

# Long-Term Outcome of Schizoaffective and Schizophrenic Disorders: a Comparative Study\*

## I. Definitions, Methods, Psychopathological and Social Outcome

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**Summary.** The long-term outcome of 72 schizoaffective and 97 schizophrenic patients with a mean duration of illness of 25.6 years and 19.6 years respectively was investigated. The outcome was assessed using the WHO Disability Assessment Schedule (WHO/DAS), the Psychological Impairment Rating Schedule (PIRS) (also developed by the WHO), the Global Assessment Scale (GAS), and the Bonn Psychopathological Criteria of Outcome. The outcome of schizoaffective disorders was found to differ from that of schizophrenia in several ways: (a) schizoaffectives achieve a full remission significantly more frequently than schizophrenics (50% vs 10%); (b) the development of so-called characteristic schizophrenic residua is the exception in schizoaffective disorders, but is frequent in schizophrenia; (c) disability, psychological impairment and disturbances of the level of functioning are not only significantly less frequent in schizoaffective disorders but are also less intense than in the schizophrenic group. The factors influencing the outcome of the two disorders are different (see part II), as are the social consequences (part III).

**Key words:** Long-term outcome – Schizoaffective disorder – Schizophrenia – Social outcome – Psychopathological outcome

### Introduction

It has been repeatedly confirmed that the outcome of schizoaffective disorders is much more favourable

than that of schizophrenia (Angst 1986; Harrow and Grossman 1984; Marneros and Tsuang 1986b). Investigations finding no differences between the two groups are exceptions, and their results are usually a function of a high degree of selection of material. Empirical studies have confirmed that schizoaffective disorders occupy an intermediate position between schizophrenic and affective disorders in regard to long-term outcome (Angst 1980a, b, 1986, 1987; Brockington et al. 1980a, b; Harrow and Grossman 1984; Pope et al. 1980; Rzewuska and Angst 1982).

The investigations regarding outcome of schizoaffective disorders are plagued by important methodological shortcomings, including insufficiently long follow-up, broad and imprecise definitions, small or highly selected samples, or vaguely defined global criteria of outcome (Angst 1986; Harding and Strauss 1984; Marneros et al. 1988a). Because our knowledge of the long-term course and long-term outcome of schizoaffective disorders remains scanty, retrospective studies still retain some assertive advantages, in spite of their well-known disadvantages – including that of serving to prepare for prospective studies – as our own investigations have shown (Marneros et al. 1988a–e). The present investigation, which forms part of the Cologne Study (Marneros et al. 1986a, 1988a), compares the outcome of schizoaffective and schizophrenic disorders over a long follow-up period using narrow definitions based on the longitudinal approach and employing standardized instruments of evaluation under consideration of a variety of different psychopathological and social aspects of outcome. Psychopathological findings and those concerning global functioning are described in the present paper (part I), causal-analytical investigations of the outcome in part II (Steinmeyer

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et al. 1989) and social consequences in part III (Marneros et al. 1989).

## Definitions

The definitions and diagnostic criteria of schizoaffective disorders and "pure" schizophrenia have been described elsewhere (Marneros et al. 1986a, 1988a, 1988e); only the most essential points are reviewed here. The definitions used distinguish between "episode" and "disorder" or "illness". An episode is defined cross-sectionally, an illness or disorder longitudinally.

We defined as "schizoaffective disorders" the concurrent or sequential presence of schizophrenic (or mood-incongruent paranoid) symptoms and melancholic or manic symptomatology. The definitions employed are based on the DSM-III or DSM-III-R criteria for (a) schizophrenic and paranoid disorders (schizophrenic symptomatology), (b) the melancholic type of major depressive disorders (melancholic symptomatology) and (c) manic episodes (manic symptomatology). Only slight modifications of DSM-III/DSM-III-R criteria were made (Marneros et al. 1988a, 1988e).

We defined as "schizophrenia" a mental disorder with schizophrenic symptomatology according to DSM-III (with slight modifications, Marneros et al. 1988a), but no melancholic or manic symptomatology during the whole course; the term "pure schizophrenia" is used synonymously (Marneros et al. 1986a, 1988a).

We defined as "outcome" the mental state and level of social functioning observed after a duration of illness of at least 10 years. As a "residuum" we defined the presence of psychopathological symptoms for at least 3 years up to the end of the observation time.

## Subjects, Methods and Instruments

### Subjects and Methods

The subjects and methods are reviewed only briefly here because they have been described elsewhere (Marneros et al. 1986a, 1988a). Only the methods and instruments specially employed in this paper are described. This presentation, part of the Cologne study (Marneros et al. 1986a, b, c, 1988a–e), is based on the personal follow-up investigations of 205 inpatients of the Cologne Psychiatric University Hospital with the discharge diagnosis "schizoaffective disorder" ("cases in-between" according to K. Schneider's nomenclature (Schneider 1973; Marneros 1983; Marneros et al. 1986b), or "suspected schizophrenia" (Marneros et al. 1984). Seventy-two of the patients fulfilled the above criteria of schizoaffective disorders. Some features of the population investigated are given in Table 1.

### Instruments of Evaluation

**Present State Examination (PSE).** As the basic instrument of the follow-up interview we used the German translation of the PSE (Wing et al. 1974, 1982). We modified the way of using it to cover both the present state and the past course.

**Disability Assessment Schedule (WHO/DAS).** The WHO/DAS was developed by the World Health Organisation (WHO 1979,

**Table 1.** Features of population studied

	Cologne Long-Term Study	
	Schizoaffective disorders	Schizophrenia
Number of patients	72	97
Sex: Female	64%	43%
Male	36%	57%
Sex distribution (f:m)	1.8:1	0.76:1
Age at onset	M = 30.50 <i>x</i> = 32.11 SD = 10.38 Min = 15 Max = 58	M = 25.00 <i>x</i> = 29.89 SD = 11.60 Min = 15 Max = 64
Duration of follow-up period (years)	M = 25.00 <i>x</i> = 25.61 SD = 10.46 Min = 10 Max = 59	M = 18.00 <i>x</i> = 19.58 SD = 8.80 Min = 10 Max = 39
Age at the end of the follow-up period (years)	M = 57.50 <i>x</i> = 57.72 SD = 13.58 Min = 27 Max = 87	M = 49.00 <i>x</i> = 49.46 SD = 13.85 Min = 27 Max = 84
Patients personally interviewed	100%	100%

M = Median; *x* = arithmetic mean; SD = standard deviation; Min = minimum value; Max = maximum value

1988; Schubart et al. 1986a, b) for the assessment of social behaviour and disability in or after mental illness. "Disability", in this instrument, is defined as a disturbance or loss of the ability to perform specific social functions and roles in the family, at work and/or in social groups, according to the normal expectations of the community (Schubart et al. 1986a).

We decided, on the grounds of sample-dependent specificities, to omit some items of section 2 of the WHO/DAS (social role performance), especially items 2.1–2.5 (marital, parental and heterosexual roles, participation in household), and items 2.7–2.9, (occupational role, interest in and demand for information). The main reason for this decision was the permanent hospitalization of some patients or the absence of required conditions for performance of the social roles rated by these items, parental or occupational role.

For every item the interviewer had to rate both intensity and duration (whether present for more or less than one half of the last 4 weeks). In our population all "disturbed" items had the maximal duration (present more than half of the last 4 weeks).

The scores finally assigned were the sums of the scores for intensity and duration.

**Psychological Impairment Rating Schedule (PIRS).** The PIRS was developed by the WHO (Biehl et al. 1986, 1988; Schubart et al. 1986b; WHO 1979) for the assessment of psychological impairments after mental illness. It reflects the opinion of the observing expert. Seventy-five aspects of the observed behaviour of the patient are rated, and the ratings are grouped

into ten sections. For each item there are three possible ratings (symptom absent, symptom moderate, symptom severe).

In addition, in order to enable a more global judgement of the degree of disturbance, in each section an "overall impression" was formulated using a 6-point rating scale (where three steps are operationally defined) (Biehl et al. 1988). The PIRS is strongly related to the PSE (Biehl et al. 1988; Schubart et al. 1986b).

**Global Assessment Scale (GAS).** The GAS, developed by Spitzer and co-workers (Spitzer et al. 1976, Endicott et al. 1976) is a rating scale for evaluating the overall functioning of a subject during a specified period on a continuum from psychological or psychiatric illness to health. The GAS has been shown to be very reliable (Endicott et al. 1976). GAS ratings were found to be more liable to change over time than were other ratings of overall severity or specific symptom dimensions. The relative simplicity, reliability and validity of the GAS make it useful in a variety of clinical and research settings (Endicott et al. 1976).

**Bonn Criteria of Psychopathological Outcome.** These criteria were developed by Huber and co-workers (Huber et al. 1979) to describe the psychopathological outcome of psychoses. Fifteen subtypes are grouped into three categories: "full remission", "non-characteristic residua" and "characteristic schizophrenic residua". A summarized English translation of the Bonn criteria is provided in an appendix by Marneros et al. (1986a).

### Statistics

**LISREL Analysis.** The Analysis of Linear Structural Relationships (LISREL analysis) (Jöreskog and Sörbom 1987) was employed for the empirical evaluation and graphical representation of the direct and indirect influences of the "exogenous independent variables" and "endogenous dependent variables" (for more details see part II of the present study; Steinmeyer et al. 1989), and "goal variables" such as disability score or psychological and psychopathological outcome.

LISREL is a general computer program for estimating the unknown coefficients in a set of linear structural equations (Jöreskog and van Thillo 1973). The variables in the equation system may either be directly observed variables or unmeasured latent variables which are not themselves observed but which are related to observed variables. In its most general form LISREL assumes that there is a causal structure among a set of latent variables. The latent variables appear as underlying causes of the observed variables. Alternatively, latent variables can be assumed to be caused by observed variables or treated as intervening variables in a causal chain (Jöreskog and Sörbom 1987).

LISREL analysis makes it possible to compute important aetiological factors in the form of latent hypothetical constructs and to estimate their influence on the disability and outcome variables of schizophrenia or schizoaffective disorders.

**Other Statistical Procedures.** The social consequences of the illness, i.e. the effect on social and occupational mobility or role performance, were statistically investigated in two stages: first with univariate methods, then with configuration frequency analysis (CFA) (Lienert 1978). The goal of using the CFA was to find out whether some combinations of factors significantly influence the social consequences (for details, see part III, Marneros et al. 1989b).

For other statistical questions we used univariate methods like the chi-square test, *t*-test, and the Mann-Whitney *U*-test.

## Results

### Global Assessment Scale (GAS)

The findings according to the GAS are shown in Table 2.

The arithmetic mean GAS score is 42 (SD 26.8) for the schizophrenic patients and 75 (SD 28.0) for the schizoaffective patients. The difference between the two arithmetic means is significant (*t*-test,  $P = 0.000$ ).

Grouping the findings into the categories (1) no difficulties (score 91–100), (2) moderate difficulties (score 51–90), (3) severe difficulties (score 31–50) and (4) extreme difficulties (score 0–30), we found highly significant differences between schizoaffective

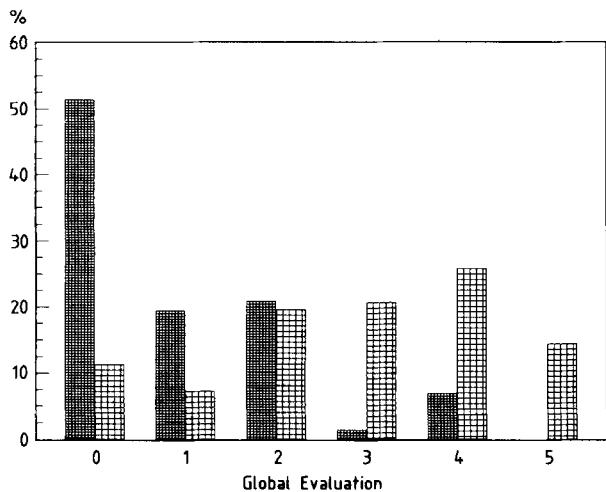
**Table 2.** Global Assessment Scale (GAS)

Score	Schizoaffective psychoses ( $N = 72$ )		Schizophrenic psychoses ( $N = 97$ )	
100	42%	51%	7%	12%
91	10%		5%	
90	1%		1%	
80	3%		1%	
75	1%		—	
71	4%		2%	
70	4%	25%	3%	13%
61	6%		—	
60	1%		4%	
55	1%		1%	
51	3%		1%	
50	3%		9%	
41	4%		1%	
40	4%	18%	9%	23%
35	1%		2%	
31	6%		1%	
30	1%		21%	
25	—		1%	
21	—		1%	
20	—	6%	18%	52%
11	1%		—	
10	3%		11%	

$$\chi^2 = 52.51, \ df = 3, \ P = 0.000$$

Arithmetic mean	75.125	41.969	$P = 0.000^a$
Median	91	30	$P = 0.000^b$

<sup>a</sup> *t*-test; <sup>b</sup> Mann-Whitney *U*-test



**Fig. 1.** Disability assessment schedule (WHO/DAS): Global evaluation. 0 Excellent adjustment; 1 Very good adjustment; 2 Good adjustment; 3 Fair adjustment; 4 Poor adjustment; 5 Very poor adjustment; Significance:  $\chi^2 = 59.9$  df = 5  $P = 0.0000$ . ■ Schizoaffective disorders (N = 72); ▨ Schizophrenia (N = 97)

and schizophrenic disorders ( $\chi^2 = 52.51$ ,  $P = 0.000$ ) (Table 2). Only 6% of the schizophrenic patients but 52% of the schizophrenic fell into group 4.

#### Disability Assessment Schedule (WHO/DAS)

As we have already pointed out above, some items of section 2 of the WHO/DAS were not rated for sample-related reasons.

#### Global Evaluation

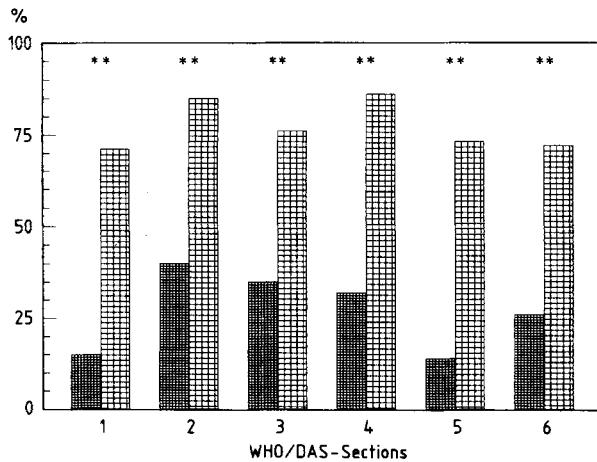
In section 5 of the WHO/DAS the investigator's overall assessment of the patient's social adjustment is given, considering all information recorded and rated in the schedule.

Schizoaffective patients were found to have a significantly more favourable "postmorbid" adjustment than schizophrenic patients, as shown in Fig. 1. No schizoaffective patients but 14% of the schizophrenics were found to have extremely severe maladjustment (stage 5). Altogether, 41% of the schizophrenic patients but only 7% of the schizoaffectives had a severe or extremely severe maladjustment.

#### Overall Behaviour

Here the items of section 1 of the WHO/DAS (overall behaviour) plus two items of section 2 (social role performance) are considered.

Section 1 contains the items (1) self-care, (2) spare-time activity, (3) slowness and (4) social with-



**Fig. 2.** Disability Assessment Schedule (WHO/DAS): Frequency of disturbances (scores '1' and '2') 1 Self-care; 2 Spare-time activity; 3 Slowness; 4 Social contacts/withdrawal; 5 Friction in interpersonal relationship; 6 Emergency or crisis behaviour; ■ Schizoaffective disorders (N = 72); ▨ Schizophrenia (N = 97); \*\*  $P < 0.01$  ( $\chi^2$ -test)

drawal. The two rated items of section 2 are (1) friction in interpersonal relationships and (2) emergency or crisis behaviour.

#### Frequency of Disturbances Regarding Single Items Rated

Figure 2 shows that there are significant differences between the two groups, with at least three facts differentiating them: (1) more schizophrenics than schizoaffectives have the rated disturbances; (2) the ranking of the disturbances most frequently rated differs; (3) the item rated least often in the schizophrenic group (self-care) is still almost twice as frequent as the item rated most often frequently in the schizoaffective group (spare-time activity).

#### Average Intensity of the Disturbances Rated with WHO/DAS

**Patient's Average Score (PAS) of WHO/DAS.** The PAS is the arithmetic mean of all equally weighted item scores for each individual patient. It shows the severity of the disability referred to by the items rated. The results are shown in Table 3.

The difference between the two groups is significant ( $P = 0.000$ ). Sixty-two per cent of the schizoaffective but only 13% of the schizophrenic patients had either no disturbances or only very slight ones ( $PAS < 0.50$ ). Conversely, 64% of the schizophrenic but only 12% of the schizoaffective patients had severe to enormous disturbances in the items rated ( $PAS > 2.00$ ).

**Table 3.** Disability Assessment Schedule (DAS): Patient's Average Score (PAS)

PAS	Schizoaffective disorders (N = 72)	Schizophrenia (N = 97)
0	35 (49%)	7 (7%)
0.01–0.50	9 (13%)	6 (6%)
0.51–1.00	11 (15%)	7 (7%)
1.01–1.50	3 (4%)	8 (8%)
1.51–2.00	5 (7%)	7 (7%)
2.01–2.50	4 (6%)	10 (10%)
2.51–3.00	3 (4%)	9 (9%)
3.01–3.50	1 (1%)	14 (14%)
3.51–4.00	1 (1%)	10 (10%)
4.01–4.50	–	12 (12%)
4.51–5.00	–	7 (7%)
Arithmetic mean	0.690	2.583
Median	0.333	2.833

<sup>a</sup> *t*-test; <sup>b</sup> Mann-Whitney *U*-test

**Item's Average Score (IAS) of WHO/DAS.** The IAS is the arithmetic mean of an item score rated in a group of patients. The IAS of the six rated items are shown in Fig. 3.

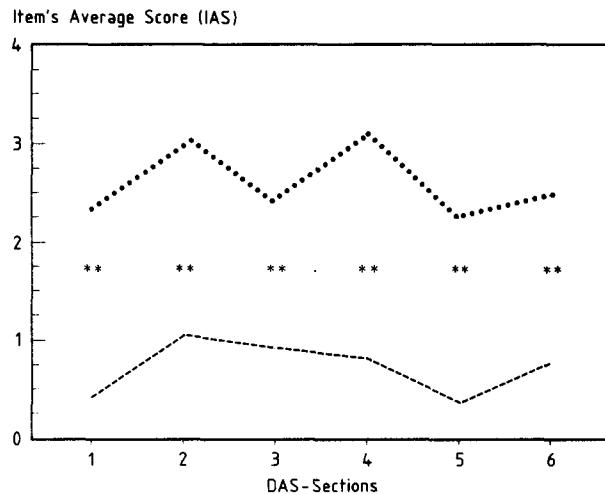
For all items the IAS is significantly higher (and therefore the disturbance more severe) in the schizophrenic than in the schizoaffective group.

#### Psychological and Psychopathological Outcome

The psychological aspect of the outcome was estimated using the PIRS, the psychopathological outcome using the Bonn Psychopathological Criteria of Outcome (Huber et al. 1979; Marneros et al. 1986a).

**Table 4.** Psychological Impairment Rating Schedule (PIRS): frequency of ten most disturbed items

Psychological Impairment Rating Schedule		Schizoaffective disorders (N = 72)		Schizophrenia (N = 97)	
Item	Frequency (disturbed patients)	Item	Frequency (disturbed patients)	Item	Frequency (disturbed patients)
Blunted affect	24%	Slowness	72%		
Reduced quantity of facial expression	15%	Blunted affect	65%		
Slowness	14%	Slow facial expression	62%		
Pressure of speech	14%	Reduced range of facial expression	60%		
Slow facial expression	13%	Distractability	59%		
Depression	13%	Reduced quantity of facial expression	53%		
Restricted quantity of speech	11%	Limited use of gestures	50%		
Self-neglect	11%	Lack of "presence"	49%		
Limited use of gestures	10%	Loss of taste	40%		
Reduced range of facial expression	10%	Self-neglect	38%		



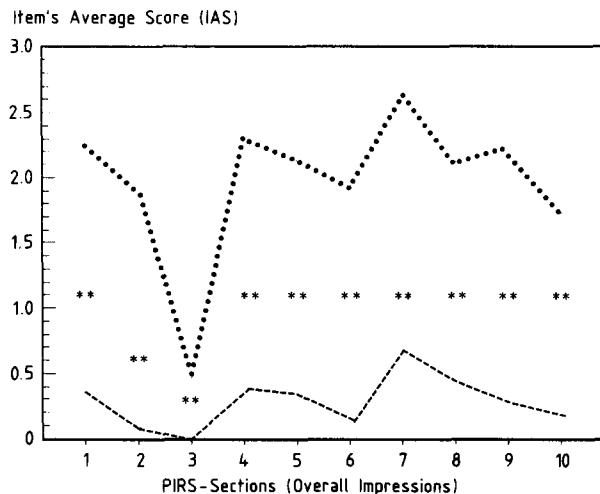
**Fig. 3.** Disability assessment schedule (WHO/DAS). Profiles of items. 1 Self-care; 2 Spare-time activity; 3 slowness; 4 Social contacts/withdrawal; 5 Friction in interpersonal relationship; 6 Emergency or crisis behaviour; \*\* Mann-Whitney-test,  $P = 0.000$ ; (—) Schizoaffective disorders (N = 72); (·····) Schizophrenia (N = 97)

#### Psychological Impairment Rating Schedule (PIRS)

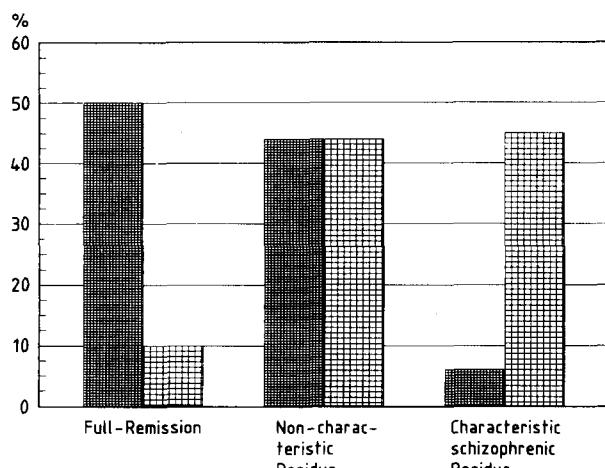
Table 4 shows the ten most frequently "disturbed" items (score 1 or 2). As can be seen, every one of these items is disturbed in more than one-third of the schizophrenic patients, but none of them is disturbed in more than 24% of the schizoaffective patients.

Forty-three of the items (57%) were disturbed in more than 10% of the schizophrenics, but only eight items (11%) were disturbed in more than 10% of the schizoaffectives.

**Item's Average Score (IAS) of PIRS.** For each section of the PIRS an "overall impression" was evaluated (see Instruments section).



**Fig. 4.** Psychological impairment rating schedule (PIRS). Profiles of overall impressions. 1 Slowness/psychic tempo; 2 Attention withdrawal; 3 Fatigability; 4 Initiative; 5 Facial expression; 6 Body language; 7 Affect display; 8 Conversation skills; 9 Self presentation; 10 Cooperation; \*\* Mann-Whitney test:  $P = 0.000$  (----) Schizoaffective disorders ( $N = 72$ ); (.....) Schizophrenia ( $N = 97$ )



**Fig. 5.** Bonn criteria of psychopathological outcome (Huber et al. 1979) ■ Schizoaffective disorders ( $N = 72$ ) ▨ Schizophrenia ( $N = 97$ ) Significance:  $\chi^2 = 47.0$ ,  $df = 2$ ,  $P = 0.000$

The IAS is the arithmetic mean of an item score rated in a group of patients (as in the WHO/DAS). The IAS was computed for every single one of the ten sections. Figure 4 shows the profiles of the IAS of PIRS. All ten IAS are significantly more favourable in schizoaffectives than in schizophrenics.

#### Psychopathological Outcome

Using the Bonn Psychopathological Criteria of Outcome (Huber et al. 1979; Marneros et al. 1986a) we found that exactly half of the schizoaffective patients experienced full remission, i.e. the patient had no

psychopathological residual symptoms for at least 3 years (Fig. 5).

Exactly the same proportion of schizoaffective and schizophrenic patients had so-called non-characteristic residua: 44% of the patients of each group had impaired ability to concentrate, impairment of thinking, weakened modulation of expression, reduction of spontaneity, low capacity to resist external influences, disturbances of affect, etc. Only 6% of the schizoaffectives but 45% of the schizophrenics had a so-called characteristic schizophrenic residuum, i.e. in addition to the above-mentioned symptoms they displayed psychotic symptoms, such as delusions or hallucinations (see Marneros et al. 1986a, appendix).

#### Discussion and Conclusions

There is a very good agreement in the literature that schizoaffective disorders have a much more favourable outcome than schizophrenic disorders (reviews by Angst 1986; Harrow and Grossman 1984; Marneros and Tsuang 1986a). Only a few studies have had deviant results, usually resulting from strong negative selection of the sample. (We assume such selection for the Chestnut Lodge Study; Williams and McGlashan 1987).

The present study, with the advantages of a long follow-up period, narrow definitions and standardized instruments for evaluation of the outcome, supports those findings, showing significant differences between schizoaffective and schizophrenic disorders in various aspects of outcome. Full remission, that is the absence of constant psychopathological symptoms over a period of at least 3 years up to the time of the follow-up investigation, was found in one-half of the schizoaffective but only in 10% of the schizophrenic patients. The findings of the Cologne study regarding full remission in schizophrenia differ considerably from the findings of similar European studies, such as those by Huber et al. (1979), Bleuler (1973, 1974) and Ciompi and Müller (1976). The most important reason for this is certainly the broad definition of schizophrenia used by the above-mentioned studies, including schizoaffective disorders (Harding and Strauss 1984; Marneros et al. 1986a, b, c, 1987, 1988e).

It can also be said that the development of so-called characteristic schizophrenic residua (Huber et al. 1979; Marneros et al. 1986a) is the exception in schizoaffective disorders but fairly common in schizophrenia (Armbruster et al. 1982; Gross et al. 1986; Marneros et al. 1986c, 1987).

The findings concerning the influence of the illness on the "postmorbid" level of functioning reveal a picture similar to that given by the psychopatholog-

ical criteria. According to the GAS, somewhat more than half of the schizoaffective patients had a superior level of functioning in a wide range of activities (score 91–100); this was true for only 12% of the schizophrenic patients. Conversely, more than half of the schizophrenic patients were found to be unable to function in almost all areas, or their behaviour was considerably influenced by either delusions or hallucinations, or they showed serious impairment in communication or judgement (GAS-score 0–30); this was the case for only 6% of the schizoaffective patients. The better GAS outcome of schizoaffective disorders in comparison to schizophrenia is in agreement with the findings of Möller et al. (1988). Angst (1989) found much more severe disturbances of the level of functioning in schizoaffective patients than in the study presented here. We think that the discrepancy is based on sample differences: Angst had many more schizodominant patients than our Cologne study (Angst 1989). It depends probably also on the time of evaluation: We rated the GAS in average 11 years (median) after the last episode of illness, while in the Zurich Material the GAS was evaluated after every episode.

Significant differences between the two groups were found in regard to disability. According to the WHO/DAS, 41% of the schizophrenic patients had a severe or even "extremely severe" maladjustment, but in only 7% of the schizoaffective patients was the maladjustment severe (and in none of them "extremely severe"). As the patient's average score for WHO/DAS shows, almost three-quarters of the schizoaffective patients had either no or only very slight disturbances of social adjustment, but this was true for only 19% of the schizophrenic patients. The item's average score for the WHO/DAS shows that each single function rated in the WHO/DAS is more severely disturbed in the schizophrenic than in the schizoaffective population, resulting in different social consequences (part II, Marneros et al. 1989b).

The factors influencing the long-term prognosis of schizophrenic disorders include both symptomatological and non-symptomatological variables, and thus differ from those influencing the prognosis of schizoaffective disorders (mainly symptomatological), as we show in part II (Steinmeyer et al. 1989).

In conclusion, it can be said that the findings of the present study, in combination with findings regarding the premorbid and social features of schizoaffective and schizophrenic disorders (Marneros et al. 1989a), support the assumption that these two types of disorder are not identical.

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