Sibling Patterns in Schizophrenia

It has been hypothesized that siblings in different positions within the family constellation are subject to varying degrees of stress (*1, 2*). Owing to this factor, the first-born sibling is not infrequently presented as having significantly greater difficulties in adjustment than the later born (*3*). Since stress is believed to be an etiological variable in schizophrenia, attempts were made to establish the existence of a definite relationship between sibling position (especially that of the first-born) and the incidence of this disease in a large sample (*1*). This relationship has, however, never been satisfactorily established (*4*). In the majority of studies, families of all sizes, as well as families that are most probably incomplete—containing other psychotic siblings, siblings who have died, and so on—are included in the samples. Thus, the conclusions lack consistency, in part at least, because of shortcomings in statistical design or analysis (*5*). An attempt was made in the study discussed in this report to investigate the hypothesized relationship between sibling position and incidence of schizophrenia in such a way as to minimize the errors mentioned.

The data were collected during 1955 and 1956 at Warren State Hospital, Warren, Pennsylvania. The cases studied were restricted to schizophrenic patients with two normal siblings and were drawn from the following sources: the files of such patients present in the hospital for more than 2 years and the files of such patients discharged over a period of 15 years. The information recorded in each file included the age and the sex of the patient and of his siblings, so that ordinal position by sex could be determined. Families containing adopted children or stepchildren, twins, triplets, or siblings who had also been hospitalized for any mental disease were rejected. Also excluded were cases in which a sibling had died before the patient reached his 20th year, or in which the clinical diagnosis was primarily of mental deficiency or organic central nervous system disease. To insure inclusion of only completed families, only those cases were approved in which the youngest sibling was over 10 years of age.

These conditions were set in the hope that, if there were an ordinal positional effect, it would be most clearly demonstrated where only one of the three siblings developed schizophrenia. Patients with only two siblings were selected in order to limit and define ordinal positional effects and also to facilitate the evaluation of the role of the sex of the patient and siblings in the constellation.

Table 1 summarizes sibling constellations and sex distribution of 156 cases which met all criteria. Since, during the period covered by this study, the male first-admission rate to mental hospitals for schizophrenia was generally 15 percent lower than the female rate, an appropriate correction factor for sex incidence was introduced. Approximate expectancies for the case distribution, by sibling, were calculated for each constellation. The results are summarized in Table 2.

Chi-square tests were carried out for each constellation that appeared to depart substantially from expectation. None of these tests indicated statistically significant departures from expected incidence rates—that is, no ordinal position appears to carry specific vulnerability to schizophrenia within the three-sibling constellation.

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Table 1. Schizophrenic index cases by sibling constellation. (M, male; F, female.)

Sibling constellation by sex			No. of representatives within each constellation and ordinal position			
Ordinal position						
1st	2nd	3rd	Total cases	1st	2nd	3rd
M	M	M	12	6	3	3
M	M	F	20	5	6	9
M	F	M	23	3	9	11
F	M	M	17	5	7	5
F	F	M	24	12	7	5
F	M	F	30	13	5	12
M	F	F	18	6	4	8
F	F	F	12	5	5	2
Totals			156	55	46	55

Table 2. Corrected anticipated incidence, by sibling constellation. (The figures in this table were computed across, separately for each constellation. Totals were obtained by addition.)

Sibling constellation			Breakdown by patient			
Ordinal position			Total cases	Ordinal position		
1st	2nd	3rd		1st	2nd	3rd
M	M	M	12.0	4.0	4.0	4.0
M	M	F	20.0	6.3	6.3	7.4
M	F	M	22.9	7.2	8.5	7.2
F	M	M	17.1	6.3	5.4	5.4
F	F	M	24.0	8.4	8.4	7.2
F	M	F	29.9	10.5	8.9	10.5
M	F	F	18.0	5.4	6.3	6.3
F	F	F	12.0	4.0	4.0	4.0
Totals			155.9	52.1	51.8	52.0

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27 December 1957

Persistent Patterns of Wakefulness in the Pretrigeminal Midpontine Preparation

It is well established that wakefulness and its electroencephalographic correlate, low-voltage, fast activity, are maintained by a tonic barrage of impulses arising in the brain-stem reticular formation (*1, 2*; also *3*). Behavioral and electroencephalographic sleep patterns are precipitated when the midbrain reticular formation is widely injured but the classical sensory paths are spared; conversely, interruption of the latter pathways at the midbrain level, with the medially placed reticular formation left intact, does not modify alert behavior and waking electroencephalographic patterns (*2*).

The problem of finding what is the lowest level of brain-stem transection which still permits synchronized electro-