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Discrimination of Former Depressed Patients from Healthy Volunteers on the Basis of Stable Personality Traits Assessed by Means of KSP*

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Summary. A total of 208 former depressed patients were investigated by means of the personality inventory KSP and compared to 75 healthy volunteers who had never had an affective episode.

By means of discriminant analysis 81.3% of the subjects could be correctly classified as former depressed patients or healthy volunteers. When patients in the diagnostic subgroups, unipolars, bipolars, patients with neurotic-reactive depressions and patients with unspecified depressions were compared to healthy volunteers, 85.4%, 83.0%, 84.2% and 86.4% respectively could be correctly classified.

The main personality traits differentiating former depressed patients from healthy volunteers were high scores on subscales measuring psychasthenia, impulsivity, guilt and inhibition of aggression and low scores on subscales measuring indirect aggression, hostility, socialization and verbal aggression.

Key words: Affective disorders – Personality traits – KSP – Discriminant analysis

Introduction

In an earlier study (Perris et al. 1984) we have demonstrated that depressed patients differ from healthy volunteers in several stable personality traits.

The results indicate that the depression prone individual seems to have more anxiety, psychasthenia, proneness to suspicion and guilt feelings (Strandman 1978; Perris and Strandman 1979; von Zerssen 1976, 1977). Furthermore, depression prone individuals seem to be characterized by a high level of inhibited aggression and by lower levels of manifest aggression (Perris et al. 1984), in line with traditional psychoanalytic theories (Chodoff 1972).

Except for the demonstrated differences between healthy controls and depressed patients, depressed patients in different diagnostic subgroups have been shown to differ from each other with regard to stable personality traits (Perris 1966, 1971; Perris et al., submitted).

Thus, as the personality characteristics found, high levels of anxiety, psychasthenia, suspicion and guilt might represent an import psychological variable, contributing in enhancing an individuals reactivity to external stressful events, leading to an increased frequency of depressive breakdowns, the discriminative power of these personality traits has been regarded with interest.

The purpose of the present study has thus been to evaluate the discriminative power of certain stable personality traits in differentiating healthy volunteers from depressed patients investigated when *recovered* from their depressive episode, and the discriminative power in differentiating former depressed patients in different diagnostic subgroups from healthy volunteers.

Methodology

The Series

The series comprised 208 patients, treated at the Department of Psychiatry, Umeå University, during their depressive episode. The personality inventory was, however, not completed until the patients had recovered from the depressive episode and was seen at the outpatient department for a check-up. At this time, most of the symptomatology had disappeared and the patient was able to manage at home. Most of the patients were, however, still on tricyclic antidepressants. However, in a separate study (Perris et al. 1979) we have demonstrated that most of the subscales of the personality inventory used were fairly independent from the state of the patient.

The series comprised 81 male and 127 female subjects with a mean age of 46.1 ± 12.7 years.

The patients were classified into various diagnostic subgroups by two experienced psychiatrists, who worked independently from each other and who applied standardized criteria reported in detail elsewhere (Perris 1966; d'Elia et al. 1974). In the few instances when the independent diagnoses did not correspond, the case was discussed jointly and reanalyzed until agreement was reached. If agreement could not be reached, the patient was classified in a group "unspecified depressive disorder".

Briefly, the groups taken into account in the present study were:

a) *Unipolar Patients.* That is patients who had suffered from at least three episodes of severe depression (usually of a psychotic severity) with a free interval in between;
b) *Bipolar Patients.* That is patients who had suffered from at least one episode of depression and one episode of mania, and who were depressed when entering the study;

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Table 1. Age and sex distributions in the series

	Age ($\bar{x} \pm SD$)	Sex (M/F)
Healthy volunteers	39.5 ± 12.1	27/48
Unipolars	50.2 ± 11.3[a]	23/39
Bipolars	42.9 ± 12.4[b]	13/18
Neurotic-reactive depressions	41.1 ± 14.7[b]	21/37
Unspecified depressions	46.5 ± 13.0[a]	24/33

[a] Significantly different from healthy volunteers
[b] No significant differences from healthy volunteers

c) *Neurotic-Reactive Depressives.* That is patients with a history of a vulnerable personality structure and a proneness to depressive reactions to external events, mostly of a non-psychotic severity; and
d) *Patients with an Unspecified Depressive Disorder.* That is patients who did not fulfill the criteria for inclusion in any of the previous groups.

The present series comprised 62 patients with a unipolar affective disorder, 31 patients with a bipolar affective disorder, 58 patients with a neurotic-reactive depression and 57 patients with unspecified depressive disorders.

At the commencement of the study, 94% of the patients fulfilled Kendell's criteria for depression. The few who did not were patients who were admitted mostly for social reasons and who were not currently depressed. The majority of the patients in the series also fulfilled the DSM-III criteria for major affective disorder of a unipolar or bipolar type, and only a minor number were classified as dysthymic disorder or adjustment disorder with depressed mood. None of the psychotic patients suffered from mood-incongruent delusions when ill.

The control group comprised 75 healthy individuals, 27 men and 48 women with a mean age of 39.5 ± 12.1 years. All subjects included in the control group had no past history of affective episodes. Approximately 40% of the healthy volunteers were relatives of the patients, usually husbands, brothers or sisters, while the rest were people working at the department of psychiatry. As almost half the control group was comprised of relatives of the depressed patients, it seems unlikely that the differences found between healthy volunteers and depressed patients would be exclusively a result of environmental factors.

Personality Inventory

The personality inventory used has been constructed for research purposes at the Karolinska Hospital in Sweden (Schalling 1978; Schalling and Åsberg 1981). The inventory is named KSP (Karolinska Scales of Personality) and is composed of subscales from personality inventories in use, e.g. the Sensation Seeking Scale (SSS) (Zuckerman 1971) and the Impulsiveness-Venturesomeness-Empathy (IVE) inventory (Eysenck and Eysenck 1978).

The inventory comprises 135 questions grouped in 15 subscales: psychic anxiety, somatic anxiety, muscular tension, social desirability, impulsiveness, monotony avoidance, distance preference, psychasthenia, socialization, indirect aggression, verbal aggression, irritability, suspicion, guilt, and inhibition of aggression. The different subscales have also been classified on the basis of a factor analysis (Schalling et al. 1983). The scales were grouped as follows: (a) scales related to impulsivity, thrill-seeking and psychopathy (low socialization)—impulsiveness, monotony avoidance and socialization; (b) scales related to cognitive-social anxiety, psychasthenia and low assertiveness—psychic anxiety, psychasthenia and inhibition of aggression; (c) scales related to autonomic and motor disturbances—somatic anxiety and muscular tension; (d) scales related to social withdrawal and schizoidia—distance preference; (e) scales related to the Buss aggression factor—indirect aggression, verbal aggression and irritability; (f) scales related to the Buss hostility factor—suspicion and guilt.

In addition, two factors of aggression have been arbitrarily constructed by the scale constructor by adding together the scores of the subscales: one indicative of aggression by combining the scales indirect and verbal aggression (aggression factor) and one indicative of hostility obtained by combining the subscales suspicion and guilt (hostility factor).

In an earlier study when depressed patients were investigated when depressed and when recovered from their depressive episode (Perris et al. 1979) it was demonstrated that most of the subscales were fairly independent from the state of the subject. However, variables referring to aspects of anxiety proved to be less stable and more state-dependent.

Statistics

All statistical analyses were performed at the computer centre at Umeå University (UMDAC) by means of the standard programmes comprised in the Statistical Package for the Social Sciences (SPSS).

The main programme used was discriminant analysis by the method of Wilks lambda. From the power of correct classification, by means of the standardized canonical discriminant function, sensitivity was calculated as number of correctly classified non-depressed/total number of non-depressed $\times 100$ and specificity as number of true classified depressed/total number of depressed $\times 100$.

Differences between means have been tested by means of Student's t-test and differences in frequency distributions by means of χ^2.

Results

Healthy Volunteers vs Depressed Patients

The depressed patients scored high on psychasthenia, impulsivity, guilt and inhibition of aggression while the healthy volunteers scored high on indirect aggression, hostility factor, socialization and verbal aggression. The results are presented in detail in Table 2 and Fig. 1.

The distribution of the discriminant function scores among the depressed patients is unimodal (Fig. 1) and there is no clear indication that specific subgroups of depressed patients could be identified by means of this discriminant function.

Healthy Volunteers vs
Patients with Unipolar Affective Disorders

The patients with unipolar affective disorders scored high on psychasthenia, impulsivity, muscular tension and inhibition of aggression while the healthy volunteers scored high on social desirability, indirect aggression and verbal aggression, 85.4% were correctly classified. The results are presented in detail in Table 2.

Table 2. Discrimination of former depressed patients from healthy volunteers by means of the personality inventory KSP. Standardized canonical discriminant function scores

	A vs B	A vs C	A vs D	A vs E	A vs F
KSP subscales					
Psychic anxiety				0.44	
Somatic anxiety					
Muscular tension		0.24		0.35	
Social desirability		−0.13			
Impulsiveness	0.46	0.48	0.78	0.37	0.46
Monotony avoidance				−0.14	
Distance preference				0.13	
Psychasthenia	0.70	0.67	0.75	0.31	0.81
Socialization	−0.18			−0.34	
Indirect aggression	−0.15	−0.19	−0.37		−0.22
Verbal aggression	−0.22	−0.36	−0.26		−0.25
Irritability					
Suspicion					
Guilt	0.28		0.39		
Inhibition of aggression	0.24	0.15			0.20
Aggression factor					
Hostility factor	−0.17		−0.27	−0.31	
Eigen value	0.64	1.18	0.72	1.01	0.98
Wilks lambda	0.61	0.46	0.58	0.50	0.50
χ^2	136.8	102.4	54.8	88.5	87.3
df	8	7	6	8	5
P	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Specificity	81.3%	87.1%	77.4%	82.8%	87.7%
Sensitivity	81.3%	84.0%	85.3%	85.3%	85.3%
Correctly classified	81.3%	85.4%	83.0%	84.2%	86.4%

A = Healthy volunteers ($n = 75$)
B = Depressed patients ($n = 208$)
C = Unipolars ($n = 62$)
D = Bipolars ($n = 31$)
E = Neurotic-reactive depressions ($n = 58$)
F = Unspecified depressive disorders ($n = 57$)

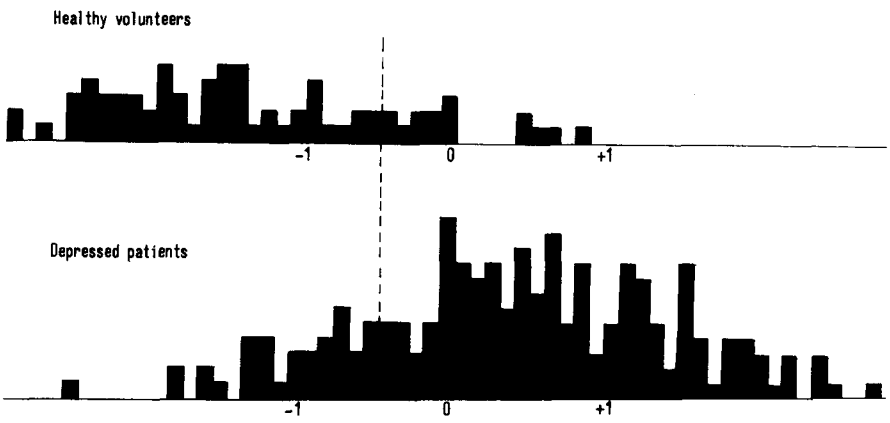

Fig. 1. Distribution of discriminant scores for the discriminant function that best separates former depressed patients ($n = 208$) from healthy volunteers ($n = 75$) 81.3% of the subjects correctly classified

Healthy Volunteers vs
Patients with Bipolar Affective Disorders

The patients with bipolar affective disorders scored high on impulsivity, psychasthenia and guilt while the healthy volunteers scored high on verbal aggression, hostility factor and indirect aggression, 83% were correctly classified (Table 2).

Healthy Volunteers vs
Patients with Neurotic-Reactive Depressions

The patients with neurotic-reactive depressions scored high on psychic anxiety, impulsivity, muscular tension, psychasthenia and distance preference while the healthy volunteers scored high on monotony avoidance, hostility factor and socialization, 84.2% were correctly classified (Table 2).

Healthy Volunteers vs
Patients with Unspecified Depressions

The depressed patients with unspecified depressions scored high on psychasthenia, impulsivity and inhibition of aggression while the healthy volunteers scored high on indirect aggression and verbal aggression, 86.4% were correctly classified (Table 2).

Discussion

As has been demonstrated in earlier studies (Perris 1966; Chodoff 1972; von Zerssen 1976, 1977; Strandman 1978; Perris and Strandman 1979; Perris et al. 1984) depressed patients, investigated when recovered, differ significantly in their stable personality traits from healthy volunteers who have never had an affective episode. It is impressive that 81.3% of the subjects can be correctly classified with the personality inventory KSP as the only aid. With a specificity of 81.3% and a sensitivity of 81.3%, this personality inventory, regarded as a diagnostic test, has a discriminative power of the same magnitude as e.g. the dexamethason suppression test (Coppen et al. 1983).

In some of the subscales of KSP, sex differences exist (Perris et al. 1983a). However, in the present study no significant sex differences occurred between any of the groups of former depressed patients and the healthy volunteers so it is unlikely that sex differences may explain the results.

In KSP, there are significant correlations between some of the separate subscales and age, especially the subscales social desirability, socialization, indirect aggression, verbal aggression and agression factor (Perris et al. 1984). In the present study the former depressed patients were, as a group, significantly older than the healthy volunteers (46.1 ± 12.7 years vs 39.5 ± 12.1 years, $t = 3.84$, $P < 0.01$). However, two of the diagnostic subgroups, the patients with neurotic-reactive depressions and the patients with bipolar affective disorders, did not differ significantly from the healthy volunteers in mean age. Also in these two subgroups 84.2% and 83.0% of the subjects could be correctly classified. Thus it seems unlikely that the results are due entirely to age differences between the groups, e.g. verbal aggression is a subscale significantly negatively correlated to age (Perris et al. 1984). Thus the fact that former depressed patients scored significantly lower than the healthy volunteers on verbal aggression, may in part be explained by the difference in mean age between the groups. However, former depressed patients with bipolar affective disorders also scored significantly lower than healthy volunteers on verbal aggression, and no significant age difference existed between these groups.

The main personality traits differentiating former depressed patients from healthy volunteers are high values in psychasthenia, impulsivity, guilt and inhibition of aggression and low values on indirect aggression, hostility, socialization and verbal aggression. These subscales have been shown to measure stable personality traits (Perris et al. 1979). The results as concerns psychasthenia and guilt are in line with earlier results (von Zerssen 1976, 1977; Strandman 1978; Perris and Strandman 1979). As concerns high frequency of inhibition of aggression in former depressed patients as contrasted to high scores on indirect aggression, hostility and verbal aggression in healthy volunteers the results are in line with classical analytical theory and our own earlier results (Chodoff 1972; Perris et al. 1983a, b, 1984).

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