

Original Paper

**Paranoid-hallucinatory Syndromes in Schizophrenia
Results of the International Study on Psychotic Symptoms**

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Abstract The research on socio-cultural influence on the phenomenology of schizophrenia has a long tradition which can be traced back to Kraepelin. However, all former investigations focused either on delusions or hallucinations, although it is part of common psychiatric knowledge that both phenomena are strongly associated (paranoid-hallucinatory syndrome). Analyzing the data of the International Study of Psychotic Symptoms (IPSP) by means of Principal Component Analysis, we were able to isolate seven factors syndromes: 'religious grandiosity syndrome', 'low perception syndrome', 'coenesthetic hypochondria syndrome', 'apocalyptic guilt syndrome', 'persecutory syndrome', 'poisoning syndrome', and 'delusional jealousy'. With the exception of delusional jealousy all factors were unequally distributed between the patients. Although we were able to develop explanatory hypotheses for our findings, further empirical and conceptual research is necessary to answer numerous open questions concerning the striking differences of psychotic phenomena in different cultures.

Key words: phenomenology of schizophrenia, cultural comparison, delusions, hallucinations, International Study on Psychotic Symptoms

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INTRODUCTION Until nowadays transcultural comparative studies on psychotic symptoms in schizophrenia have exclusively investigated the differences in the distribution of only one group of phenomena like contents of delusions (e.g. Kim et al. 2001, Murphy 1967, Ndeti and Vadher 1984a, Stompe et al. 1999 and 2006, Tateyama et al. 1998), or hallucinations (Murphy et al. 1963; Ndeti and Vadher 1984c) or Schneider's first rank symptoms (Gureje and Bamgboye 1987; Ndeti and Vadher 1984b; Pela 1982; Radhakrishnan et al. 1983; Salleh 1992; Zarrouk 1978).

In an earlier paper we have shown some regular associations between certain kinds of hallucinations and contents of delusions in patients with schizophrenia (Stompe and Bauer 2004a). Visual hallucinations seem to have an affinity to religious delusions as well as to delusions of grandeur, while coenesthetic hallucinations occur primarily with hypochondriac delusions. These results are pointing to the existence of relatively stable paranoid-hallucinatory syndromes. According to Jaspers (1963) syndromes are symptom-clusters, which are taken as typical pictures

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of mental states and which allow to bring some order into the countless varied phenomena. They are objective and subjective phenomena of a striking character with a frequent simultaneous appearance of their characteristic elements and a coherence of these symptoms. It was the aim of this part of our investigation to identify these syndromes and to investigate their distribution in different cultures.

METHOD

The International Study on Psychotic Symptoms

Our present analysis is based on the data of the International Study on Psychotic Symptoms (ISPS). The IPSP was the first study organized by the Vienna Research Group in Cultural Psychiatry, founded in 1994. The aim of this project is to scrutinize several aspects of the phenomenology of schizophrenic disorders, like subtypes of schizophrenia, delusions, hallucinations and first rank symptoms and the impact of culture, ethnics, religion and social patterns on this symptomatology. In the meantime centres from seven countries are participating in the ISPS (Austria, Poland, Lithuania, Georgia, Pakistan, Nigeria, and Ghana).

Study design of the ISPS

Inclusion criteria were a clinical diagnosis of schizophrenia and an age between 18 and 60 years. Exclusion criteria were mental disabilities, organic brain disorders, affective- and substance-induced disorders. After giving informed consent, patients were interviewed by experienced psychiatrists. In the moment our sample consists of 1080 inpatients (Table 1) consecutively admitted to psychiatric hospitals (University Clinics, psychiatric hospitals and rehabilitation centres).

Table 1 Demographic data of patients with schizophrenia from Austria, Poland, Lithuania, Georgia, Pakistan, Nigeria and Ghana (N-total = 1080)

	Male	Female	Age	Age at onset	Duration of illness
Austria (N=350)	258 (73.7%)	92 (26.3%)	33.0±10.0	22.3±6.4	10.6±9.1
Poland (N=80)	59 (73.7%)	21 (26.3%)	28.1±7.2	22.5±6.4	5.5±6.0
Lithuania (N=73)	33 (45.2%)	40 (54.8%)	35.3±13.1	23.2±6.1	12.1±10.5
Georgia (N=74)	37 (48.7%)	39 (51.3%)	37.2±10.9	25.9±7.5	12.8±10.5
Pakistan N=103)	65 (63.1%)	38 (36.9%)	32.8±9.6	25.2±7.0	7.7±6.4
Nigeria (N=324)	198 (61.1%)	126 (38.9%)	30.8±10.9	25.1±8.3	6.3±7.5
Ghana (N=76)	39 (51.3%)	37 (48.7%)	33.8±9.9	25.9±7.5	7.9±6.6

Diagnoses were derived from SCID interviews, supplemented by hospital charts and collateral information. When all data had been collected, Internet communication was held between field-workers and the first author, and consensus diagnoses were made using DSM-IV (APA 1994). Delusions and hallucinations were classified by the FPS (Fragebogen für psychotische Symptome), a semi-structured questionnaire, comprising items about delusions, hallucinations and FPS (Bauer et al. 2006, Stompe et al 1999, Stompe and Ortwein 2002b, Stompe et al 2004a, Stompe et al 2004b, Stompe et al. 2006a, Stompe and Friedmann 2007). The section on contents of delusions comprises 10 themes (persecution, poisoning, grandeur, religion, hypochondria, guilt, apocalypse, erotomania, jealousy, descent; multiple quotations possible, Stompe et al 2004b). The chapter on hallucinations comprises the type (auditory, visual, coenesthetic, tactile, gustatory and olfactory) and characteristic qualities (content, complexity etc.) The chapter on Schneider's First Rank Symptoms contains questions on the occurrence of delusional perceptions, audible thoughts, thought broadcasting, thought insertion, thought withdrawal, commenting and dialogue voices, made volition ('made thoughts', 'made emotions', 'made movements', 'made actions'). All items are binary coded. Additionally, each answer has to be noted in a descriptive part. Possible periods under investigation are (a) point prevalence, (b) one year prevalence, (c) life time prevalence.

The instrument was translated (and retranslated) into the several languages and checked for validity and reliability. After extensive intercultural dialogue and training in handling the instrument, inter-rater reliability was tested: case reports from each centre were sent by internet to Vienna, randomized and distributed to the participating investigators. So no investigators knew the origin of the case report he/she was evaluating by means of the FPS. The results of this procedure were returned to Vienna. Cohen's kappa for inter-rater reliability ranged from .64 to 1.00 (Stompe et al. 2004b, Stompe et al. 2006). Additionally a broad range of socio-demographic variables like family structures (Stompe et al. 1999b), religious confession (Stompe 1999, Stompe et al. 2006), social origin, education, marital status, and profession was determined from each subject.

Statistics

To stable symptom-clusters a Principal Component Analysis with Varimax rotation was performed. As the Lithuanian sample consisted of only 73 patients, a fact, which may lead to distortions of the factor structure because of the unequal sample-sizes, we randomly selected 73 patients from all other sites for multidimensional analysis. For further analyses the standardized factor score were saved as regression coefficients (values between +1 and -1). To test the differences of the mean values between the samples of the single sites, One-Way ANOVA + Turkey post hoc tests were performed.

RESULTS

Table 2. Paranoid-hallucinatory syndromes in schizophrenia (Principal component analysis; Varimax rotation)

	<i>Factor</i>						
	1	2	3	4	5	6	7
<i>Explained variance</i>	11.4%	9.8%	8.8%	8.0%	7.7%	7.6%	6.5%
Delusions of grandeur	.78						
Religious delusions	.71						
Delusions of descent	.51					.45	
Olfactory hallucinations		.84					
Gustatory hallucinations		.72				.42	
Tactile hallucinations		.51					
Hypochondriac delusions			.77				
Coenesthetic hallucinations			.74				
Auditory hallucinations				.76			
Visual hallucinations	.54						
Delusions of persecution				.47		.42	
Delusions of guilt					.73		
Delusions of apocalypse					.63		
Delusions of being loved					-.41		
Delusions of being poisoned						.71	
Delusions of jealousy							.84

Table 2 shows the rotated solution of the Principal Component Analysis. The first factor has high loadings from delusions of grandeur and descent, religious delusions and visual hallucinations. The second factor is strongly associated with gustatory, olfactory and tactile hallucinations. The third factor is strongly associated with hypochondriac delusions and coenesthetic hallucinations, the fourth factor with auditory hallucinations and persecutory delusions. The fifth factor is bipolar consisting only of delusions: it is positively associated with delusions of guilt and apocalypse, and negatively associated delusions of being loved. The sixth factor is associated with delusions of being poisoned, being persecuted and delusions of descent as well as with gustatory hallucinations. Finally, factor seven, consists only of delusions of jealousy. We named factor 1 'religious grandiosity syndrome', factor 2 'low perception syndrome', factor 3 'coenesthetic

hypochondria syndrome’, factor 4 ‘apocalyptic guilt syndrome’, factor 5 ‘persecutory syndrome’, factor 6 ‘poisoning syndrome’, and factor 7 ‘delusional jealousy’. With the exception of delusional jealousy all other paranoid-hallucinatory syndromes were unequally distributed between the seven sites (Table 3).

Table 3. Paranoid hallucinatory syndromes by country (Mean/Standard deviation; One-Way ANOVA)

	Factor 1	Factor 2	Factor 2	Factor 4	Factor 5	Factor 6	Factor 7
	<i>Religious grandiosity</i>	<i>Low perceptions</i>	<i>Coenesthetic hypochondria</i>	<i>Apocalyptic guilt</i>	<i>Persecutory syndrome</i>	<i>Poisoning syndrome</i>	<i>Jealousy</i>
Austria	0.1 ± 1.0	0.1 ± 1.1	0.3 ± 1.1	-0.3 ± 1.1	-0.1 ± 1.1	-0.3 ± 0.8	-0.1 ± 0.9
Poland	0.0 ± 1.1	0.0 ± 1.0	0.2 ± 1.1	0.2 ± 1.1	0.2 ± 1.1	0.0 ± 0.7	-0.1 ± 0.8
Lithuania	-0.1 ± 1.0	0.2 ± 1.3	0.1 ± 1.3	0.0 ± 1.1	0.1 ± 0.7	0.2 ± 1.0	0.2 ± 1.3
Georgia	0.0 ± 0.9	0.2 ± 1.0	0.2 ± 1.0	-0.3 ± 0.7	-0.4 ± 1.4	0.2 ± 1.3	-0.1 ± 1.3
Pakistan	-0.7 ± 0.6	-0.3 ± 0.3	-0.3 ± 0.3	-0.3 ± 0.4	-0.2 ± 0.6	-0.2 ± 0.7	-0.1 ± 0.8
Nigeria	0.2 ± 1.0	0.1 ± 1.3	0.1 ± 1.3	0.0 ± 0.9	0.0 ± 1.1	-0.2 ± 1.0	0.3 ± 0.8
Ghana	0.4 ± 0.8	-0.2 ± 0.6	-0.2 ± 0.6	-0.1 ± 0.9	0.4 ± 0.8	0.3 ± 1.0	0.0 ± 0.8
<i>Sign.</i>	***	*	***	***	***	**	<i>n.s</i>

* $p < .05$; ** $p < .01$; *** $p < .001$

Several statistically significant differences could be found by means of Turkey-test: lower mean values concerning the ‘religious grandiosity syndrome’ in the Pakistani group compared with all the other sites, lower mean values for the ‘low perception syndrome’ in Pakistanis compared with the Georgian subjects, higher mean values for the ‘coenesthetic hypochondria syndrome’ in Austria compared with Pakistan, Nigeria, and Georgia, and lower mean values of for the ‘coenesthetic hypochondria syndrome’ in Pakistan compared with Ghana. Lithuanian patients showed higher mean values in the ‘apocalyptic guilt syndrome’ than patients of all other sites. A more complex situation was found with the ‘persecutory syndrome’: higher mean values in Ghana compared with Austria and Pakistan and lower mean values in Georgia compared with Lithuania and Poland. The ‘poisoning syndrome’ showed lower mean values in Austria compared with Lithuania, Ghana and Georgia.

DISCUSSION The aim of this study was: (1) to re-examine previous results concerning the existence of stable, characteristic and distinguishable paranoid-hallucinatory syndromes by means of Principal Component Analysis and (2) to investigate possible differences in the distribution of these syndromes in patients with schizophrenia from different countries.

We found seven distinguishable syndromes (‘religious grandiosity syndrome’, ‘low perception syndrome’, ‘coenesthetic hypochondria syndrome’, ‘apocalyptic guilt syndrome’, ‘persecutory syndrome’, ‘poisoning syndrome’, and ‘delusional jealousy’). Concerning the second question we found in fact statistically significant differences in six of seven syndromes pointing to a marked impact of culture on the characteristics of psychotic phenomenology:

(1) Patients from Pakistan have an isolated position concerning the ‘religious grandiosity syndrome’. At least partly this result is in line with the studies on culture and delusions performed by Murphy and his colleagues from the Mc Gill University in the 1960es (Murphy et al. 1963; Murphy 1967). Using a completely different study design, also these authors have found low rates of religious delusions in Islamic countries. We were able to further differentiate this result: especially religious themes associated with delusional grandiosity are very rare in Pakistan. In contrast to the European patients no Pakistani claimed that he is God, Jesus or Mohammed, that means no Pakistani patient expressed a delusional identity (Stompe and Strobl 2000; Stompe and Ortwein 2002a; Stompe et al. 2006, Dvorak et al. 2006). This result may be due to differences in structure of identity between traditional and modern / post-modern countries: role- and family identity are more important in traditional cultures, personal identity in modern ones. A second important explanation seems to be the strict Islamic prohibition to warship any holy person beside Allah.

(2) The high values of apocalyptic guilt could be found in Lithuanian patients. There two possibilities to interpret this result:

a. in an earlier paper we pointed out that delusions of guilt are more frequent in Poland and Lithuania than in all other sites (Stompe et al. 2006). In the present studies the cultural meaning of the association between delusions of guilt and apocalypse ('apocalyptic guilt syndrome') in Lithuania seems to be unclear at the first sight. The syndrome has a religious background (e.g. 'The World has come to an end, because I have committed an immortal sin'). Perhaps this difference between the Polish and the Lithuanian patients is due to the different history of the official Christian church in the communistic area – a stronger position in Poland, more persecution in Lithuania. Religiosity in Lithuania was more or less a forbidden private issue.

b: the high values of the 'apocalyptic guilt syndrome' may be due to different distributions of schizophrenic subtypes in the single sites. In an earlier paper we have shown that apocalyptic delusions are strongly associated with acute schizophreniform or schizoaffective disorders (Stompe and Ortwein-Swoboda 2002b), clinical pictures summarized under the term cycloid psychoses by Leonhard (Leonhard 1999). However, in the case of Lithuanian patients this argument is not very plausible because the rate of acute forms of schizophrenia was not higher than in the other European countries (Strnad et al. 2006).

I hope that we were able to show that combining single psychotic signs like contents of delusions and types of hallucinations to more complex paranoid-hallucinatory syndromes opens up new perspectives for further cross-cultural comparison studies. Several problems and questions for future research are resulting:

- ◆ Are these syndromes ubiquitous constants of schizophrenic disorders?
- ◆ To which extent are these paranoid-hallucinatory syndromes culture-sensitive?
- ◆ Are there any other factors like religious confession, social situation, sex, age, age of onset, duration of illness, and schizophrenia subtype influencing the occurrence of these syndromes?

We think to be able to go beyond the results and considerations presented here, it will be necessary to expand the International Study on Psychotic Symptoms including more sites from other countries.

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