

DEVELOPMENTAL NORMS OF INDIAN CHILDREN

2½ YEARS TO 5 YEARS

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Summary

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The Indian population is young: 50% under 18, 17% under 6. Each child is unique, having its own rate of development in motor abilities, language, and personal-social, or adaptive behaviour, and following its own course of development depending upon the interaction of different variables - education, health, nutrition, educated mother, etc. In India the gulf between children in rural and urban areas and children in industrial areas, and in varying grades of society is widening. Climatic conditions, social values, customs and traditions of the family and community also influence a child's development, and in India where these vary so widely no borrowed pattern can be applied to understand the Indian child.

The study made of children at centres in Calcutta, Bombay, Madras, Allahabad, Ahmedabad, Hyderabad, and Delhi in adaptive language, motor, personal and social development was designed on the lines of Gesell's developmental schedules, modified for the purpose. It showed urban children to be advanced in all the characteristics, except play and detachment, in which the children in the industrial areas excelled. The rural children were disadvantaged in every respect.

The report recommends pre-school education at this the most critical period of the child's development, notwithstanding the high cost to the country, and its limited resources.

Report

The children in India grow and develop in surroundings that vary enormously. A large section of these children grow up in the traditional rural settings that deprive them of the privileges and amenities to which children in the relatively modernised urban settings are exposed. In the field of education, health or nutrition or in terms of educated motherhood, there is an ever increasing gulf between the children in the rural, urban, semi-urban, or semi-rural settings or in varying grades and sections of the high, middle or low standards of social living. All these factors are significant in the matter of the development of the child.

India's population is relatively very young. About 50 per cent of the population falls in the age group below 18. This broad base of the age-pyramid of India has been steady since 1921. Children in the age-group under 6 constitute 17 per cent of the population.

Children are a nation's wealth and no society can afford to neglect them. Each child is a unique being and follows its own course of developmental cycle depending upon the inter-action of different variables. Even in the case of the same child, rate of growth in different aspects may vary widely; e.g. a child may be well developed in motor abilities but not yet so in language, personal-social or adaptive development. Yet developmental processes follow a consistent course and every individual normally passes through each major stage of development. Nevertheless, absence of stimulation from the environment, poor health, malnutrition, or lack of incentive from adults may retard the normal rate of development. Climatic conditions, social values, customs and tradition of the family and community in which the child lives also influence the developmental pattern of the child. It, therefore, becomes clear that the data borrowed from elsewhere cannot be applied to understand the developmental pattern of children in India. The present project was, therefore, started to elicit this much needed basic data on the developmental pattern of Indian children. These basic data should pave the way for major changes in the programme of schooling, as a suitable curriculum can be planned only if we understand the level and pattern of development of the child. It was proposed to start the present project from the age of $2\frac{1}{2}$ as it is at this age that the child is first exposed to schooling. An organised agency like the pre-school can reach the child at this stage and it may be possible to accelerate the rate of development of the child through a stimulating school programme. There is also sufficient research evidence to prove that rate of development, particularly intellectual development, is extremely rapid during this stage, and that the child derives maximum benefit if stimulation is given at this stage. Moreover, it is the base on which the whole schooling programme is based, and so for improving the school programme it is most desirable to start from the base. It was, therefore, decided that the present developmental studies should start from the age of $2\frac{1}{2}$.

As the growth of the child is in several directions, it was felt that it is not justifiable to arrive at one simple final quantitative index of growth. What is wanted is the pattern of development, and in order to get at the pattern it was decided to design the study on the lines of Gesell's developmental schedules which provide qualitative evaluation covering major basic areas of development.

The main objective of the present developmental studies is to understand the growth and development of children and to know the processes involved in the growth in the context of Indian conditions. In particular, the aspects studied are:

Adaptive development

Language development

Motor development

Personal social development

A second objective is to study the effect of environmental deprivation on the rate of development. A large majority of the Indian children live in terribly underprivileged conditions. They lack basic amenities such as food,

shelter and clothing, they receive hardly any parental care, and environmental stimulation is almost nil for them. It is proposed to find out what effect such deprivation has on the development of the child.

Another aim of the study is to note the impact of industrialisation on child development. India is rapidly getting industrialised; industrial towns are springing up quickly; children are getting exposed to industrial atmosphere. It is aimed to study if such changes have in any way affected the pattern of development of the child.

Importance of the Study:

The present study gives us the patterns of behaviour for the preschool age-group in different socio-economic groupings. These patterns will be useful not only to the students of Psychology and Education but also to parents at large..... So far we in India have been making use of normative data of other countries conducted in totally different cultural and social backgrounds and have been basing our planning on these studies. In many cases these cannot be valid or applicable to our culture. Indian parents also are without a guide to go by in order to understand the growth at different stages of development. It is hoped that the present study will meet the need and requirement of our society and will give us a better understanding of our children.

Pilot Study:

A pilot study was conducted on 38 children drawn from the school-going population of Delhi, covering the age-group $2\frac{1}{2}$ years to 5 years.

The pilot study had two objectives - firstly, how far is the testing equipment culturally suitable to Indian conditions and to see if it discriminates adequately between different ages, and, secondly, to devise well-organised comprehensive observational record forms for different aspects of development like adaptive, motor, personal-social and language.

Testing Procedures:

The testing procedure has the following characteristics:

- (a) It does not consider any operation right or wrong but takes into account the operation as it is, which is termed as the individual pattern of doing a task
- (b) The emphasis throughout the testing is on the process of operation and on understanding how these processes undergo changes with the progress in age
- (c) The tests and testing procedures remain constant when applied to the varying age-groups of children from $2\frac{1}{2}$ to 5 years. This is done to understand the genesis of growth of different concepts
- (d) The tests are not speed tests and children are free to take as much time as they need to complete a task. Time, no doubt, is taken into consideration as a variable in final analysis
- (e) The tests are individual tests and the tester generally takes a week to complete the testing of three to four children. However, there are variations, and the speed of testing depends upon the ease with which the rapport is established with the child.

Training Programme:

Before the testing programme was started a month's training programme was organised for the orientation of the field workers. This was considered essential for keeping the instructions uniform at all the centres and to reduce the inter-individual difference of the workers to a minimum level.

Sampling:

Stratified random sampling in a country of India's size with wide diversity in climate, culture and way of life is a complex task. The problem is further aggravated when one considers the wide range of social beliefs, unbridgeable distance in the socio-economic grouping, social control and hierarchy in the caste system, rural-urban differences and levels of education. A large majority of people continue to live in villages and in extreme poverty. It is, thus, neither possible nor practical to visualise a scheme of thought which will distribute the sample with proper weightage to all these factors. In order to meet the situation, at least partially, the study was conducted in different regions of the country covering rural, urban, and industrial samples.

The size of the sample of the study in terms of population of children in that age-group is also significantly small. There was no way out as the entire testing procedure is individual and takes on an average at least two to three days to complete the testing of a single child; and further, in view of the limited time at the disposal (two years and nine months), and meagre resources (Rs. Six lakhs and 35 thousands only) available for the purpose, the sample had to be so restricted. Nevertheless, it is hoped that the problems that will arise out of the study will be taken up for further intensive investigation. The study is of two types (a) Cross-sectional study, and (b) the longitudinal study.

Centres:

The study was conducted at the following seven (7) centres in collaboration with professors of education and psychology:

Calcutta, Bombay, Madras, Allahabad, Ahmedabad, Hyderabad and Delhi.

Besides studying children in these centres which can be described purely as urban areas, the testing programme included children from the areas in the state which could be classified as purely rural and other areas which could be termed as predominantly industrial areas. Thus in terms of sampling each centre covered the following three (3) variables:

(a) Urban Sample, (b) Purely rural sample; and (c) Predominantly industrial and semi-urban sample.

Ages:

The study is confined to six (6) age-groups: $2\frac{1}{2}$, 3, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, 5 - the age interval between the groups being six-months and is equally distributed with respect to age and sex. Thus it takes into consideration the two variables of age and sex.

For the sake of convenience the tests are categorised into the different segments of developments, though for all purposes development is always considered as an integrated whole. The categories of tests are, (a) adaptive (b) motor and (c) language development. Besides these the personal-social development of the child is also studied for which there is an interview schedule for eliciting information from the parents, and to add to its reliability teacher's and examiner's observations are also recorded for items that are observable to them.

Adaptive Tests:

"To speak of intelligence tests", according to Gesell, "for the pre-school child is to ignore the true character of behaviour at this age". Adaptive tests, therefore, assess children's ability to modify or alter their behaviour according to the needs and requirements of the situation, and thereby to draw a synthesis between their capacity to initiate and the ability to profit from the past experience. Adaptive tests included in our scale are of the following category:

1. Block Building or Cube Play
2. Form Adaptation
3. Drawing
4. Form Discrimination
5. Number Concept
6. Colour Identification
7. Immediate Memory
8. Problem Solving

Language Development Tests:

Development of language is very important in the pre-school period as it is at this stage that the child for the first time is able to speak freely. Language ability gets gradually integrated with other fields of behaviour by the end of the pre-school stage.

The tests included here are generally those used in the Gesell scale, excepting picture cards and picture books which are selected out of the existing Indian literature. In the case of the other tests it was possible to adapt them into the local language of the child. The original test is in English but uniform translation was made for local purposes. These tests are primarily meant for knowing the degree of understanding the child possesses at different age levels and the levels of abstraction that the child achieves. The language tests used in the present battery are as follows:

- (1) Following directions (2) Following preposition (3) Use of objects (4) Naming and identification of objects (5) Action agent responses (6) Comprehension tests (7) Ability to give one's name, sex age and address (8) Ability to distinguish A.M., P.M., right and left (9) Responses to Picture Books (10) Responses to picture cards.

Motor Development:

Gesell divides motor development into (1) Upright Posture, (2) Walking and Running, (3) Prehension and Manipulation, (4) Laterality and Directionality.

In the present scheme of classification we attempt to study, besides these, the total patterns of motor behaviour and how they differ from age to age, and also to understand the critical stage of stabilisation or motor behaviour.

Motor tests can be classified in the following way:

- I. Standing, Walking and Running
 - 1) Walking on (a) a straight line (b) on toes (c) with a glass of water (d) backward (e) on walking boards.
 - 2) Standing on (a) one foot (b) with crossed feet and
 - 3) Running.
- II. Kicking, Catching and Throwing
 1. Undirected and directed kicking of a ball,
 2. Catching a rolled ball and ball thrown chest high,
 3. Undirected and directed throwing of a ball.
- III. Ascending and descending stairs.
- IV. Skipping.
- V. Hopping like a frog and simple hopping.
- VI. Jumping (1) down (2) long jump (3) high jump.
- VII. Hand Skills

Threading the beads, cutting with scissors.

Personal-Social Development:

Personal-social development test is done in a different way. There are no tests as in the case of motor development and adaptive development. Here the examiner has a check list in terms of the following aspects of personal-social development:

- (a) Eating, (b) sleeping, (c) elimination, (d) dressing,
(e) personal hygiene, (f) communication, (g) play activities,
and (h) developmental detachment.

This check list is almost the same as that of Gesell's and is filled in through an interview with the mother. In a way it is the mother's assessment of her child. Wherever possible and when the child is also attending a school the teacher's observations on these aspects are also recorded. Both mother's and teacher's reports are supplemented by the reports of the examiner on all items that are observable.

Other variables:

In the urban sample, further stratification is done on the basis of fee-structure and the sample is distributed as follows:

- (a) High fee and low fee groups constituted 26.7 per cent each of the sample.
- (b) Middle fee group constituted the remaining 46.6 per cent each of the sample.

Similar stratifications for the rural or semi-urban industrial sample are not done as these samples are mostly non-school going.

Sample Size:

Each centre was to cover a sample size of 360 children for each phase-rural, urban, and semi-urban industrial, thus covering a total of 1080 children. The distribution of children in terms of age and sex was expected to be as under:

		Age						Total
		25	30	35	40	45	50	
Sex	B	30	30	30	30	30	30	180
	G	30	30	30	30	30	30	180
Total		60	60	60	60	60	60	360

All the centres could not test the full sample. The actual sample on which the study was done is:

Centre	Urban	Rural	Industrial
Ahmedabad	360	360	350
Allahabad	360	360	360
Bombay	360	360	272
Calcutta	360	360	360
Delhi	356	363	349
Hyderabad	354	356	180
Madras	360	288	170

Longitudinal Study:

The Longitudinal study was designed for purposes of cross-validation of the cross-sectional study and is confined to urban population only. The original plan was to follow up the two and a half year olds of the urban sample. This, however, could not be done and therefore, a fresh sample was drawn.

Under this programme children are being tested repeatedly at the seven centres at a fixed interval of six months. The sequence of testing is kept fixed. Each child was tested when he/she had completed two years, six months and one day. The forty-two children included in the sample consisted

of 21 boys and 21 girls. All the children belonged to the middle income group. The centres were, however, left free to decide the middle income group according to the local conditions by taking into account the factors of occupation, salary, residence and education of the family.

The total sample at seven centres consists of 292 children, 146 boys and 146 girls. All the centres test 21 boys and 21 girls excepting Calcutta centre where there are 20 boys and 20 girls only.

Analysis of Data:

The primary objectives of the present study are (i) to determine the normative pattern of behaviour of children in each of the age group from $2\frac{1}{2}$ to 5 and (ii) to measure the change in the behaviour as a result of growth. For this purpose about 100 test items were used which are grouped under four parts such as personal-social, motor, adaptive and language behaviour. These tests on the whole can be divided into the following two groups:

- (i) Tests where simple frequencies are to be added and the cumulative total considered as representative part of the sample under study
- (ii) Tests where steps taken by the individual in the performance of a task will in collective form be taken as a single unit for purposes of inter-individual matching.

The first category includes tests of personal-social development and a part of the adaptive tests such as tests of number concepts, immediate memory, identification tests, following direction, etc. The second category consists of the entire motor schedule of testing and a large part of the adaptive tests.

The first category of tests involves only simple frequency analysis which will give the percentage of children who show a particular item of behaviour. The second category of tests is subjected to pattern analysis. The technique takes into account various aspects of behaviour exhibited by the child in the course of performing a task. Thus the steps taken by the child in performing a task becomes the pattern of behaviour of that child. The objective is to find out those patterns that have the highest frequency distribution and are, therefore, characteristic of an age-group. In this way it is possible to locate not only the oft repeated pattern but a hierarchy of patterns that are found in a particular age-group. In case no one single pattern emerges, then the attempt is to combine two or three patterns together so that a meaningful pattern which is representative of the age group emerges.

In all such combinations and summation of patterns care is taken to see that the final pattern represents more than 50 per cent of the individuals agreeing with over 75 per cent of the pattern. The patterns thus found are analysed with respect to age, sex and socio-economic groupings.

Summary of Results:

Adaptive Development

The results showed that on the whole urban children were faster in adaptive development than rural or industrial children, whereas the rural ones were found to be slowest. The striking differences between the three groups were

found to be in drawing tests, number tests, colour identification, immediate memory and problem solving. Comparison with Gesell's norms showed that Indian urban children were found to be faster in the development of number concepts, colour identification, comparative judgment and immediate memory, whereas in the other tests they were more or less similar. The inter-centre comparisons showed that children of Calcutta (Bengal) were found to be, on the whole, faster in adaptive development than children from the other regions; whereas those who were comparatively slower were urban children of Ahmedabad, rural and industrial children of Delhi and industrial children of Allahabad.

Personal Social Development

Personal social development also were found to be more or less on the same lines as adaptive development. That is, the skills were mastered first by urban children, then the industrial children and last of all by the rural children. This acceleration shown by the urban children held true in all aspects except play and developmental detachment in which the industrial children were more accelerated. The inter-centre comparisons showed that, generally speaking, children of Madras, Bombay and to some extent Calcutta were found to be slower than children from other centres. A comparison with Gesell's norms revealed that in activities such as self-feeding, taking complete charge of elimination, washing and drying hands, feet and face, and in running errands Indian samples were faster than Gesell's sample. In dressing and communication it was only the urban sample that compared favourably with Gesell's whereas industrial and rural children were found to be slower. In play interests and sleep habits the two samples were found to be totally different.

Motor Development

The main findings of the study are that on the whole urban children were found to be faster in motor development too as in the other two aspects, whereas the rural children were the slowest. The inter-centre comparisons in motor development did not show any consistent differences. A comparison of the present samples with Gesell's study showed that on the whole the present sample proved to be a little more accelerated than Gesell's in the development of most of the motor skills.

Language Development

The analysis of language results also showed the same trend. The differences between urban, rural and industrial children were very striking in the area of language. The urban children were found to be much more accelerated than the other two groups whereas the rural children were found to be the slowest. Like in adaptive development, in language development too, the children of Calcutta were found to be faster than children from other regions. The urban children of Ahmedabad and Allahabad were found to be comparatively slower in language development.

Implications of the Study:

The study showed the wide gap that exists between the urban and rural children of India. One may argue that this is so because the tests were urban biased. Even if it is so (though all efforts were taken to select such test items that were suitable to both the groups), one should admit that the skills assessed in the present battery of tests are essential to be developed in a child before he

enters the primary school. Discrimination of form and colour, rudimentary concepts of number, picture identification and naming, comprehension skills, fine and large muscle skills etc. are abilities without which a child will find it hard to cope with the demands of the primary school. The rural child does not appear to have developed many of these abilities in his pre-school years. As such schooling in early primary classes is bound to be an extremely difficult process for him. This may explain the high wastage and stagnation figures in the early primary classes in India.

The majority of rural children in India are disadvantaged in almost every sense of the term. The stimulation that they receive at home is minimal. Neither do the children have facilities to attend pre-schools where compensatory education may be attempted. Therefore, the net result is that the critical period at which development is at its maximum goes unnoticed.

Considering the rate of growth of Indian economy it is not realistic to expect that problems of illiteracy and poverty will be overcome in the near future. Therefore, the only possibility to give the children the required enrichment is through the pre-schools. However, it is true that finding the required resources for expansion of pre-school education is a difficult task for a developing country like India. Yet in terms of cost-benefit, it appears to be a sound policy of investment.