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# Schizophrenia's Classical Subtypes

## A Family Heredity Study

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**Summary.** A genetic family study of the classical schizophrenic subgroups (33 hebephrenics, 38 catatonics, 69 paranoid schizophrenics) demonstrated a tendency towards differences in the global morbidity risk of schizophrenia (greatest in the relatives of catatonics) and a tendency towards a predominance of homotypical secondary cases. However, as these results are statistically not significant, they cannot be used as arguments in discussing the genetic separation of schizophrenic subtypes.

**Key words:** Family genetics – Schizophrenic subtypes

### Introduction

The purpose of this report is to demonstrate and discuss genetic family data with regard to the classical schizophrenic subtypes hebephrenia, catatonia and paranoid schizophrenia. Our approach was focused on 2 issues:

1. Differing morbidity risk figures for the relatives of subgroup probands;
2. Homotypia vs. heterotypia, i.e. similar or dissimilar secondary cases among the probands' relatives.

The authors of pertinent studies published in recent genetic literature are by no means unanimous in their views. Concerning the differences in the morbidity risk figures for schizophrenia among the relatives of the probands in the 3 subgroups, several authors representing various schools agree that, among relatives of hebephrenics and catatonics there is a much higher incidence rate of schizophrenic secondary disorders than among relatives of paranoid schizophrenics [2, 3, 4, 5, 7, 13, 14, 15, 16].

As to the predominance of homotypical over heterotypical secondary cases among the schizophrenic relatives of the probands in the respective subgroups, quite a number of researchers have registered a tendency towards homotypia ever since the pacesetting studies of Schulz [10] and Kallmann [4]. However, homotypia alone was not recorded; secondary cases of other subtypes were also reported [1, 4, 6, 9, 11, 12, 15, 16, 17].

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**Table 1.** Population studied

| Probands | | Relatives | | Total |
|---|---|---|---|---|
| | | 1st degree | 2nd degree | |
| Diagnosis | *N* | *N* | *N* | |
| Hebephrenia | 33 | 151 | 406 | 557 |
| Catatonia | 38 | 200 | 453 | 653 |
| Par. schizophrenia | 69 | 375 | 809 | 1184 |
| Total | 140 | 726 | 1668 | 2394 |

**Table 2.** Morbidity risk figures (%) of first degree relatives

| Index cases | Schizophrenia | Affective disorder |
|---|---|---|
| Hebephrenia | 8.44 | – |
| Catatonia | 12.80 | 4.13 |
| Par. schizophrenia | 6.95 | 1.5 |

The findings discussed here are part of an extensive family heredity study of functional psychoses. Methodology and research strategy were reported elsewhere [9]. On this occasion we want to emphasize again the importance of applying internationally comparable diagnostic criteria when grouping and evaluating the probands. However, this could be done only for the major nosological dichotomy schizophrenia and affective disorders [8], not for their subgroups. In our subgroup diagnoses, we followed the criteria of the Kraepelin and Bleuler schools. The psychopathological evaluation of the relatives and their diagnostic assessment was performed blindly, i.e., independently of index-case diagnoses. Table 1 shows the total number of schizophrenic index cases, their first-degree relatives (parents, sibs, children) and second-degree relatives (uncles, aunts, grandparents).

## Results

1. The classical subgroups differ with regard to the global schizophrenia and affective disorder morbidity risk figures in first-degree relatives (Table 2): Catatonia ranks first, followed by hebephrenia and paranoid schizophrenia. The figures of affective disorders also differ, being highest among the relatives of catatonics.

These differences, checked by the $\chi^2$-test, are statistically not significant. There is only a tendency towards differences in the morbidity figures. This tendency has not been observed in second-degree relatives.

**Table 3.** Morbidity risk figures (%) of first degree relatives

| Index cases | Hebephrenia | Catatonia | Par. schizophrenia |
|---|---|---|---|
| Hebephrenia | *4.69* | 1.87 | 0.94 |
| Catatonia | 4.48 | *5.76* | 1.92 |
| Par. schizophrenia | 1.04 | 0.7 | *4.52* |

**Table 4.** Distribution of schizophrenic subtypes among 1st degree relatives by probands diagnosis

| Probands | *N* | *N* | 1st degree relatives | | | Total |
|---|---|---|---|---|---|---|
| | | | Hebephrenia | Catatonia | Par. schizophrenia | |
| Hebephrenia | 33 | 151 | 5 | 2 | 1 | 9 |
| Catatonia | 38 | 200 | 7 | 9 | 3 | 20 |
| Par. schizophrenia | 69 | 375 | 3 | 2 | 13 | 20 |

**Table 5.** Distribution of schizophrenic subtypes among 2nd degree relatives (uncles, aunts, grandparents) by probands diagnosis

| Probands | *N* | *N* | 2nd degree relatives | | | Total |
|---|---|---|---|---|---|---|
| | | | Hebephrenia | Catatonia | Par. schizophrenia | |
| Hebephrenia | 33 | 406 | 2 | 4 | 3 | 9 |
| Catatonia | 38 | 453 | – | 7 | 2 | 9 |
| Par. schizophrenia | 69 | 809 | 2 | 13 | 11 | 28 |

2. Concerning homotypia vs. heterotypia of secondary cases, we found a tendency towards homotypia among the affected first-degree relatives [9] (Tables 3 and 4).

In testing the statistic significance of the demonstrated tendency towards homotypia of secondary cases, we used 2 methods: when applying the $\chi^2$ method, no significant differences were found ($\chi^2 = 5.115$, $d.f. = 4$, $P = 0.2757$). Because of the small figures in the table, however, the $\chi^2$ method could perhaps be considered an invalid test. We therefore used Cohen's Kappa, a measure of correlation; it defines the degree of similarity of disorders in the respective subgroups. Thus it is a measure of homotypia. For hebephrenia ($K = 0.27$) and catatonia ($K = 0.33$), the test result was negative, as indicated by low correlation, but it was positive for paranoid schizophrenia ($K = 0.58$). The percentage of identical diagnoses of affected secondary cases was 62% for hebephrenia, 69% for catatonia and 80% for paranoid schizophrenia. The significance test ($z$-test) was positive only for

paranoid schizophrenia ($z=3.41$). The latter test, however, should be applied only when the total number of cases exceeds 100.

The problem of homotypical vs. heterotypical subtypes was also studied in second-degree relatives (Table 5). Catatonia seems to stand out because of the large number of homotypical secondary cases. The tests applied here ($\chi^2$ and Kappa) did not show a statistical significance: $\chi^2=4.509$, $d.f.=4$, $P=0.3415$; Kappa: 0.21 (hebephrenia), 0.18 (catatonia) and 0.13 (paranoid schizophrenia). The percentage of corresponding cases amounted to 80%, 57%, and 59%. $Z$-values were 0.81, 1.19, and 1.08.

## Discussion and Conclusion

The classical schizophrenic subtypes were studied with regard to family data. In accordance with several authors, we found a difference in the total morbidity risk for schizophrenia in the relatives of the 3 subgroups. It was greatest for catatonia, somewhat lower for hebephrenia, and lowest for paranoid schizophrenia. But the differences were statistically not significant, and so they cannot be used as an argument in favour of a genetic differentiation of classical schizophrenic subgroups. The same applies to the second issue of this study, namely, the possible predominance of homotypia in the secondary cases affected. Although there is a tendency towards homotypia in first-degree relatives, most clearly so in the group of paranoid schizophrenics, there is a great overlap with dissimilar secondary cases. Statistically, the results as to homotypia are not significant, neither can they be used in substantiating the claim that subtypes are genetically different entities.

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