Concept of reliable change in the usage of the KON-2006 Neurotic Personality Questionnaire

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Summary

The KON-2006 is a questionnaire enabling the assessment of neurotic personality traits. This paper presents a method of categorising changes in the KON-2006 assessment based on the reliable change concept (RC). The RC helps to determine whether a given magnitude of change in a patient can be attributed to a real transformation of the subject or whether it is an effect of the imprecision of a given measuring instrument instead. Cut-off point values for a reliable change (RCV) in KON-2006 results are presented. These values were computed for the global index of neurotic disintegration (X-KON) and for 24 subscales of the questionnaire.

KON-2006 Neurotic Personality Questionnaire / reliable change / psychotherapy / effectiveness

INTRODUCTION

In research on psychotherapy effectiveness the dominant stance of scientists is to measure the scope of relief from target symptoms after the psychotherapeutic procedure has been implemented. This tendency can be traced to the researchers' need to operationalise outcomes that can be measured and statistically analysed. On the other hand, it seems to be obvious for therapists of all orientations that in order to provide help that lasts they need to pursue goals that are broader than simple "behavioural" health [1]. One of the ways to approach this problem is to refer to the concept of dysfunctional personality traits that are responsible for the occurrence and persistence of a mental disorder [2].

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One of the significant examples of "looking deeper" than a symptoms' reduction is the approach to neurotic disorders by Aleksandrowicz's research group from the Department of Psychotherapy, UJ, Kraków. Aleksandrowicz et al. [3, 4, 5] assume that the roots of neurotic disorders can be traced to the deficits or particularly intensified personality traits that, when confronted with stressful life events, lead to the emergence of neurotic symptoms. The neurotic personality (defined as a personality with dysfunctional traits responsible for neurotic reactions) is operationalised by a measure developed by the same research group called the KON-2006 (Kwestionariusz Osobowości Nerwicowej). This measure consists of 243 items clustered into 24 subscales (see Tab. 1). The global index of neurotic personality is called "X-KON".

CATEGORIES OF PSYCHOTHERAPY EFFECTIVENESS MEASURED WITH KON-2006

The KON-2006 was successfully used in research on psychotherapy effectiveness. We know that the decrease of dysfunctional per-

sonality traits co-occurs with neurotic symptom reduction [3, 6]. However there are mixed data about psychotherapy effectiveness regarding the change in a neurotic personality. There are empirical data showing that psychotherapy can significantly affect the neurotic personality [3], while other research suggests that psychotherapy conducted in some places is ineffective in this mentioned respect [6].

There are two main complementary approaches to assess psychotherapy effectiveness. One is based on statistical significance whereas the other is based on clinical significance [7]. In this paper the focus is on the second approach. In the publication by Aleksandrowicz's research group we can find a proposal for categorising the magnitude of X-KON changes [5]. The change index (CI) can be computed based on the following formula:

$$CI = \frac{(XKON_1 - XKON_2)^2}{XKON_{higher} \cdot 110.4}$$

where X-KON$_1$ and X-KON$_2$ are the magnitude of X-KON in the first and the second measurements of KON-2006, respectively; X-KON$_{higher}$ is the higher value from the two results (X-KON$_1$ and X-KON$_2$). The number 110.4 is the maximum value of X-KON.

The values obtained for the CI can be sorted into five categories: (1) a CI in the range <0.1;1> means a considerable improvement in the neurotic personality, (2) a CI in the range <0.01;0.1) indicates slight improvement, (3) a CI in the range (-0.01;0.01) means no change, (4) a CI in the range <-0.1;-0.01) indicates slight deterioration, and (5) a CI in the range <-1;-0.1) points to a considerable deterioration.

The method of categorisation described is an interesting, original proposal. In the formula for the CI is an installed mechanism – the changes among highly disturbed patients must be larger to be categorised as an "improvement" as opposed to patients who are close in their initial X-KON results to the healthy population. The logic behind this proposal might be summarised in the following hypothesis, where the same degree of change in the X-KON result is not equivalent among patients on different levels of neurotic disintegration. But, to the best of the author's of the present paper knowledge, no

empirical data are available to support this hypothesis. Moreover, in some cases, a change by two points or even one point in the X-KON may be categorised as a slight improvement or deterioration, while the probability that this kind of change is due to an imperfection of the measurement is higher than 75%. Furthermore, even the authors of this categorisation method point out that the values which constitute the boundaries of the categories used are arbitrary. This seems to be an important limit of this proposal. An alternative way to categorise the changes in KON-2006 might be based on the reliable change concept [7]. The aim of this paper is to present this proposal in the context of KON-2006.

Reliable change

The Reliable Change Index (RCI), introduced by Jacobson, Follette and Revenstorf in 1984 is a statistical method of assessing whether a difference between two measurements with a given confidence level can be attributed to a real change rather than to fluctuations in the test results [7]. In the paper by Jacobson and Truax [7], the RCI is an index that should exceed a certain value (e.g. 1.96 for p=0.05) in order for a particular change to be assumed to be reliable. In the opinion of the author of the present paper, it would be more convenient for the researchers to talk about the Reliable Change Value (RCV) – defined as a set of values for a certain measuring instrument that could be seen as "reliable" – rather than the RCI. In other words, it is proposed to introduce the term RCV, which would stand for the difference between two measurements (x_1-x_2) that could be called reliable at a given confidence level. One should underline the fact that the RCV is just a simple mathematical transformation of the formula for the RCI. Thus, the formula for the RCV based on the formula presented in the paper by Jacobson and Truax [7] is as follows:

$$RCV_p = S_{diff} \cdot Z_p$$

where S_{diff} is the standard error of difference between the two questionnaire scores; and Z_p is a standardised standard deviation for a given p-value for a normal distribution (e.g. $Z_{p=0.05}$=1.96; $Z_{p=0.01}$=2.57; $Z_{p=0.01}$=1.51). The S_{diff} can be comput-

ed from the reliability of the test (r_{xx}) and the standard deviation (SD) of the test results using the following formula [8]:

$$S_{diff} = SD\sqrt{2(1 - r_{xx})}$$

Reliable change value for KON-2006

Tab. 1 presents the values that can be used to assess whether the difference between two measurements using the Polish version of KON-2006 is reliable with 95% ($RCV_{p=0.05}$), 99% ($RCV_{p=0.01}$) and 85% ($RCV_{p=0.15}$) confidence levels. The 95% confidence range is most frequently used in psychotherapy research but, in some cases (e.g. for diagnostic purposes), more conservative or more liberal approaches can be chosen. The values in Tab. 1 are given for the X-KON and for the results of the 24 subscales of the questionnaire. The RCVs for the X-KON were computed based on the test-retest reliability (r=0.89[1]; with an interval of a few hours, N=76), whereas the RCV's for the subscales were computed based on the Cronbach's alphas (N=1314) presented in the handbook of the questionnaire [3]. *Table 1 next page.*

A change in neurotic personality after the psychotherapeutic process can be categorised based on the RCV for the KON-2006 into three groups:

1. reliable improvement. The patient should be categorised in this group when the difference between the first and last measurements is positive and higher than 13.03 points for the X-KON (p=0.05);

2. no reliable change. The patient should be categorised in this group when the difference between the first and last measurements falls within the range of <-13.03; 13.03> for the X-KON (p=0.05);

3. reliable deterioration. The patient should be categorised in this group when the difference between the first and last measurements is nega-

tive and higher than 13.03 points for the X-KON (p=0.05).

This method of categorisation can be conducted in an analogical manner in respect to all of the 24 subscales. For example, a decrease of 3.75 points or more for the asthenia scale means that with a 95% confidence level the patient reliably improved with respect to this trait.

In the literature, it is recommended that two-fold criteria are used to categorise the change – (1) the reliable change and (2) a cut-off point between the normal and disturbed population. The authors of the KON-2006 suggest using two boundaries for the X-KON – 8 points or less being typical for the healthy population, 18 points being typical for the neurotic population, and between 8 and 18 points being labeled as "diagnostically uncertain" [3]. It is proposed that a patient who crosses the 18 point boundary and who is finally located between 8 and 18 points is categorised as "possible recovery". The following categories are suggested for assessing the change in a neurotic personality based on the RCV and the cut-off points:

1. recovery – (two criteria: the end result of the X-KON lower than 8 points and the decline higher than 13.03 points);

2. possible recovery - (two criteria: the end result of the X-KON between 8 and 18 points and the decline higher than 13.03 points);

3. reliable improvement - (two criteria: the end result of the X-KON higher than 18 points and the decline higher than 13.03 points);

4. no reliable change (one criterion: a change smaller than 13.03 points);

5. reliable deterioration (one criterion: an increase in the X-KON result of more than 13.03 points).

CONCLUSIONS

The KON-2006 is a questionnaire of neurotic personality that can be successfully used to assess psychotherapy effectiveness. However, the method used for categorisation of the KON-2006 results has some important limitations. It is suggested that the concept of reliable change can be implemented into research where the data from

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Table 1. Values of points (RCV) for the X-KON and the rest of the 24 subscales of the KON-2006 that exceed the Reliable Change Index (RCI) based on three p-value levels

KON-2006 Scales	$RCV_{p=0.05}$	$RCV_{p=0.01}$	$RCV_{p=0.15}$
General X-KON score	13.03		
1. Feeling of being dependent on the environment	4.84	6.34	3.73
2. Asthenia	3.75	4.91	2.89
3. Negative self-esteem	3.57	4.68	2.75
4. Impulsiveness	4.58	6.01	3.53
5. Difficulties with decision making	3.83	5.03	2.95
6. Sense of alienation	3.91	5.13	3.01
7. Demobilisation	5.01	6.57	3.86
8. Tendency to take risks	3.95	5.18	3.04
9. Difficulties in emotional relations	4.27	5.60	3.29
10. Lack of vitality	5.14	6.73	3.96
11. Conviction of own resourselessness in life	4.44	5.82	3.42
12. Sense of lack of control	3.88	5.09	2.99
13. Deficit in internal locus of control	5.07	6.64	3.90
14. Imagination, indulging in fiction	4.33	5.68	3.34
15. Sense of guilt	3.74	4.90	2.88
16. Difficulties in interpersonal relations	4.20	5.51	3.23
17. Envy	3.88	5.08	2.99
18. Narcissistic attitude	3.67	4.81	2.82
19. Sense of being in danger	4.17	5.46	3.21
20. Exaltation	4.13	5.41	3.18
21. Irrationality	3.61	4.74	2.78
22. Meticulousness	3.24	4.25	2.50
23. Ponderings	3.56	4.66	2.74
24. Sense of being overloaded	3.74	4.90	2.88

the KON-2006 are analysed. It is hoped that the statistically sound method based on the RCI proposed for the analysis of neurotic personality changes will make the KON-2006 be used even more frequently by researchers as well as clinicians.

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