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Frequency of Occurrence of Schneider's First Rank Symptoms in Schizophrenia

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Summary. We investigated the frequency of first rank symptoms (FRS) among patients hospitalised for schizophrenia for the first time in their life. The diagnosis was made in a Schneider oriented psychiatric hospital; 47% of the patients showed FRS. The frequency of FRS depends on the age and sex of the patient and on the existence of somatic findings but is independent of the level of their intellectual capacity or of the duration of the observation time.

Key words: First rank symptoms - Schneider's concept - Schizophrenia

Zusammenfassung. Wir untersuchten die Häufigkeit von Symptomen ersten Ranges (SER) bei Patienten, bei denen zum ersten Mal in ihrem Leben die Diagnose Schizophrenie gestellt wurde, und zwar in einer Schneider-orientierten Klinik. 47% der Patienten boten SER. Die Häufigkeit der SER ist abhängig von Alter und Geschlecht der Patienten und vom Vorhandensein somatischer Befunde, aber ist unabhängig von der intellektuellen Begabung des Patienten oder der Dauer der Beobachtung.

Schlüsselwörter: Symptome ersten Ranges - K. Schneiders Konzept - Schizophrenie

Introduction

Schneider's first rank symptoms (FRS) have been attracting renewed active interest since the beginning of the 1970s. This is a result of the search for diagnostic criteria which are as reliable as possible for research into schizophrenia [1, 2, 6, 7, 13, 14, 17]. The great attractions of FRS for international schizophrenia research are not only that they occur sufficiently frequently and are easy to elicit, but also their non-theoretical pragmatic character [7, 17, 18], features which are not shared by other concepts [16].

Despite these characteristics of FRS, their reported frequency varies widely between different psychiatric centres. The findings from the international Pilot Study of Schizophrenia [2, 17, 18] show this clearly, despite the use of uniform methods and instruments.

In view of these discrepancies, we have investigated the occurrence of FRS in schizophrenia in a hospital which is strictly oriented to Schneider's concept [8, 9]. We investigated whether the frequency of FRS correlates with the following factors:

1. age
2. sex
3. length of hospitalisation
4. low intellectual capacity
5. the presence of definite somatic disease

Material and Methods

For various reasons the patients of the Cologne University Psychiatric Hospital form a very suitable collective for answering the above questions. For 30 years the hospital was directed by a pupil of Schneider, Prof. Dr. Werner Scheid, who regards himself as an orthodox Schneiderian. In the 30 years from 1950 to 1979, the Schneiderian concept was the sole diagnostic concept used in the hospital. The diagnoses and their documentation were controlled by the director of the hospital, either personally or through his senior assistants, who themselves all strictly apply Schneider's diagnostic criteria (two underwent part of their training under Schneider himself). The findings were usually very extensively documented, so that there is no difficulty in using 190 items per patient.

In the period mentioned (1950–1979), 3,874 in-patients were diagnosed as having schizophrenia. The material used for our study is the case records of the patients hospitalised for schizophrenia for the first time in their life between 1950 and 1979. Non-German speaking patients were excluded. Available case records selected in this way numbered 1,208. The data were elicited by a protocol drafted by ourselves containing 190 items, which had been standardised after a preliminary study of 400 case records. The protocol contains the following sections: general, history, social factors, heredity, life events, psychopathological symptoms, somatic findings, treatment and outcome. The psychopathological symptom list is AMDP-oriented. The computer programmes are SPSS-based.

With the aim of avoiding descriptive inaccuracies—a danger which is always present in retrospective studies based on case records—we classified the FRS into six groups as follows:—

1. delusional perceptions
2. "first rank auditory phenomena", i.e. hearing voices talking to one another, hearing voices commenting on the patient's own actions or omissions, or the patient hearing his own thoughts spoken aloud (Gedankenlautwerden)
3. thought insertion
4. thought withdrawal
5. thought broadcasting
6. other feelings of being influenced by outside forces

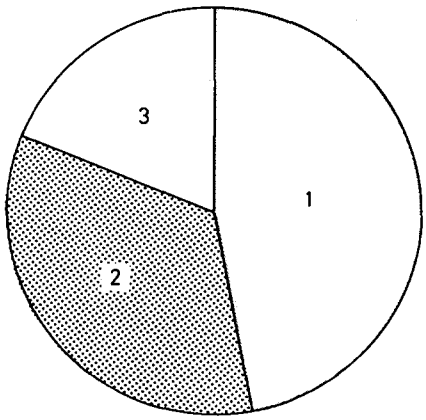

Fig. 1. FRS in Schizophrenia $n=1208$
1. FRS ($n=567$ – 46.9%);
2. other productive symptoms ($n=411$ – 34.1%);
3. non-productive symptoms ($n=230$ – 19.0%)

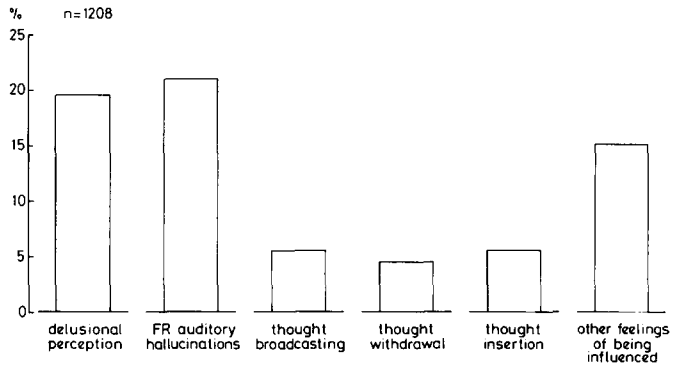

Fig. 2. Kinds of FRS

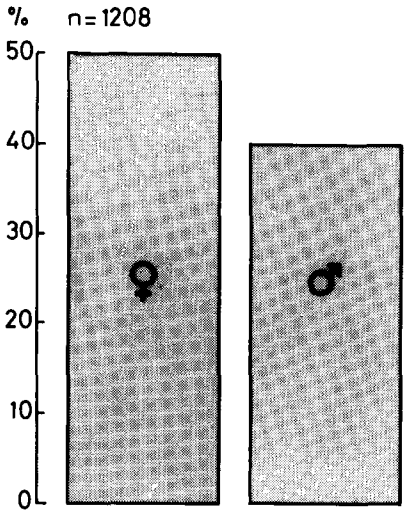

Fig. 3. Frequency of FRS correlated to the sex of first hospitalised schizophrenic patients

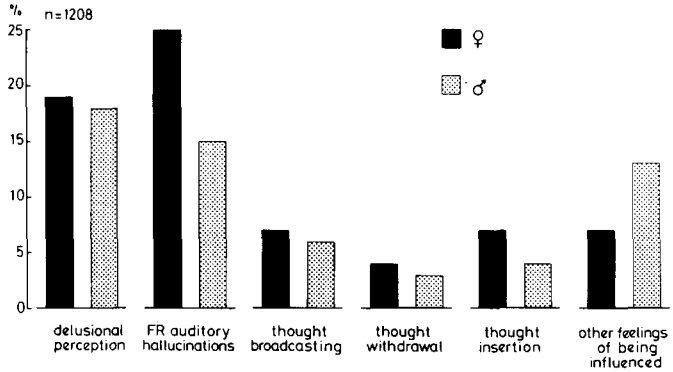

Fig. 4. Types of FRS correlated to the sex of first hospitalised schizophrenic patients

Results

Frequency of FRS in First Time Hospitalised Schizophrenic Patients

Of the total collective of 1,208 patients hospitalised for schizophrenia for the first time ever, the diagnosis in 978 cases (81%) was made on the grounds of productive psychotic symptoms and in the remaining 230 cases (19%) on grounds of "expression symptoms in the wider sense", i.e. formal disturbances of thinking, catatonic disorders, emotional disturbances, disturbances of drive, disturbances of social contact, and others (Fig. 1). First rank symptoms were elicited in 567 patients, representing 47% of the total collective and 58% of those with productive schizophrenic symptoms. The diagnosis "schizophrenia" was made significantly more frequently on non-FRS than on FRS ($\chi^2=4.53$, df=1, $P<0.05$).

The percentage distribution of the various forms of FRS is shown in Fig. 2. First rank auditory phenomena were recorded for 263 patients (22% of total collective) and delusional perceptions for 229 patients (19%). The difference in frequency between these two is not statistically significant ($\chi^2=2.95$, df=1, no significance). The groups of thought phenomena (thought withdrawal, thought broadcasting and thought insertion) occurred less frequently. Thought broadcasting was recorded in 76 patients (6%), thought withdrawal in 44 patients (4%) and thought insertion in 70 patients (6%). The group "other feelings of being influenced by outside forces" was elicited in 186 patients (15%). The difference in frequency between the group of first rank auditory phenomena and the group "other feelings of being influenced" is highly significant ($\chi^2=16.22$, df=1, $P<0.01$).

The difference in frequency between delusional perceptions and "other feelings of being influenced" is statistically significant at the 5% level ($\chi^2=5.38$, df=1, $P<0.05$). The three groups "first rank auditory phenomena", "delusional perceptions" and "other feelings of being influenced" were significantly more frequent than the three groups of "thought phenomena" ($\chi^2=51.80$, df=1, $P<0.01$ for "other feelings of being influenced" versus "thought broadcasting").

FRS in First Time Hospitalised Schizophrenic Patients as Correlated with Patient's Sex

The total collective comprised 805 female and 403 male patients and FRS were presented by 403 of the females (50%) and 164 of the males (41%) (Fig. 3). The higher frequency in the women patients is highly significant ($\chi^2=9.46$, df=1, $P<0.01$).

The frequency of the various groups of FRS correlated with sex is shown in Fig. 4 and Table 1. All six groups of FRS were recorded more often for women than for men. The higher frequency in women is however only highly significant (1% level) for the first rank auditory phenomena ($\chi^2=14.48$, df=1, $P<0.01$); the higher frequency of thought insertion in women

Table 1. Types of FRS correlated to the sex of first hospitalised schizophrenic patients

$n=1208$	♀		♂	
	n	%	*n*	%
Delusional perception	156	19	73	18
FR auditory hallucinations	201	25	62	15
Thought broadcasting	52	7	24	6
Thought withdrawal	31	4	13	3
Thought insertion	55	7	15	4
Other feelings of being influenced	135	17	51	13

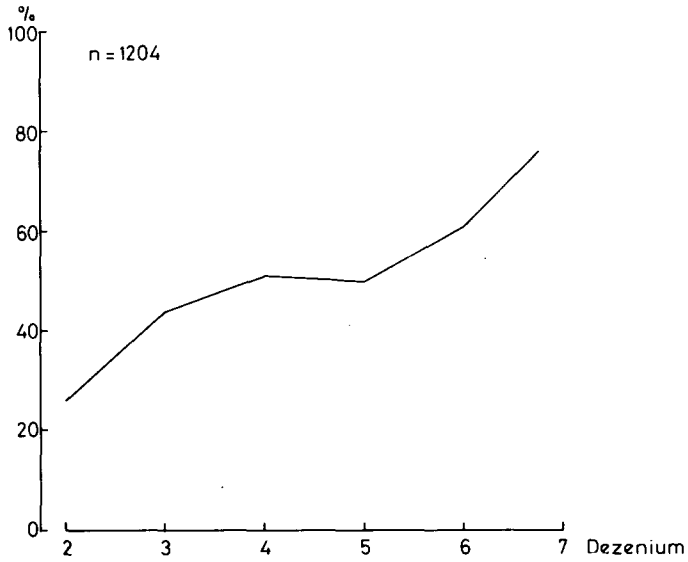

Fig. 5. Frequency of FRS correlated to the age of first hospitalised schizophrenic patients

is significant, but only at the 5% level ($\chi^2=4.76$, df=1, $P<0.05$).

Frequency of FRS in First Time Hospitalised Schizophrenic Patients as Correlated with Patient's Age

The occurrence of FRS increases with increasing age on first hospitalisation (Fig. 5 and Table 2). (4 patients first hospitalised at age 70 or above are not included in the figure or the table on account of the small number of cases). If age 40 is selected as a dividing line, the following results are produced (Fig. 6). Of 805 patients first hospitalised for schizophrenia at age 40 or below, 342 (42%) showed FRS, as against 225 (56%) of the 403 patients first hospitalised at age 41 or above. This higher frequency in the older group is highly significant ($\chi^2=19.21$, df=1, $P<0.01$). Table 3 shows the frequency of the various groups of symptoms correlated with age. Only in two groups of symptoms is the frequency significantly higher for the older patients: these are the first rank auditory phenomena ($\chi^2=22.75$, df=1, $P<0.01$) and "other experiences of being influenced" ($\chi^2=9.21$, df=1, $P<0.01$) (Fig. 7).

Investigation of the occurrence of FRS as correlated with both age and sex gave the following results. Of the total 805 female patients, 468 (58%) were aged 40 or under and 337 (42%) aged 41 or over on first admission. First rank symptoms were shown by 213 (46%) of the younger women and by 190 (56%) of the older women. Of the 403 male patients, 337 (84%) were

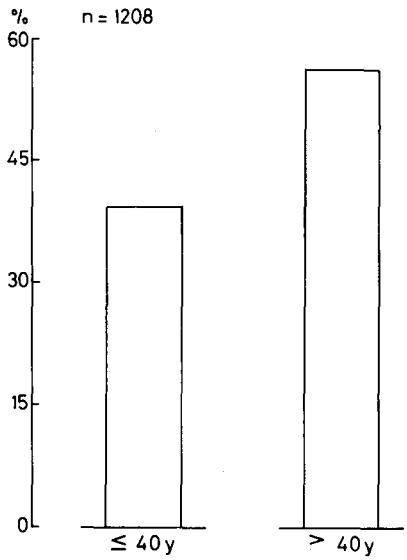

Fig. 6. Frequency of FRS correlated to the age of first hospitalised schizophrenic patients

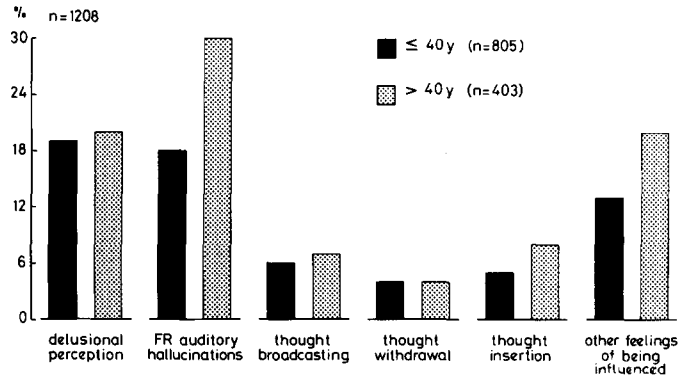

Fig. 7. Types of FRS correlated to the age of first hospitalised schizophrenic patients

Table 2. Frequency of FRS correlated to the age of first hospitalised schizophrenic patients

$n=1204$		FRS	
Decade	*n*	*n*	%
2	160	41	26
3	374	163	44
4	271	138	51
5	233	116	50
6	137	83	61
7	29	22	76

aged 40 or under, and 66 (16%) aged 41 or over. Of the younger group of men, 129 (38%) showed FRS, as against 35 (59%) of the older group of men. The difference between younger and older women is statistically significant ($\chi^2=9.25$, df=1, $P<0.01$); the difference between younger and older men is significant, but at the 5% level ($\chi^2=4.98$, df=1, $P<0.05$). These results suggest that men suffer from schizophrenia at a much lower age than women and that the incidence of FRS is significantly higher among the older women and men than among young women and men.

Table 3. Types of FRS correlated to the age of first hospitalised schizophrenic patients

$n=1208$	≦40y $n=805$		>40y $n=403$	
	n	%	*n*	%
Delusional perception	149	19	80	20
FR auditory hallucinations	143	18	120	30
Thought broadcasting	46	6	30	7
Thought withdrawal	29	4	15	4
Thought insertion	43	5	27	7
Other feelings of being influenced	106	13	80	20

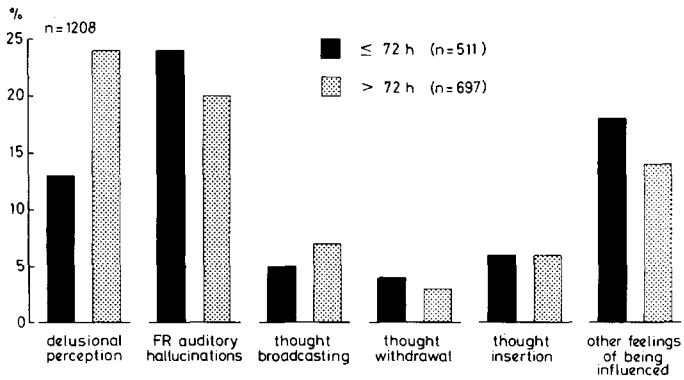

Fig. 8. Types of FRS correlated to the duration of hospitalisation of first hospitalised schizophrenic patients

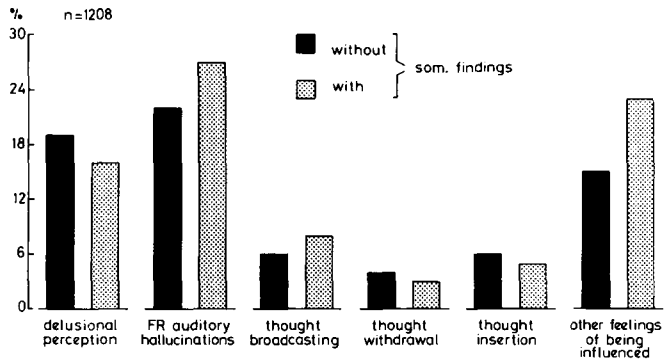

Fig. 9. Types of FRS correlated to the somatic findings of first hospitalised schizophrenic patients

FRS as a Function of Duration of Hospitalisation

We defined short hospitalisation as an in-patient stay of less than 4 days, and long hospitalisation as one of 4 days or more. This limit was chosen to take account of weekend admissions. The short-stay group comprised 511 patients and the long-stay group 697 patients. The frequency of FRS in these two groups is identical: FRS were shown by 242 (47%) of the short-stay patients and by 325 (47%) of the long-stay group ($\chi^2=0.06$, df=1, no significance). This suggests that FRS are easy to elicit, and do not require a long period of in-patient observation. However, when the occurrence of the separate types of symptom is examined (Fig. 8), it can be seen that the frequency of delusional perceptions is significantly higher for the long-stay patients, a finding which could be expected because of the greater difficulty of detecting and defining the delusional perceptions [5, 10, 11, 15].

Frequency of FRS in Patients with Definite Somatic Disease

Of the total 1,208 patients, 62 (5%) presented with definite somatic disease, and in 39 (63%) of these cases, FRS of schizophrenic were diagnosed. Of the remaining 1,146 patients with no somatic disease findings, 528 (46%) showed FRS of schizophrenia. The higher frequency of FRS in the somatic disease patients is statistically significant ($\chi^2=6.69$, df=1, $P<0.01$). Although the number of patients with somatic disease is too small in relation to the remainder to permit statistically reliable statements to be made, one can nevertheless conclude that the diagnosing physician was much more cautious before making the diagnosis "schizophrenia" in a patient with somatic disease, and usually needed FRS to make this diagnosis. The most frequent forms of FRS in patients with somatic disease were "first rank auditory phenomena" and "other feelings of being influenced by outside forces" (Fig. 9). It is interesting that the only symptom group which occurred significantly more frequently in the patients with somatic disease was "other feelings of being influenced by outside forces", mostly bodily influences ($\chi^2=3.88$, df=1, $P<0.05$).

Frequency of FRS in Patients of Low Intellectual Capacity

Of the total collective of 1,208 patients, low intellectual capacity can be regarded as reliably established in 39 cases. Of these, FRS were shown by 16 patients (41%). Although a comparison between the small number of these patients with the large number of patients of normal intelligence can be statistically risky, one can assume that there is no difference in the frequency of FRS between patients of low intellectual capacity and those of normal intellectual capacity ($\chi^2=0.57$, df=1, no significance). There is also no difference between these two sample groups as regards the occurrence of the various different FRS.

Discussion and Conclusions

Various studies have shown that Schneider's FRS occur frequently and clearly enough to be suitable for both clinical diagnosis and research purposes. Despite the characteristics, there are wide variations in the reported frequency of FRS between different investigating centres, both as regards the overall frequency and the relative frequency of the different symptoms [2, 3, 4, 6, 12, 16, 17, 18]. The studies by Huber et al. (1979) [4] have shown that the frequency of FRS, and indeed of all other productive psychotic symptoms, increases as the illness becomes more chronic. In order to exclude as far as possible the factor "chronicity of the illness"—it cannot be totally excluded—we have included in this study only patients hospitalised for schizophrenia for the first time ever. Our investigations showed that the occurrence of FRS can be influenced by various factors. Among the conclusions which can be drawn are the following:

The frequency of first rank symptoms in the collective we studied was age dependent, with a higher frequency of FRS in patients who were older at the time of first hospitalisation. The same also applies to the entire range of productive psychotic symptoms: the older the patient, the more frequently these are recorded. Our findings are in agreement with those of several other authors [e.g. 6] but contrast with those of others [e.g. 1, 12].

There are various possible interpretations of the observed increase of frequency of FRS with increasing age:

a) Following the findings of Huber et al. that with increasing chronicity the frequency of FRS and also the total produc-

tivity rise, one can surmise that in patients first hospitalised at a relatively late age the psychosis had been present for a long time previously but at a relatively low intensity, such as not to cause the patient difficulty in social interactions or everyday tasks. However, as the illness became more chronic (initially subclinical), the productive form of the schizophrenia became manifest and disturbed the patient's social interaction or caused failure in coping with allotted tasks, so that medical help in the form of hospitalisation was required.

b) Patients in whom disturbances of thinking, of affect, of drive or of other functions were of major importance experienced failures at an earlier age and required hospitalisation when younger.

c) The diagnosing physician did not wish to risk diagnosing schizophrenia in older patients unless they showed productive symptoms, but had few reservations about diagnosing schizophrenia in younger patients even without productive symptoms.

d) One can also surmise that schizophrenia in older patients is more productive than in younger patients.

The frequency of FRS in female patients was significantly higher than in male patients. However, other authors have found no difference in the frequency of FRS between men and women [1, 6, 12]. We think, however, that our findings are in agreement with the observation—made not only by ourselves—that women show productive symptoms more often than men [4].

Schizophrenia was also diagnosed in patients with definite somatic disease. These patients did not, however, present any organic psychopathological syndrome. Although the number of patients with somatic disease is too small to draw statistically reliable conclusions, the significantly higher occurrence of FRS in this group of patients can be interpreted. In our view, the diagnosing physician was much more cautious before making the diagnosis "schizophrenia" in patients with somatic disease than in others, which would explain this increased frequency.

The length of time for which the patient was under observation had no effect on eliciting FRS. This may indicate that the symptoms are so easy to elicit that this can be done in a short period under observation. The fact that the frequency of delusional perceptions was significantly higher in patients hospitalised for a longer period emphasises the difficulty of detecting and defining this symptom [5, 10, 11].

In the patients of this study there was no difference in the occurrence of FRS between patients of low and those of normal intellectual capacity.

Our findings described above show that several factors may influence the frequency with which FRS of schizophrenia occur. Such factors are the patients' age and sex, and the existence of somatic disease. Factors which have no effect are the duration of the observation period or low intellectual capacity of the patient.

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