Order of Birth and Schizophrenia

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In a previous survey of hospital in-patients it was observed that among schizophrenics the earlier born were affected to a greater extent (Rao and Sundararaj, 1964). Following a suggestion by Slater (personal communication) the work was extended and further data collected on a larger number of patients to determine the role of birth order in schizophrenics. The present communication reports the findings.

MATERIAL

From among the patients admitted to the Mental Hospital, Bangalore, during the past three years, a total of 1,034 records were selected for this study. Of these patients, 689 were males and 345 females. These records were selected on the basis of availability of complete information regarding the family history, birth order, sibship size and confirmed diagnostic formulations.

Among the males, 339 were married, 345 single and 5 widowers; among the females, 244 were married, 79 single and 22 widowed. Regarding the rural-urban distribution, 341 males and 160 females came from rural areas, while 348 males and 185 females were from the urban area. The majority of the patients were in the age group of 20–40 years. In 244 families, at least one other member of the family, besides the patient, was mentally ill.

OBSERVATIONS

The distributions of the birth order and sibship size for 689 males and 345 females are shown in Table I. The significance of birth order was determined by two independent methods (Slater, 1962; Russell Davis, 1962).

(*a*) *Slater's method:* If an individual is born mth in order in a sibship of n individuals, then his ordinal position is taken to be $(m-1)/(n-1)$. The mean ordinal position of persons taken at random from the general population will approximate to $0 \cdot 5$, and both the theoretical and the observed variances of the distribution are readily calculated. Applying this method to the data of Table I, we find the mean birth order of the two sexes, taken separately and together, as shown in Table II.

It will be seen that in both males and females the mean ordinal position differs significantly from the expected value, in males $p < \cdot 001$, in females $\cdot 025 < p < \cdot 050$, in both sexes together $p < \cdot 001$. This means that the early born are over-represented in both sexes, to approximately the same degree. The fact that the observed and the theoretical variances are very much the same suggests that, in respect of birth order, the material is fairly homogeneous.

(*b*) *Russell Davis's Method:* This is a method of estimating the place in the sibship which has some relationship with the psychological attitudes within the sibship and family. It is described as follows: "Omit the only children. Classify the other cases as first in birth order, last, 'second' (except those also last), 'penultimate' (except those also first or second) or 'middle' (the remainder)." Classified in this way, the figures of Table I give rise to those of Table III, correct to two places of decimals (for working purposes five places of decimals are used).

The results show a significant shift in favour of being first or second born in the males, which is statistically significant ($\cdot 001 < p < \cdot 01$), and a similar shift in the females which is not significant. However, if the females are dichotomized into those who are first or second born and others, there is a significant χ^2 for this sex also ($\chi^2 = 6 \cdot 47$, 1 d.f., $\cdot 01 < p < \cdot 025$).

DISCUSSION

In the present sample of 1,034 schizophrenics, it is interesting to note that a significantly

greater proportion are early born. There is no easy explanation for this finding; one of the contributing factors could be that in many an Indian family the early born has to shoulder the stresses and strains of family responsibilities to a large extent. It must be stressed that the case material is drawn from the patients admitted to the hospital, and is not truly representative of others who are ill but who do not seek admission (for instance the rural population). The apparent shift towards the early born observed in the present study might therefore

TABLE I

Distribution of birth order of 689 males and 345 females in relation to sibship size
Order of Birth

Sibship size	I M	I F	II M	II F	III M	III F	IV M	IV F	V M	V F	VI M	VI F	VII M	VII F	VIII M	VIII F	IX M	IX F	X M	X F	XI M	XI F	XII M	XII F	XIII M	XIII F	XIV M	XIV F	XV M	XV F	XVI M	XVI F	XVII M	XVII F	Total M	Total F
1	30	9																																	30	9
2	30	9	36	18																															66	27
3	21	6	20	21	29	8																													70	35
4	31	13	36	10	22	12	20	12																											109	47
5	19	19	36	12	16	7	19	10	14	4																									104	52
6	26	9	15	11	20	7	17	9	12	6	8	9																							98	51
7	23	9	10	6	11	6	16	5	6	2	6	3	13	3																					85	34
8	3	6	7	3	4	3	9	9	5	5	3	9	2	4	6	4																			39	43
9	10	7	5	2	5	2	9	3	5	1	1	2	4	3	3	1	6	0																	48	21
10	2	1	3	1	1	1	2	0	5	4	1	0	1	1	1	1	0	2	1	0															17	11
11	1	2	2	3	1	0	1	0	2	1	3	0	2	0	0	1	..		0	1															12	8
12	0	1	..		..		1	0	1	0	..		1	0	..		0	2	..																3	3
13	..		..		..		2	0	0	1	..		..		..		..		1	0	..		1	0											4	1
14	2	0	..		..		..		..		..		..		..		..		0	1	..		..												2	1
15	..		..		..		..		..		..		..		..		..		..		..		..		..		0	1					0	1
18	..		..		..		..		0	1	..		..		..		..		..														0	1
22	..		..		..		..		..		..		..		..		..		..		..		..		1	0	..		..		1	0	2	0
Total	198	91	170	87	109	46	96	48	50	25	22	23	23	11	10	7	6	4	2	2	..		1	0	..		1	0	0	1	..		1	0	689	345

M = Males   F = Females

TABLE II

	N	Mean	Observed variance	Theoretical variance	Standard error of mean
Males	659	0·44786	0·11994	0·13711	0·01442
Females	336	0·45929	0·13280	0·13313	0·01991
Both sexes	995	0·45172	0·13285	0·13576	0·01168

TABLE III

	Males Obsd.	Males Expd.	χ^2	Females Obsd.	Females Expd.	χ^2	Both sexes Obsd.	Both sexes Expd.	χ^2
First	168	146·65	3·11	82	70·73	1·64	250	217·38	4·89
Second	134	113·65	3·64	69	57·23	2·42	203	170·88	6·04
Middle	158	161·73	0·09	87	91·75	0·25	246	253·48	0·17
Penultimate	65	90·32	7·10	39	45·56	0·95	104	135·88	7·48
Last	134	146·65	1·09	59	70·73	1·95	192	217·38	2·96
Totals	659	659·00	15·03	336	336·00	7·19	995	995·00	21·54

only indicate that risk of illness being the same for any birth position, the early born have a better chance of admission to hospital.

SUMMARY

An analysis of 1,034 schizophrenics (689 males and 345 females) in relation to the birth order has revealed that in both sexes the early born are affected to a significantly greater extent than the later born.

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