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ABSTRACT

Over 200 families from lower and middle income areas of British Columbia, including a group representing the Indian communities, were studied in this effort to examine poverty as it relates to families, especially to young children. A wide variety of health, social, and economic variables were examined in the hope of developing output criteria for the evaluation of poverty programs. The subjects were children entering kindergarten for the first time. Interviews with parents gave medical histories of the children and parental attitudes toward cost of living and income. Examinations given the children included a routine physical, dental examination, vision and hearing screening, and a kindergarten readiness test. Children of poor families more frequently demonstrated dental disease; skin, tonsil, and ear infections; and poor school performance. Their families were characterized by family disruption, unemployment, frequent changes in residence, and lower level of education and occupation. The families from more affluent socioeconomic groups manifested different attitudes toward education. More than one-half the document consists of tables and graphs. (AJ)

PRESCHOOLER STUDY

The Medical, Social and Economic Correlates of Poverty in Preschool Children of British Columbia - A Pilot Study

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INTRODUCTION

The objective of this study was to examine the subject of poverty as it relates to families and in particular to young children within families. It was hoped to establish a small number of reliable medical, social and economic measurements or factors which correlated well with poverty. By this means, it was hoped that selected measurements or factors would be provided which might assist in the identification of the preschool child suffering the effects of poverty and therefore "at risk". The final objective was to develop output criteria that would enable the evaluation of effectiveness of any program directed at poverty.

This study was conducted at the local level and centred upon the preschool child. The child entering kindergarten for the first time was selected for study. It was felt that this age group would be the most suitable for assessing the effect of preschool conditions upon growth and development.

METHODOLOGY

Choice of Study Areas

Three study areas were selected. Two areas were chosen, using a socioeconomic scale (1), to represent lower and middle income areas. A third area was selected to represent the Indian communities of British Columbia. The Indian community was selected on the basis of accessibility, size of the preschool population, and support for the study project by the Band Council.

Sampling Procedure

Only children entering kindergarten for the first time and who were born in 1964 were eligible for the study. Children studied in the summer months were selected from lists of children registered for kindergarten in a lower and in a middle income area of Vancouver. Children studied in the winter months were selected from kindergarten class lists in the same lower income area of Vancouver as the summer study and in the Indian community area. Those children on the class lists in the lower income area of Vancouver that were not on the summer list in that area were eligible for the winter study.

A simple random number technique was used to select children from the population lists in the Vancouver study areas. All children in the Indian study area were selected for study.

Study Design

The study team consisted of three interviewers and two examiners assisted by a public health nurse and supervised by the study pediatrician (R.T.). Field work was conducted from a suitable location in each local area. In addition to the examining and interviewing rooms, a play area was created and supervised by indigenous help. Interpreters were recruited from the local area when required.

All children and parents were seen and briefly screened by the supervising pediatrician and the public health nurse. Children for whom the parent or legal guardian was not available for interview were rejected from the study. Total elapsed time of interview and examination averaged 45 minutes. Each study unit consisted of three parts: a physical examination; an interview; and a set of physical and laboratory measurements.

The medical examinations were carried out by two medical students especially trained for the procedures involved. The examination included a routine physical, a dental examination, vision and hearing screening, and a special battery of psychological tests. The latter tests, a modification of the Vallett procedure, were developed in collaboration with the Vancouver School Board and will be referred to as "kindergarten readiness tests".* All positive physical findings were verified with the study pediatrician. Mother and child were separated during the course of the study unit and the ease of this separation judged by the examining student on a five point rating scale. The examining student also rated the child's health on a seven point scale.

Historical data was gathered at all stages of the study unit but the major portion was obtained in a formal interview. Interpreters familiar with the questionnaire were utilized wherever English was not adequately comprehended. The interview questionnaire examined the past health of the study case. This included any history of chronic disease and a two week interval history for acute disease in the study case. Information was also gathered on the family's utilization of health care facilities, their medical insurance status, and their attitudes towards health care and the health of the study case. Information was also obtained on the birthplace of the study case and parents, their duration of residence in the local area, and the education and occupation of the parents as well as their social and religious affiliations. Data was also obtained on income, cost of living, and attitudes towards income and cash reserve.

* available from the authors upon request.

The study unit was pretested in a non-study area. Families studied during the pretest were known to the study pediatrician and the school nurse. Information gathered during the interviews on these families was cross-checked against background knowledge of the families in an attempt to validate the study unit.

Preregistered children and their parents were subjected to the full interview and examination unit during the summer months prior to the start of kindergarten. An attempt to obtain information on cost of food was eventually dropped from the study because of a poor response rate. Children and their families studied during the winter months did not receive the full study unit. Children in the lower income Vancouver area were not examined, while those in the Indian study area were examined but did not receive the "tine test". The interview unit for the Indian study area was modified, in consultation with the Band Council, to provide additional information pertinent to the problems of Indian health.

All children in the Vancouver sample were given the Metropolitan Readiness Test by their classroom teachers at the completion of their kindergarten academic year. In addition, the teacher was asked to report the days of school missed as a fraction of the total days attended, and to evaluate the study children from her class on a special form. This data, obtained at the conclusion of the kindergarten year, was gathered in collaboration with the Vancouver School Board.

DEFINITIONS

Registration - Early registration is defined as the child's name being on the school list in the study area or on the lists of another school in a different district on or before the completion of the normal school year in that area.

- Late registration is defined as a child present in a kindergarten class in the fall of 1971 who had not previously been registered at that or any other school prior to the completion of the preceding academic year.

Living Scale - defined as $\frac{\text{Total income (12 mos.) - (Rent + Fixed Expenses)}}{\text{Family Unit}}$

Fixed Expenses - cost of utilities including Hydro, gas, oil, telephone and water plus fixed regular monthly debts but not including cost of food or clothing.

Rent - cost of domicile in which the child and the majority of the family resides. This includes mortgage and loan payments on a house but does not include payments on other property or expenses the wage earner is compensated for while living away from home.

Family Unit - defined as a unit value for each member of a family residing in the main residence or being financially supported, at another place of residence, by the same family.

- unit value - adults and children older than 12 yrs. = 50 units each.
- children 12 yrs. of age or less = 25 units each.

Total Income - includes income from all sources including welfare, family allowance and rentals or boarders that accrues to the family in the normal taxation year.

ANALYSIS OF THE DATA

Data obtained from the study unit was recorded in the attached questionnaire. Information was then coded and transferred to computer tape. Each item was examined in simple descriptive terms, i.e. frequency of each type of response; and in terms of statistical significance. Each study unit was also analyzed by census tract, by local area, and by several arbitrary groupings including a "living scale".

χ^2, Kolmogorov-Smirnov and Student-t tests were used, where appropriate, as tests of significance. Multiple variables were selected for correlation analysis.

RESULTS

Sample Characteristics

Population size, sample size, and response rates are indicated for each of the study areas in Table I. Comparison of the preregistration and the in-class lists for the two Vancouver areas revealed a substantial difference in registration patterns between the low income and middle income areas. This difference prompted the modification of our original study design, and implied significant differences between the lower and middle income areas in terms of mobility of families and knowledge and attitudes about schooling. Two hundred and ten children and their families underwent a complete interview and examination. During the winter study of the lower socioeconomic grouping, an additional 69 families were interviewed but their children were not examined. The latter group represented a random sample of those families who registered their children late for school. Of the 279 study children, 214 were given a Metropolitan Readiness Test and a teacher evaluation at the conclusion of the kindergarten academic year.

Family Characteristics (Table II)

1. Middle Socioeconomic - Children and their families drawn from the summer preregistration lists were substantially the same in both socioeconomic areas (Table II). The middle socioeconomic area presented a stable picture with 47% of the families residing at their present address during the entire preschool life of the study case. The study family owned their own home in 83% of cases and 96% of the families had both

mother and father living at home. Seventy-seven per cent of the families in the middle class area had their entire family living with them and 78% of the mothers did not work. Of interest is the finding that almost 10% of the children residing in the middle class area were adopted children. Almost 60% of the middle class families were Protestant and enjoyed higher educational and occupational standings. Sixty-eight per cent of the fathers and 72% of the mothers in the middle class area were Canadian born.

2. Low Socioeconomic - The low income area seemed to be divisible into two components:

(a) Early registrants (summer). This group, exemplified by the preregistered kindergarten child, were in most respects indistinguishable from the children and their families in the middle class area. Duration of residence, stability of the marriage, were not appreciably different from the middle class area. Only 70% of the families owned their own home and only 65% of the mothers were at home and not working. There were no adopted children in this lower income area, and less than 10% of the children lived away from home. Only 27% of the fathers and 37% of the mothers in this area were Canadian born. Forty-one per cent of the fathers and 44% of the mothers were of Roman Catholic persuasion.

(b) Late registrants (winter). The late registrant children and their families were different from their counterparts in the summer sample from the same low income area. Forty-two per cent of the families had lived at the present address in the area for less than one year and only 44% of the families in this group owned their own home. Twenty per cent of the families were single parent families and 19% of their children lived away from home. Parents of the late registrant children were more frequently Canadian born than in the early registration group. Forty-two

per cent of the fathers and 45% of the mothers were born in Canada and 51% of the parents were Roman Catholic in persuasion. The father's education level was not significantly different from that of the fathers of the early registrant children in the low income area. The mother's educational level was lower and the number of working mothers was greater in the late registration group.

3. Indian Band - The 21 Indian families surveyed represent a one-in-two sample of the eligible children from the Band registry. These children and their families represented the most extreme poverty seen in the total study sample. The response rate amongst this study population was low with one area on the reserve being totally unrepresented. The Indians represented the most stable group in terms of duration of residence and country of origin of both parents. Sixty-seven per cent of the families studied owned their own home and 81% of the mothers were not working. While 67% of the parents were actually married, 86% of the children had both a mother and father living in the home. Sixty-two per cent of the Indian families had at least one child living outside of the present home. Ninety-one per cent of the mothers and 81% of the fathers in the Indian group were of Roman Catholic persuasion and the educational levels of both father and mother were much lower than for all of the other study areas. The occupational class for the Indian fathers was much lower than for the other study areas.

Health Characteristics of Study Children (Table III)

Examination of height, weight, and skin fold thickness did not reveal significant differences with the exception of slightly greater weight and smaller skin fold thicknesses in the somewhat older Indian kindergarten children. Examinations of urine and the "tine test" did not produce significant numbers of positive results to warrant analysis.

The physical examination of the study children revealed an assortment of minor and major disorders. The predominant finding was that of severe dental disease. This was most marked amongst the Indian children in the study sample (Figure 1), while the middle class area showed the best overall dental health. Skin, lymph nodes, tonsils, ears, and cardiorespiratory were the most common systems reported as having abnormal findings. Disorders of skin, lymph nodes, tonsils, and ears were more prevalent among the Indian children than among the other groups. Cardiorespiratory findings were largely limited to the finding of functional murmurs.

Behavioural Characteristics of Study Children (Tables IV and V)

Examination of the kindergarten readiness of the study children revealed greater difficulties with "letter your name" in the lower income area (Figure 2). Separation, language and concepts scores were also lower in this group (Table IV). In general, the Indians were found to be as "ready" as the middle income children.

Examination of the Grade 1 readiness of the study children revealed persistence of the difference between middle and lower income children. The lower income area, especially the late registrant group, did not perform as well as the middle class area. These differences are corroborated in the teacher's assessment of the study childrens' development (Table V).

When days absent from kindergarten due to illness were calculated as a percentage of total days enrolled, it was found that 54% of the middle income children were absent less than 5% of days, compared to 25% for the early registrants and only 8% for the late registrants in the lower income group.

Eighty one per cent of the middle class and 78% of the lower class children that were early registrants were judged by the teachers to be ready for a regular or an enriched Grade 1 experience. Only 63% of the late registrant children were ready to go on to Grade 1.

Health Care Characteristics of Study Families (Table VI)

Most families could name a family physician or doctor whom they attended for private medical care. All families had some form of prepaid medical insurance, but many were confused as to the amount of premium paid and/or the name of the insurance carrier. Only 45% of the Indian children had visited a dentist and only 38% owned and used a toothbrush. Only 25% of the early registrants in the lower class area had visited a dentist.

Economic Characteristics of Study Families

The mean values for income and expenditures for each of the four areas studied are shown in Figure 3. There is a wide spread between take-home pay and total income between the different areas studied. Income ranged from an average of $550 per month in the middle class area to an average of $140 per month in the Indian area. Less variation was found between the four areas in the estimated cost of housing, food and other fixed monthly expenditures. It was interesting to note that in all socio-economic areas there was an average of $40 fixed expenses per month over and above cost of food and housing. The net result of the differences between these mean values is that the early registration families from both the lower and the middle income areas had approximately the same income margin, i.e. $430 per month average. This was considerably more than the income margin for the late registration and Indian families which were surprisingly close together with about $260 per month average. Net income, calculated as the difference between take-home pay and fixed expenses (rent, utilities, fixed debts) showed considerable variation between each of the study areas.

Of the various living scales examined (1.3, 1.5, 1.6 and 2.0) the scale of 1.5 seemed to approximate the "poverty line" (Table VII & Fig. 4). Using the level of 1.5 or less as an indicator of relative poverty, differences were found between the poor and non-poor groupings. No difference was found in the age distribution of children at home, but the non-poor group had, on the average, fewer children at home (Fig. 5). Similarly, the total number of pregnancies per mother was greater in the poor than in the non-poor group (Fig. 6). Education of the mother and father, while not markedly different, favoured a lower level of education in the poor parents. It was interesting to note that, while the occupational class of the poor mothers was not different from that of the non-poor mothers, the occupational class of the poor fathers was definitely lower than that of the non-poor fathers (Figures 9 & 10). Income data for the preceding 12 months and for the entire preschool years of the study case indicated that the poor families had been consistently poorer than the non-poor. In addition, significant differences in the total number of months employed per year were found and indicated a higher unemployment rate amongst the poor (Fig. 11). Attitudes towards the adequacy of the family income are well illustrated in Figure 12 and indicate significant differences in assessment of adequacy of income between the two groups.

DISCUSSION

Only a small proportion of the large volume of data generated in this study can be reasonably included in the present report. Of particular interest was the finding that poverty is not located in or restricted to clearly defined areas of the City of Vancouver. Because of the wide dispersal of poor families amongst a more normal population, the presence of poverty is much more difficult to identify.

Defining poverty proved even more difficult. We feel that the living scale created for this study represents an acceptable alternative to the lack of a clear definition of poverty. Data published on costs of food and clothing in Vancouver and Toronto in 1967-68 was utilized in the establishment of unit values for each family member (2, 3). Assuming that living expenses are proportional to family composition and size the income left after fixed expenses (i.e. rent, utilities, and fixed debts) was divided by the total unit value for each family. Thus, a family with a living scale of 1.0 had just enough money after paying their fixed expenses to cover the minimal cost of food and clothing.

Our task was then to find a point somewhere between 1.0 and infinity that represented a reasonable line between poor and non-poor. An examination of the many variables generated by this data indicated 1.5 or less to be the optimal line of division. The resultant dichotomy is clear enough to enable us to compare the two groups and to distinguish statistically significant differences between them. This division reduces but does not eliminate the possibility that there are families with a living scale in excess of 1.5 who would consider themselves in the poverty range.

The distribution of poverty in the Vancouver region may be related to the pattern of home ownership. It is of note that even the families in the low income area show a high degree of home ownership. The finding of a special group of families who register their children late for school, who seem to be highly mobile, and who are economically disadvantaged may be related to the difficulties of obtaining suitable rental accommodation in the City. The possibility of identifying families "at risk" of poverty by the simple means of identifying late registrants for kindergarten could be of great value.

The unexpected findings related to late registration in the low income area prompted modification of the second phase of the projected pilot study. It had been our original intent to update and modify our questionnaire and then to go back into the study areas and validate the questionnaire. Because of the size of the late registrant group and because of our suspicion that this group represented the poverty group that we had failed to find in sufficient quantities during the summer months, we reassessed our study design and attempted to examine these families within the limits of the study methodology.

The most clearly defined and homogeneous group in this study were the North American Indians. The impressive feature of this study was the fact that our native Indians, when compared with the non-Indian of Vancouver, represented the extreme end of the Canadian poverty scale. This generalization must be made with the recognition that individually, Indians throughout British Columbia experience a wide variety of living standards. There is also considerable variation between Indian bands in British Columbia and in the rest of Canada. As a group, however, their socioeconomic plight is likely the worst in British Columbia.

It is necessary to recognize the importance of the data on Indian health. The significant contribution of this small group of study families to the overall pathology detected in the total study should be stressed. Both quantitative and qualitative differences were represented by the Indian families examined. The tragedy of poor housing, high pregnancy rates, and significant numbers of childhood deaths is easily lost in the overview statistics. That many of the conditions documented might be disappearing with the advent of contraception, better medical care, and better housing for the particular Band studied does not obviate the necessity of examining standards amongst other Indian groups. The experience of

involving the Indian Band Council and the Indians in this health study was most gratifying and has served to mark the beginning of an extended involvement in the whole area of Indian health.

The results of the various parameters studied indicate the rather limited value of routine performance of many standard examinations. For example, much of the general physical examination was singularly unproductive of significant amounts of pathology in the children studied. Only a few areas seemed to relate reasonably clearly to the socioeconomic status of the families. These were: dental health, skin, lymph nodes, tonsils, ears, and skin fold thickness or arm circumference.

Simple examination of the teeth and gums, the skin, and possibly the ears, would seem to suffice as a health maintenance examination in this age group. No new conditions were found, though some old were explained anew to the parents. The areas which appear important for health maintenance can be easily surveyed by an adequately trained public health nurse. The role of the physician in the routine preschool examination of children, if considered as a casefinding tool, is clearly of limited value.

The differences in the degree of readiness for school between study areas is of interest. Unfortunately, the children in the winter sample could not be adequately assessed in terms of kindergarten readiness. They and their families would appear to be "at risk" in the area of preparedness for Grade 1. Even if they were identified as "at risk" a programme of preschool enrichment would only be possible after the fact. This information makes a strong argument for such broadly based programmes as "Sesame Street" and for the development of winter school programmes suitable for such children.

Examination of the economic data for the study families indicates some interesting compensatory mechanisms within the groups. Families from the low income area of Vancouver studied during the summer months seemed to be more aware of school and registered their children early. They also compensated for a somewhat smaller average take-home pay by reducing the costs of housing and the amount of fixed monthly expenses. Interestingly enough, this group of families, who seemed more concerned with their children's education, also had a slightly higher than average cost of food per month than other families. The families from the winter study months showed moderate differences in income between the Indian and non-Indian groups. The Indian groups seemed able to compensate for their lower income by a much lower than average cost of housing. On the other hand, their monthly cost of food and the other fixed monthly expenses were within the range of all other study families. The poor non-Indian group faced relatively high housing costs and spent less per month on food than the early registrant families from the same part of town. The net result for the winter, urban poor group of families was that their income margin was within the range of that for the Indian families.

Income margin or the operating margin in the family finances would seem to be important to family stability and the development of its members. It would seem that the poorer you are, the smaller the margin you have to operate within. As this margin shrinks, the amount of money available to spend for food and clothing diminishes before that for fixed expenses such as rent and utilities. Thus, we see that the average food costs per month for the urban poor families is the lowest of all groups studied. The implications of this upon health for the preschool child and the pregnant woman cannot be ignored. It is also highly likely that the size of the

income margin relates directly to the attitudes of adequacy of income and some of the dissatisfaction expressed by study families. This concept links with the concept of relative poverty outlined by the Economic Council of Canada in their Annual Report (4). These features of income control should be further considered in relationship to a guararteed annual income (5).

SUMMARY

Two hundred and seventy nine families from three different socioeconomic areas of British Columbia were studied. A wide variety of health, social, and economic variables were examined in relationship to these families and their kindergarten aged children.

Poverty, while present in the study population, was not heavily concentrated in either urban area. The North American Indian group was found to be the most extreme example of poverty in the areas studied. Twenty eight percent of the total study population and 76% of the Indian group existed with a living scale of less than 1.5. Using this arbitrary scale significant differences in a number of variables were found between poor and non-poor families and their children.

Dental disease; infections of skin, tonsils, and ears; and poorer school performance seem to be the liabilities which children of poor families will more frequently face. Family disruption, unemployment, frequent changes of residence, and lower educational and occupational achievement characterize the poor families studied.

Children and their families living in the same socioeconomic area seem to be divisible into two groups based upon parental behaviour in the area of registration for kindergarten. By implication these families manifest different knowledge and attitudes towards education. The relationship between poverty and these two different groups is worthy of further study.

REFERENCES

1. MAYHEW, B. W.: Local areas of Vancouver. Research Department, United Community Services of the Greater Vancouver Area, January, 1967.

2. PROCEEDINGS OF THE SPECIAL SENATE COMMITTEE ON POVERTY: Report of the Department of National Health and Welfare, Appendix A. Bulletin Number 23, pp. 139-159, February, 1970.

3. METROPOLITAN HEALTH DEPARTMENT, CITY OF VANCOUVER: Personal communication.

4. ECONOMIC COUNCIL OF CANADA: Fifth Annual Review, "The Challenge of Growth and Change". pp. 103-140, September, 1968.

5. PROCEEDINGS OF THE SPECIAL SENATE COMMITTEE ON POVERTY: Number 53.

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TABLE I

DERIVATION OF THE STUDY SAMPLES

SOCIOECONOMIC STATUS OF AREA	TIME OF REGISTRATION	POPULATION SIZE	SAMPLE SIZE	NUMBER RESPONDED	RESPONSE RATE	MOVED OUT
Middle	Early	323	120	94	78.3	-
Middle	Late	73	-	-	-	23
Lower	Early	452	120	95	79.2	-
Lower	Late	211	120	69	57.5	49
Indian		67	31*	21	67.7	-
Total		1126	391	279	71.4	72

* Number of eligible children actually attending kindergarten

TABLE II

FAMILY CHARACTERISTICS IN THE SOCIO-ECONOMIC AREAS

	SOCIO-ECONOMIC AREA							
	Middle		Lower (Early)		Lower (Late)		Indian	
	No.	%	No.	%	No.	%	No.	%
Total families	94	100.0	95	100.0	69	100.0	21	100.0
Ownership of home	78	83.0	66	69.5	30	43.5	14	66.7
Residence 5 or more years	44	46.8	42	44.2	17	24.6	13	61.9
Residence less than 1 year	11	11.7	15	15.8	29	42.0	3	14.3
Both parents at home	90	95.7	88	92.6	55	79.7	18	85.7
Parents married	90	95.7	88	92.6	54	78.3	14	66.7
All children at home	72	86.7*	86	90.5	56	82.3*	8	38.1
Child adopted	9	9.6	0	0.0	0	0.0	1	4.8
Mother not working	65	69.2	45	47.4	30	43.5	16	76.2
Grade 13 education or beyond:								
Father	69	73.4	50	54.3*	38	56.7*	7	33.3
Mother	76	80.9	48	51.1*	32	46.3	5	23.8
Protestant religion:								
Father	55	59.1*	23	24.9*	8	11.6	3	14.3
Mother	57	60.6	26	27.4	14	20.3	0	0.0
Roman Catholic religion:								
Father	23	24.9*	39	41.9*	35	50.7	17	81.0
Mother	24	25.5	42	44.2	35	50.7	19	90.5
Canadian born:								
Father	64	68.1	26	27.7*	29	42.0	20	95.2
Mother	68	72.3	35	36.8	31	44.9	20	95.2
Higher occupational class (1 or 2):								
Father	19	20.9*	10	11.4*	6	9.8*	0	0.0
Mother	2	6.7*	2	5.3*	1	4.8*	0	0.0

* Excludes missing data

TABLE III

HEALTH CHARACTERISTICS OF THE STUDY CHILDREN

	SOCIO-ECONOMIC AREA					
	Middle		Lower (Early)		Indian	
	No.	%	No.	%	No.	%
Total children	94	100.0	95	100.0	21	100.0
Health status normal	31	33.0	15	15.8	0	0.0
Tine test negative	93	100.0*	92	98.9*	-	-
Urinalysis normal	88	98.9*	77	97.5*	18	100.0
Systems normal:						
Hearing	87	94.6*	82	91.1*	16	84.2*
Ears	90	95.7	93	97.9	18	85.7
Vision	84	92.3*	79	90.8*	17	89.5*
Skin	88	93.6	87	91.6	9	42.9
Lymph nodes	69	73.4	70	73.7	10	47.6
Tonsils	68	72.3	76	80.0	14	66.7
- Absent	16	17.0	10	10.5	5	23.8
Chest	82	87.2	89	93.7	20	95.2
Abdomen & G.U.	94	100.0	94	99.0	21	100.0
Neurological	93	98.9*	95	100.0	21	100.0
No congenital abnormalities	89	94.7	84	88.4	20	95.2

	Middle	Lower (Early)	Indian
Mean height (cm.)	109.1	107.1	111.2
Mean weight (lbs.)	41.7	42.0	45.0
Mean arm circumference (cm.)	18.0	17.6	18.0
Mean skin fold (mm.)	9.5	9.5	8.1
Mean dental score (Max.=40)	33.8	30.6	15.7

* Excludes missing data

TABLE IV

BEHAVIOURAL CHARACTERISTICS OF THE STUDY CHILDREN

	MEAN FOR SOCIO-ECONOMIC AREA			
	Middle	Lower (Early)	Lower (Late)	Indian
Kindergarten Readiness Items:				
Letter your name (Max.=5)	2.4	1.7	-	2.3
Draw a man (Max.=10)	4.9	4.9	-	4.1
Separation (Max.=10)	9.2	7.8	-	9.7
Motor (Max.=5)	4.0	4.1	-	4.5
Discrimination (Max.=10)	8.9	8.3	-	8.8
Language (Max.=10)	8.9	7.1	-	8.4
Concepts (Max.=10)	7.9	6.3	-	7.2
Total readiness (Max.=75)	47.8	46.8	-	46.8
Grade I Readiness Items:				
Metropolitan Readiness Tests				
Word meaning	9.0	7.1	6.7	-
Listening	10.1	9.2	8.5	-
Matching	8.1	7.9	6.8	-
Alphabet	7.7	6.7	5.0	-
Numbers	12.5	12.5	10.3	-
Copying	8.4	8.5	6.0	-
Total readiness	56.0	52.1	43.7	-
Draw A Man (Max.=5)	3.0	3.3	2.9	-

TABLE V

TEACHER'S ASSESSMENT OF DEVELOPMENT OF STUDY CHILDREN AT COMPLETION OF SCHOOL YEAR

	NUMBER IN SOCIO-ECONOMIC AREA					
	Middle		Lower (Early)		Lower (Late)	
	No.	%	No.	%	No.	%
Rated normal or advanced by teacher:						
Language	78	86.7*	64	74.5	42	64.6
Emotional	72	79.1	69	80.2	44	67.7
Social	81	89.0	70	81.4	44	67.7
Intellectual	79	86.8	73	84.9	46	70.8
Motor coordination	78	85.7	71	82.6	50	76.9
Absent due to illness $<5\%$ of days	43	54.4	21	25.3	5	7.8
Placement recommended:						
Regular Grade I	54	59.3	58	67.4	32	54.2
Grade I enriched	20	22.0	9	10.5	5	8.5
Grade I with extra help	13	14.3	8	9.3	15	25.4

* Excludes missing data

TABLE VI

HEALTH CARE CHARACTERISTICS OF THE STUDY FAMILIES

	SOCIO-ECONOMIC AREA							
	Middle		Lower (Early)		Lower (Late)		Indian	
	No.	%	No.	%	No.	%	No.	%
Have family physician	82	87.2	85	89.5	63	91.3	17	81.0
Have medical insurance	93	98.9	92	96.8	62	98.4*	21	100.0
Child has visited dentist	56	59.6	24	25.3	36	52.9*	9	45.0*
Child has and uses toothbrush	94	100.0	90	94.7	66	95.7	8	38.1

* Excludes missing data

TABLE VII

ECONOMIC CHARACTERISTICS OF THE STUDY FAMILIES AS DESCRIBED BY LIVING SCALE

	SOCIO-ECONOMIC AREA									
	Middle		Lower (Early)		Lower (Late)		Indian		Total	
Living Scale	No.	%	No.	%	No.	%	No.	%	No.	%
Below 1.3	10	11.2	13	14.3	25	37.3	13	61.9	61	22.8
Below 1.5	13	14.5	18	19.8	28	41.8	16	76.2	75	28.0
Below 1.6	18	20.1	20	22.0	33	49.3	17	81.0	88	32.8
Below 2.0	31	34.8	34	37.4	40	59.8	20	95.2	125	46.3
2.0 or above	68	65.2	57	62.6	27	40.2	1	4.8	143	53.7
Total scaled	89	100.0	91	100.0	67	100.0	21	100.0	268	100.0

FIGURE 1. CUMULATIVE % DISTRIBUTION OF DENTAL SCORES IN SOCIO-ECONOMIC AREAS

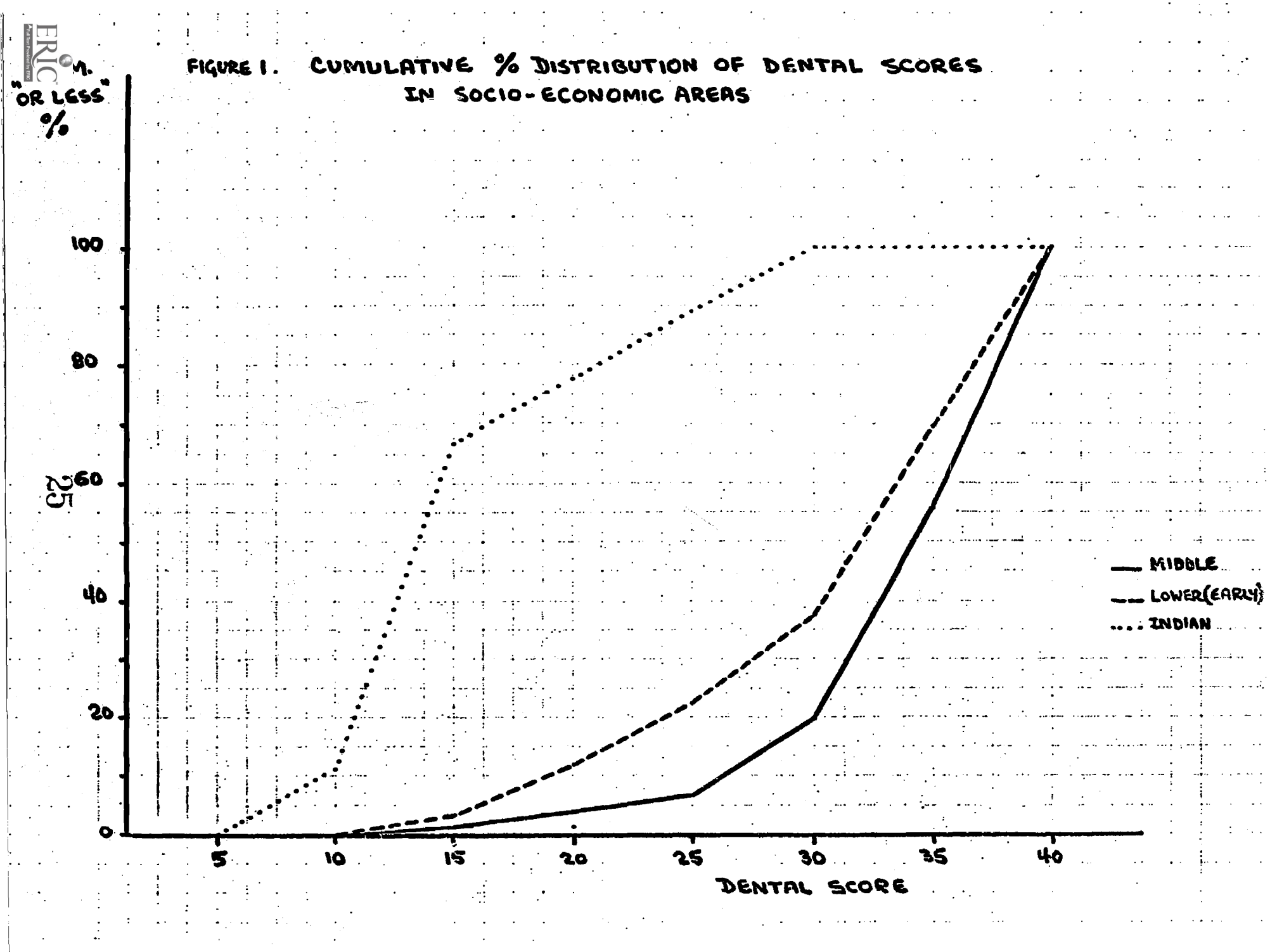

FIGURE 2. CUMULATIVE % DISTRIBUTION OF "LETTER YOUR NAME" SCORES IN SOCIO-ECONOMIC AREAS

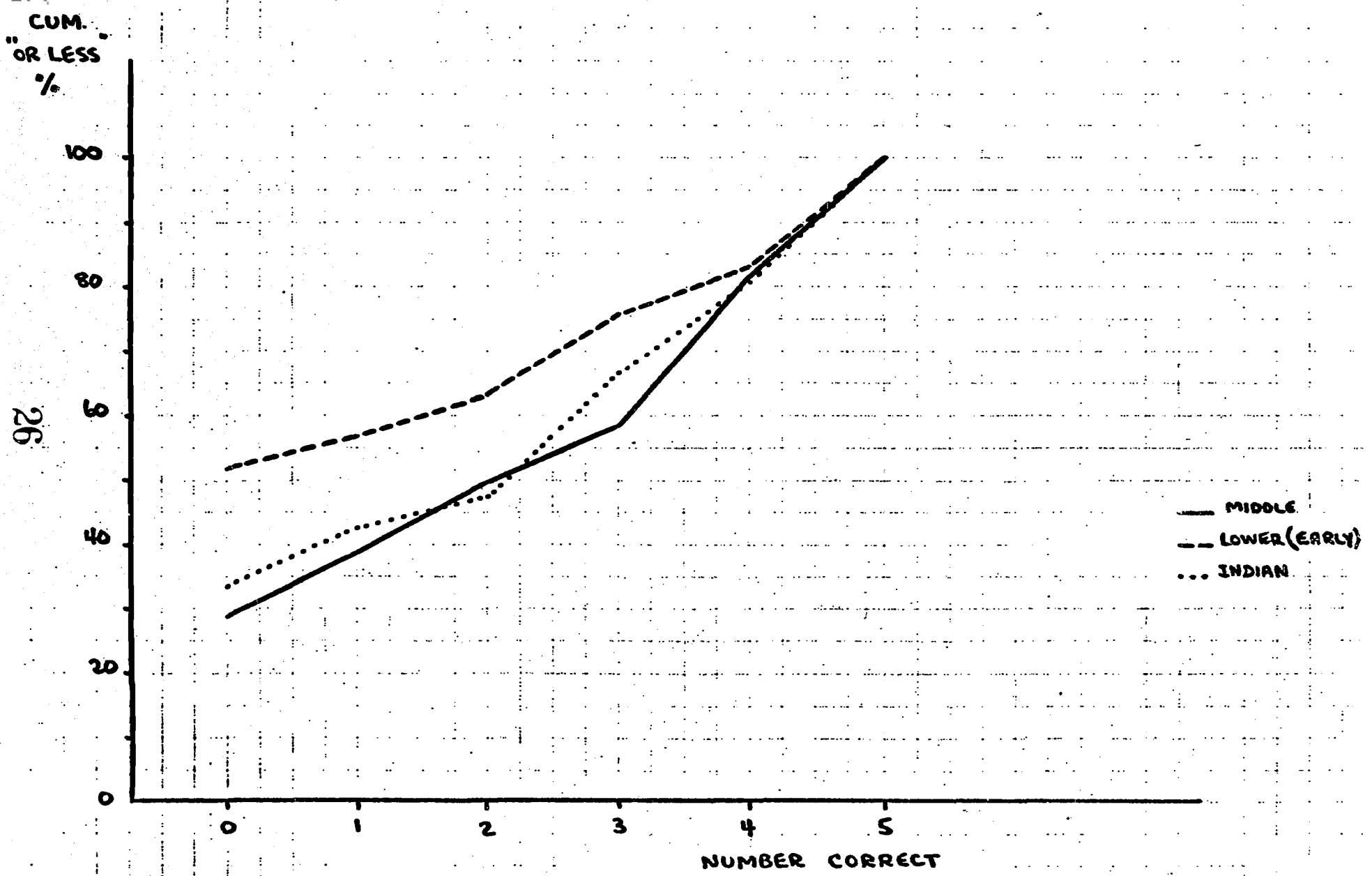

FIGURE 3. MEAN INCOME AND EXPENDITURES IN SOCIO-ECONOMIC AREAS

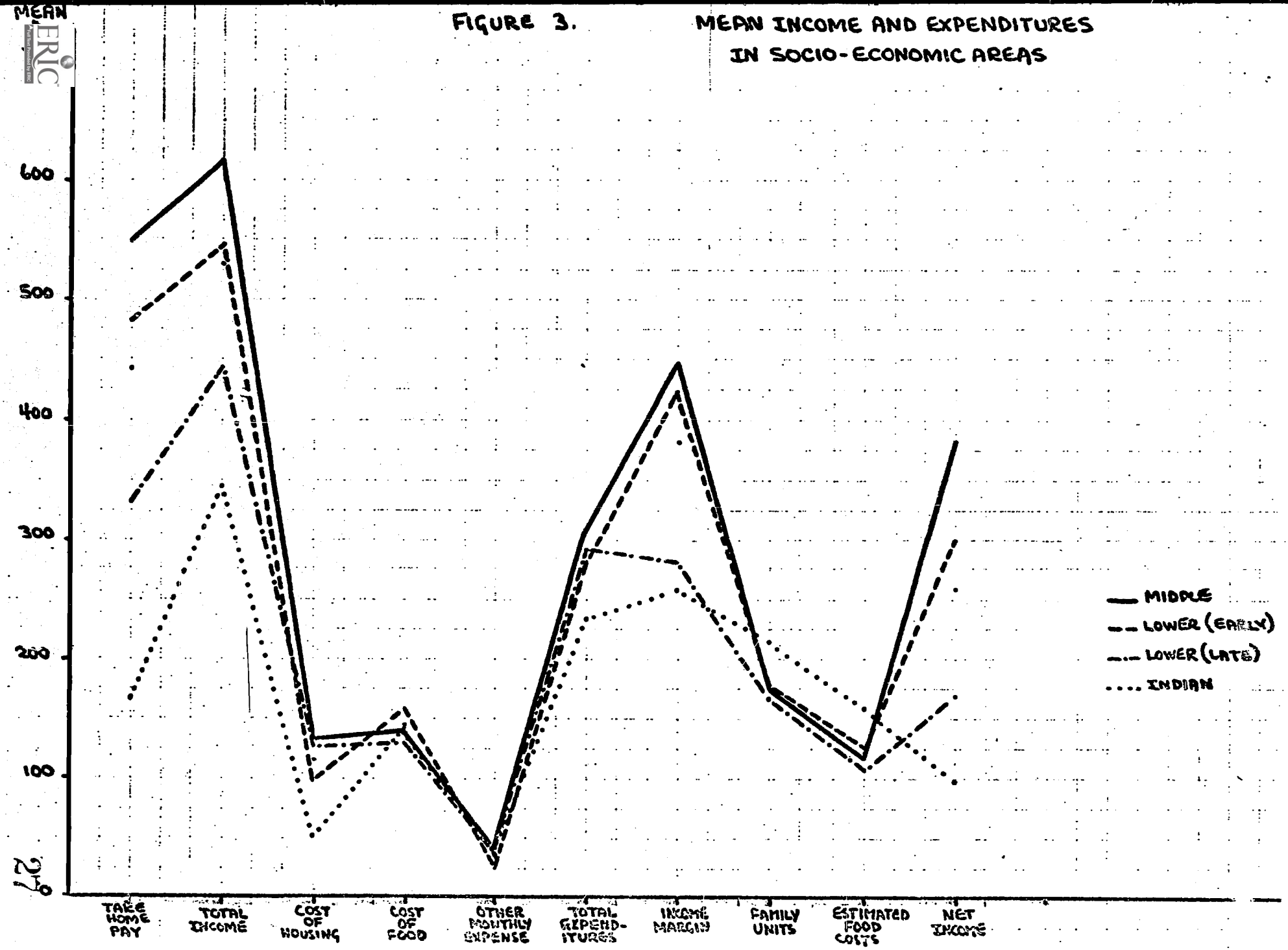

FIGURE 4. CUMULATIVE % DISTRIBUTION OF LIVING SCALES IN SOCIO-ECONOMIC AREAS

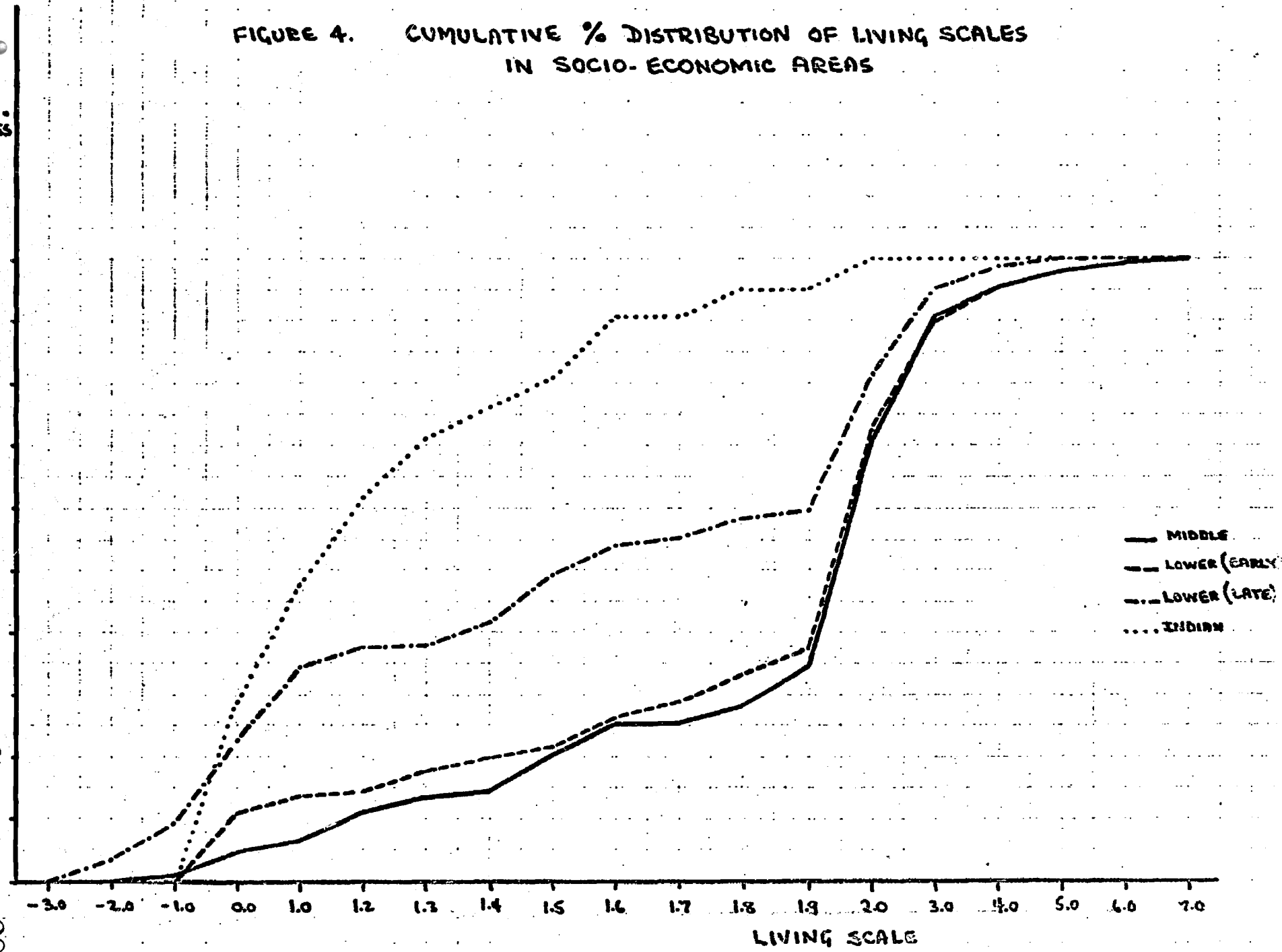

FIGURE 5. CUMULATIVE % DISTRIBUTION OF NUMBER OF CHILDREN AT HOME IN STUDY FAMILIES, BY AGE GROUP AND BY LIVING SCALE

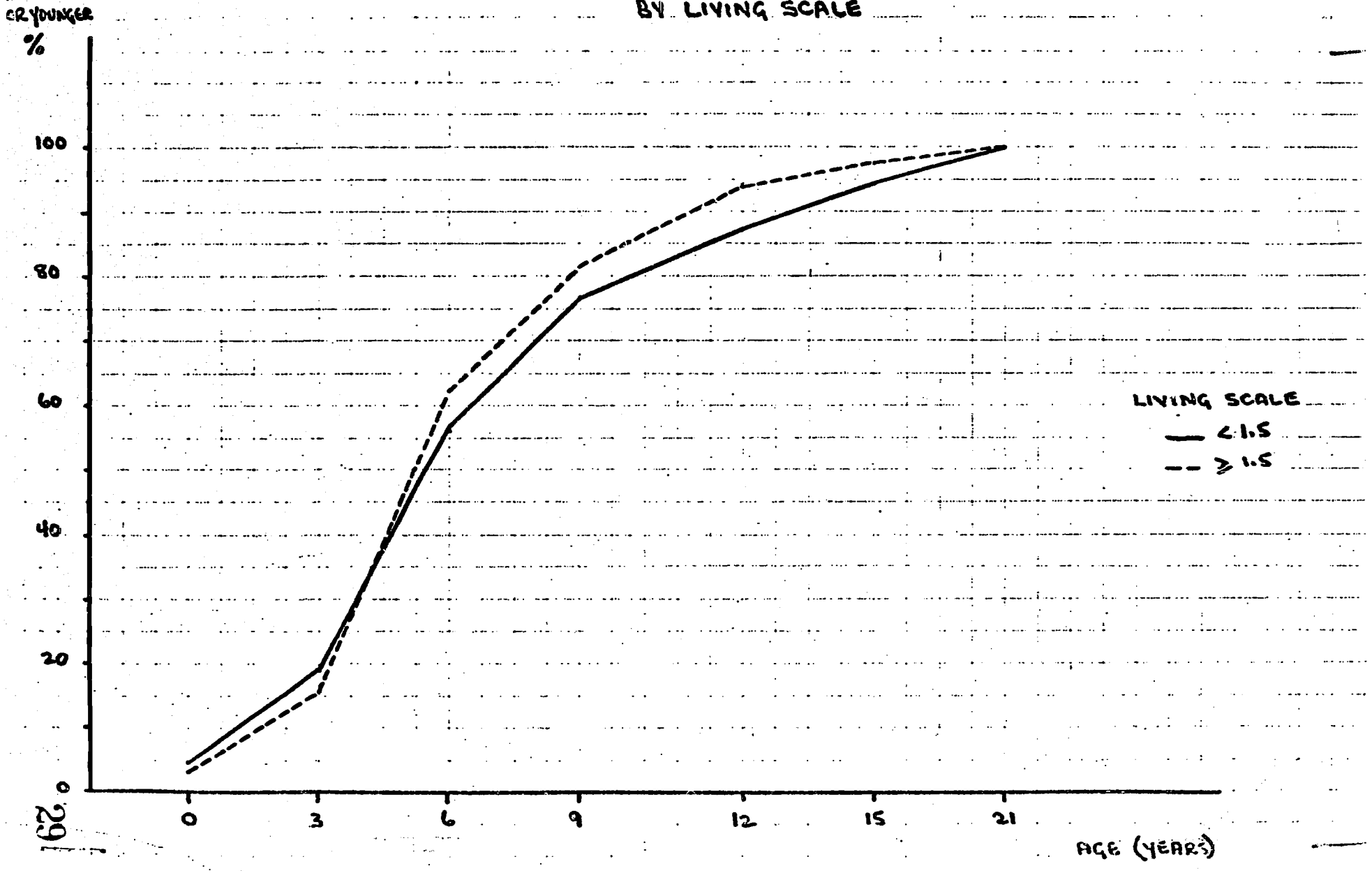

FIGURE 6. CUMULATIVE % DISTRIBUTION OF NUMBER OF PREGNANCIES BY LIVING SCALE

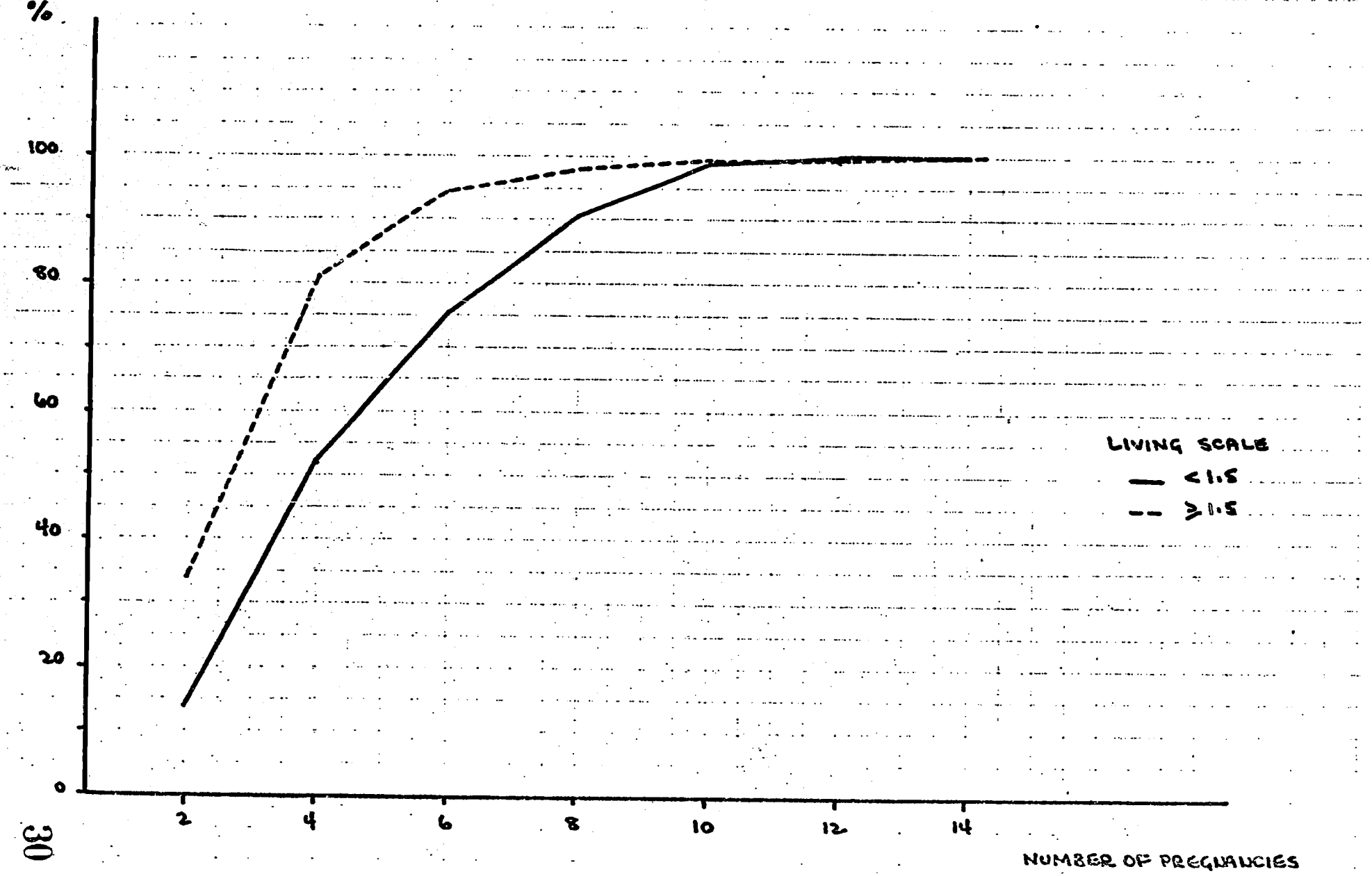

FIGURE 7. CUMULATIVE % DISTRIBUTION OF FATHER'S EDUCATION BY LIVING SCALE

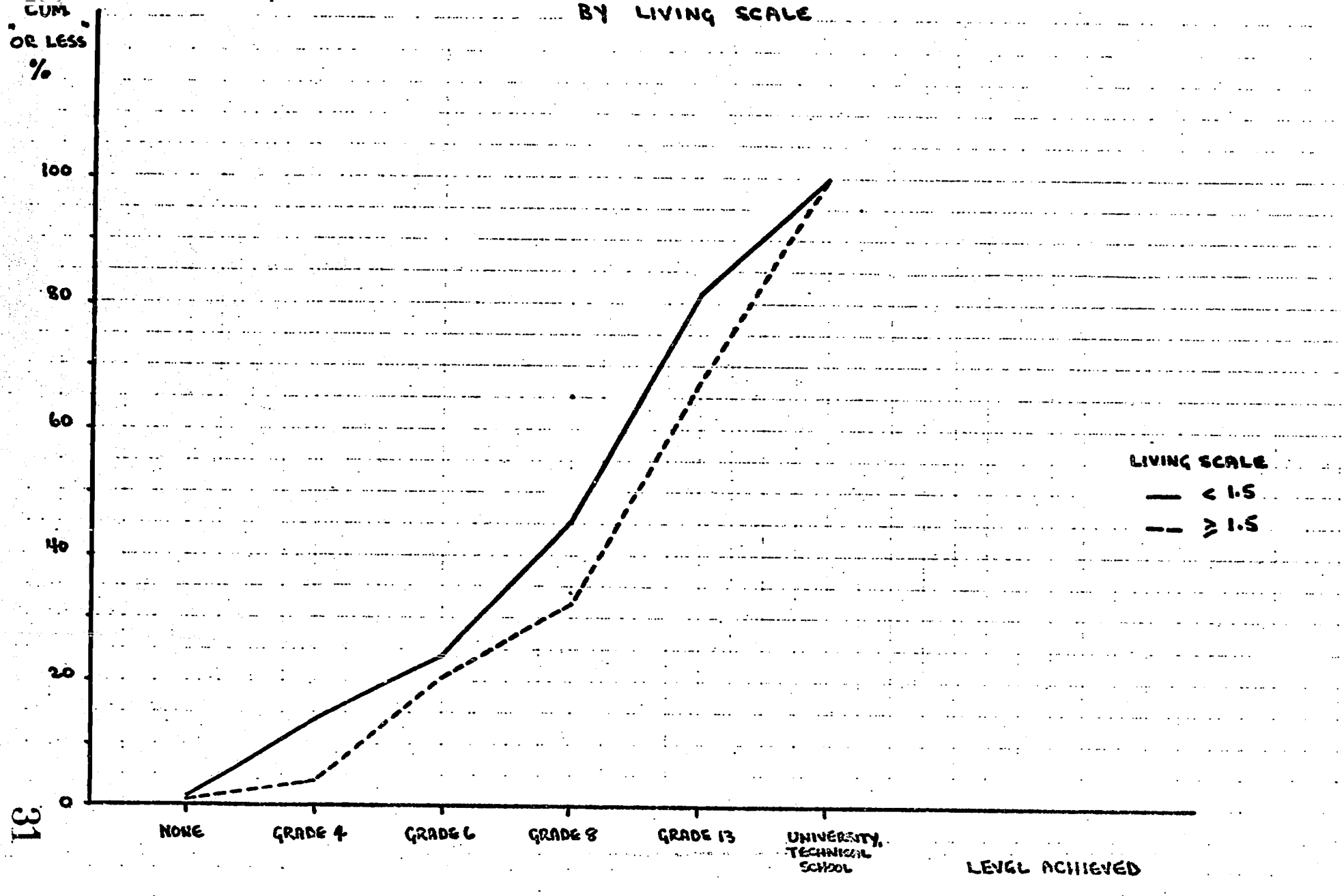

FIGURE 8. CUMULATIVE % DISTRIBUTION OF MOTHER'S EDUCATION BY LIVING SCALE

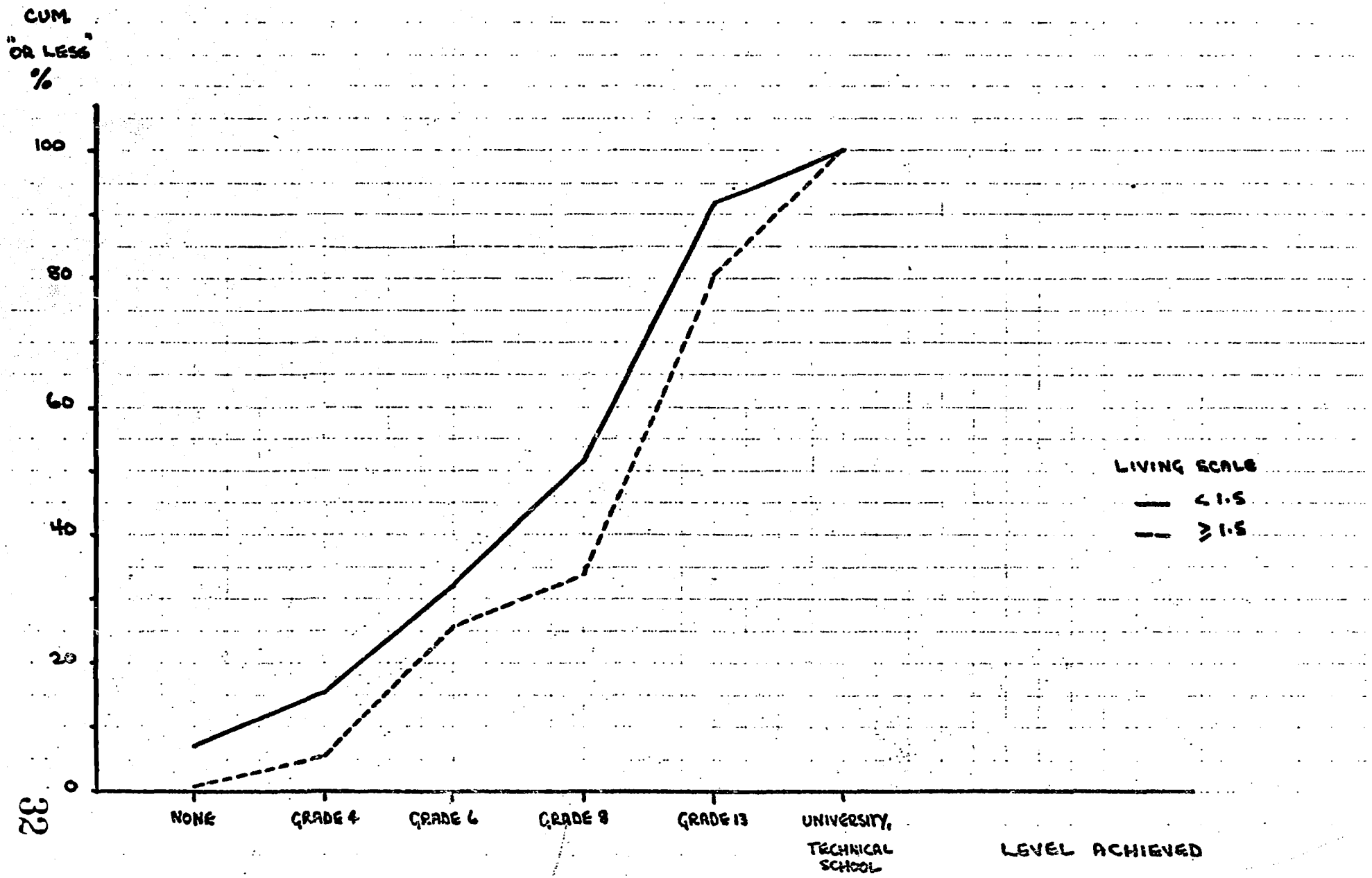

FIGURE 9. CUMULATIVE % DISTRIBUTION OF FATHER'S OCCUPATIONAL CLASS BY LIVING SCALE

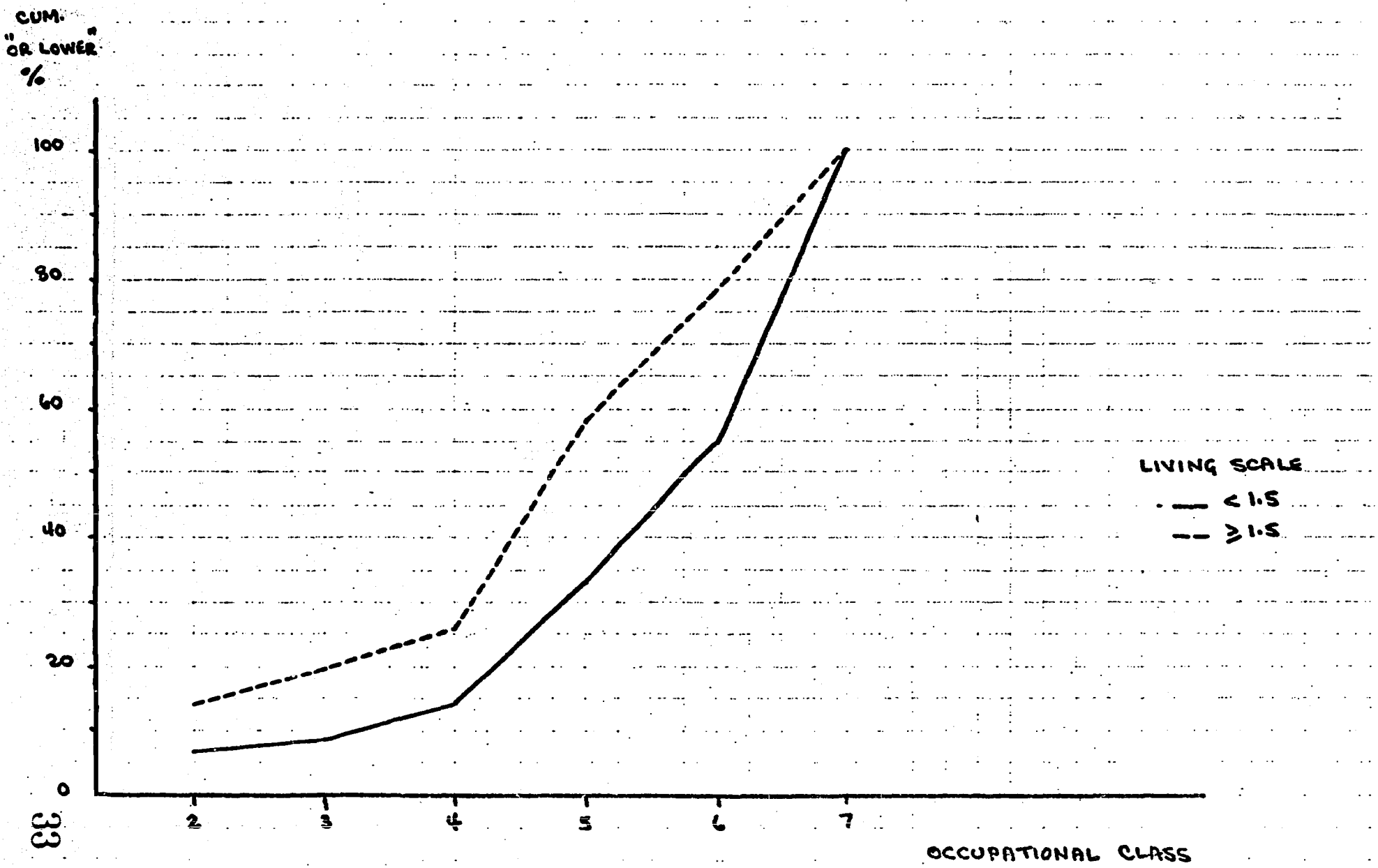

FIGURE 10. CUMULATIVE % DISTRIBUTION OF MOTHER'S OCCUPATIONAL CLASS BY LIVING SCALE

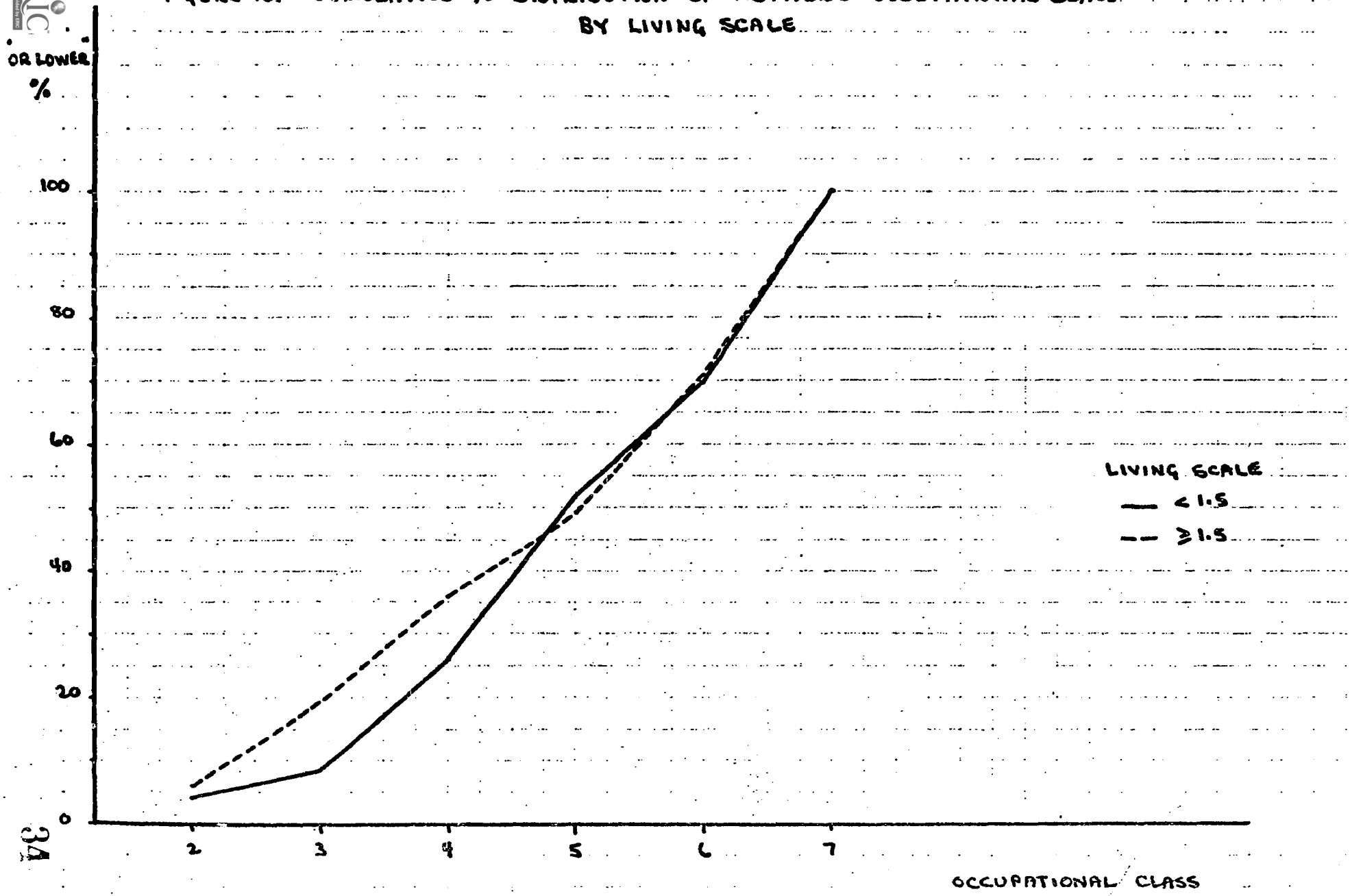

FIGURE II. CUMULATIVE % DISTRIBUTION OF NUMBER OF MONTHS EMPLOYED BY LIVING SCALE

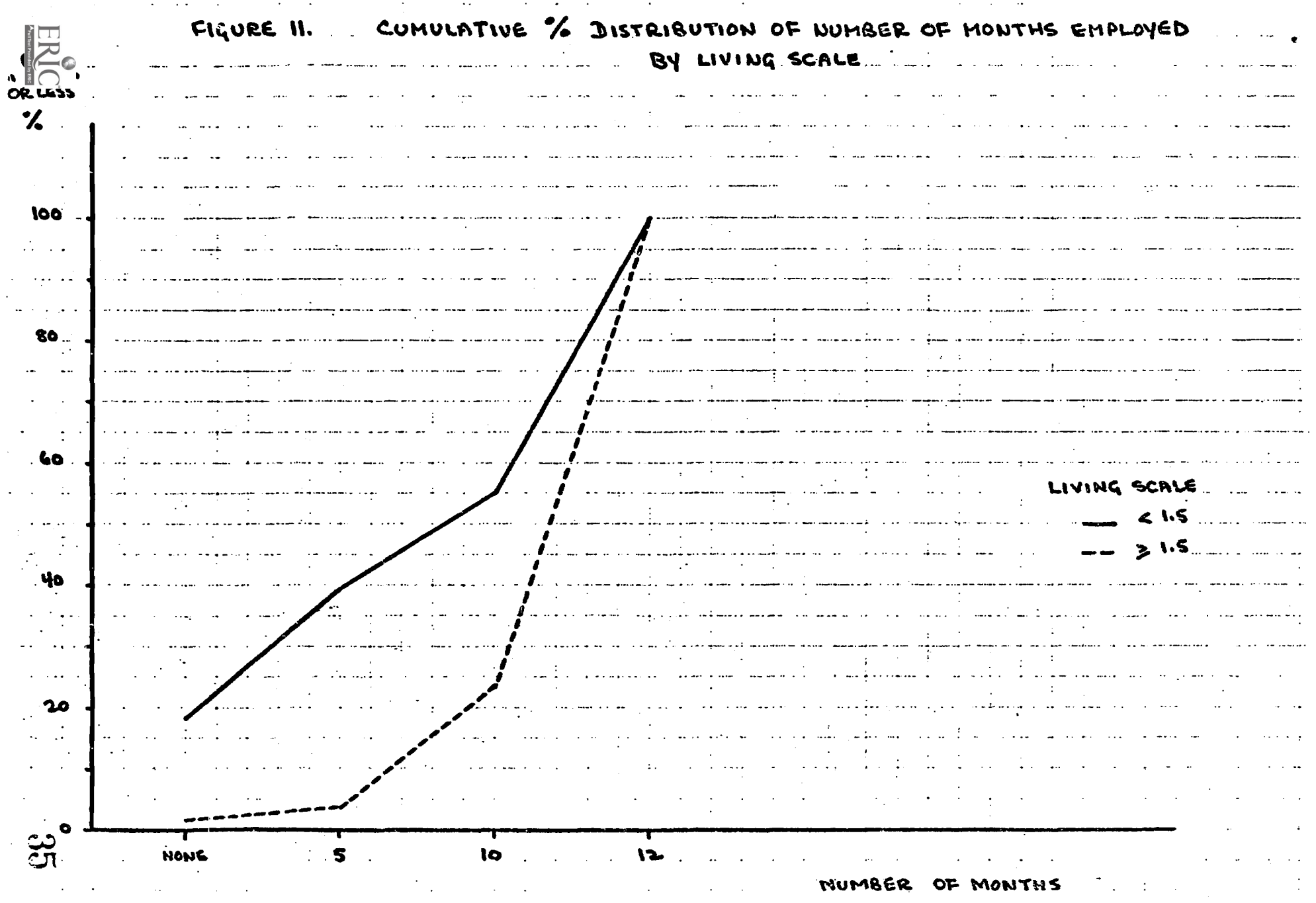

FIGURE 12. CUMULATIVE % DISTRIBUTION OF PARENT'S RATING OF ADEQUACY OF INCOME BY LIVING SCALE