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Major Differences in Subjective Experience of Akinetic States in Catatonic and Parkinsonian Patients

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Both catatonic and parkinsonian patients show severe motor deficits such as complete akinesia. In contrast to Parkinson's disease, mechanisms of akinetic states in catatonia remain unclear. In an attempt to define catatonic akinesia in a more detailed way we investigated subjective experience in 22 akinetic catatonic patients comparing them with 22 major depressive, 22 paranoid schizophrenic, 22 residual schizophrenic, and 22 akinetic parkinsonian patients. Catatonic patients were diagnosed according to standardised criteria. They were treated exclusively with lorazepam (2–4mg) during the first 24 hours and, according to their response on day 1, they were divided into responders and nonresponders. Subjective experience was investigated with a self-rated questionnaire, developed by us, for

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the subjective experience of psychological and motor functions in an acute akinetic state. Catatonic patients differed significantly in their subjective experience from parkinsonian, depressive, and schizophrenic patients. Unlike parkinsonian patients, catatonics were not fully aware of their severe deficits in motor execution. In contrast to catatonic nonresponders to lorazepam, lorazepam-responders were characterised by intense and overwhelming emotional experiences. Subjective experience of akinesia seems to differ fundamentally between catatonic and parkinsonian patients as well as between catatonic responders and nonresponders to lorazepam.

INTRODUCTION

The term ''catatonia'' was first introduced by Kahlbaum (Kahlbaum, 1874) when he described patients with motor (posturing, waxy flexibility, immobility, stereotypy), affective (depressive, anxiety, happiness), and behavioural (echolalia, echopraxia, negativism, mutism, staring) abnormalities. Later, catatonia was interpreted in various ways (see Table 1). Because of motor symptoms, such as akinesia, some authors emphasised relationships between catatonia and Parkinson's disease (Homburger, 1932; Northoff, Wenke, Demisch, Eckert, & Pflug, 1995a). Other interpretations focused on cognitive abnormalities such as ambivalence and blockade of the will, associating catatonia predominantly with residual schizophrenia (Andreasen, 1982; Bostroem, 1932; Kraepelin, 1904; Mortimer, Lund, & McKenna, 1990). Catatonia was also related to affective alterations like anxiety and depression (Magrinat, Danziger, Iorenzo, & Flemenbaum, 1983; Perkins, 1982; Starkstein et al., 1996).

However, the exact functional relationships between cognitive, affective, and motor disturbances in catatonia remain unclear. Investigation of subjective experience and psychopathology of catatonic patients may be considered as one method to address this question, because it could reveal psychological functions associated with akinesia. Therefore, we developed a self-rating questionnaire for subjective experience in catatonia (see Appendix), where different interpretations of catatonia are given (see Table 1). We investigated subjective experience and psychopathology in akinetic catatonic patients and compared these results with residual schizophrenic, paranoid schizophrenic, major depressive, and Parkinson's disease patients.

Relying on clinical and therapeutic descriptions (Homburger, 1932; Kraepelin, 1904; Northoff et al., 1995a; Rosebush, Furlong, & Mazurek, 1990), we hypothesised that in catatonia, psychological alterations (i.e. affective and cognitive) may predominate in the subjective experience of akinesia whereas Parkinson's disease patients may experience deficits in motor execution. Accounting for catatonia as a state of extreme disability (Perkins, 1982), we made the additional assumption of major differences in subjective

TABLE 1
Interpretations of Catatonia

Interpretation	*Author*		*Hypothesis*	*Question in Self-rating Questionnaire*
Motor	Kleist	(1908)	Psychomotor phenomena	1, 10
	Homburger	(1932)	Ambiguity of motor symptoms	
	Abrams & Taylor	(1977)	Specifity of motor symptoms	
	Northoff	(1995)	Deficit of internal initiation	
Cognitive	Kraepelin	(1904)	Ambivalence/negativism	2, 3, 4, 5
	Bostroem	(1928)	Blockade of the will	
	Andreasen	(1982)	Negative symptoms	
	Mortimer	(1990)	Residual schizophrenia	
Affective	Bleuler	(1911)	Sign of affective discharge	6, 7, 8, 9, 11
	Margrinat	(1983)	Reaction to stress	
	Perkins	(1982)	Immobilisation reflex as a response to anxiety	
	Starkstein	(1996)	Association with depression	
Phenomenological	Wulff	(1960)	Dissociation of inner and	12, 13, 14
	Laing	(1967)	outer world	
	Northoff	(1995)		

experiences between catatonic patients on the one hand, and noncatatonic schizophrenic and depressive patients on the other.

METHODS

Subjects

We investigated 22 catatonic patients (9 women, 13 men: 32.7 ± 10.8; mean ± SD); 17 of them were untreated (at least 6 months off neuroleptics prior to admission: 14 patients never received neuroleptics and 3 patients had been treated with haloperidol (2–18mg daily) for an average duration of 2.1 ± 1.2 years); 5 catatonic patients received neuroleptics (haloperidol, duration: 3.2 ± 1.1 years; dose range: 2–20mg) either on the day of admission or during the 6 months before admission. Neuroleptically naive and neuroleptically treated catatonic patients did not differ significantly in subjective experiences or in psychopathological measurements. Catatonic patients were selected from all consecutively admitted patients to the University Psychiatric Hospital in Frankfurt between January 1991 and May 1994 (incidence,

calculated in relation to all incoming patients: 2.7%). The duration of illness varied from 1 week to 10 years (mean: 147 weeks) and the duration of catatonic symptoms was reported as lasting from 1 to 18 days (means: 4.8 days).

The catatonic syndrome was diagnosed according to operationalised criteria: Lohr and Wiesniwski (1987) (3 from 11 symptoms) and Rosebush et al. (1990) (4 from 12 symptoms, derived from Kahlbaum). These scales use a rather strict definition of catatonia relying on a cluster of symptoms, which had to be present within one hour of investigation on the day of admission, as recommended by Gelenberg (Gelenberg, 1977). All patients had to be classified as akinetic catatonic (excluding catatonic patients with predominant hyperkinesias in order to homogenise the group with regard to subjective experience of an acute akinetic state) according to both lists of criteria. Two independent psychiatrists (GN; JW) rated the same patients successively within one hour on day 0 (before initial medication with lorazepam), day 1 (24 hours after admission), and day 21 (the day of the investigation of subjective experience). Both raters had to agree on every catatonic symptom otherwise the patient was excluded from the study ($n = 1$). In addition, we checked for catatonic criteria in DSMIII-R (APA, 1987). If a patient was diagnosed as catatonic only according to one or two of the three measurements of catatonia (Lohr, Rosebush, DSMIII-R) he/she was excluded from the study ($n = 2$). Catatonic patients not completely akinetic for at least 30 minutes in the presence of the examiners, were also excluded from the study ($n = 3$).

Catatonic patients with predominant hyperkinesias (i.e. excited catatonia), as well as patients with severe neuroleptic-induced side-effects and other extrapyramidal movement disorders were excluded from the study. Furthermore we excluded from the study those patients who were not able to undergo investigations of subjective experience on day 21 ($n = 3$) and day 42 ($n = 1$). Comorbid diagnoses were made on discharge by two independent psychiatrists with a structured clinical interview according to DSMIII-R (APA, 1987).

The data from the catatonic patients were compared with age-and sex-matched noncatatonic patients suffering from major depression (age: 33.1 ± 9.8 years; $n = 22$), paranoid schizophrenia (age: 31.9 ± 9.8 years; $n = 22$), and residual schizophrenia (age: 33.5 ± 10.1 years; $n = 22$). These patients were all diagnosed according to DSMIII-R by an independent psychiatrist (JE).

The following psychopathological measurements were made: Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962), Scale for the Assessment of Negative Symptoms (SANS; Andreasen, 1982), Hamilton-Depression Scale (HAM-D; Hamilton, 1960), and the Hamilton-Anxiety Scale (HAM-A; Hamilton, 1959). In addition, we evaluated neuroleptic-induced hypokinesias with the Scale for Extrapyramidal Side Effects (SEPS; Simpson & Angus, 1970). All psychopathological ratings were done by GN and JW, who had both completed special rating training. Assessments of the inter-rater and intra-rater

reliabilities for the different scales revealed average intra-class correlation coefficients between 0.90 and 0.95.

Schizophrenic and depressive patients with neuroleptic-induced side-effects (SEPS > 8) were excluded as well as those with a history of a catatonic episodes and/or catatonic symptoms on previous admissions ($n = 7$) according to personal knowledge and/or chart review. In addition, we investigated 22 akinetic Parkinson's disease patients, who were sex- but not age-matched (age: 45.6 ± 10.2 years; means ± SD). During an ''off'' state these patients showed an acute akinetic crisis without any voluntary movements and actions for at least 30 minutes. Catatonic and parkinsonian patients did not differ in their phenomenological appearance of akinesia (complete loss of all movements for at least 30 minutes in the presence of the examiners). Parkinson's disease patients (medication: L-dopa in nonretard form with an average daily dose of 569mg (SD = 274.5); 6 patients were taking Deprenyl) had to fulfil the following additional criteria: akinetic-rigid type; bilateral signs; at least stage II of the Hoehn and Yahr scale (1967) for the severity of Parkinson's disease; no signs of psychosis (BPRS < 8) (Overall & Gorham, 1962); depression (HAM-D < 10) (Hamilton, 1960); or dementia (MMS > 30) (Folstein, Folstein, & McHugh, 1975).

All patients (catatonic, schizophrenic, depressive, parkinsonian) were subject to the following exclusion criteria: (1) history of alcohol, drug, or substance abuse; (2) structural-morphological abnormalities on cerebral CT scan; (3) a severe life event (e.g. death of partner) on the basis of a detailed clinical evaluation; (4) patients suffering from other extrapyramidal motor disorders (e.g. Huntington's chorea, dystonia, etc.).

Measurement of Subjective Experience

We developed a self-rating questionnaire for the assessment of subjective experience in catatonia (see Appendix). Items were orientated to motor, affective, cognitive, and phenomenological interpretations of catatonia (see Table 1): items 1 and 10 are concerned with experience of motor function; items 2 and 5 are related to the will; items 3 and 4 point to cognitive aspects; items 6, 7, and 11 focus on the emotional experience; items 8 and 9 are related to the affective experience of motor alterations; and items, 12, 13, and 14 are concerned with the general experience of the environment in the catatonic state.

For most of the items, the ''normal'' and the ''pathological'' conditions were put on the left and the right sides of the questionnaire, respectively (see Appendix). According to the degree of severity of their subjective experience, patients were asked to make a cross on the line between the left and right of each item. All participating subjects gave informed consent.

Study Design

All catatonic patients received initially solely lorazepam 2–4 × 1mg (mean: 3.5mg) either orally or intravenously during the first 24 hours. Drug response to lorazepam was defined by resolution of catatonic syndrome on day 1 (24 hours after admission), so that patients could no longer be classified as catatonic according to criteria by Lohr, Rosebush, and DSMIII-R. Nonresponders to lorazepam were defined strictly by nonresolution of the catatonic syndrome on day 1. Over subsequent weeks, medication with lorazepam was continued (2–4mg/day). Depending on comorbid diagnosis, 17 catatonic patients received additionally daily neuroleptics (haloperidol, 2–25mg; benperidol, 4–20mg daily; 10 responders, 7 nonresponders); 4 patients (2 responders and 2 nonresponders) received tricyclic antidepressants: amitryptyline (23–150mg daily); trimipramine (25–275mg daily); doxepin (25–175mg daily); 4 patients (2 responders, 2 nonresponders) received lithium (serum concentration: 0.62–1.18mmol/l), and 2 patients (responders) received lorazepam only (2–4mg daily).

Recording of subjective experience in catatonic patients was done by WK and GN on day 21 as part of a semistructured interview. The patients were asked to report their subjective experiences during the acute catatonic state on admission and to complete the self-rating questionnaire according to their personal experiences. Given the presence of catatonic symptoms such as mutism, stupor, etc., in the acute catatonic state, this retrospective determination is really the only way to investigate such experiences. We chose day 21 as the time point for evaluation of subjective experiences as this seemed still close enough to hospital admission to recall subjective experiences during the acute catatonic state, but was long enough to allow for complete resolution of catatonic symptoms. Patients, who were unable to undergo investigation of subjective experiences on day 21, were excluded from the study ($n = 3$). In accordance with other studies of therapeutic outcome (Northoff et al., 1995a; Rosebush et al., 1990) all catatonic patients ($n = 22$) participating in our study were no longer rated as catatonic by day 21.

Depressive and schizophrenic patients were interviewed 3 weeks after admission (i.e. day 21) in a similar setting (directed by BG). Parkinsonian patients were selected by MR and interviewed by GN in a way similar to all other groups.

All groups (catatonic, depressive, schizophrenic, parkinsonian) had to complete the self-rating questionnaire a second time 6 weeks after admission. This second investigation was done in order to establish test–retest reliability. The questionnaire proved highly reliable for individual items ($r = .89–.93$) as well as for the total score ($r = .92$).

Psychopathological measurements (BPRS, HAM-A, HAM-D, SANS, SEPS; see earlier) were done on day 0 (before initial medication with lorazepam), on day 1 (24 hours after admission) and on day 21 (3 weeks after admission).

Statistical Analysis

We measured the position of the cross marked by the patient on the line in centimetres from the left. All results were expressed as means and standard deviations. The main groups (catatonia, Parkinson's disease, paranoid schizophrenia, residual schizophrenia, depression) were compared by using an analysis of variance (ANOVA). Differences between groups were tested using Scheffé's test. The scores of investigated variables (items 1–14) in responders and nonresponders as well as in diagnostic subgroups in the catatonic sample were tested using multivariate techniques (MANOVA). Correlations between treatment response, clinical variables (age, sex, age of onset, length of illness, duration of catatonic symptoms, psychotropic medication), self-rating questionnaire, and psychopathological scores were assessed using Pearson's product moment coefficients. All computations were executed with the SPSS-X statistics software system (SPSS-X Statistic System 1991).

RESULTS

Catatonic Symptoms and Comorbid Diagnoses

Catatonic symptoms on day 0, 1, and 21 according to Rosebush (Rosebush et al., 1990) can be seen in Table 2. No significant correlations were found between treatment response and age, sex, age of onset, length of mental illness, total duration of catatonic symptoms, and concomitant psychotropic medication.

The 22 patients (responders/non-responders) with a catatonic syndrome showed the following comorbid diagnoses according to DSMIII-R:

—Residual schizophrenia (295,6): 3(0/3)
—Catatonic schizophrenia (295,2): 11(7/4)
—Major depression (196,3): 3(2/1)
—Bipolar disorder (296,6): 4(3/1)
—Reactive psychosis (298,8): 1(1/10)

Response to Lorazepam

After treatment with lorazepam, 13 patients could no longer be classified as catatonic on day 1 (24 hours after admission). 9 patients were still diagnosed as catatonic after 24 hours, so that they were classified as nonresponders. As mentioned earlier, 5 patients received neuroleptics either on the day of admission or during the 6 months prior to admission; 3 of these patients were evaluated as responders and 2 as nonresponders on day 1. None of the nonresponders were catatonic on day 21. Catatonia was resolved by additional medication (neuroleptics or antidepressants) in 8 of the 9 nonresponders. Due to the development of pyrexia, one nonresponder underwent bilateral electroconvulsive therapy (ECT) on day 8, resolving catatonia completely.

TABLE 2
Number and Percentage of Catatonic Symptoms (according to Rosebush et al., 1990) in Catatonic Patients on Day 0 and 1[a]

Item	*Day 0*		*Day 1*	
	N	*%*	*N*	*%*
Immobility	22	100.0	9	40.9
Staring	17	77.3	11	50.0
Rigidity	18	81.8	9	40.9
Autism	19	86.4	6	27.3
Posturing	21	95.5	8	36.4
Grimacing	13	59.1	7	31.8
Negativisms	12	54.5	6	27.3
Catalepsy	20	90.9	10	45.4
Echolalia/-praxia	4	18.2	5	22.7
Stereotypies	10	45.4	6	27.3
Verbigerations	7	31.8	4	18.2
Mutism	20	90.0	9	40.9
Total symptoms (means ± SD, range)	8.3 ± 1.8; 6–11		4.1 ± 2.1; 0–7	

[a] On day 21 patients showed no catatonic symptoms at all with the exception of one patient exhibiting a slight rigidity.

Subjective Experience

The following text discusses subjective experience in catatonia, depression, Parkinson's disease, and residual and paranoid schizophrenia. (Scores of the self-rating questionnaire can be seen in Table 3.) Analysis of variance (ANOVA) showed significant differences in almost all items except item 4 (ideas in the head) and item 14 (nice or horrible state). Scheffé's test revealed that catatonic patients differed significantly in almost all items from depressive, parkinsonian, paranoid schizophrenic, and residual schizophrenic patients (see Table 3).

Catatonia and Parkinson's Disease. Items concerning the subjective experience of motor deficits (item 1) and control of movements (item 10) differed significantly between catatonia and Parkinson's disease (see Table 3). Catatonic patients felt significantly less deficits in execution of movements (item 1) and significantly more loss of control of movements (item 10) than parkinsonian patients. In addition, catatonic and parkinsonian patients showed significant differences in all other items, so that subjective experience of akinesia seems to differ essentially between these conditions.

TABLE 3
Subjective Experience in Catatonic, Paranoid and Residual Schizophrenic, Depressive, and Parkinsonian Patients

Scheffés Test Items	*Catatonic Syndrome (a, b, c, d)*	*Parkinson's Disease (a)*	*Major Depression (b)*	*Residual Schizophrenia (c)*	*Paranoid Schizophrenia (d)*	*P ANOVA*
1	4.5 ± 3.5	7.2 ± 1.7	3.7 ± 2.8	2.2 ± 2.4	2.0 ± 2.0	.0002
2	6.2 ± 2.4	2.6 ± 2.5	6.1 ± 2.1	2.9 ± 2.2	2.1 ± 2.1	.00004
3	6.3 ± 2.7	2.9 ± 2.7	1.9 ± 2.2	3.5 ± 2.4	1.9 ± 2.4	.00003
4	4.2 ± 3.6	3.2 ± 2.9	2.9 ± 2.8	3.7 ± 2.9	3.2 ± 2.9	–
5	7.5 ± 1.7	3.9 ± 3.0	5.3 ± 2.9	7.4 ± 2.4	4.8 ± 1.9	.00008
6	7.2 ± 1.9	5.6 ± 2.0	6.8 ± 1.5	5.3 ± 1.9	5.2 ± 2.0	.0005
7	6.2 ± 2.6	3.9 ± 2.6	6.7 ± 1.5	4.1 ± 3.0	3.7 ± 2.4	.0006
8	5.8 ± 2.9	2.1 ± 2.5	4.0 ± 2.9	3.5 ± 3.1	3.2 ± 2.7	.0009
9	6.1 ± 2.9	4.2 ± 3.2	4.1 ± 2.6	2.4 ± 2.5	2.0 ± 1.8	.0004
10	6.7 ± 2.2	3.8 ± 2.6	3.9 ± 2.9	3.7 ± 2.9	2.8 ± 1.9	.0007
11	5.5 ± 3.3	5.9 ± 2.5	3.0 ± 2.7	2.6 ± 1.8	3.1 ± 2.5	.00002
12	6.5 ± 2.8	2.9 ± 3.1	5.2 ± 2.9	5.2 ± 2.5	3.2 ± 2.4	.0001
13	6.5 ± 2.5	1.9 ± 2.6	4.1 ± 2.7	4.9 ± 2.4	3.8 ± 2.7	.0009
14	7.1 ± 2.4	7.2 ± 1.5	7.5 ± 1.2	6.8 ± 2.6	6.1 ± 2.5	–
Total	65.1 ± 35.8	51.4 ± 20.4	66.8 ± 20.2	54.5 ± 17.8	49.2 ± 16.7	.049

Scheffé's test ($P < .05$).

(a) All items except item 11 and 14 differed significantly between catatonic and parkinsonian patients.

(b) All items except item 2, 6, 7, and 14 total differed significantly between catatonic and depressive patients.

(c) All items except item 5 and 14 differed significantly between catatonic and residual schizophrenic patients.

(d) All items except item 14 differed significantly between catatonic and paranoid schizophrenic patients.

Catatonia and Depression. Catatonic and depressive patients differed significantly on almost all items except items 2 (free or blocked will), 6 (feelings of anxiety), 7 (intense feelings), and 14 (nice or horrible state). Hence, both catatonia and depression can be characterised by the expression of intense anxiety.

Catatonia and Residual Schizophrenia. Catatonic and residual schizophrenic patients differed significantly on all items except items 5 (transformation of ideas into action) and 14 (nice or horrible state). Both conditions can therefore be characterised by difficulties in the generation of voluntary movements (item 5).

Catatonia and Paranoid Schizophrenia. Catatonic and paranoid schizophrenic patients differed significantly in all items except item 14 (nice or horrible state). Hence, subjective experience seems to differ fundamentally between catatonia and paranoid schizophrenia.

Subjective Experience in Catatonic Subgroups

In order to investigate further the subjective response to lorazepam and the underlying comorbid disease, the catatonic group was split into responders and nonresponders and diagnostic groups (catatonic schizophrenia, residual schizophrenia, affective disorder) (see Table 4).

Responders and Nonresponders to Lorazepam. Significant differences between catatonic responders and nonresponders to lorazepam were found on item 6 (intense feelings of anxiety), 7 (overwhelmed by feelings), 8 (blockade of movements by emotions), 11 (control of feelings), 12 (isolation from environment), 13 (determination by environment), and 14 (nice or horrible state) (see Table 4). In contrast to catatonic nonresponders to lorazepam, the responders showed intense emotional states and an altered relation to their environment.

Diagnostic Subgroups. The main diagnostic subgroups (catatonic schizophrenia, residual schizophrenia, affective disorder) of our catatonic sample revealed significant differences on items 1 (execution of movements), 4 (ideas in the head), 5 (transformation of ideas into action), 9 (intense emotions and speech), 12, 13, and 14 (see Table 4 and earlier). In general, scores were high in catatonic schizophrenia and rather low in catatonics with residual schizophrenia. Catatonic patients with an underlying affective disorder showed more or less similar values to catatonic schizophrenics (see Table 4).

TABLE 4
Diagnostic Subgroups and Catatonic Responders/Nonresponders: Scores on Subjective Experience

	Response to Lorazepam			*Diagnostic Subgroups*			
Item	*Responder* ($n = 13$)	*Nonresponder* ($n = 9$)	*P*	*Catatonic Schizo.* ($n = 11$)	*Affective Psychosis* ($n = 6$)	*Residual Schizo.* ($n = 3$)	*P*
1	4.27 ± 3.5	5.04 ± 3.8	–	6.46 ± 2.9	2.58 ± 3.2	1.36 ± 0.7	.021
2	6.70 ± 2.1	5.51 ± 2.9	–	6.46 ± 2.1	5.97 ± 3.1	5.87 ± 3.5	–
3	6.42 ± 2.2	6.28 ± 3.5	–	6.95 ± 2.4	5.34 ± 2.7	7.70 ± 0.7	–
4	4.77 ± 3.5	3.38 ± 3.7	–	3.12 ± 3.4	5.01 ± 3.9	7.87 ± 0.4	.009
5	7.72 ± 0.7	7.21 ± 2.6	–	7.95 ± 0.6	7.90 ± 0.7	5.00 ± 3.8	.0005
6	7.64 ± 1.2	6.68 ± 2.8	.021	7.45 ± 1.4	6.66 ± 3.1	6.88 ± 2.1	–
7	7.37 ± 1.5	4.62 ± 2.9	.052	6.19 ± 2.5	6.01 ± 3.1	5.30 ± 2.6	–
8	6.56 ± 2.2	4.75 ± 3.7	.003	5.83 ± 2.8	7.41 ± 1.4	3.71 ± 3.9	–
9	5.77 ± 2.6	6.48 ± 3.5	–	7.23 ± 1.8	4.89 ± 3.1	5.27 ± 4.2	.048
10	7.12 ± 1.6	6.17 ± 2.8	–	6.47 ± 2.7	7.41 ± 1.1	6.53 ± 2.1	–
11	6.31 ± 2.6	4.37 ± 3.8	.042	6.94 ± 2.8	5.25 ± 2.9	4.30 ± 3.3	–
12	7.18 ± 1.8	5.55 ± 3.7	.002	8.03 ± 0.6	5.84 ± 3.5	4.90 ± 3.4	.0008
13	7.18 ± 14	5.68 ± 3.4	.001	7.60 ± 1.2	7.89 ± 0.5	3.10 ± 2.3	.049
14	7.87 ± 0.7	6.01 ± 3.4	.0004	7.90 ± 0.8	6.61 ± 3.1	4.17 ± 3.8	.02
Total	62.1 ± 40.1	64.6 ± 30.5	–	66.58 ± 40.1	51.9 ± 42.0	68.7 ± 19.8	–

Psychopathology

Scores for the various psychopathological and movements (SEPS) measurements can be seen in Fig. 1. Differences between the various groups and the different days (day 0, 1, and 21) as well as correlations between the self-rated questionnaire and the psychopathological scores are given in the following text.

General Psychopathology. BPRS scores showed no significant differences between all groups on all three days. Differences between days 0 and 21 were significant in all three groups ($P < .05$). Significant positive correlations in catatonics were found between total scores of the self-rating-questionnaire and BPRS only on day 0 ($r = .82$; $P < .0001$). No significant correlations were found in the other groups.

Anxiety. HAM-A scores differed significantly between catatonic responders and nonresponders on day 0 only ($P = .025$). Significant positive correlations were found between HAM-A and items 6 (feelings of anxiety), 7 (intense feelings), 8 (blockade of movements by emotions), and 11 (control of feelings) ($r = .79–.85$; $P = .014–0004$). In depressive patients, a significant positive correlation was found between HAM-A on day 0 and item 7 ($r = .84$; $P < .0001$). No other significant correlations were found.

Depression. Significant positive correlations were found between HAM-D scores on day 0 and item 7 (overwhelmed by feelings) in all catatonics, in catatonic responders and nonresponders, as well as in depressive patients ($r = .76–.81$; $P = .0032–.0004$).

Negative Symptoms. Significant positive correlations were found between SANS scores on day 0 and item 5 (transformation of ideas into action) in catatonic and residual schizophrenic patients ($r = .81/.85$; $P = .0043/.0001$).

Movements. Significant positive correlations between SEPS scores on day 0 only and item 1 (execution of movements) were observed in parkinsonian but not in catatonic patients ($r - .81$; $P = .0032$).

DISCUSSION

The main findings of the present investigation of subjective experience in catatonia are: (1) significant differences in subjective experience of akinesia between catatonic and parkinsonian patients; (2) significant differences in subjective experience between catatonia on the one hand, and noncatatonic schizophrenia and depression on the other; (3) significant differences in the

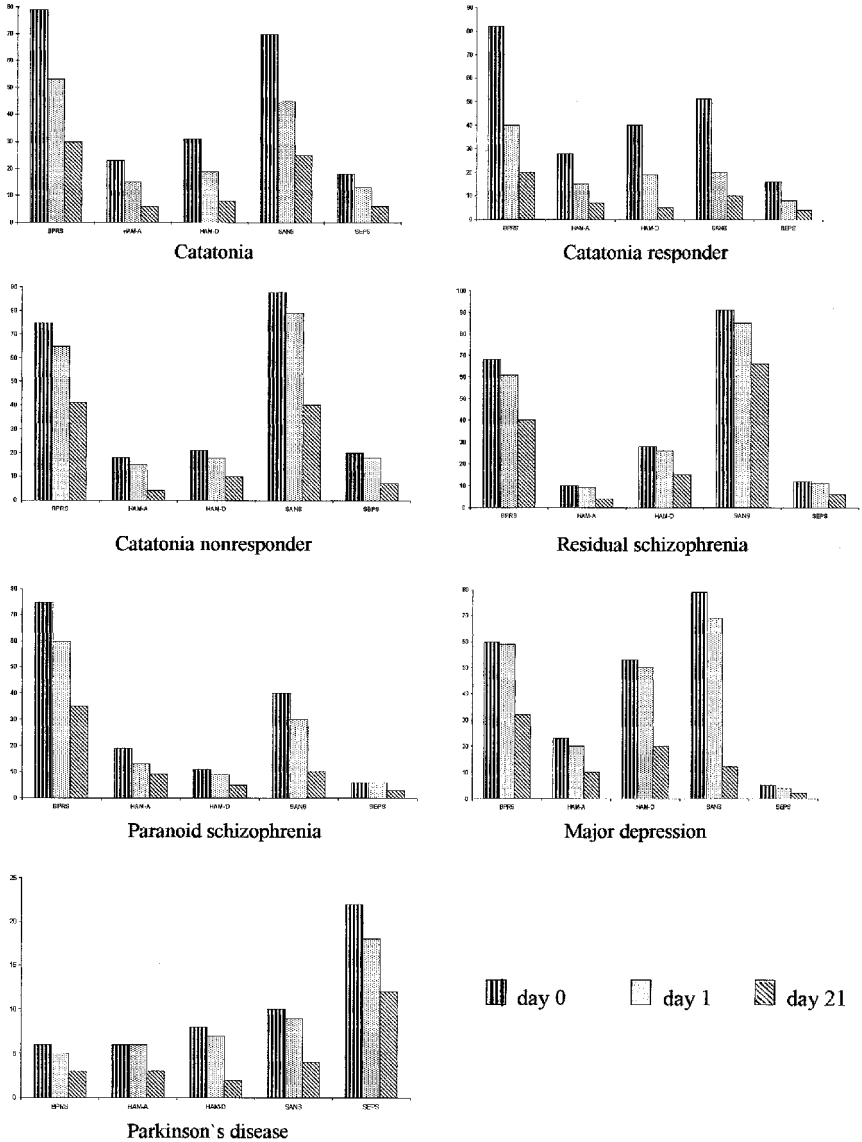

FIG. 1. Psychopathological scores in the different groups on days 0, 1, 21.

acute emotional state between catatonic responders and nonresponders to lorazepam. We will focus the discussion on the implications of our findings for functional relationships between psychological and motor functions in catatonia.

Subjective Experience in Catatonia

Catatonic patients experienced significantly less inability of execution (item 1) and significantly more loss of movement-control (item 10) than parkinsonian patients (see Results and Table 3). Although both groups showed severe akinesia, they differed significantly in their associated subjective experiences. In contrast to parkinsonian patients, catatonics seem to be less aware of their motor deficits. The reasons for this finding are unclear. Catatonics may suffer from anosognosia or from an amnesia (Mayer-Gross, 1932), which might be caused either by the disease itself or by medication with lorazepam. However, considering the fact that catatonic patients experienced a strong loss of control of movements (and other alterations as well), the assumption of total amnesia is rather unlikely. In contrast to the alterations of initiation and execution of movements that exist in Parkinson's disease, it could be supposed that in catatonia, deficits of planing and control of movements predominate. Such an hypothesis is further supported by the findings of deficits of the voluntary generation and control of movements in catatonia (Northoff, Wenke, Travers, Eckert, & Pflug, 1995b). However, more detailed studies are necessary in order to reveal the exact functional deficits in the motor system in catatonia.

In addition to major differences between catatonia and Parkinson's disease, subjective experiences differed fundamentally between catatonics on the one hand and noncatatonic schizophrenic and depressive patients on the other. Catatonia may therefore be considered as an extreme state which must be distinguished from the underlying disease, either schizophrenia or depression (see Tables 3 and 4). But some similarities were found, which could account for predisposition of occurrence of catatonic syndrome in either schizophrenia or depression. Both catatonic and depressive patients experienced a blockade of the will and intense feelings of anxiety (no significant differences in items 2 and 7; see Table 3). Such emotional similarities could account for the close relationship between catatonia and depression (Abrams & Taylor, 1976; Taylor, 1990). Catatonic and residual schizophrenic patients were both characterised by experiences of an inability to transform ideas into action (no significant difference in item 5; see Table 3). Such difficulties in the generation of voluntary action may therefore be regarded as one predisposing factor for the development of a catatonic syndrome in residual schizophrenia (Andreasen, 1982; Mortimer et al., 1990).

Response to Lorazepam

Catatonic responders to lorazepam showed significantly higher scores on items 6, 7, 8 and 11 (see Table 4), which all concern emotional experiences. Hence, responders experienced more anxiety (item 6), more overwhelming emotion (item 7), more emotional blockade of movements (item 8), and more loss of emotional control (item 11) than nonresponders. Considering our additional finding of significantly increased HAM-A scores in responders on day 0 (see Results and Fig. 1), one could regard intense and noncontrollable emotions as a predictor of therapeutic response to lorazepam. As hypothesised previously (Northoff et al., 1995a; Rosebush et al., 1990) the anxiolytic component of lorazepam may be considered as the central mechanism of therapeutic efficacy in catatonia. In addition, our findings of a distinction between catatonic responders and nonresponders gives further support to the assumption of two catatonic subgroups that can be distinguished not only therapeutically but also psychopathologically and biochemically (Northoff et al., 1995a; Northoff, Wenke, & Pflug, 1996).

Methodological Limitations

Considering the fact that some authors postulate an amnesia for the acute catatonic state (Lohr & Wisniewski, 1987; Mayer-Gross, 1932), the retrospective character of our study is problematic. However, due to symptoms such as mutism, stupor, etc., subjective experiences cannot be explored in the acute catatonic state itself. Following our observations using a semistructured interview (Northoff, 1997), catatonic patients were well able to recall their subjective experiences. Hence, a general amnesia seems rather unlikely.

Reports of subjective experiences may be confounded by side-effects of neuroleptic medication. However, 5 catatonic patients receiving neuroleptics either on day 0 or in the 6 months before admission (see Methods), did not differ significantly on any item of the self-rating questionnaire from the other 17 catatonic patients. In addition, patients with severe neuroleptic-induced side-effects (see Methods and SEPS scores in Fig. 1) were excluded from the study. Therefore, it seems rather unlikely that subjective experience was confounded by neuroleptic-induced movement disorders.

One could be concerned about the over-representation of schizophrenia among catatonic patients, which may limit the generalisability of our results. The two main psychiatric diseases associated with the catatonic syndrome, schizophrenia and affective disorder, were well represented in our sample. However, our results do not apply to those with organic catatonia, because of the lack of such patients in our study. Different degrees of disease severity and cognitive disturbances may have influenced the ability to report and recall subjective experience. However, there were no significant differences in general psychopathology between all groups (see BPRS-scores in Fig. 1). In addition,

cognitive abilities, as measured by SANS, did not differ significantly (see Results and Fig. 1).

One could also be concerned about the lack of measures of validity and reliability for the self-rating questionnaire. Due to the fact that there are not established self-assessment scales for catatonia, validity of our scale could not be proven directly. However, significant correlations were found between various items and psychopathological scores, which may indirectly support the validity of the questionnaire. Test–retest reliability was high (see Methods).

CONCLUSIONS

1. Investigation of subjective experience of akinesia in catatonia and Parkinson's disease revealed major differences. Catatonia and Parkinson's disease may be characterised by similar motor symptoms (i.e. akinesia), which represent a common final functional pathway of different underlying psychological disturbances.

2. Subjective experience in catatonia can be characterised by major affective and cognitive alterations, distinguishing it from noncatatonic schizophrenia as well as from depression. Motor, affective, and cognitive interpretations of catatonia may not therefore be considered as mutually exclusive but rather as complementary which is in line with the original description by Kahlbaum (1874).

3. Catatonic responders to lorazepam can be distinguished from nonresponders by their emotional experiences. Hence, anxiolytic mechanisms of lorazepam seem to be of central importance to its therapeutic efficacy in catatonia, and emotional intensity may be regarded as one predictive factor of response to lorazepam.

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APPENDIX

Self-rating questionnaire for the assessment of subjective experience in catatonia

1. I had no problems in executing movements	_____	I was unable to execute movements
2. My will was free and not blocked	_____	My will was blocked entirely
3. I had no problems in speaking	_____	I was unable to speak
4. My head was full of ideas	_____	My head was totally empty
5. I could follow the coherent stream of thoughts	_____	I was unable to follow the coherent stream of thoughts
6. I had intense feelings of happiness	_____	I had intense feelings of anxiety
7. These feelings did not touch me	_____	The intense feelings overwhelmed me
8. My movements were not influenced by the intense emotions	_____	The intense emotions made me unable to move
9. My speech was not influenced by the intense emotions	_____	The intense emotions made me unable to speak
10. I had full control of my movements	_____	I lost control of my movements
11. I had full control of my feelings	_____	I lost control of my feelings
12. I did not feel isolated from the environment	_____	I felt isolated from the environment
13. I did not feel overwhelmed by the environment	_____	I felt overwhelmed by the environment
14. The state was nice	_____	The state was horrible