

## Correspondence

### BIRTH ORDER OF SCHIZOPHRENICS

DEAR SIR,

An article by Dr. Erlenmeyer-Kimling on 'The problem of birth order and schizophrenia' (*Journal*, June 1969, 659-78) shows significant birth order effects for each of six major samples analysed. All of these results are dismissed as a 'negative conclusion' because of several intersample inconsistencies. However, most of the supposed inconsistencies can be attributed to variables such as sex, family size, or cultural differences. If the above variables are kept constant, the results were remarkably uniform for males from small families in the United States in four samples (two reported in her article and two reported previously) (1, 2). In every sample, first-born schizophrenics outnumbered the last-born with over-all ratios of more than three to two.

None of three comparable samples of female schizophrenics had any similar excess of first-born cases. We believe that the vulnerability of first-born males in the United States may be due to higher parental expectations and greater pressure for school and job performance in an achievement-oriented society. The difficulties encountered by inexperienced mothers might be intensified if the first child is of the opposite sex; but, regardless of explanation, the important fact is that a sex difference is present in each of three samples.

This sex difference makes it difficult to invoke any of the demographic sources of bias enumerated by Price and Hare (*Journal*, June 1969, 633-46) as explanations of the positive findings. If eldest sons in small families greatly outnumber the youngest sons, why is there not a similar preponderance of eldest daughters? Moreover, in the sample of Barry and Barry (1) the span of consecutive admissions was twenty years, and the ages of patients covered an even wider range, which should minimize any bias due to changes in birth or marriage rates.

A more extreme example of cultural differences is a sample from India, in which earlier-born schizophrenics from large families are over-represented, apparently owing to the heavy responsibilities often placed on the eldest son. Caudill (3) has reported a similar vulnerability in the eldest son of Japanese families engaged in family-owned business, whereas among these Japanese the youngest daughter was more often affected. Dr. Erlenmeyer-Kimling's

article contains a useful and interesting set of figures and tables which employ the Slater index. However, the over-representation of later-born males from large families, shown for two large samples of schizophrenics (1, 4), is dismissed because these results do not coincide with her own. These are highly significant (at .0002 and .0008 levels according to her table). The discrepancy between her negative findings and the two strongly positive results merits further research utilizing the precautions against bias which are so admirably outlined by Price and Hare (*Journal*, June 1969, 633-46). A better alternative to the moratorium on such studies suggested by Dr. Erlenmeyer-Kimling would be exploration of the reasons for both the negative and the positive results.

We agree that the birth order relationships reported are not specific for schizophrenics, and that other conditions also show comparable birth order effects. These include samples of alcoholics (5) and homosexuals (6). However, we believe that each of these significant findings can be explained. For example, the pressures associated with early birth position may lead either to eminence, as was first pointed out by Sir Francis Galton, or to delinquency (7). If social and family pressures become too severe or the individual is especially vulnerable, the result may be psychiatric illness. The specific type of illness which develops must depend on various psychosocial, biochemical and genetic factors.

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DEAR SIR,

Positive, as well as negative, findings with respect to birth order and schizophrenia have been in the literature for some time. The positive findings run this way and that, early and late birth positions having been inculcated about equally often for different samples of patients. Support of the postulate that birth order, for whatever reason, bears a significant relation to the probability of developing schizophrenia demands, not merely positive, but consistent findings. Barry and Barry (1967) and others have pointed out, however, that birth order might relate to vulnerability to schizophrenia in different ways in different cultures and, within cultures, in different ways for the two sexes or for members of small versus large sibships. That is, a sample, partitioned into cells by sex and sibship size, would show a particular *pattern* of birth order across these cells.

The point made in the paper by myself and assistants (Van den Bosch and Denham) was that, when partitioned by such variables, samples from similar cultures would then be expected to follow similar *patterns* across the cells. Our paper was concerned with a search for pattern consistencies in birth order among samples of schizophrenic patients. Detailed data were available for five Western samples: Granville-Grossman's (1966) British sample and four U.S. samples—two from our own studies, one reported by Barry and Barry (1967) and Solomon and Nuttall's (1966) sample consisting of males only. Comparability of these samples was discussed briefly in the paper. In analyses by two methods we partitioned the data by sex and sibship sizes 2-4 and 5+. Intersample inconsistencies, therefore, cannot be attributed to sex, family size or major cultural differences as Drs. Barry and Barry seem to believe. Analyses of a sixth sample, the Indian patients studied by Sundararaj and Rao (1966), were included for interest, but, as we emphasized, not for comparison with the Western material; and pattern consistencies were sought only among the U.S. and British samples. Evaluation of the stability of the Indian data would, of course, have to be based on other Indian studies.

The above letter introduces no quarrel with our contention that the data failed to evidence significant birth order effects associated with schizophrenia in the females. No birth order effects emerged in the analyses of small sibships in the four (*N.B.* 4, not 3) Western samples, and a positive finding (preponderance of late birth positions) appeared for females of large sibships only in the Barrys' 1967 sample.

According to our analyses, males, the other half (approximately) of most schizophrenic patient populations, also demonstrated no consistent birth order pattern across the samples. It is chiefly this conclusion to which Drs. Barry and Barry object. They have previously proposed (Barry and Barry, 1967) a specific pattern of birth order effects for male schizophrenics of Western cultures: over-representation of early birth orders in small sibships and over-representation of late birth orders in large sibships. The Barrys believe that the hypothesized relation is upheld by intersample consistencies in the data for at least the small sibships. Of the five male samples examined by us, three (our two and Solomon and Nuttall's) exhibited a significant excess of early birth positions. The remaining U.S. sample (Barry and Barry) and the British one (Granville-Grossman) technically showed no birth order effect. If one prefers a more liberal interpretation of data, however, one may say that a statistically non-significant trend is present toward early birth orders in the Barry and Barry sample and, equally, toward late birth orders in the Granville-Grossman sample. The Drs. Barry apparently prefer the latter interpretation for their own work, but they lose sight entirely of the Granville-Grossman sample with its opposing trend. They are impressed instead by the 'remarkably uniform' findings for the four U.S. samples, and in particular the substantial outnumbering of last-born patients by the first-born. Careful inspection of the data structures for these samples suggests somewhat less overall uniformity than the Barrys suppose. For example, their own sample gave exactly the reverse picture for sibship size 4, with an excess of late-born rather than early-born individuals (see Fig. 1 of our paper, *Journal*, June 1969, p. 665); in sibship size 3, our 1954-56 sample did not deviate at all from random expectations, our 1934-36 and the Barrys' samples displayed no difference between intermediate and first-born ranks, and the Solomon and Nuttall cases had an excess of intermediate but not of first-born positions.

Turning to the data on large sibships (sizes 5+), Drs. Barry and Barry note that two samples contained an excess of later-born males. They are referring to their own sample and to Granville-Grossman's British study, which they suddenly resurrect, having