

## Twenty-one Psychiatric Cases and their MZ Cotwins

### *A thirty years' follow-up*

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In 1941, I published a psychiatric study of 69 same-sexed pairs of twins. The index cases were derived from 8596 consecutive admissions to three mental hospitals and one psychiatric unit of a general hospital in South Sweden, every patient being checked for twin birth in the official birth registers. There was no pair with more than one index case. Upon examination, 21 pairs were considered more or less certainly MZ, and 48 DZ. The degree of certainty of the zygosity diagnosis was expressed by a special formula (Essen-Möller, 1941*b*).

Of the 21 index cases, 7 (N. 1-7 of the monograph) were at that time judged schizophrenic. The later course revealed that one more index case (N. 12) was a schizophrenic and should have been included into this diagnostic group, which I shall have to concentrate upon in this brief presentation.

Out of the 8 cotwins of the schizophrenic index cases, 5 had presented symptoms of mental disorder up to the time of my investigation, which took place almost thirty years ago. This corresponds so far to a concordance rate of 62%. However, all of the cotwin disorders were relatively mild and transient in nature and consisted mainly of depressive or anxiety states. Even if some of the disordered cotwins had spent some time in a nursing home or in a psychiatric ward of a general hospital, none of them had been admitted to a mental hospital. And, although several of the clinical pictures contained some single trait suggestive of schizophrenia — such as ideas of reference (N. 2 and 7) or hallucinations (N. 5) — in no case a proper diagnosis of schizophrenia could be made. The cotwin who came closest to this diagnosis was a man aged 35 (N. 1), who gave much thought to telepathic phenomena and the like; yet, he was comparatively open-minded and accessible to discussion of his ideas, and he had never been incapacitated by them. Thus, at the time of the first investigation, *the correct rate of concordance for schizophrenia in fact was zero*. This finding was the more striking as the two other samples published up to that time, those of Luxenburger (1928) and Rosanoff (1934), showed rates of concordance at about 70%, although Luxenburger (1934) later corrected his figure to 33%, for diagnostic reasons. Personally, I was inclined to attribute my zero finding to chance, the number of pairs being small, and also to the relatively short time of observation.

Later samples (Slater, 1953; Kallmann, 1946; and Inouye, 1961) again yielded over 60% concordance, and a more recent sample by Gottesman and Shields (1966) gave 50% when calculated according to the proband method. On the other hand, three recent samples (Tienari, 1963; Kringlen, 1967; and Fischer et al, 1969) resulted in only 23% concordance when pooled together; indeed, Tienari did not report a single case of strict concordance among his 16 pairs. This gave rise to much discussion by Rosenthal (1959, 1961) and others. It was observed that mental hospitals of our days admit, on an average, somewhat milder cases than they did a generation ago, and that milder cases might yield a lower rate of concordance. Also, a different practise of diagnosing was thought to have interfered: the diagnoses of cotwins might have been less strict than those of the index cases themselves. It was further speculated — since all of the low-rate samples, including my own, were of Scandinavian origin — that concordance might be different in different countries (Gottesman and Shields, 1966). It cannot as yet be regarded as settled, how much exactly each of these various explanations do really contribute; and, as for the diagnostic point of view, case histories have unfortunately not been published for all of the samples available. There is, however, one more source of error, pointed out repeatedly by Allen (1955, 1965, 1967), which should not be overlooked. All of the three last-mentioned low-rate samples are distinguished by a complete or almost complete ascertainment, while the degree of ascertainment in the older samples (including my own) is rather low. In other words, while double index cases are comparatively rare in the older samples, almost every cotwin of the recent low-rate samples is himself an index case. In fact, this common feature is what justifies a pooling of the three samples into a single group. And, if the difference in ascertainment is duly corrected for, by observing the proband principle of Weinberg, one third at least of the reported gap between low-rate and high-rate concordance is at once eliminated.

It seemed of interest to see whether an extended time of observation would influence the zero concordance of my own sample. Except for one cotwin, who was killed by accident shortly after the first examination, all cotwins were now well past the risk period for schizophrenia. In fact, the reexamination, which was just completed, revealed that one of the mildly disordered cotwins (N. 2) and one of the healthy ones (N. 3) had in the meantime been hospitalized for a long period, owing to clear-cut schizophrenia. The onset was 23 and 11 years, respectively, later than that of their index cases, and no explanation for the difference was obvious. Two more cotwins (N. 5 and 7) had been hospitalized for a shorter time, because their earlier nonschizophrenic symptoms had exacerbated without changing in nature. The cotwin who thirty years earlier gave thoughts to telepathy (N. 1) had largely dropped them and was still not incapacitated from a social point of view; however, through the last ten or twelve years, he suffered from constant swingings of mood, alternating between depression and a tense restlessness. One cotwin (N. 4) had recovered from his depressive symptoms but was now an inmate of an institution for feeble-minded, partly for physical reasons. Finally, two cotwins had remained

healthy as long as they lived, one of them (N. 6) until 87, the other (N. 12) only until 28.

Thus, the all-over concordance for mental disorder, mild or severe, past or present, was now 6 out of 8. For admission to a mental hospital, the concordance was 4 out of 8. *For schizophrenia, the rate of concordance among those who survived the end of the risk period was 2 out of 7, or 29%.* Accordingly, the concordance for schizophrenia in this sample has risen from zero to somewhere about the uncorrected level of the low-rate samples discussed above, but not more, and whatever the implication. Regard should of course still be taken to the smallness of the sample.

This preliminary report of the 8 pairs with a schizophrenic index cases was necessarily schematic. The remaining 13 pairs, diagnostically heterogeneous, may be summarized even more briefly: here, too, concordance was low at the first examination, but it did not increase with length of observation.

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