

## KON-2006 NEUROTIC PERSONALITY QUESTIONNAIRE

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### Summary

**Aim** Construction of a questionnaire describing personality traits connected to occurrence and persistence of neurotic disorders.

**Material.** Responses of 794 patients (before treatment) and 520 persons from the control group on items of the constructed personality questionnaire and the Polish symptom checklist KO "0".

**Method:** Analyses of subscales reliability and item-scale correlations, test-retest and split-half reliability. Factor analyses estimating internal reliability of the questionnaire. Cross-validation with the symptom checklist KO "0".

**Results.** Psychometric properties of the KON-2006 questionnaire indicate that it is consistent and reliable enough. Validity analyses indicate a large probability that X-KON coefficient informs about personality dysfunctions related to neurotic disorders.

**Conclusions.** Neurotic personality questionnaire KON-2006 may serve to estimate personality traits connected to the occurrence and persistence of neurotic disorders, as well as changes resulting from psychotherapy.

### neurotic disorders / neurotic personality / personality tests

The problem of aetiology of neurotic disorders (and even adequacy of the notion "neurosis") is one of unanswered questions in psychopathology. Significant universality of functional symptoms, appearing sporadically in almost all humans in situations connected to tension, is a source of unclear boundaries between illness and health. On the other hand, the frequency of occurrence of syndromes with functional symp-

toms causing complaints, reported by a subject (and/or its environment) as disorder, was about 20-30% in the studied populations [1] and makes neurotic disorders one of the most frequent medical problems. Variety of courses of disorders – from short reactions, usually connected to stressful situations, to chronic and often recurrent, lasting for many years – and with variations of clinical picture, support doubts regarding the understanding of those disorders as one unit, as well as many relatively independent illnesses.

Contemporarily, etiopathogenesis of the neurotic disorder is considered mainly as a consequence of confrontation of a subject with life events, exceeding his/her ability to cope ("stressful"). In parallel, chronic or recurrent neurotic symptom occurrence is usually connected to various personality dysfunctions causing helplessness.

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ness. Their presence and helplessness caused by them, especially regarding coping with interpersonal relationships, are visible in the clinical picture of majority of patients. The character of those dysfunctions, sometimes labelled with an equivocal and unclear name of "neurotic personality", sometimes "immaturity" or described in categories of "specific personality disorders" is unclear [2, 3].

Specification of the type of personality disturbances, responsible for the ethiopathogenesis of neurotic disorders is more difficult because the research instruments available are dedicated either for the description of a normal personality (e.g. 16 PF Cattell, NEO-FFI), or specific personality disorders, occurring independently from neurotic disorders (e.g. NPI, MMPI etc.). On the other hand, construction of a research instrument dedicated for the measurement of personality dysfunctions (deficits and/or particularly intensified personality traits etc.) connected to neurotic disorders is impeded by a lack of well-grounded assumptions, regarding the area and spectrum of that exploration. None of the proposals emerging from existing theories of human personality or theories of psychopathology of neurotic disorders has received satisfying confirmation in clinical experience. Even if a previous adaptation of the 16 PF Cattell personality inventory [4, 5, 6, 7] was shown to be a useful way to assess information about neurotic personality and its changes resulting from treatment, it was not valid enough to play the role of a diagnostic tool. Probably, the area of personality described by scales of that inventory is not sufficiently adequate to the area connected to neurotic disorders.

That is why it was considered purposeful to attempt the construction of an instrument based on experimental definition of variables and scales, differentiating persons suffering from neurotic disorders from healthy individuals. Those actions were initiated in late 1970's with the creation of a pool of items useful for the construction of the neurotic personality questionnaire. In the years 1996-2001, the analysis of applicability of 779 items was conducted (among others selected from many different personality and temperament tests e.g. 16PF, MMPI, PTS, TTS, IPIP, TCI), also including evaluation of clarity, unambiguity, comprehensiveness of formulations, and introduction of some necessary corrections. Con-

nections between responses of patients filling in temporary versions of our personality questionnaire, and results of assessment with the symptom checklist KO "0" [8, 9, 10] were sought for.

In the years 2001-2004 sequential selections of items and attempts of questionnaire construction based on a criterial approach were performed [11]. The sets of 26, 35, and 39 hypothetic scales, created (among others) according to results of cluster analyses of items answered by populations of patients referred to treatment because of neurotic disorders and by control, nonclinical groups were analysed. The next steps were based on factor analyses of the questionnaire, identification of interpretable factors (subscales), their reconstruction by exclusion or inclusion of items (especially those improving subscales' reliability) and forming of final scales, e.g. by combination of highly correlated subscales.

In 2004, after further items eliminations, the pool of 243 items, best differentiating individuals suffering from neurotic disorders from healthy subjects was created, and next factor analyses, reliability (test-retest) analyses, and evaluations of scale coherence (intracorrelations) and comparisons of results in those scales in untreated (healthy) populations with patients suffering from neurotic and personality disorders were conducted.

After minor corrections in 2005, an instrument called the Neurotic Personality Questionnaire (Kwestionariusz Osobowości Nerwicowej) (KON 2006) was finished, also in a computerized version which may be disseminated (along with the symptom checklist KO "0" and database sheet) on a CD-ROM.

Items of the questionnaire KON-2006 require an unambiguous answer YES or NO, 240 of these form 24 scales of various length – from 8 to 20 items, majority of scales (20) consist of at least 11 items. Some items are placed in more than one scale (in some cases differently keyed), 4 of them are placed in four scales, 15 in three, 46 in two. Pilot studies suggest the possibility of construction of additional scales, also with the use of 3 items not included in the currently established 24 scales.

Final analyses of KON-2006 scales' reliability and item-scale correlations, as well as test-retest correlation and half-split reliability were performed in the years 2005-2006. Research material for the final study included a set of 1314

questionnaires, 794 filled-in before treatment by patients with a diagnosis of neurotic disorders, personality disorders, dysthymia, and eating disorders (569 women and 225 men)<sup>1</sup> and 520 questionnaires were filled-in by subjects from the control group (327 women and 193 men), who on the day of assessment were not treated because of neurotic disorders or other illnesses requiring intense therapy<sup>2</sup>.

Also analyses of differences between results in those populations were conducted (with the ROC method, and by comparisons of distributions of raw results). Results on scales that were different (statistically significantly) in populations of patients versus the non-clinical population, were weighted with 1 or 2 points. Sum of points (weights), multiplied by the number of scales, with scores specific for the population suffering from neurotic disorders, results in the index "X-KON", globally informing about the extent of neurotic dysfunction of personality.

In analyses estimating the questionnaire's validity some specific groups were used, selected in regard to the symptom checklist results, supporting a diagnosis of functional disorders (620 subjects, 442 women, and 178 men) or – contrary – symptom checklist scores practically eliminating such a possibility (control group – 247 individuals, 143 women, and 104 men). The inclusion criterion for the group of ill subjects was a global symptom level of the symptom checklist KO "0" (GSL) indicating the number and intensity of co-occurring symptoms typical for neurotic disorders (230 points for women, and 220 points for men), in the control group such a criterion was a GSL value below 100 points<sup>3</sup>.

Circa 43% of the population of 620 ill subjects were persons aged 19-25 years, 39% of them were 26-37 years old (18 years old – 1 person, 19-23 years – 176 persons, 24-28 – 157 subjects, 29-33 – 94 individuals, 34-38 – 55 persons, 39-43 – 42, above 44 years – 52 subjects<sup>4</sup>). In the control group of 247 persons, circa 70% were 19 to 25 years old (34-38 – only 9 subjects, 39-43 – 6 persons, above 44 years – 32 subjects). About half of the population of 794 patients, and 63% controls (520 subjects) had a university level education (complete or incomplete), 31% of the control group were medical students.

As it may be concluded from analyses performed, both basic (on a population of 794 patients, and 520 non-patient subjects), as well as supplementary (population of 620 patients), scales of the KON-2006 questionnaire are consistent (Cronbach's alpha from circa 0.6 to circa 0.9).

#### SCALES OF THE QUESTIONNAIRE

Each answer ("yes" or "no") in compliance with the key causes adding one point to the raw score of the scale. Usually extreme values of scales (high or low) discriminate the population of individuals suffering from neurotic disorders and the control group.

**Scale 1. Feeling of being dependent on the environment** defines the subject's tendency to perceive him/herself as a dependent person, subordinated to others, compliant, unable to refuse, conditioning his/her opinions and actions to others, and and at the same time disapproving

<sup>1</sup> Majority of them were referred to the Department for Treatment of Neurotic and Behavioral Disorders, Chair of Psychotherapy Jagiellonian University Medical College (731 – 92%), others were 50 patients from Institute of Psychiatry and Neurology in Warsaw and 13 were from the Ambulatory Clinic PZP in Lublin.

<sup>2</sup> In acquisition of the material valuable help was provided by students from the Research Student Group at the Chair of Psychotherapy UJ CM, and students of psychology from the Institute of Psychology, Jagiellonian University. Authors would like to express their gratitude.

<sup>3</sup> Norms (cut-off point) for the KO "0" symptom check-list GSL estimated in 1994 are 165pts for men, and 200pts for women,  $\pm 10\%$ . Re-evaluation based on a population treated in the years 1999–2005 (687 women, and 295 men referred to treatment, 464 women, and 296 men in the control group) suggested new estimation of cut-off points: 200pts for women, and 190pts for men, with a deviation of  $\pm 15\%$  (test-retest analysis). In establishing criteria of inclusion to the study and control group, those updated data were taken into consideration, including a twice higher possible standard error value. Moreover, in the control group in order to eliminate not only persons with a neurotic disorders, but also cases of disorders other than neurotic, but causing GSL different from zero (e.g. infections), the threshold of 100pts (equal to the co-occurrence of 25 reported functional disorders, considered as moderately disturbing) was decided.

<sup>4</sup> Lack of age data for 43 patients

those aspects of him/herself. The scale includes 18 items, its raw value results from the number of "yes" answers in items No 6, 10, 16, 24, 92, 107, 174, 178, 179, 183, 184, 190, 211, 221, 240 and 241, and a "no" answer in items No 140 and 195. Cronbach's alpha coefficient is 0.865, test-retest correlation 0.906, Guttman's half split reliability coefficient 0.820.

In the group of patients, treated because of neurotic disorders, the mean value of that scale was  $9.3 \pm 4.6$ pts for women,  $8.8 \pm 4.4$ pts for men, and was significantly higher ( $p < 0.0001$ ) vs the control group subjects ( $3.6 \pm 3.5$ pts for women, and  $2.9 \pm 2.6$ pts for men). Weights, for calculation of X-KON: for women raw scores 0-5 = 0pts, 6-13 = 1pts, 14-18 = 2pts; for men raw scores 0-2 = 0pts, 3-13 = 1pts, 14-18 = 2pts. The cut-off point (ROC method) was 6.5pts for both genders.

**Scale 2. Asthenia** describes the subject as a person with low dynamics, perceiving his/her own psychic weakness, dissatisfied with life. The scale includes 13 items, "yes" answers in items No 11, 12, 17, 25, 29, 110, 114, 124, 151, 168, 200, "no" answers in items No 41 and 111. Cronbach's alpha 0.892, test-retest correlation 0.866, Guttman's coefficient 0.880.

In the group of patients the mean score of that scale was  $10.4 \pm 2.6$ pts for women,  $10.6 \pm 2.7$ pts for men, and was significantly higher ( $p < 0.0001$ ) than in the subjects from the control group ( $3.6 \pm 3.0$ pts for women and  $2.6 \pm 2.5$ pts for men). Weights: for women 0-7 = 0pts; 8-11 = 1pts; 12-13 = 2pts; for men 0-5 = 0pts; 6-11 = 1pts; 12-13 = 2pts. Cut-off point for women was 7.5pts and 8.5pts for men.

**Scale 3. Negative self-esteem** defines self-perception as unattractive, worthless person, dissatisfied with her/himself. The scale consists of 13 items, "yes" answers in items No 14, 21, 26, 39, 156, 185, 202, 203, 211, 234, 237, "no" answers in items No 134 and 153. Cronbach's alpha 0.874, test-retest correlation coefficient 0.838, Guttman's coefficient 0.839.

In the group of patients the mean raw score was  $6.3 \pm 3.4$ pts for women,  $5.8 \pm 3.3$ pts for men and was significantly higher ( $p < 0.0001$ ) than in the control group ( $1.4 \pm 2.1$ pts for women, and  $0.8 \pm 1.1$ pts for men). Weights: for women 0-2 = 0pts; 3-9 = 1pts; 10-13 = 2pts; for men 0-2 = 0pts;

3-8 = 1pts; 9-13 = 2pts. Cut-off point for both genders was at 2.5pts.

**Scale 4. Impulsiveness** describes the subject's perception of self as a person easily out-bursting, quarrelsome, irritable, uneasy for others, physically aggressive, and not accepting those behaviours. The scale consists of 17 items, "yes" answers in items No 47, 61, 78, 80, 112, 113, 125, 133, 146, 171, 188, 199, 204, 228, 229, 235, and a "no" answer for item No 144. Cronbach's alpha 0.835, test-retest correlation coefficient 0.797, Guttman's coefficient 0.645.

In the group of patients the mean raw scale score was  $8.6 \pm 3.9$ pts for women,  $8.4 \pm 4.0$ pts for men and was significantly ( $p < 0.0001$ ) higher, than in the controls ( $4.3 \pm 3.1$ pts for women, and  $3.8 \pm 2.7$ pts for men). Weights: for women 0-4 = 0pts; 5-12 = 1pts; 13-17 = 2pts; for men 0-5 = 0pts; 6-12 = 1pts; 13-17 = 2pts. Cut-off point for women was at 4.5pts, and 5.5pts for men.

**Scale 5. Difficulties with decision making** describes the subject's perception of him/herself as having difficulties with decision making, tendency to hesitate, give a mattercareful considerations, deliberations, avoiding having own initiative. The scale includes 11 items, "yes" answers in items No 2, 65, 74, 90, 95, 98, 173, 196, "no" answers in items No 7, 28, 129. Cronbach's alpha 0.806, test-retest correlation coefficient 0.840, Guttman's coefficient 0.621.

In the group of patients the mean raw scale score was  $7.4 \pm 2.9$ pts for women,  $7.2 \pm 3.1$ pts for men, and was significantly ( $p < 0.0001$ ) higher than in the controls ( $4.5 \pm 2.8$ pts for women,  $4.1 \pm 2.5$ pts for men). Weights: for women 0-5 = 0pts; 6-9 = 1pts; 10-11 = 2pts; for men 0-6 = 0pts; 7-9 = 1pts; 10-11 = 2pts. The cut-off point for both genders was at 6.5pts.

**Scale 6. Sense of alienation** describes the subject's perception of him/herself as a person who is alienated, deprived of social support, not understood, treated with disrespect, being not comprehensible. The scale includes 14 items, "yes" answers in items No: 3, 27, 39, 44, 55, 76, 106, 150, 154, 166, 181, 218, and a "no" answer in items No 30, 71. Cronbach's alpha 0.862, test-retest correlation coefficient 0.699, Guttman's coefficient 0.822.

In the group of patients the mean raw scale score was  $6.1 \pm 3.8$ pts for women,  $6.5 \pm 3.6$ pts for men and was significantly ( $p < 0.0001$ ) higher than in the controls ( $3.0 \pm 2.0$ pts for women, and  $1.5 \pm 1.8$ pts for men). Weights: for women and for men 0-2 = 0pts; 3-8 = 1pts; 9-14 = 2pts. Cut-off point for women was at 3.5pts, and 2.5pts for men.

**Scale 7. Demobilisation** describes the subject's experiencing of loss of hope, and decrease of life dynamics, being afraid of new challenges and situations, feeling of tiredness, dissatisfaction with him/herself. The scale consists of 20 items, "yes" answers in items No: 32, 90, 108, 131, 166, 242, "no" answers in items No 15, 38, 41, 50, 77, 83, 93, 132, 143, 153, 165, 182, 197, 239. Cronbach's alpha 0.875, test-retest correlation coefficient 0.856, Guttman's coefficient 0.864.

In the group of patients the mean raw scale score was  $12.1 \pm 4.5$ pts for women,  $11.8 \pm 4.6$ pts for men and was significantly ( $p < 0.0001$ ) higher than in the controls ( $5.3 \pm 3.8$ pts for women, and  $4.5 \pm 2.6$ pts for men). Weights: for women and for men 0-7 = 0pts; 8-15 = 1pts; 16-20 = 2pts. The cut-off point for women was 5.5pts, and 8.5pts for men.

**Scale 8. Tendency to take risks** defines the subject's perception of her/himself as a person seeking for danger, not afraid of new situations or – contrary – avoiding and taking no risk. The scale includes 14 items, "yes" answers in items No: 4, 31, 48, 50, 56, 89, 93, 99, 116, 129, 135, 186, "no" answers in items No 8, 90. Cronbach's alpha 0.763, test-retest correlation coefficient 0.904, Guttman's coefficient 0.732.

In the group of patients the mean raw scale score was  $3.1 \pm 2.6$ pts for women,  $3.4 \pm 2.8$ pts for men and was significantly ( $p < 0.0001$ ) lower than in the controls ( $4.7 \pm 3.1$ pts for women, and  $5.5 \pm 3.0$ pts for men). Weights: for women and for men 2-11 = 0pts; 0-1 = 1pts; 12-14 = 1pts. (due to a small spread of the extreme scores in individuals suffering from neurotic disorders, the weights of 2pts. was not applied). Cut-off point for women 2.5pts and 4.5pts for men.

**Scale 9. Difficulties in emotional relations** describes feeling of difficulties in relating to others, and distrust towards the environment con-

nected to it. The scale includes 12 items, "yes" answers in items No 8, 13, 51, 100, 104, and "no" in items No 30, 54, 64, 75, 118, 167, 236. Cronbach's alpha 0.691, test-retest correlation coefficient 0.821, Guttman's coefficient 0.667.

In the group of patients the mean raw scale score was  $6.4 \pm 2.8$ pts for women,  $7.3 \pm 2.7$ pts for men and was significantly ( $p < 0.0001$ ) higher than in controls ( $4.5 \pm 2.3$ pts for women and  $5.0 \pm 2.1$ pts for men).

Weights: for women 0-6 = 0pts; 7-10 = 1pts; 11-12 = 2pts; for men 0-7 = 0pts; 8-10 = 1pts; 11-12 = 2pts. Cut-off point for women 6.5pts, for men 7.5pts.

**Scale 10. Lack of vitality** defines lack of life dynamics and awareness of that dysfunction. The scale includes 20 items, "yes" answers in items No: 29, 84, 90, 102, 108, 136, 170, 196, 242 and "no" answers in No: 9, 22, 34, 50, 89, 99, 111, 142, 163, 212, 231. Cronbach's alpha 0.807, test-retest correlation coefficient 0.905, Guttman's coefficient 0.766.

In the group of patients mean raw scale score was  $11.7 \pm 3.8$ pts for women,  $11.9 \pm 3.6$ pts for men and was significantly ( $p < 0.0001$ ) higher than in the controls ( $6.5 \pm 3.3$ pts for women, and  $5.8 \pm 2.7$ pts for men). Weights: for women and for men 0-8 = 0pts; 9-15 = 1pts; 16-20 = 2pts. Cut-off point for both genders was at 9.5pts.

**Scale 11. Conviction of own resourcelessness in life** defines the subject's perception of him/herself as a person who is unstable, resourceless, not oriented on achieving her/his goals, easily disorganized and withdrawing in a situation of increased difficulties. The scale consists of 16 items, "yes" answers in items No: 12, 49, 114, 126, 131, 201, "no" in items 68, 70, 86, 189, 197, 209, 213, 216, 217, 243. Cronbach's alpha 0.874, test-retest correlation coefficient 0.865, Guttman's coefficient 0.879.

In the group of subjects suffering from neurotic disorders the mean raw scale score was  $9.2 \pm 3.7$ pts for women,  $9.4 \pm 4.1$ pts for men and was significantly ( $p < 0.0001$ ) higher than in the controls ( $3.2 \pm 3.4$ pts for women, and  $2.2 \pm 2.5$ pts for men). Weights: for women and for men 0-4 = 0pts; 5-12 = 1pts; 13-16 = 2pts. Cut-off point for both genders was at 5.5pts.

**Scale 12. Sense of lack of control** defines the subject's perception of him/herself as a person depending on circumstances, "the powers above", accidental events, and other people, and suffering from various losses as a consequence. The scale includes 13 items, "yes" answers in items No: 19, 40, 63, 91, 149, 154, 178, 184, 190, 198, 205, 215, and a "no" answer in item No 223. Cronbach's alpha 0.811, test-retest correlation coefficient 0.826, Guttman's coefficient 0.821.

In the group of patients the mean raw scale score was  $5.4 \pm 3.1$ pts for women,  $5.3 \pm 3.0$ pts for men and was significantly ( $p < 0.0001$ ) higher than in controls ( $1.5 \pm 2.0$ pts for women, and  $1.0 \pm 1.4$ pts for men). Weights: for women 0-2 = 0pts; 3-8 = 1pts; 9-13 = 2pts; for men 0-3 = 0pts; 4-7 = 1pts; 8-13 = 2pts. Cut-off point for women was at 2.5pts, and 1.5pts for men.

**Scale 13. Deficit in internal locus of control** defines the subject's perception of him/herself as a person not driven by his/her own aspirations and decisions, unable to have own initiative and steer her/his life on his/her own. The scale consists of 19 items, "yes" answers in items No: 154, 160, 166, 178, 179, 190, 194, 196, 215, 224, "no" answers in items No: 7, 20, 70, 86, 94, 195, 213, 223, 233. Cronbach's alpha 0.832, test-retest correlation coefficient 0.797, Guttman's coefficient 0.783.

In the group of patients the mean raw scale score was  $9.1 \pm 4.2$ pts for women,  $8.9 \pm 4.2$ pts for men and was significantly ( $p < 0.0001$ ) higher than in controls ( $3.6 \pm 3.3$ pts for women, and  $3.1 \pm 2.5$ pts for men). Weights: for women 0-5 = 0pts; 6-13 = 1pts; 14-19 = 2pts; for men 0-4 = 0pts; 5-12 = 1pts; 13-19 = 2pts. Cut-off point for women was at 5.5pts and 6.5pts for men.

**Scale 14. Imagination, indulging in fiction** defines tendency of the subject to give play to his/her imaginations, especially grandiose ones, need to gain admiration and being liked by others. Scale is made of 13 items - No 1, 33, 66, 103, 127, 158, 172, 174, 179, 206, 222, 225, 238, all items keyed "yes". Cronbach's alpha 0.708, test-retest correlation coefficient 0.910, Guttman's coefficient 0.555.

In the group of patients the mean raw scale score was  $6.4 \pm 2.8$ pts for women,  $6.7 \pm 2.9$ pts for men, and was significantly higher ( $p < 0.0001$ )

than in the controls ( $4.0 \pm 2.7$ pts for women, and  $4.3 \pm 2.4$ pts for men). Weights: for women and for men 0-5 = 0pts; 6-9 = 1pts; 10-13 = 2pts. Cut-off point for both genders was at 4.5pts.

**Scale 15. Sense of guilt** defines the tendency of the subject to experience guilt, worry, blaming him/herself about his/her own behaviours and features. The scale consists of 11 items- No: 45, 52, 59, 88, 100, 122, 176, 181, 183, 224, 230, all keyed "yes". Cronbach's alpha 0.832, test-retest correlation coefficient 0.887, Guttman's coefficient 0.816.

In the group of patients the mean raw scale score was  $8.0 \pm 2.6$ pts for women,  $7.6 \pm 2.4$ pts for men and was significantly higher ( $p < 0.0001$ ) than in the controls ( $2.9 \pm 2.5$ pts for women, and  $2.2 \pm 2.4$ pts for men). Weights: for women 0-5 = 0pts; 6-9 = 1pts; 10-11 = 2pts; for men 0-4 = 0pts; 5-9 = 1pts; 10-11 = 2pts. Cut-off point for both genders was at 5.5pts.

**Scale 16. Difficulties in interpersonal relations** describes both difficulties in relations with the environment, as well as the subject's perception of him/herself as a person not coping adequately when contacting others. The scale includes 12 items, "yes" answers in items No: 3, 58, 76, 87, 100, 106, 139, 226, and "no" answers in items No: 30, 62, 64, 193. Cronbach's alpha 0.732, test-retest correlation coefficient 0.761, Guttman's coefficient 0.638.

In the group of patients the mean raw scale score was  $6.3 \pm 2.9$ pts for women,  $6.9 \pm 2.7$ pts for men and was significantly higher ( $p < 0.0001$ ) than in the controls ( $3.2 \pm 2.3$ pts for women, and  $3.4 \pm 2.2$ pts for men). Weights: for women and for men 0-5 = 0pts; 6-9 = 1pts; 10-12 = 2pts. Cut-off point for women was at 5.5pts and 4.5pts for men.

**Scale 17. Envy** describes experiencing frustration when facing others' successes and depreciation of other persons. The scale includes 14 items, No 5, 18, 23, 43, 82, 92, 115, 119, 120, 161, 218, 222, 226, 232 (all keyed "yes"). Cronbach's alpha 0.749, test-retest correlation coefficient 0.776, Guttman's coefficient 0.720.

In the group of patients the mean raw scale score was  $4.4 \pm 2.8$ pts for women,  $4.5 \pm 3.1$ pts for men and was significantly higher ( $p < 0.0001$ )

than in the controls ( $1.8 \pm 2.3$ pts for women, and  $1.9 \pm 1.9$ pts for men). Weights: for both genders 0-2 = 0pts; 3-7 = 1pts; 8-14 = 2pts. Cut-off point for both genders was at 2.5pts.

**Scale 18. Narcissistic attitude** describes the subject's perceiving him/herself as a person deserving particular privileges, who wants to own more than others, is better than others and is egocentric. The scale includes 14 items, No: 43, 57, 85, 105, 117, 119, 128, 130, 135, 152, 162, 191, 219, 222 (all answers "yes"). Cronbach's alpha 0.740, test-retest correlation coefficient 0.854, Guttman's coefficient 0.713.

In the group of patients the mean raw scale score was  $2.9 \pm 2.0$ pts for women,  $3.8 \pm 3.0$ pts for men and was significantly higher ( $p < 0.0001$ ) than in the controls ( $1.7 \pm 2.0$ pts for women, and  $2.5 \pm 2.4$ pts for men). Weights: for women 0-5 = 0pts; 6-8 = 1pts; 9-14 = 2pts; for men 0-5 = 0pts; 6-9 = 1pts; 10-14 = 2pts. Cut-off point, was at 3.5pts for both genders.

**Scale 19. Sense of being in danger** describes the subject's distrust towards others, foreseeing failures, resignation of own goals, perception of him/herself as a person not enough resistant, not understood, being abused by the environment. Scale consists of 14 items, No: 26, 55, 58, 60, 72, 76, 81, 108, 159, 160, 205, 214, 218, 240 (all answers "yes"). Cronbach's alpha 0.770, test-retest correlation coefficient 0.750, Guttman's coefficient 0.738.

In the group of patients the mean raw scale score was  $6.1 \pm 3.1$ pts for women,  $6.1 \pm 2.9$ pts for men and was significantly ( $p < 0.0001$ ) higher than in controls ( $1.8 \pm 1.9$ pts for women, and  $1.9 \pm 1.6$ pts for men). Weights: for women 0-2 = 0pts; 3-8 = 1pts; 9-14 = 2pts; for men 0-3 = 0pts; 4-8 = 1pts; 9-14 = 2pts. Cut-off point for women 4.5pts, and 3.5pts for men.

**Scale 20. Exaltation** defines the subject's self-perception as a very sensitive person, fragile, emotional, with variable moods, and at the same time seeking for support. The scale includes 13 items, No 35, 37, 69, 97, 108, 115, 123, 138, 148, 164, 171, 208, 227 (all answers "yes"). Cronbach's alpha 0.776, test-retest correlation coefficient 0.872, Guttman's coefficient 0.729.

In the group of patients the mean raw scale score was  $9.6 \pm 2.3$ pts for women,  $8.5 \pm 2.4$ pts for men and was significantly higher ( $p < 0.0001$ ) than in the controls ( $5.5 \pm 2.8$ pts for women, and  $3.8 \pm 2.7$ pts for men). Weights: for women 0-8 = 0pts; 9-11 = 1pts; 12-13 = 2pts; for men 0-6 = 0pts; 7-10 = 1pts; 11-13 = 2pts. Cut-off point for women was at 8.5pts, and 6.5pts for men.

**Scale 21. Irrationality** indicates being driven by irrational cognitive schemata (e.g. belief in supernatural powers) and wishful thinking. The scale consists of 10 items, No 36, 40, 53, 64, 73, 79, 96, 137, 147, 158 (all answers "yes"). Cronbach's alpha 0.651, test-retest correlation coefficient 0.907, Guttman's coefficient 0.573.

In the group of patients, the mean raw scale score was  $4.8 \pm 2.1$ pts for women,  $4.2 \pm 2.2$ pts for men and was significantly higher (for women  $p < 0.0001$ , for men  $p < 0.001$ ) than in the controls ( $3.9 \pm 2.0$ pts for women,  $3.3 \pm 2.1$ pts for men). Weights: for women 0-3 = 0pts; 4-7 = 1pts; 8-10 = 2pts; for men 0-4 = 0pts; 5-6 = 1pts; 7-10 = 2pts. Cut-off point for women was at 4.5pts and at 2.5pts for men.

**Scale 22. Meticulousness** describes pedantry, uncertainty and perfectionism in thinking and actions. The scale includes 8 items, No: 65, 69, 84, 157, 169, 177, 192, 220 (all answers "yes"). Cronbach's alpha 0.676, test-retest correlation coefficient 0.845, Guttman's coefficient 0.595.

In the group of patients the mean raw scale score was  $4.1 \pm 1.9$ pts for women,  $4.2 \pm 2.2$ pts for men and was significantly higher ( $p < 0.0001$ ) than in the controls ( $2.6 \pm 1.9$ pts for women, and  $2.4 \pm 1.8$ pts for men). Weights: for women and for men: 0-2 = 0pts; 3-6 = 1pts; 7-8 = 2pts. Cut-off point for both sexes was at 3.5pts.

**Scale 23. Ponderings** defines a tendency of the subject to recollecting, pondering over him/herself and his/her own actions, uncertainty and susceptibility. The scale includes 10 items, "yes" answers in items No 58, 65, 69, 97, 141, 145, 175, 184, 203, and a "no" answer in item No 50. Cronbach's alpha 0.710, test-retest correlation coefficient 0.870, Guttman's coefficient 0.651).

In the group of patients the mean raw scale score was  $8.1 \pm 1.7$ pts for women,  $7.7 \pm 1.9$ pts for men and was significantly ( $p < 0.0001$ ) high-

er than in the controls ( $5.0 \pm 2.2$ pts for women, and  $4.2 \pm 2.3$ pts for men).

That scale has smaller impact on the overall score (X-KON coefficient) because of a relatively small difference between cut-off point and maximum score. Weights: for women 0-7 = 0pts; 8-10 = 1pts; for men 0-5 = 0pts; 6-10 = 1pts. Cut-off point for women 7.5pts and 6.5pts for men.

**Scale 24. Sense of being overloaded** indicates the subject's perception of him/herself as a person subordinated to rules, obligations and tasks, expecting a lot from her/himself, as being overburdened.

However the sense of being overloaded is more intensive in individuals suffering from neurotic disorders, it is not obvious that it results from any particular personality dysfunction. This is why information derived from this scale should be considered as supplementary. The scale consists of 9 items (all keyed "yes") - No 46, 101, 109, 121, 155, 180, 199, 207, 210. Cronbach's alpha 0.544, test-retest correlation coefficient 0.803, Guttman's coefficient 0.443.

In the group of patients, the mean raw scale score was  $5.1 \pm 2.0$ pts for women,  $4.9 \pm 2.0$ pts for men, and was higher than in the controls ( $4.6 \pm 2.0$ pts for women and  $4.5 \pm 2.2$ pts for men), but significantly higher ( $p < 0.005$ ) only in the group of disordered women. Weights: for women 0-5 = 0pts; 6-7 = 1pts; 8-9 = 2pts; for men 0-3 = 0pts; 4-7 = 1pts; 8-9 = 2pts. Cut-off point for women was at 5.5pts and 3.5pts for men.

## X-KON COEFFICIENT

X-KON coefficient, being the sum of weighted scores, resulting from subject's responses in accordance with the key in 24 scales, multiplied by the number of scales where weighted scores were different from zero, permits a global estimation of the range and severity of personality disorder, connected to neurotic disorders etiopathogenesis. The result of those calculations may range from 0 to 1104pts, but because of practical reasons it was decided to divide the global score by 10, and consequently the score spectrum ranges from 0 to 110.4pts.

In the population of 794 patients, the mean value of the X-KON coefficient was  $35.8 \pm 22.6$ pts.

Test-retest analyses in the group of 76 subjects filling the neurotic personality questionnaire twice, within a few hours, indicate a high stability of the X-KON coefficient – circa  $\pm 5$ pts (for men and women).

In the population of 620 patients with neurotic disorders, personality disorder, dysthymia, and eating disorders, all with significant intensity of neurotic symptom (GSL coefficient above 230pts for women, and 220pts for men), the mean value of the X-KON coefficient was  $39.5 \pm 21.8$ pts for women,  $41.6 \pm 21.5$ pts for men, and was significantly higher ( $p < 0.0001$ , for both genders) when compared to means in the control group (247 persons with GSL up to 100pts) –  $7.0 \pm 13.1$ pts for women, and  $4.7 \pm 8.5$ pts for men.

In the group selected from the population described previously, which consisted of 313 subjects with diagnosed neurotic disorders with significant intensity of neurotic symptoms (excluding adjustment disorders), the mean value of the X-KON coefficient was  $37.6 \pm 21.6$ pts (in the subgroup of women  $37.2 \pm 22.2$ , in men  $38.6 \pm 20.1$ pts).

In the group of all 520 controls, distribution of raw scores in the populations of women and men not suffering from neurotic disorders, subjects with X-KON value ranging from 1.7 to 16.8pts (women) and 1.6-8.1pts (men) are placed in the area of 5-6 sten. Cut-off point estimated with the ROC method was 13.7pts for women, and 12.6pts for men.

X-KON coefficient value appeared to be independent from age as well as gender (differences statistically non-significant, and lower than 5pts).

According to results described above we assumed, that : **X-KON score typical for disordered subjects is higher than 18pts, and typical for healthy subjects – below 8pts (results between 8 and 18pts should be considered as susceptible of various interpretations).**

From the group of 620 patients with neurotic disorders or other disorders connected with significant increase of neurotic symptoms, scores in the area above 18pts were found in 83% of subjects (80% women, 86,5% men), in 43 of patients from this group (7%) the X-KON value was lower or equal to 8pts (with the mean symptom checklist GSL  $338.3 \pm 111.0$  pts.).

In the control group (247 subjects) results in the area below 8pts were found in 81% of subjects (75% women, and 85% men), the mean X-KON was  $1.8 \pm 1.9$ pts, mean global symptom score (GSL) was  $50.7 \pm 25.4$ pts. In 24 individuals (10%) X-KON coefficient value was higher than 18pts, with mean GSL  $69.0 \pm 20.0$ pts.

Correlation between personality coefficient (X-KON) and global symptom score (GSL) in the population of 620 patients was 0.39 ( $p < 0.001$ ), in all 794 patients (regardless of GSL level) was 0.50 with  $p < 0.001$  (in the whole investigated population -  $n = 1314$ , correlation was 0.66,  $p < 0.001$ ).

### APPLICATIONS OF KON-2006

Similarly to other psychometric instruments mentioned earlier and used in personality disorders diagnosing, the KON-2006 questionnaire is also most likely disclosing only some of the personality aspects (subsystems) having a specific influence on the neurotic disorders' ethiopathogenesis. Analysis of its scales' validity indicates however that they very likely inform about personality dysfunctions connected to the emergence and sustaining of neurotic disorders (perhaps excepting from the score of scale No 24 in men). Range and intensity of those dysfunctions are described by the value of the X-KON coefficient.

Application of the KON-2006 questionnaire may enhance both description, as well as differentiation between neurotic disorders and reaction to stress (especially "acute" stress), and assessment of changes resulting from treatment, without significant consumption of diagnosticians' time, especially in the case of application of computer software.

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