

# Unipolar and Bipolar Schizoaffective Disorders: A Comparative Study\*

## II. Long-Term Course

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**Summary.** Seventy-two schizoaffective patients were investigated longitudinally (mean follow-up period 25.6 years). Of these, 37 were classified as unipolar and 35 as bipolar schizoaffectives. Their long-term courses were compared. Bipolar schizoaffectives were found to have shorter cycles, i.e. more frequent relapses and more episodes. Bipolars displayed much more variation in symptomatology. Unipolar schizoaffectives had longer periods of remission (that is the last relapse-free period if longer than 3 years) and more frequently showed suicidal symptomatology than did bipolar schizoaffectives. Altogether bipolar schizoaffective disorders had a more unfavourable course than unipolar disorders.

**Key words:** Schizoaffective disorders – Long-term courses – Unipolar – Bipolar

### Introduction

Earlier investigations, most importantly the pioneer work of Angst, showed that the course of schizoaffective disorders seems to be similar to that of affective disorders (Angst 1980; Angst et al. 1973; Marneros et al. 1988a–d). Of great theoretical and practical interest is the question whether the division of schizoaffective disorders into unipolar and bipolar – similar to the division in affective disorders – can be justified by differences in long-term course. Recent work carried out by Angst (1989) seemed to indicate that this is so. In this part of the Cologne study we com-

pared essential elements of the long-term course in unipolar and bipolar forms of schizoaffective disorders to try to answer the question.

### Material, Methods and Definitions

The features of the sample investigated, methods, and definitions have already been described in part I of this study (Marneros et al. 1989). Here is some additional information. The precise assessment of the beginning and end of an episode, especially if residual symptoms are present, is extraordinarily difficult (Marneros et al. 1988). With the aim of achieving a homogeneous definition of episodes, we define, for the purposes of the following analysis, the length of an episode as the duration of inpatient or inpatient-like treatment. Inpatient-like treatment must fulfil the following criteria: (a) there must be intensive medical care (treatment with psychotropic drugs, and frequent consultation of a psychiatrist), with (b) interruption of the usual occupation or duties. "Slight" episodes, not fulfilling these criteria, were not considered for statistical evaluation. The measurement of the length of a cycle, i.e. the time between the beginning of one episode and the beginning of the next, is more reliable than the measurement of the length of episodes, because episode and interval are considered as one unit (Angst 1980, 1986; Marneros et al. 1988).

As we have already reported elsewhere (Marneros et al. 1988 a–c), the Cologne study confirmed the findings of similar earlier investigations by Angst and coworkers (Angst and Weis 1967; Angst et al. 1973; Angst 1980) that the length of cycles, intervals, and episodes has a log normal distribution, i.e. that through logarithmic transformation an approximately normal distribution can be achieved. The following statistics are therefore based on logarithmically transformed values. Also the number of episodes, cycles and intervals have been logarithmically transformed, if necessary.

To estimate affect-dominance or schizo-dominance of the course or its bias to the schizophrenic or affective pole we used the Syndrome Presence Index (SPI) and the Schizo-Affectivity Score (SAS) (Marneros et al. 1988c). Further details of this can be found below.

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## Results

### Frequency of Episodes

Bipolar schizoaffective disorders were found to have significantly more episodes than unipolar disorders (Table 1). A polyphasic course, i.e. an illness with four or more episodes (4–18 episodes) was observed in 71% of the bipolar schizoaffectives but in only 41% of the unipolars. In contrast, an oligophasic course, that is one with two or three episodes, was observed in 46% of the unipolars, but in only 20% of the bipolars. A monophasic course, defined as an illness with only one episode during the whole observation time, was found in 14% of the unipolars and 9% of the bipolars (Fig. 1). The median number of episodes was twice as high in the bipolars as in the unipolars (Table 1).

*Annual Frequency of Episodes.* An estimate of the Annual Frequency of Episodes (AFE) was made in earlier investigations (Marneros et al. 1988a) in order better to compare individual cases with different follow-up periods. The AFE is calculated by division of the sum of episodes by the years of duration of the follow-up period. We calculated the AFE intraindividually.

As Table 1 shows, the intraindividually calculated AFE in bipolars is on average (median and geometric mean) double that in unipolar schizoaffective patients.

### Number of Cycles

As can be observed for the number of episodes, bipolar schizoaffective patients have significantly more cycles than unipolar ones (monophasic patients and the one permanently hospitalized patient are excluded). Bipolar schizoaffective patients have three times as many cycles as unipolar schizoaffectives (Table 1). A large majority of unipolars (68%) was found to have 1–3 cycles, while the majority of bipolars had 4–10 cycles (56%).

*Annual Frequency of Cycles.* As we already pointed out in an earlier paper (Marneros et al. 1988a) the Annual Frequency of Cycles (AFC) is an important parameter of the course of affective and schizoaffective disorders because it is more or less independent of the inactivity period of the disorders and from the rare monophasic cases. The AFC is estimated by division of the number of cycles by the years of the follow-up period up to the end of the last completed cycle. The AFC is intraindividually estimated. Bipolar schizoaffective patients have a significantly

**Table 1.** Schizoaffective disorders: course

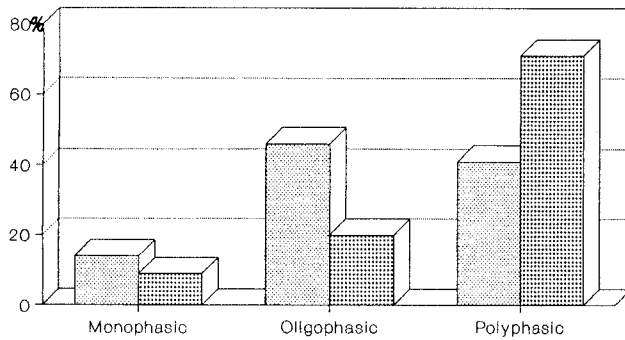
	Unipolar	Bipolar	P
Number of episodes	M = 3 x = 4.33 Geom = 3.36 SD = 3.41 Min. = 1 Max. = 16 LNx = 1.213 N = 36	M = 6 x = 6.88 Geom = 5.46 SD = 4.36 Min. = 1 Max. = 18 LNx = 1.670 N = 35	0.007 ** <sup>a</sup>
Annual frequency of episodes (AFE)	M = 0.12 x = 0.16 Geom = 0.13 SD = 0.11 Min. = 0.03 Max. = 0.48 LNs = -2.044 N = 36	M = 0.28 x = 0.35 Geom = 0.26 SD = 0.27 Min. = 0.03 Max. = 1.42 LNx = -1.354 N = 35	0.000 ** <sup>a</sup>
Number of cycles	M = 2 x = 3.87 Geom = 2.89 SD = 3.38 Min. = 1 Max. = 15 LNx = 1.062 N = 31	M = 6 x = 6.44 Geom = 5.18 SD = 4.15 Min. = 1 Max. = 17 LNx = 1.645 N = 32	0.002 ** <sup>a</sup>
Annual frequency of cycles (AFC)	M = 0.25 x = 0.34 Geom = 0.23 SD = 0.32 Min. = 0.05 Max. = 1.33 LNx = -1.467 N = 31	M = 0.48 x = 0.51 Geom = 0.40 SD = 0.33 Min. = 0.09 Max. = 1.33 LNx = -0.924 N = 32	0.011 * <sup>a</sup>
Inactivity (years)	M = 19 x = 17.15 SD = 9.23 Min. = 4 Max. = 34 N = 27	M = 9 x = 10.68 SD = 6.95 Min. = 4 Max. = 34 N = 25	0.018 * <sup>b</sup>

\*  $P < 0.05$ ; \*\*  $P < 0.01$ ; <sup>a</sup> *t*-test; <sup>b</sup> Mann-Whitney *U*-test  
M = median; x = arithmetic mean; Geom = geometric mean; SD = standard deviation; Min. = minimum value; Max. = maximum value; LNx = arithmetic mean of the logarithmically transformed values; N = number of patients

higher AFC (median 0.48) than unipolar schizoaffectives (median 0.25; Table 1).

### Length of Episodes

Because it is difficult to define the beginning and end of an episode precisely, we considered episode length



**Fig. 1.** Schizoaffective disorders ( $n = 72$ ): course. (■) Unipolar; (▨) bipolar

— mainly for purposes of statistical analysis — as being the time between the beginning and the end of inpatient or inpatient-like treatment (for criteria for inpatient-like treatment see above). The length and type of episodes are given in Table 2. No differences were found between the unipolar and bipolar groups regarding the length of the three common episodes, i.e. schizodepressive, melancholic, schizophrenic (Table 2). As the minimum/maximum values in Table 2 show, there is a great variation in the lengths of one and the same type of episode, so that the median or geometric mean are more reliable than the arithmetic mean. Both values showed that the schizodepressive episodes were of the longest duration and the manic episodes the shortest. However, it must be pointed out that the individual variations are considerable, as the minimum-maximum values show.

#### Length of Cycles

Because the distribution was strongly biased to the left, we used the median and the geometric mean, rather than the arithmetic mean, to describe cycle length, i.e. the time period between the beginning of one episode and the beginning of the following episode. With such a distribution, the arithmetic mean of length gives the false impression of a very favourable course.

Cycle length generally decreases with an increasing number of cycles (Fig. 2). A significant difference in length of first cycle was found between unipolars and bipolars ( $P = 0.02$ ).

In an attempt to avoid the inordinate influence of the intraindividual and interindividual variations of cycle length we included as many cycles as were found in at least half the patients: at least four cycles were observed in 34 (54%) of the 63 patients having cycles.

The mean length of the four cycles for this group is shown in Fig. 3. As can be seen, the average first

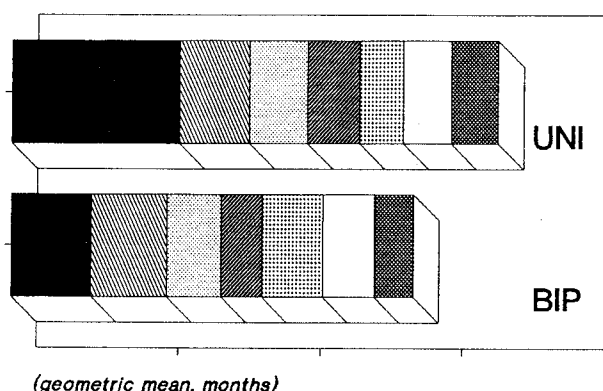
**Table 2.** Schizoaffective disorders: length of episodes (months)

Type of episode	Unipolar	Bipolar	<i>P</i>
Schizophrenic	M = 1.50	M = 1.00	0.840 <sup>a</sup>
	Geom = 1.33	Geom = 1.26	0.377 <sup>b</sup>
	Min. = 0.75	Min. = 0.50	
	Max. = 3.00	Max. = 8.50	
	<i>N</i> = 9	<i>N</i> = 20	
Schizodepressive	M = 2.00	M = 2.00	0.540 <sup>a</sup>
	Geom = 1.97	Geom = 1.80	0.692 <sup>b</sup>
	Min. = 0.25	Min. = 0.50	
	Max. = 31.00	Max. = 8.00	
	<i>N</i> = 120	<i>N</i> = 45	
Schizomanic		M = 1.25	
		Geom = 1.16	
		Min. = 0.25	
		Max. = 10.00	
		<i>N</i> = 76	
Manic		M = 1.00	
		Geom = 1.10	
		Min. = 0.25	
		Max. = 2.50	
		<i>N</i> = 12	
Melancholic	M = 1.00	M = 1.75	0.106 <sup>a</sup>
	Geom = 1.14	Geom = 1.79	0.072 <sup>b</sup>
	Min. = 0.25	Min. = 0.75	
	Max. = 7.00	Max. = 6.00	
	<i>N</i> = 22	<i>N</i> = 14	
Manic-depressive		M = 1.38	
		Geom = 1.81	
		Min. = 0.50	
		Max. = 15.50	
		<i>N</i> = 10	
Schizomanic-depressive		M = 1.75	
		Geom = 1.78	
		Min. = 0.25	
		Max. = 8.75	
		<i>N</i> = 53	
Non-characteristic	M = 1.50	M = 0.25	0.272 <sup>a</sup>
	Geom = 1.41	Geom = 0.57	0.467 <sup>a</sup>
	Min. = 1.00	Min. = 0.25	
	Max. = 2.00	Max. = 3.00	
	<i>N</i> = 4	<i>N</i> = 3	

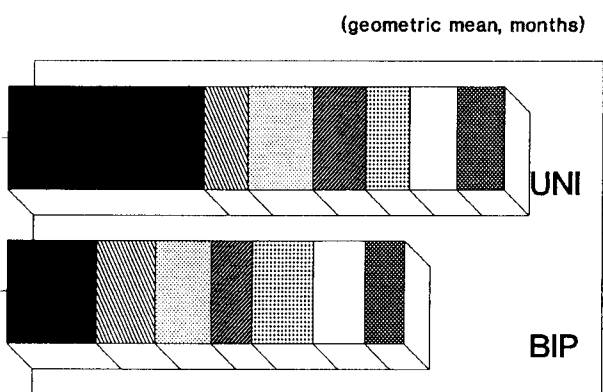
<sup>a</sup> *t*-test (log); <sup>b</sup> Mann-Whitney *U*-test

M = median; Geom = geometric mean; *N* = number of episodes; Min. = minimum value; Max. = maximum value

cycle is more than twice as long in unipolars as in bipolars. Nevertheless, the differences between the two groups for the four cycles are not significant overall ( $P = 0.314$ ; two-way analysis of variance with repeated measurement, Manova).



**Fig. 2.** Unipolar and bipolar schizoaffective disorders: length of cycle 1-7



**Fig. 3.** Schizoaffective disorders with at least 4 cycles ( $n = 34$ ): length of cycle 1-7

However, there were significant differences among the cycles 1-4 ( $P = 0.002$ , Manova). Using the paired  $t$ -test we found for unipolars a significant difference between the first and the second cycle ( $P = 0.022$ ) but relatively small differences between the first and the third cycle ( $P = 0.093$ ) and between the first and the fourth cycle ( $P = 0.052$ ). The mean cycle length of the bipolars shows a progressive decrease which is not significant between consecutive cycles but is significant between the first and the third cycle ( $P = 0.013$ ) and between the first and the fourth cycle ( $P = 0.001$ ).

As Table 3 shows, the difference in length of cycles between unipolar and bipolar schizoaffective disorders is caused by the difference in the length of the intervals and not in that of the episodes.

#### *Inactivity of the Illness*

The inactivity of the illness, i.e. a period of at least 3 years from the end of the last episode regardless of the presence or absence of residual symptoms (for more details see Marneros et al. 1988c), was found to be significantly longer in unipolar than in bipolar schizoaffective disorders (Table 1).

**Table 3.** Schizoaffective disorders: length of cycles and intervals (months)

	Unipolar	Bipolar	<i>P</i>
Average cycle length (months)	M = 45.5 $x = 74.07$ Geom = 35.59 SD = 62.15 Min. = 9.58 Max. = 227.75 LNx = 3.572 N = 31	M = 26.07 $x = 40.21$ Geom = 22.52 SD = 33.49 Min. = 8.25 Max. = 136.00 LNx = 3.115 N = 32	0.033 * <sup>a</sup>
Average length of episodes per patient (months)	M = 2.42 $x = 2.77$ Geom = 1.89 SD = 2.18 Min. = 0.72 Max. = 12.00 LNx = 0.638 N = 36	M = 1.75 $x = 2.09$ Geom = 1.47 SD = 1.34 Min. = 0.37 Max. = 7.30 LNx = 0.385 N = 35	0.084 <sup>a</sup>
Average length of intervals per patient (months)	M = 43.50 $x = 69.24$ Geom = 29.11 SD = 59.40 Min. = 7.67 Max. = 212.5 LNx = 3.371 N = 31	M = 22.97 $x = 37.65$ Geom = 17.99 SD = 33.58 Min. = 3.63 Max. = 131.25 LNx = 2.890 N = 32	0.045 * <sup>a</sup>

\*  $P < 0.05$ ; <sup>a</sup>  $t$ -test (log); <sup>b</sup> Mann-Whitney  $U$ -test

M = median;  $x$  = arithmetic mean; Geom = geometric mean; SD = standard deviation; Min. = minimum value; Max. = maximum value; LNx = arithmetic mean of the logarithmically transformed values; N = number of patients

#### *Type of Episodes*

The comparison between unipolar and bipolar schizoaffective disorders has to be restricted to the type of episodes that appear in both groups, i.e. episodes with manic symptomatology have to be excluded. The comparison reveals some interesting differences (Table 4). Regarding initial symptomatology, of the four common types of episode (schizodepressive, melancholic, schizophrenic or non-characteristic) only the schizodepressive type was significantly more frequent in the unipolar group, while the other three types of episode (schizophrenic, melancholic and non-characteristic) occurred with the same frequency in the two groups. During the course, however, schizophrenic episodes were also found to be significantly more frequent in the bipolar group.

As expected, bipolar schizoaffective disorders had a polymorphous course, i.e. showed more than one type of episode, significantly more frequently than a

**Table 4.** Type of episodes

	Uni- polar (N = 37)	Bi- polar (N = 35)	Total (N = 72)	P <sup>a</sup>
Initial episode				
Schizodepressive	76%	23%	50%	0.000**
Schizomanic	—	23%	11%	
Schizomanic-depressive	—	11%	6%	
Schizophrenic	14%	11%	13%	1.000
Melancholic	3%	3%	3%	1.000
Manic	—	9%	4%	1.000
Manic-depressive	—	14%	7%	
Non-characteristic	8%	6%	7%	
Whole course				
Schizodepressive	95%	46%	71%	0.000**
Schizomanic	—	69%	33%	
Schizomanic-depressive	—	51%	25%	
Schizophrenic	14%	34%	24%	0.038*
Melancholic	27%	17%	22%	0.313
Manic	—	20%	10%	1.000
Manic-depressive	—	23%	11%	
Non-characteristic	8%	9%	8%	
Polymorphism				
Monomorphous	62%	14%	39%	0.313
Polymorphous	38%	86%	61%	

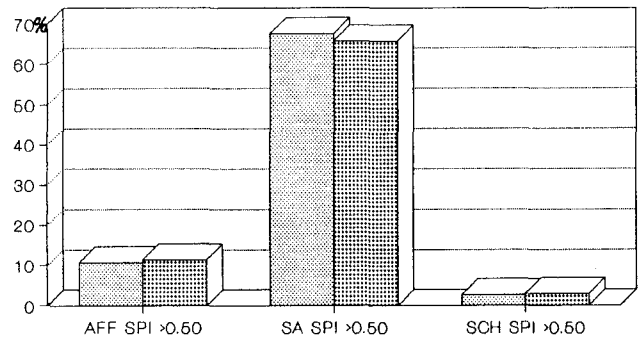
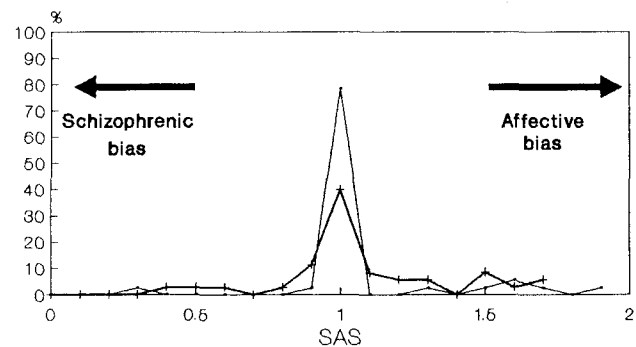
\*  $P < 0.05$ ; \*\*  $P < 0.01$ ; <sup>a</sup> Chi-square test

monomorphous course (86% vs 14%). This contrasted with the findings for unipolar schizoaffective disorders (38% polymorphous, 62% monomorphous).

Seventy per cent of the unipolars had only schizoaffective (schizodepressive) episodes during the whole course. In contrast, only 37% of the bipolars had only schizoaffective (schizodepressive, schizomanic, and mixed schizomanic-depressive) episodes; the remaining 63% also had pure affective and/or schizophrenic episodes.

#### *Degree of the Affective or Schizophrenic Bias of the Course*

To find out how frequently a specific group of episodes, i.e. schizophrenic, affective, schizoaffective, was present in relation to the total number of episodes of a patient, we estimated the SPI. The SPI is calculated for any individual patient by dividing the number of episodes referred to (schizophrenic, affective, schizoaffective) by the total number of episodes. For details see Marneros et al. (1988c). For any individual patient three different SPIs are available: a schizophrenic, an affective and a schizoaffective SPI.

**Fig. 4.** Schizoaffective disorders ( $n = 72$ ): syndrome presence index (SPI). (■) Unipolar; (▨) bipolar**Fig. 5.** Schizoaffective disorders: schizo-affectivity score (SAS). (—) Unipolar; (---) bipolar

A type of episode is considered as dominating the course if its SPI is higher than 0.50.

As Fig. 4 shows, the course in both groups of schizoaffective disorders was dominated by the presence of schizoaffective episodes (schizoaffective SPI higher than 0.50) and only in exceptional cases by the presence of schizophrenic or affective episodes.

Although the SPI gives the occurrence of a type of episode in relation to the total number of episodes of a patient, it does not give any information about the occurrence of a type of episode — for example an affective episode — in relation to that of the other kind of episodes, in this example schizophrenic and schizoaffective episodes. This additional information can be gained by estimating the SAS. The SAS shows the bias of the course in schizoaffective disorders towards the schizophrenic or the affective pole (for details see Marneros et al. 1988c). The ideal schizoaffective course has an SAS of 1 with boundaries 0.5–1.5. An SAS lower than 0.5 shows a schizophrenic bias, one higher than 1.5 an affective bias. The histograms of Fig. 5 show that both unipolar and bipolar groups displayed a very strong focus on intermediate schizoaffective values (mean SAS for unipolars = 1.083, for bipolars = 1.079; ideal = 1.00).

**Table 5.** Psychopathological symptoms

	Uni- polar (N = 37)	Bi- polar (N = 35)	Total (N = 72)	P <sup>a</sup>
Suicidal symptomatology	78%	51%	65%	0.016
Attempted suicide	43%	29%	36%	0.195
First-rank symptoms	30%	43%	36%	0.246
Productive psychotic symptoms	73%	89%	81%	0.095
Delusions	70%	86%	78%	0.115
Hallucinations	43%	46%	44%	0.833

\*  $P < 0.05$ ; <sup>a</sup> Chi-square test

### Psychotic Symptomatology

Four of the bipolar patients (11%), and ten of the unipolars (27%), had never been productively psychotic, i.e. had never had delusions or hallucinations; however, the difference was not significant (Table 5). Similarly, no significant differences were found between the two groups with regard to special forms of psychotic symptomatology, i.e. delusions, hallucinations or first-rank symptoms.

**Suicidal Symptomatology.** Significantly more unipolars (78%) than bipolars (51%) had had suicidal intentions at least once. Forty-three per cent of the unipolars, but only 29% of the bipolars, had attempted suicide at least once. As we showed earlier, the suicidal symptomatology of schizoaffective disorders is dependent on the type of episodes: schizodepressive episodes are accompanied by suicidal symptomatology more frequently than other types of episodes (Rohde et al. 1989). The most common method of attempting suicide in both groups was drug overdose.

### Conclusion and Discussion

Both unipolar and bipolar schizoaffective disorders are recurrent, but there are significant differences between them regarding the long-term course. According to the findings of this study, bipolars have shorter cycles and more episodes than unipolars, i.e. they relapse more frequently and within a shorter time, a finding which confirms the recent findings of Angst (1989). Especially with regard to the first relapse, the differences between the two groups are impressive: on average (median), it can be expected that the first relapse in bipolars will occur a little over 2 years after the onset of the first episode, but in the unipolars more than 8 years after the first episode. In both groups, the cycle length generally decreases with the

increasing number of cycles, as in affective disorders (Angst 1980, 1986; Marneros et al. 1988a).

Both unipolar and bipolar schizoaffective disorders are usually polymorphous: that means that they usually (61%) have more than a single type of episode (Marneros et al. 1988c, d). However, bipolar schizoaffective patients displayed much more variation in symptomatology than the unipolar ones. This phenomenon is not only due to the bipolarity of the schizoaffective episodes, but also – and more importantly – to the occurrence of pure affective and pure schizophrenic episodes during the long-term course: only 37% of the bipolars had only schizoaffective (schizodepressive, schizomanic, or mixed schizomanic-depressive) episodes; the other 63% also had pure affective and pure schizophrenic episodes. In contrast, only 30% of the unipolars had episodes other than schizoaffective ones.

Pure schizophrenic episodes were significantly more frequent in the bipolars. However, in spite of the fact that the bipolar schizoaffective disorders are more frequently polymorphous than the unipolar ones, both of these had only a very slight bias to an affective or schizophrenic course: the course in both groups was strongly focused around a schizoaffective centre, as the estimations of the SPI and of the SAS showed. Whether this tendency is common to all schizoaffective populations or only specific to this sample remains to be proven by other investigations.

Suicidal symptomatology is very frequent in both unipolar and bipolar schizoaffective patients, but significantly more frequent in unipolars.

In an earlier investigation we found that schizodepressive episodes are accompanied by suicidal symptomatology more frequently than are other types of episodes, even pure melancholic episodes (Marneros et al. 1988c; Rohde et al. 1989; Rohde and Marneros 1989).

Unipolar schizoaffective patients had a significantly longer average inactivity period (the last relapse-free period if longer than 3 years) (Marneros et al. 1988c) than bipolars (19 years vs 9 years). This finding, however, has to be proven by other investigations because some independent variables like type and duration of treatment and prophylaxis were considerably inhomogeneous and non-standardized, so that their impact on the dependent variable "inactivity of the illness" could not be correctly estimated. In an earlier investigation we found that lithium prophylaxis can have a favourable impact on the length of the inactivity period as well as on that of the cycles, especially in bipolars (Marneros et al. 1988c).

In conclusion, it can be said that there are important clinical differences in the course between unipolar and bipolar schizoaffective disorders. Regarding

frequency of relapse and inactivity of the illness, bipolars have a more unfavourable course than unipolars.

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