Arch Psychiatr Nervenkr (1982) 231:527–538

Archiv für Psychiatrie und Nervenkrankheiten
Archives of Psychiatry and Neurological Sciences

The Effect of Mental Illness on the Emotional Experience of Music

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Summary. Psychiatric patients ($N=107$) were studied regarding the importance of pertaining to a diagnostic group for the variation of emotional experience in music. The diagnostic groups chosen were: schizophrenic, depressive and manic psychosis, obsessive, depressive, anxiety and hysterical neurosis. As stimuli seven newly composed pieces of music orchestrated for a small symphony orchestra were used. The assessment of emotional experience was accomplished by semantic differential scales measuring the factors tension-relaxation, gaiety-gloom and attraction-repulsion. The most conspicuous findings were: the anxiety neurosis patients experienced the music as neutral in tension and gaiety, but repulsive. Hysterics experienced more gaiety and attraction together with varying degrees of tension, obsessives more tension, depressive psychotics more gloom and schizophrenics more attraction than other groups.

Key words: Mental illness – Emotional experience – Music

Introduction

In psychiatric research very few studies exist where music is used as a stimulus. Sometimes music is the object of speculation and circumscript pilot studies of therapeutic approaches. In this context, opinions on the effects of psychopathology on the perception of music vary from one extreme to the other. It has been proposed that the experience of music is affected in a specific way in each psychopathological state (Willms 1977), but others assume that the experience of music even by psychotic patients is comparable to the experience by normal subjects (Altschuler and Shebesta 1941). Even studies where objective quantitative measures are used have given contradictory results.

The study is supported by the Swedish Medical Research Council, project no. B81-21X-4803-6A.

0003-9373/82/0231/0527/$02.40

The literature describing emotional effects of music in psychopathological states shows scattered and often unprecise results. A part of the relevant literature deals with the relation of music to the psychopathology of schizophrenia, which includes deficits in symbol functioning and inadequate emotional experiences. De Wolfe et al. (1973 and 1975) asked schizophrenic patients to rate their preference of excerpts of irritating and relaxing music. An important finding was that schizophrenics who adapted to the stress in the experimental situation preferred relaxing music to a greater extent. Reactive schizophrenics showed greater preference for relaxing music than process schizophrenics. It was hypothesized that the tendency to prefer relaxed music was a measure of responsiveness and capacity to differentiate among external stimuli. Physiological methods to study reactions to music in schizophrenic and depressive patients were used by Weidenfeller and Zimney (1962). GSR (Galvanic Skin Response) was measured during exposure to a series of excerpts of calming and exciting music. Skin resistance increased with the exposure to calming music which was similar to the reaction of normal subjects. However, the response in schizophrenic patients was less marked than in the normals. This comparatively muted response is explained by the reduced emotional contact with reality in schizophrenics. Depressive psychotics were used in a study of the emotional experience of music by Simon et al. (1951). Together with normal subjects, they were more inclined to recognize sad quality in the music than schizophrenic and manic psychotics.

The effect of anxiety on the perception of music is interesting because of the importance of anxiety in pathological states. Stanton (1975) found that performance in test situations improved by listening to sedative music and those with high test anxiety reported experience of more relaxation. In a study by Smith and Morris (1976) it was found that exposure to stimulative music resulted in higher scores in emotional (physiological) and cognitive (worry) aspects of anxiety, while exposure to sedative music had no similar effect.

Sensation-seekers were studied in comparison to anhedonic patients by Watson, Anderson and Schulte (1977). High sensation-seekers rated the music significantly more enjoyable than patients scoring low in sensation-seeking, who disliked all types of music, especially those pieces of music rated as grating. The findings were interpreted as supporting the view that anhedonic and sensation-seeking deficits represent entirely separate emotional deficits related to process schizophrenia and neurotic tendencies respectively.

The psychopathology in manic psychotics was studied by Stein (1977) who found that manic psychotics were unable to reproduce tempo correctly unless this was in the proximity of their own inner "optimum tempo". She also studied the reactions in various psychopathological groups (Stein 1974), and states: "Patterns of altered perception in these troublesome categories (schizophrenic, manic depressive and organic brain syndromes) are sharply differentiated from one another, diagnostic differences far exceeding individual differences. Wide variation in social class, age, race, religion, education, and musical talent, interest, training and experience were irrelevant to the perceptual errors of the several hundred patients examined to date".

The aim of the present study is to focus upon the emotional experience of music by mental patients with symptoms of emotional disturbances. In a pre-

vious study ratings of the same newly composed pieces of music by psychiatric patients and normal subjects were compared (Nielzén and Cesarec 1982c). Explicable differences were found between diagnostic groups and normal subjects. In comparing the diagnostic groups with each other, the contrasting characteristic deviating patterns of experience are presumed to become more apparent than in comparisons with normal subjects.

Subjects

The study involved 107 patients from a psychiatric clinic at a University Hospital. All patients were voluntarily admitted in-patients. The subjects were diagnosed by the ward staff, but to be included in the study the patients had to comply with the criteria of diagnostic groups according to DSM III (Diagnostic and Statistical Manual 1978). All cases with symptoms of brain lesions were omitted, as were severe cases of alcohol and narcotic abuse. Patients with more severe somatic diseases or with impaired hearing were not included. The diagnostic groups chosen for the study were schizophrenic, depressive and manic psychosis; obsessive, depressive, anxiety and hysterical neurosis. Schizophrenia was diagnosed when disturbances of thought, delusions or hallucinations were important symptoms. However, in this group many patients were included who had passed their maximum point of productive symptoms. Depressive psychosis had to show delusions of guilt, psychomotor retardation and sleep disturbances. The categorization of manic psychosis required symptoms of hyperactivity, flight of ideas and decreased need for sleep. Obligatory symptoms within the neurotic groups were obsessive or compulsive symptoms in the obsessive group, depressed mood and lowered level of activity within the depressive neurosis group, and sympathetic manifestation and painful anxiety at the subjective level within the group of anxiety neurosis. Hysterical neurotics had to show symptoms of dissociative thinking and behaviour. The diagnostic categories and some identifying data are presented in Table 1.

Material and Methods

Compositions

As stimuli in the experiments short pieces of newly composed music orchestrated for a small symphonic orchestra were used. A verbal description of the compositions is presented in a previously published study (Nielzén and Cesarec 1981). The compositions have also been rated by 8 musically educated raters on scales describing structural elements (Nielzén and Cesarec 1982a). These scales were factor analyzed and three main factors of structure emerged: simple-sophisticated, vivid-placid and dark-light. The first factor was constituted by the scales consonant-dissonant, major-minor, melodious-amelodious and unsophisticated-sophisticated rhythmic articulation, factor vivid-placid by fortissimo-pianissimo, marked-vague rhythm, staccato-legato and fast-slow tempo and dark-light by minor-major and bass-treble. Factor scores for these structural factors have been computed and are presented in Table 2.

Scales

The emotional experience of the compositions was assessed by means of a semantic differential constructed according to Osgood (1957). In an earlier study a number of scales have been factor analyzed and shown to measure mainly three factors of emotional experience: tension-relaxation, gaiety-gloom and attraction-repulsion (Nielzén and Cesarec 1981). Four scales with the highest loadings in one of the factors and with low loadings in the others were chosen to represent each factor. Tension-relaxation thus became represented by tense-relaxed,

Table 1. Some identifying and background variables of the subjects with psychopathological symptoms

	DSM-III diagnosis	No.	Mean age	Sex		Marital status[a]				Education[b]			Medication[c]							Duration of illness before admission (months)	
				♂	♀	M	S	D	W	1	2	3	Hn	Ln	Th	Anx	ECT	Li	–	<4	>4
SP	295.13	22	30	12	10	3	16	1	2	4	5	13	13	5	–	–	–	–	4	6	16
DP	296.54	12	42	8	4	10	2	–	–	4	3	5	–	1	5	–	1	–	5	10	2
MP	296.44	10	40	4	6	7	2	–	1	3	2	5	–	–	1	–	–	3	6	10	–
ON	300.30	12	34	7	5	2	6	2	2	5	2	5	–	1	1	1	–	–	9	6	6
DN	300.40	20	41	10	10	15	4	–	1	10	7	3	1	1	4	–	3	–	11	19	1
AN	300.02	12	40	7	5	9	1	2	–	7	1	4	1	2	2	2	–	–	5	10	2
HN	301.50	19	36	8	11	11	6	1	1	11	2	6	–	1	–	1	1	–	16	12	7
Total		107	38	56	51	57	37	6	7	44	22	41								73	34

SP = Schizophrenic Psychosis ($N=22$)
DP = Depressive Psychosis ($N=12$)
MP = Manic Psychosis ($N=10$)
P = All patients
ON = Obsessive Neurosis ($N=12$)
DN = Depressive Neurosis ($N=20$)
AN = Anxiety Neurosis ($N=12$)
HN = Hysterical Neurosis ($N=19$)

[a] M = Married; S = Single; D = Divorced; W = Widowed

[b] 1 = Primary school and/or corresponding level of occupational education; 2 = High school and/or corresponding level of occupational education; 3 = Education at an academic level

[c] Hn = High dose neuroleptic; Ln = Low dose neuroleptic; Th = Thymoleptic; Anx = Anxiolytic; ECT = Electroconvulsive therapy; Li = Lithium; – = no medication. Some patients are prescribed several medications

Table 2. Factor scores of the structural factors of the compositions. The negative and positive indexes denote the relative amount of structures pertaining to the pole in question as subjectively judged

Pieces of music	Simple-sophisticated	Vivid-placid	Dark-light
	Consonant–dissonant major–minor melodious–amelodious unsophisticated–sophisticated rhythmic articulation	ff–pp marked–vague staccato–legato fast–slow	Minor–major bass–treble
(1)	(–) 9.76	(––) 8.38	(–) 5.00
(2)	(+) 15.50	(+) 13.26	(––) 4.63
(3)	(––) 8.50	(––) 7.50	(+) 7.25
(4)	(+) 13.62	(–) 9.01	(+) 7.12
(5)	(+) 14.62	(–) 9.21	(–) 5.62
(6)	(––) 6.12	(++) 16.25	(++) 7.37
(7)	(––) 7.88	(––) 6.26	(++) 7.50

The factor scores are computed by means of ratings by 8 musically educated subjects of different structural elements in the music (Nielzén and Cesarec 1982a)

Table 3a. Factor I Tension-relaxation

	1	2	3	4	5	6	7
SP	14.2	16.9	18.2	14.6	13.1	19.6	16.5
	5.37	4.68	4.72	2.65	4.49	5.08	3.88
DP	13.3	17.2	16.3	13.5	11.7	19.5	15.3
	4.56	4.76	4.29	3.42	4.19	3.75	3.28
MP	11.4	14.1	17.5	14.1	10.8	19.8	16.6
	3.63	5.17	2.80	6.61	5.57	3.94	3.72
ON	11.9	16.3	19.3	9.8	7.3	21.8	13.7
	6.19	5.73	4.03	3.22	3.31	6.18	3.89
DN	13.4	16.8	18.5	14.6	11.0	19.4	14.8
	4.83	4.87	3.83	5.04	3.16	5.66	5.63
AN	15.0	17.5	18.4	14.2	14.8	20.0	16.3
	3.46	3.40	3.09	2.12	3.51	4.57	2.53
HN	14.5	19.1	18.3	11.6	8.1	21.8	16.1
	4.98	6.63	4.36	4.03	3.46	5.55	5.69

violent-peaceful, hard-soft and threatening-enticing. Gaiety-gloom was represented by happy-sad, humorous-serious, impulsive-controlled and active-passive. Finally, attraction-repulsion was measured by means of rich-poor, beautiful-disgusting, profound-superficial and clear-diffuse. Factor scores were computed for each factor and piece of music by summing the ratings. The mean factor scores in the different clinical groups were compared by means of analysis of variance and *t*-test.

Table 3b. Factor II Gaiety-gloom

	1	2	3	4	5	6	7
SP	16.0	19.5	13.9	16.1	17.2	21.1	12.5
	3.53	2.79	4.26	4.67	3.19	4.10	4.94
DP	15.9	18.7	16.8	18.3	17.8	20.2	14.3
	6.14	5.07	5.11	3.58	4.65	4.43	5.48
MP	16.6	20.2	15.7	16.3	19.2	20.3	12.4
	4.43	4.08	4.08	3.97	3.46	3.68	3.66
ON	18.3	20.8	12.8	17.0	16.8	21.3	11.8
	4.19	4.41	5.18	3.13	3.71	4.92	4.73
DN	16.9	17.8	14.3	17.2	16.6	20.7	13.7
	2.73	2.71	4.58	4.07	2.70	2.25	4.15
AN	15.3	19.0	15.2	16.8	16.1	17.0	14.4
	3.62	3.22	4.22	3.04	3.45	2.98	4.56
HN	16.0	18.9	11.1	15.6	17.1	20.5	10.5
	4.56	4.40	4.31	4.04	3.63	2.84	3.81

Results

Mean factor scores and standard deviations for the three experiential factors and the seven pieces of music in the different diagnostic groups are shown in Table 3. *F*-values from the analysis of variance are presented in Table 4. In Table 5, showing the *t*-values, the pieces of music are rank ordered from the least to the most relaxed, gloomy and repulsive pieces respectively according to the mean ratings by all patients taken together. Most differences pertain to a few diagnostic groups in each of the experiential factors and these groups are framed in the tables. The results will be presented in the order suggested by the frequency of significant differences in the respective diagnostic groups.

As can be seen in Table 4 the psychotic groups do not differ from each other, only one almost significant difference emerging in factor III, attraction-repulsion, between depressive and schizophrenic psychotics, ($F=3.22$, $P<0.08$). The significant differences are more numerous in comparisons between neurotic versus psychotic groups and between different neurotic groups.

Comparisons of Ratings in Experiential Factor I: tension-relaxation

Obsessive Neurotic Group. Significant main tendencies[1] are found in comparison with schizophrenic psychotics and anxiety neurotics because the obsessive neurotic patients rated

1 The diagnostic groups may differ significantly in the mean factor scores across all pieces of music which here is called "significant main tendency". If the variation of the experience of the single pieces of music is dependent on the diagnosis to a significant extent, this is referred to as "significant interaction".

Table 3c. Factor III Attraction-repulsion

	1	2	3	4	5	6	7
SP	13.0	13.2	12.4	13.1	13.5	11.0	12.7
	3.71	3.42	3.71	4.43	4.18	4.19	3.92
DP	15.0	13.7	15.1	13.6	15.3	13.9	15.4
	6.51	5.02	3.32	3.73	4.25	6.47	4.85
MP	13.2	12.5	15.4	14.6	13.9	10.4	10.7
	3.82	5.02	3.41	5.32	4.84	5.17	4.97
ON	11.7	12.0	15.0	15.5	15.1	12.1	14.1
	4.19	3.84	2.66	3.55	4.19	5.11	3.85
DN	14.1	14.4	13.7	15.1	17.0	14.1	14.7
	5.00	4.34	3.60	4.30	4.61	3.49	2.98
AN	16.1	16.4	14.8	15.3	15.6	14.3	14.4
	3.15	4.70	3.46	2.77	2.02	5.28	2.75
HN	13.7	12.9	12.5	15.3	15.5	11.6	12.9
	5.16	5.25	3.39	3.06	3.84	6.13	3.15

Table 3a-c. Mean factor scores and standard deviations for the three experiential factors and the seven pieces of music in the different diagnostic groups.
SP = Schizophrenic Psychosis (N=22)
DP = Depressive Psychosis (N=12)
MP = Manic Psychosis (N=10)
ON = Obsessive Neurosis (N=12)
DN = Depressive Neurosis (N=20)
AN = Anxiety Neurosis (N=12)
HN = Hysterical Neusosis (N=19)

all the music as more tense. The significant interactions are due to the obsessive neurotics having rated pieces 5, 4, and 7 as significantly more tense than the schizophrenic psychotics and pieces 5 and 4 as significantly more tense than patients in the depressive psychotic, depressive neurotic and anxiety neurotic groups (Table 5).

Anxiety Neurotic Group. Anxiety neurotic patients rate all the music as significantly less tense (see above) than the obsessive neurotics. This is the highest significant difference noted in the study (F=8.64). Almost significant main tendencies are also seen in relation to the groups of manic psychosis and depressive neurosis. The anxiety neurotic patients tend to rate all the music as less tense (F=3.47, P<0.07; F=3.10, P<0.09). Interactions are significant in comparisons with the obsessive and hysterical diagnostic groups. The anxiety neurotic patients experience less tension, especially in pieces 5 and 4, the most tense ones according to the mean ratings by all patients taken together.

Hysterical Neurotic Group. There are no significant main tendencies but the interactions are significant in the comparisons with all diagnostic groups except the obsessive neurotic one. The hysterical neurotics rate more tension in the most "tense" pieces 5 and/or 4. In comparison with the manic psychotics the hysterical neurotics rate less tension in pieces 1 and 2.

Comparisons of Ratings in Experiential Factor II: gaiety-gloom

Hysterical Neurotic Group. The hysterical patients tend to rate all music as gay in comparison to the other diagnostic groups. The difference is significant in comparison with depressive and

Table 4. *F*-values of the analyses of variance of ratings by different psychopathologial groups of patients

	Factor I (tension-relaxation)						Factor II (gaiety-gloom)						Factor III (attraction-repulsion)					
	SP	DP	MP	ON	DN	AN	SP	DP	MP	ON	DN	AN	SP	DP	MP	ON	DN	AN
DP	−1.24						0.76						3.22†					
	0.28						1.29						0.72					
MP	2.30	0.09					−0.54	−0.02					0.06	−1.21				
	0.67	1.10					0.55	0.95					1.62	1.55				
ON	−6.47*	−0.90	−0.37				0.23	−0.14	−0.06				1.00	−0.54	0.27			
	3.41**	2.88*	2.25*				0.76	2.19*	1.26				1.90	1.32	1.31			
DN	−1.38	0.08	0.53	2.92			0.04	−0.69	−0.51	−0.16			6.26*	0.02	2.45	1.23		
	0.42	0.44	0.69	2.01†			0.98	0.80	1.57	1.57			0.87	0.88	2.38*	1.54		
AN	0.38	2.07	3.47†	8.64**	3.10†		−0.24	−1.05	−0.98	−0.67	−0.57		8.09*	0.34	3.51†	2.43	0.35	
	0.25	0.65	1.49	3.85**	0.81		2.46*	0.70	1.95†	2.99*	2.03†		0.31	0.81	1.64	2.80*	1.18	
HN	−0.51	0.15	0.51	2.12	0.05	−1.19	−2.80	−3.99*	−4.38*	−3.84†	−5.24*	−0.87	1.00	−1.01	0.24	−0.02	−2.19	−3.82†
	3.64**	2.21*	2.69*	0.71	2.30*	3.82**	0.76	2.61*	1.15	0.33	2.07*	3.95***	0.68	1.22	1.20	1.15	0.59	1.00

The frames indicate those groups that have shown significant main tendencies or interactions. The different lines (solid, broken and dotted) have been chosen only to make the reading easy.

A negative index denotes a lower mean factor score in the diagnostic group listed to the left in the line concerned. The upper figures denote main tendencies and the lower interactions.

†=$P<0.1$
*=$P<0.05$
**=$P<0.01$
***=$P<0.001$

SP = Schizophrenic Psychosis ($N=22$)
DP = Depressive Psychosis ($N=12$)
MP = Manic Psychosis ($N=10$)
ON = Obsessive Neurosis ($N=12$)
DN = Depressive Neurosis ($N=20$)
AN = Anxiety Neurosis ($N=12$)
HN = Hysterical Neurosis ($N=19$)

Table 5. Table of *t*-values in comparison showing significant interactions

	Factor I (tension-relaxation)						
	5	4	1	7	2	3	6
ON/SP	−4.30***	−4.45***	−1.09	−2.02†	−0.30	0.75	1.01
ON/DP	−2.82**	−2.77**	−0.64	−1.13	−0.39	1.81†	1.08
ON/MP	−1.73†	−1.90†	0.24	−1.81†	0.96	1.25	0.90
AN/ON	5.39***	3.96***	1.51	1.92†	0.60	−0.63	−0.79
AN/HN	5.27***	2.34*	0.31	0.09	−0.86	0.07	−0.00
HN/SP	−4.09***	−2.78**	0.19	−0.25	1.18	0.10	1.32
HN/DP	−2.50*	−1.42	0.69	0.48	0.92	1.30	1.40
HN/DN	−2.71**	−1.97†	0.73	0.70	1.18	0.01	1.32
HN/MP	−1.42	−1.10	1.93†	−0.27	2.22*	0.61	1.15
	Factor II (gaiety-gloom)						
	7	3	1	4	5	2	6
HN/AN	−2.63*	−2.63*	0.51	−0.94	0.79	−0.08	3.22**
HN/DN	−2.67*	−2.28*	−0.74	−1.17	0.50	0.97	−0.22
HN/DP	−2.15*	−3.25**	0.04	−1.94†	−0.46	0.12	0.21
AN/SP	1.15	0.86	−0.58	0.56	−0.95	−0.45	−3.33**
AN/ON	1.37	1.21	−1.93†	−0.13	−0.51	−1.11	−2.60*
DP/ON	1.16	1.90†	−1.12	0.97	0.58	−1.07	−0.57
	Factor III (attraction-repulsion)						
	6	7	2	3	1	4	5
DN/MP	2.04*	2.34*	0.99	−1.30	0.55	0.26	1.68
AN/ON	1.02	0.25	2.52*	−0.13	2.91*	−0.13	0.37

The pieces of music (1–7) are rank ordered according to increasing mean factor scores of the ratings by all patients. A negative index signifies a lower factor score in the first mentioned diagnostic group.

† = $P<0.1$
* = $P<0.05$
** = $P<0.01$
*** = $P<0.001$

SP = Schizophrenic Psychosis ($N=22$)
DP = Depressive Psychosis ($N=12$)
MP = Manic Psychosis ($N=10$)
ON = Obsessive Neurosis ($N=12$)
DN = Depressive Neurosis ($N=20$)
AN = Anxiety Neurosis ($N=12$)
HN = Hysterical Neurosis ($N=19$)

manic psychotics and depressive neurotics and approaches significance in comparison with obsessive neurotics. The interactions in comparison with depressive psychotics and anxiety and depressive neurotics are significant due mainly to the experience of more gaiety in pieces 7 and 3 by the hysterical patients. Compared with anxiety neurotics the hysterical patients experience piece 6 as significantly more gloomy.

Anxiety Neurotic Group. The anxiety neurotic patients show no significant main tendencies but a few significant interactions. The significant interactions in comparison with the schizophrenics and the obsessives are mainly due to the experience of less gloom in piece 6 by the anxiety neurotics. The anxiety patients tend to rate less gaiety in "gay" pieces of music and less gloom in "gloomy" pieces of music, which as seen in Table 4 becomes most apparent in comparison with the hysterical neurotics. The same general pattern of ratings also lies behind the almost significant interactions in comparison with the manic psychotics and the depressive neurotics.

Depressive Psychotic Group. There is a significant main tendency in comparison with the hysterical neurotic group reflecting ratings of more gloom by the depressive psychotics. There are also two significant interactions, namely in comparison with obsessive and hysterical neurotics.

Comparisons of Ratings in Experiential Factor III: attraction-repulsion

Schizophrenic Psychotic Group. Schizophrenic patients experience all the music as significantly more attractive in comparison with depressive and anxiety neurotics and almost significantly in comparison with the depressive psychotic group ($F=3.22$, $P<0.08$).

Anxiety Neurotic Group. All the music is experienced by anxiety neurotic patients as significantly more repulsive compared with the schizophrenic group. Likewise they tend to experience more repulsion in all the music in comparison with the manic psychotic and the hysterical neurotic patients ($F=3.51$, $P<0.08$; $F=3.82$, $P<0.06$). The significant interaction in comparison with obsessive neurotics is due mainly to the experience of more repulsion in pieces 2 and 1 by the anxiety neurotic group.

Neurotic Depressive Group. In addition to their experience of significantly more repulsion in all the music in comparison with the schizophrenic psychotics, the neurotic depressive group also shows a significant interaction in comparison with the manic psychotics. They rate the most "attractive" pieces 6 and 7 as significantly less attractive.

Discussion

The anxiety neurotic group seems to show the most widespread differences in their experience of music, differing from the other diagnostic groups in all three experiential factors. They experience less tension in all music, especially in the most "tense pieces", they show more central tendency when rating gaiety or gloom in the music and they tend to experience all the music as less attractive. In the study by Smith and Morris (1976) it was found that anxiety neurotics scored higher on worry items when they were exposed to stimulative music. This implies that the anxiety patient is easy to upset. It is possible that the worry and easy arousability of anxiety patients lead to an avoidance of becoming involved in feelings of either gaiety or gloom; tension is denied or screened off and the engaging quality of the music becomes repulsive to the patient.

The obsessive neurotic patients experience more tension in the music than do other patients. Particularly pieces 5 and 7—generally rated as the most tense—and

the most "gay" piece, 7, are rated by obsessives as especially tense. Tension has previously been found to be emphasized by women and by subjects with high need affiliation (Nielzén and Cesarec 1981). The somewhat increased sensitivity to tension may in these groups be the consequence of their striving for maintainance of good social relationships. In obsessive neurotics there is rather a strong requirement to control the environment and as a consequence their attention is intense and narrowly focused on that which is relevant to this purpose. This may be one possible explanation of the increased sensitivity to tension in music as well as their documented sensitivity to environmental aggressiveness (Schulz-Hencke 1930).

The hysterical neurotics also rated the most "tense" pieces of music as more tense than other patients but at the same time they rated pieces 1 and 2 as more relaxed. The hysterical patient experiences all the music as more gay and seems to find the music fairly attractive. Hysterical neurotics are known to be very susceptible to that which is vivid or striking and their attention is easily captured by different details. The variability in their ratings of tension in music may reflect the hysterically dissociative tendencies; they may be more easily captured than others by special cues that become inappropriately enlarged. The experience of more gaiety and attraction in music is in line with the findings by Watson et al. (1977) who found that high sensation-seekers tend to like all types of music in contrast to low sensation-seekers, who disliked all types of music, especially those rated as grating.

Schizophrenic psychotic patients rated the music as more attractive than many other groups. Disturbances of interpersonal contact and reduced emotional contact with reality are common in schizophrenics. Music is an impersonal way of communication and usually contains little specific denotative meaning. Thus the music may appeal to the schizophrenic patients as a stimulus fitting into the primary processes and easily lending itself to unrealistic and autistic imagination.

The depressive psychotics rated all the music as more gloomy than other groups. Even though it is difficult to find evidence of similar results in the literature (cf. Simon et al. 1951) this result is clearly expected from a clinical standpoint.

The depressive patient is clinically characterized by a global negative, dark and gloomy emotional tone and shows difficulties in experiencing gaiety in any kind of stimuli (Mayer-Gross et al. 1960).

In the manic psychotic group no characteristics beyond previous findings regarding tempo have been revealed (Nielzén and Cesarec 1982b). The attractivity in piece 7 experienced by these patients certainly has to do with the high tempo of this piece of music.

Each of the diagnostic groups shows in comparison with the other groups some specific trends in the emotional experience of music. The majority of these trends are quite weak but they seem to be related to the psychopathological characteristics of the group. The modes of experiencing the emotional qualities of the music most likely reflect more profound emotional disturbances and other pathological traits in the psychiatric patients.

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Received January 25, 1982