

Neurotic “disorders” or “disorder” ?

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Summary

Aim: To check the legitimacy of the presumption that there are many “neurotic” disorders.

Methods: Taxonomic analyzes by single linkage method, unweighted pair-group average and Ward’s method, also *k*-means clustering.

Material: The material in the pilot study used the information obtained from the Symptom Checklist “O”, completed before treatment by 4,649 patients, who applied for treatment due to various functional disorders. The basic study used questionnaires filled in by 288 patients with diagnosed neurotic disorders and by 95 not-neurotic persons, constituting a control group.

Results: The results suggest that the symptoms of functional disorders constitute one set (syndrome), thus the conviction of the multiplicity of neurotic disorders seems unjustified.

Key words: neurosis, syndromes, taxonomic analyses

Introduction

Psychopathology of neurotic disorders is based primarily on the description of symptoms and their syndromes, observed in patients. These are the basic “hard” data that determine the diagnosis. The second criterion (not so obvious) is lack of any “material” causes of such disruption in psychological processes, somatic functions and individual’s behavior.

The term “neurosis” (Cullen, 1769), originally referring to various diseases (especially of the nervous system) “not having a physiological explanation” was closer to what is currently defined – more broadly – by the term “functional disorders” [1]. In the twentieth century, the classification of neuroses – a not clearly defined concept referring to the most frequent form of these functional disorders – was quite often changed, due, inter alia, to the arbitrary creation of the constructs defining their types and categories. Currently called “disorders” (otherwise analogous to most disturbances of mental processes), neurotic syndromes obtained the status of separate entities, nosological classification units.

The enrichment of knowledge with the hypotheses concerning the circumstances of their formation – the significance of stress, unconscious processes, personality traits and various “defense mechanisms”, neurophysiological processes, etc. – lead to multidimensional understanding and formulating the diagnosis. The evident benefits of such approach, however, are in practice limited by the difficulties resulting from the complexity of diagnostic procedures. As a consequence, a simplifying tendency to, for example, recognizing personality disorders instead of neurotic disorders and for reducing the concept of “psychogenesis” exclusively to stress is spreading. In addition, the inclusion in the categorization of disorders some etiopathogenetic factors often compels to face a dilemma: should one recognize, for example, a depressive and mixed anxiety disorder (F 41.2), or an adaptive disorder (F 43.2)¹.

However, in clinical practice, the type of symptoms is still a decisive factor in the medical diagnosis and sustains the belief in the existence of various types of neurotic disorders, treated in classifications as separate categories² [2–9]. Their number continues to increase, among others due to the “medicalization” of common and often temporary dysfunctions, as well as due to the needs of medical statistics.

In practice, classification categories most often serve only as a label used primarily in epidemiological studies and in contacts with insurance institutions, and are not very useful in diagnostics and therapy. The boundaries between these categories are out of cluster, and their descriptions do not usually match the real picture observed in the patient. This often leads to the formulation of diagnoses consisting of the names of different nosographic units (e.g., “anxiety-conversion-obsessive-somatoform disorder in an immature personality”), to recognize an “indefinite” or “other” disorder or to assume the coexistence of several types of these disorders (comorbidity) – a concept that is increasingly being criticized [10–14].

The difficulty in matching the symptoms perceived by the patient with any diagnostic category also sometimes leads to the failure to notice or even deliberate omission of some elements of the clinical picture that do not fall within the description of these categories. It seems to be present mainly in research on psychopathology and therapy of functional disorders, generally requiring the formation of groups with identical diagnosis, and is one of the main reasons for the limited validity of research [15].

Insufficient homogeneity of the studied groups constructed on the basis of DSM or ICD categories is most likely the main cause of the ambiguity of research results (also neuropsychiatric, according to Hyman [14]), resulting in limited trust in their value and little impact on clinical practice. This leads to considering the validity of the methodology [14–18] and to undertake further attempts to revise the definitions of

¹ That means, being response to stressful, but not extremely difficult life events. Universality of such experiences is one of the reasons of doubts concerning the reduction of the concept of “psychogenesis” exclusively to psychosocial stress.

² Although “nosographic units” are only descriptions, not deciding about the legitimacy of recognizing the described disturbances of health status as a separate disorder, this in practice inclines (by analogy with other fields of medicine) to treat “disorders” as if they were various types of diseases.

individual categories and assumptions of the classification system [19–24]. It also encourages the search for common elements of neurotic disorders, e.g., “general neurotic syndrome” [25–29]. As these “general” and common features of all types of neurotic disorders are often considered depressive and anxiety symptoms (e.g., “cothymia” [25]), associated with personality dysfunctions.

Thus, on the margins of the mainstream of modern psychopathology of neurosis, the view persists that giving up considering “neurosis” as an independent nosographic unit (and perhaps also etiopathogenetic) is unjustified [30]. This view results from the conviction that the common features of different varieties of neurotic disorders are much more important than what makes them different and that the acceptance of a multitude of neurotic disorders is an artefact resulting from erroneous interpretations of clinical observations.

In the attempt to understand neurotic disorders, statistical procedures, in particular factor analyzes, play a special role [12, 13, 20, 22, 23, 31]. Some of these analyzes, using the term “dimensions”, seek to explain psychopathology and identify the hidden factor responsible for its formation. In the first of these – a symptomatic one – particularly strong correlations were found between its elements [32]. They can explain the significant variability of the clinical picture of functional disorders.

Sometimes it takes even a few minutes to replace one symptom with a completely different one, and the persistence of one syndrome over a long period of time is relatively rare. Also, with time, there are significant changes in the type of symptoms – for example, in the place of conversion (“hysterical”) syndromes dominating at the turn of the 19th and 20th centuries, depression and anxiety syndromes are currently the most common [33, 34]. Since the symptoms of neurotic and other “functional” disorders are not – in contrast to organic illnesses – the external expression of the unfolding disease process, their instability may be a consequence of the variability of “what they reveal”.

In search of the experimental foundations that avoid the arbitrariness of conceptual constructs that make up classification systems, it seems useful to study the coexistence of neurotic symptoms with taxonomic analysis methods. It may answer the question whether the dysfunctions (symptoms) occurring in the patients really group in syndromes corresponding to the categories of “disorders”, or whether these categories are rather artefacts.

Material and method of research

The research material were *the symptom checklists “O”* [35], in which the subjects described the occurrence and severity of 135 ailments and dysfunctions (neurotic symptoms) to which variables (questions) of this questionnaire³ relate, during the previous seven days.

³ The subjects describe both the incidence and severity of complaints, considering them as slight (assessed to be 4 points, moderate – 5 or significant – 7 points). The sum of the points creates the total value of the questionnaire – Global Severity Index. The limits of the GSI norm are 200 points for women, 165 for men

Three groups were subjected to analysis: (1) pilot – all available questionnaires of patients applying for treatment, (2) basic – questionnaires filled only by patients diagnosed with neurotic disorders and (3) control group. In the pilot studies, the information contained in the database of the Department of Psychotherapy at the Jagiellonian University Medical College, which gathers data about patients from almost 20 years, was used⁴. The research material comprised 4,649 questionnaires, filled out by 3,216 women and 1,433 men, who applied for treatment in the years 2000–2016. They were diagnosed with some functional disorders (neurotic and/or personality disorder, also behavioral syndromes), so it was a diverse group differentiated due to the type of disorder. This analysis made it possible to obtain a preliminary orientation in the features of the structure of the coexistence of dysfunctions, which are symptoms of functional disorders.

The group constituting the main subject of the analysis was 288 people, 204 women and 84 men – on average about 30 years old – applying for treatment in the period from September 2014 to December 2017⁵, in which the initial examination identified one of the neurotic disorders. This was considered a criterion for the construction of the test group to ensure at least relative homogeneity. The average value of GSI (Global Severity Index – Pol. OWK) in the female population was 361.0, in men 305.5 points (in the total population 344.8). Only questionnaires were used, in which there was no lack of answers to any question and there was no reason to doubt the reliability of their fulfillment (matching responses in three pairs of identical variables).

The most numerous group were people with the diagnosis of “depressive and mixed anxiety disorder” (F41.2 – about 38%), “other mixed anxiety disorders” (F41.3 – about 10.4%), autonomic dysfunctions (F45.3 – about 5.9%), social phobias (F40.1 – about 8.7%), agoraphobia (F40.0 – about 6.3%), adaptive disorders with various clinical picture (F43.2 – about 4.9%), generalized anxiety disorder (F41.1 – about 3.8%), anxiety disorders with anxiety attacks (F41.0 – about 3.5%), OCD with prevalence of intrusive thoughts (F42.0 – about 2.8%), mixed OCD (F42.2 – about 2.8%) and OCD with a predominance of compulsions (F42.1 – about 2.4%). The remaining approx. 10.5% were diagnoses: F43.1; F45.0; F45.2; 48.5 and others (1–5 persons each).

The control group consisted of questionnaires filled in anonymously in the years 2004–2006 by 95 medical students and trainees as well as employees of the Department of Psychotherapy, declaring full physical and mental health. During formation of this group, questionnaires that did not meet the above-mentioned requirement of reliability were omitted, as well as those in which the level of the GSI – in spite of declaration of health – indicate the existence of a neurotic disorder.

Among various procedures for grouping objects (taxonomy), the best way to search for answers to the question about the co-occurrence of neurotic disorders seem to be

⁴ The database used for the study contained – apart from the record of the questionnaire responses and the “F” diagnostic category – only information on gender and age, maintaining full anonymity of the respondents.

⁵ The choice of questionnaires was limited to patients undertaking treatment over a period of approx. 2 years in order to minimize the impact of changes in the type of symptoms occurring due to socio-cultural conditions.

agglomeration techniques, which results in a cluster hierarchy represented in the form of dendrite. This hierarchy results from application of cluster identification algorithm which groups variables with no prior assumptions of the existence of any clusters (e.g., corresponding to various “symptomatic syndromes”). Among the agglomeration methods available in the Statistica 13 package, the single linkage method (closest neighborhood), unweighted pair-group average and the Ward’s method were chosen. The latter is particularly recommended when determining relationships between variables with various quality characteristics [38].

Since clusters are formed on a basis of linkage distance, the latter plays very important role because its value determines both the number of clusters and their contents. As linkage distance grows connections between cluster lower. Determining the number of clusters (and the resulting content of these clusters) requires a decision on the cut-off point, i.e., determining the value (distance) of the node, above which cluster discrimination is unfounded. At the same time, this value determines the number of highlighted clusters. Such a decision is often arbitrary, because mathematical statistics do not give objective criteria to make it unambiguous [37, 38]. “Intuition, experience and substantive knowledge of the examined objects decides”. It is recommended, however, to assess the differences in the distance between successive nodes and to make the dendrite division in points where this distance is large [38]. The analysis of agglomeration graphs and auxiliary statistical criteria may be helpful in making such a decision.

Among many of them, the Mojena’s criterion was chosen along with its modifications (the cut-off point results from the formula [38] in which the k parameter ranges from 2.75 to 3.5 or – as suggested by Miligan and Cooper – takes the value 1.25); as well as the criterion based on the difference in the distance between successive dendrite nodes (the maximum value of the difference is the cut-off point) and the criterion based on the quotient of the distance between successive nodes (the cut-off point is the maximum value of the quotient) [37, 38]. The disadvantage of the latter is the frequent occurrence of maximum for initial distances, which makes it difficult to make a decision [38] – in the case of such circumstances it seemed to be deliberate not to use this criterion. The accuracy of clustering was checked using the k -means clustering procedure.

The usefulness of various measures of similarity (“metrics”) – Euclidean, Chebyshev distance and others – was tested, as well as various methods of hierarchical cluster analysis and grouping of variables. Taxonomic analyzes were carried out repeatedly, among others by comparing results in subgroups of women and men, subgroups of patients with high and minor severity of disorders, taking into account only the occurrence (answers to questions from the checklist were given a value of 0 – “the disorder did not occur” or 1 – “the complaint occurred”) or also severity of ailments (values: 4, 5 or 7), etc. Small groups formed by directly adjacent variables were analyzed as well. Some of these analyzes are presented below.

A significant number of the obtained information makes it impossible to describe them in one publication. Therefore, the presentation of the research results was limited

to the most important data obtained by one of the methods used, the remaining ones presented only in brief (especially in the case of their compliance).

Results

Pilot study

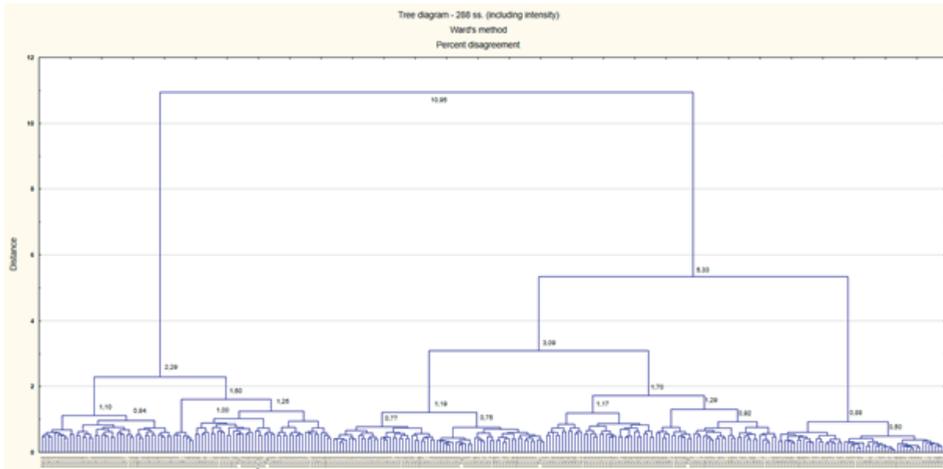
The results of variable distribution analysis carried out using the Ward's analysis – the cut-off point determined according to Mojena's criterion (distance 2.85) – suggest the existence of two clusters corresponding to the two dendrite arms. In both of them there were present in the nearest neighborhood variables referring to somatic, psychic and behavioral disturbances. The determination of this point based on the maximum value of the distance difference between nodes (6.31) and the maximum value of their quotient (3.21) indicates that all variables form one cluster. Analysis using the single linkage method, with the adoption of the Mojena's criterion ($k = 2.75$) placing the cut-off point at 0.357, likewise the method of unweighted pair-group average ($k = 3.5$, cut-off point at 0.499 distance); also the maximum value of the distance difference between nodes of 0.064, indicates the creation of one cluster by all variables⁶ [36].

Basic research

The first series of taxonomic analyzes was carried out to check whether symptom questionnaires of 288 persons with various types of neurotic disorders form clusters corresponding to diagnostic categories ("F" in the ICD-10 classification). Not only the presence of symptoms, but also the assessment of their severity were taken into account, Ward's method was used as well as single linkage method and unweighted pair-group average.

Using the Ward's method (see Graph 1), the division of the dendrite into two branches occurred at a distance of 10.95. The right arm is further divided by 5.33, one of its parts is connected by a node at a distance of 3.09. Using the Mojena's criterion, at $k = 3.5$, a distance smaller than 2.53 should be assumed for the cut-off point. This size (2.3) occurs three places below the first node (that means level of 10.95). This suggests the existence of four clusters, one of which combines the results of 94 people (node at a distance of 2.29), the second 67 people (node 1.19), the third 73 people (node 1.70), and the fourth 54 people (node at a distance of 0.88). However, in none of these alleged clusters did all of persons meet (nor were they a clear majority) with the diagnosis of any specific type of disorder. Neither were in the closest neighborhood the questionnaires of people with identical diagnoses. In addition, the cut-off point resulting from the greatest distance between nodes was 5.62. Unlike using the Mojena's criterion, this leaves all nodes below this distance

⁶ Fragments of the results and conclusions from this preliminary analysis of questionnaires were presented at the 18th WADP Congress, Florence 2017



Graph 1

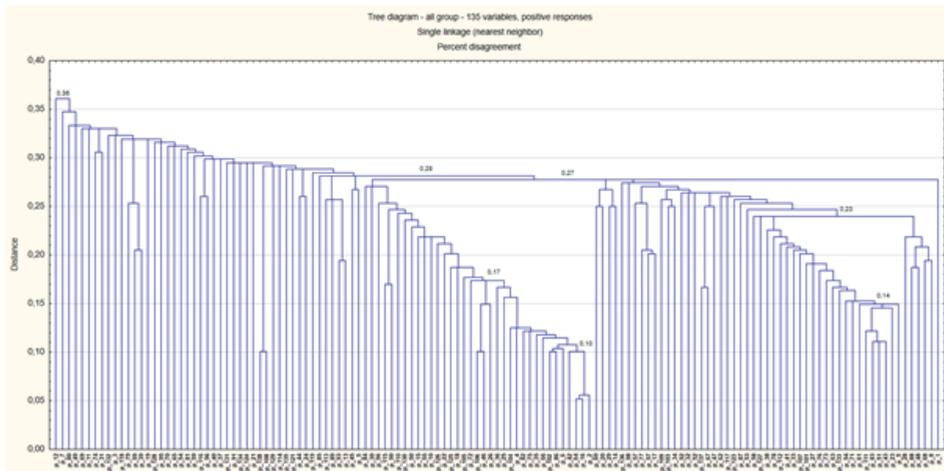
and suggests that the whole group creates – due to the type of symptoms – only one cluster.

The results of analysis of this group of questionnaires carried out by the single linkage analysis indicate similarly that all individuals constitute one cluster. The largest distance between nodes is 0.60 (for $k = 2.75$ value less than 0.72 should be assumed for the cut-off point), and the biggest difference between the averages is 0.015 at the last distance. The results of the unweighted pair-group average analysis are analogous: the largest distance between nodes was 0.728 (at $k = 3.5$ values smaller than 0.736 should be assumed for the cut-off point). The largest difference between averages was 0.04 and referred to the last distance. These results also suggest that all people's questionnaires form one cluster, despite of different diagnostic categories.

Subsequent analyzes were aimed at determining the relationship between variables regarding the perception of dysfunctions and the sensations that may indicate the occurrence of neurotic symptoms causing these ailments. The first one concerned only the presence of dysfunctions (not including their severity) in the whole group.

In the presented in Graph 2⁷ results of analysis made by the single linkage method (closest neighborhood), using the Mojena's criterion at $k = 2.75$, a value lower than 0.42 should be assumed for the cut-off point. In this case it is 0.36. The largest difference in the distance between nodes was 0.014, for the last distance. This means that all variables (135) form one cluster. However, the graph suggests that despite the mathematical criteria (considered as decisive) one should take into account the possibility of two or even three clusters, of which one counts 83 variables (from No. 12 to No.

⁷ The description of variables and their place in cluster is presented in the annex



Graph 2

2 and variable No. 1) – and another one – 52 variables, in this a relatively separate group of 5 variables referring to symptoms of derealization and depersonalization.

The results of the unweighted pair-group average analysis also indicate the presence of one cluster, containing all 135 variables. The largest distance between nodes is 0.49, with $k = 2.75$ a value smaller than 0.54 should be assumed for the cut-off point; the maximum distance difference between nodes – 0.055 – refers to the last value. However, similar to the results of the single linkage analysis, the graph suggests the possible existence of two clusters (of 44 and 91 variables).

In the Ward's analysis, the division of the dendrite into two branches was found at a distance of 8.62. The right arm of the dendrite is divided further with a node at the distance of 3.59. The largest distance between nodes (8.62) like the next – 3.59, is over limits of the Mojena's criterion (at $k = 3.5 - 3.21$). Only the third of the distance – 1.34 – is smaller and could be considered as the cut-off point (for $k = 1.25 - 1.4$). This suggests dividing the entire set into three clusters. The first one, in which the variables are connected by a node, with a distance of 1.18, is the whole left arm of the dendrite (34 variables), the other two – with a node distance of 1.33 (74 variables) and 0.54 (27 variables) – result from division of the right arm at the node with a distance of 3.58. The largest difference in the distance between nodes is 5.03, the adoption of such a cut-off point leads to the distinction of two clusters. None of these clusters collect variables referring to only one type of dysfunction, in each of them adjacent variables referring to somatic symptoms, disturbances of experiencing and behavior.

These results were checked by k -means clustering. Assuming the existence of two clusters, sets of 60 and 75 variables were obtained, assuming three clusters – 61, 46 and 28 variables. These numbers (as well as the type of variables included in the clusters)

are neither consistent with the results of the single linkage, nor with the unweighted pair-group average or the Ward’s method analyses.

In the subgroup of 204 women, in the analysis of the single linkage method (not including severity of symptoms) the cut-off occurred at the largest distance – 0.35 (smaller than distance 0.42 being the limit for $k = 2.75$). In the unweighted pair-group average analysis similarly: the largest distance 0.49 was smaller than distance 0.51 (limit for $k = 2.75$), and the biggest difference (for the last distance) was 0.053. The results of the Ward’s analysis: the largest distance of 8.97 and the second – 3.64 – were over the cut-off point (for $k = 3.5$ the limit was 3.29). This suggests the existence of three clusters. The largest difference in the distance between nodes was 5.3 for the last value, and the largest ratio 2.87 for the penultimate one from the distance.

In the 84 men subgroup, the single linkage method showed the greatest distance of 0.33 (at $k = 2.75$ the limit was 0.38), the largest difference in distance was 0.024 for the last distance. Unweighted pair-group average analysis: the largest distance of 0.51 (the limit 0.57 at $k = 3.5$), the largest distance difference was 0.076 for the last distance, the largest ratio 1.17 for the last distance. For the Ward’s analysis: the largest distance was 9.09, another one 2.86, cut-off point should be – up to the $k = 3.5$ – under 3.31 – which suggests the existence of two clusters corresponding to the arms of the dendrite. The largest difference in distance was 6.23, the largest quotient of distance 3.18, both of these values refer to the last distance – which suggests that all variables form one cluster.

Analyzes that included severity of symptoms

The results of single linkage method analysis concerning the whole population: the largest distance of 0.55 (for $k = 2.75$ the cut-off point is 0.67); the largest difference in distance is 0.017. The results of the unweighted pair-group average analysis: the largest distance: 0.7 (for $k = 1.25$ the cut-off point is 1.42); the largest distance difference 0.067 relates to the last value. This means that all 135 variables should be treated as one cluster. On the other hand, the results of Ward’s analysis, in which the dendrite was divided by a distance of 7.63 and subsequent nodes at distances of 2.67 and 2.08 suggest the existence of two clusters corresponding to the arms of the dendrite. However, the size of the maximum difference between nodes (4.93, the last distance) indicates that the entire set of variables should be also considered as one cluster. The results of k -means clustering assuming the existence of two clusters proved to be inconsistent with the results of Ward’s method analysis.

Control group

In the grouping analysis of not-neurotic **persons** due to the similarity of the ailments noted in the questionnaires, carried out by single linkage and unweighted pair-group average methods, the results suggest that the whole control group creates one cluster.

Discussion and conclusions

Responses in the symptom questionnaire are treated in these analyzes as qualitative variables, informing about the absence or occurrence of symptoms and their severity, expressed in the perception of ailments. The results of taxonomic analyzes determining the distances between these variables (the measure of their similarity) are interpreted as information reflecting the frequency of concurrent symptoms.

Such an interpretation has certain limitations, resulting *inter alia* from the specificity of the tool. Answers to the questionnaire items express a subjective assessment of what indicate (and perhaps suggest) the formulations of variables. They inform about experiencing ailments, which is not tantamount to the presence of dysfunctions (symptoms) that may cause them. In addition, it is not possible to determine whether the patients' responses refer to their current status or to a longer – a week – period of time, indicated in the instructions. Probably the majority of respondents describe primarily the ailments experienced at the time of examination, but this does not mean that the proximity of variables is a direct proof of the coexistence of symptoms.

In spite of these doubts, symptom checklists seem to be a much more reliable source of information than descriptions based on patient relations. They allow avoiding a selective perception or omitting the presence of symptoms, resulting, for example, from the expectations of the examined and examiner, from time constraints that can be devoted to interviewing patients etc. They also allow the analysis of numerous data sets obtained in a comparable manner. Therefore, it seems legitimate to recognize the results of these analyzes as information, indicating at least a significant probability of the coexistence of dysfunctions considered as symptoms of neurotic disorders.

The choice of research methodology – taxonomic analyzes – may also give rise to various doubts. Their limitation is the dependence of the results on the assumptions of the calculation procedure and the difficulty of assessing which method is adequate to the subject of the research, as well as the relative freedom in choosing the method of choosing the cut-off points that determine the conclusions.

Difficulties were created, for example, by the interpretation of the results of analyzes using the Ward's method, considered to be particularly reliable in case of determining relationships between variables of various qualitative characteristics (and such are the symptoms of functional disorders). Conclusions resulting from the application of different ways to determine the cut-off point proved to be contradictory. For example, determining the cut-off points acc. to Mojena's criteria and the distance quotient indicate the existence of several clusters (three or at least two, corresponding to the two arms of the dendrite)⁸ – while the criterion of the greatest difference of distance between nodes indicates the existence of only one cluster. As it seems, such discrepancies are less frequent in the case of calculations carried out with other methods.

⁸ Clusters, whose existence was suggested by the results of subsequent analyzes carried out using the Ward's method, differed in the composition of the set of variables, and at the same time almost each of them was adjacent to other variables.

In spite of these difficulties in interpreting the results, taxonomic analyzes seem to be the best available tools for seeking answers to the question about the validity of the belief that there are many different neurotic disorders⁹. Undoubtedly, the main criterion for the accuracy of the description of the examined reality should always be the consistency of results obtained in many studies using different methods. So, the conclusions from the presented research are based on the confirmation of such compliance in the majority of analyzes carried out.

The results of taxonomic analyzes, irrespective of the type of agglomeration method chosen and methods of determining cut-off points, regardless of taking into account only the presence or also severity of ailments, both in the entire population as well as in subgroups of women and men, people with significant or low severity of symptoms, etc. indicate that all variables create one cluster. Although in the results of analyzes carried out with the methods of single linkage and unweighted pair-group average, traces of division into smaller cluster can also be found, but this has not been confirmed by mathematical criteria. Among other, the probability of several clusters existence also those suggested by the results of Ward's calculations, has not been confirmed by the *k*-means grouping procedure checking them¹⁰.

Most probably, all dysfunctions that have the character of functional symptoms (at least those to which the questionnaire variables relate) are strongly correlated with each other and constitute elements of one set ("neurotic syndrome"). This is consistent with other observations – e.g., strong correlations between elements of the "symptomatic dimension" of these disorders [32 and others]. In the results of taxonomic analyzes, this is expressed by the emergence of one cluster, grouping all variables. The places of particular variables in this cluster and their vicinity with other variables change depending on the specifics of the research material (e.g., the size of the studied group, taking into account only the presence of symptom or also its severity, etc.).

However, the relative repeatability of the immediate neighborhood of some variables was observed, creating more strongly related groupings located in different parts of the cluster. These were, for example, variables No. 64, 16 and 2 – referring to tension, anxiety and sadness, variables referring to sleep disorders (No. 39, 79, 99), hypochondriac symptoms (No. 17, 57, 77, 97), sexual dysfunctions (No. 47, 67, 137), déjà vu and déjà vécu (No. 108 and 138), and derealization-depersonalization (No. 8, 28, 48, 68, 88)¹¹. This requires a verification in subsequent studies. Perhaps noticing such connections and omitting that they are elements of a larger whole, contributes to the illusion of a variety of syndromes and the multiplicity of various functional dis-

⁹ The use of factor analyzes in which the grouping of variables depends on the degree of loading with hidden, hypothetical "factors", sometimes a lot of a similar intensity, has been abandoned. It seems that such analyzes are more adequate in the study of etiopathogenetic conditions or, for example, the hierarchy of connections between variables [19, 20], than in determining the composition of a set of variables

¹⁰ The possibility of existence of such clusters, however, requires verification in subsequent studies.

¹¹ The proximity of variables No. 96 (Uncontrollable bursts of anger, wrath) and 116 (Constantly feeling anger, wrath) or No. 24 (Paralysing, unexplainable fear that makes it impossible for you to do anything) and 44 (Panic attacks), probably only due to the closeness of the wording.

orders. It can also explain the source of the hypothesis on the depressive and anxious nucleus of neurotic disorders [26–29].

In the interpretation of the results of taxonomic analyzes, it should be taken into account that they are based on descriptions of ailments made by many people. Cluster, created by all variables, is rather a general set of potentially possible dysfunctions. This does not mean the simultaneous occurrence in each of the subjects of all the symptoms to which the variables relate. However, it turns out that in the majority of patients forming the studied population, neurotic symptoms appear in the context of many other dysfunctions belonging to this general set.

As shown by pilot studies, most of the analyzes carried out indicates the formation by all of the variables of one cluster. It is very likely that regardless of the type of functional disorder – neurotic, personality, behavioral, etc. – the symptoms to which relate the variables of the questionnaire form one syndrome. Of course, this does not exclude differences resulting from the presence of dysfunctions, not covered by the items of the questionnaire. The answer to the question about the structure of the occurrence of such symptoms, and consequently the differences between these disorders, requires separate research.

The results of analyzes aimed at the search for relationships between the diagnosis of neurotic disorder formulated in terms of ICD-10 and the set of symptoms (in the main part of the study), confirm the validity of the belief that diagnostic categories are not very accurate. Two of the calculation procedures used: the single linkage method and the unweighted pair-group average method indicated that despite of a variety of diagnoses, the whole patient population creates one cluster. The same conclusion arises from the Ward’s method analysis when adopting the maximum difference in distance between nodes. Although the use of the Mojena’s criterion suggests the existence of four clusters, either of them, however, collected people with the same diagnosis. The search for possible differences, not related to the type of symptoms, between patients forming these clusters requires separate research.

Questionnaires of persons forming the control group despite significant differences in the number of reported dysfunctions in the results of most analyzes create one cluster, similarly to the population of patients, while the results of taxonomic analyzes concerning the coexistence of variables are very different from the results of patient population questionnaires. All agglomeration methods and methods for determining the cut-off points indicate a multiplicity of small clusters. The results of Ward’s analysis distinguished the cluster of six variables that relate to tension and anxiety, sadness, feelings of tiredness and concentration difficulties. The absence of statements about the occurrence of complaints to which 24 variables refer (see annex) may indicate that some of the functional symptoms are especially rare in people who do not have neurotic disorders.

The results may be an argument for the qualitative difference of dysfunctions occurring in various situations in healthy people, from symptoms of the neurotic syndrome. However, the analyzes carried out have a limited value (among other things due to the insufficient size of the studied group) and require verification in further studies.

Perhaps functional dysfunctions that are neurotic symptoms get specific quality becoming elements of a structured syndrome that has the character of a health disorder. There are many indications that the neurotic syndrome has features of dynamic structure [39], as for instance the phenomenon of the exchange of elements (symptoms). The dynamics of this structure are probably stimulated by feedback – both interactions within mental processes (including cause-and-effect relations between their particular elements¹²) as well as feedback related to environmental reactions¹³. In its formation, which can occur at any time in the life of an individual, and in its sustaining, a significant personality dysfunction play an important part [14, 41–43].

The functional symptoms embedded in the context of such a structure are most likely to convey (mainly non-verbally) some information¹⁴, perhaps most (but not exclusively) related to the unconscious experiences. The type of symptoms probably depends on the content of psychic experiences, and these on various circumstances, perhaps mainly socio-cultural. This would explain both fluctuations in the clinical picture of syndromes occurring in individual patients as well as changes observed over many years.

The adoption of such a dynamically structured syndrome means giving a new sense to the concept of “psychogenesis”, and also leads to a change in the criteria that determine the diagnosis of a neurotic disorder. The basic criterion is to notice the coexistence of many different dysfunctions linked by a dynamic structure, not some kind of specific dysfunction.

The neurotic syndrome in the proposed sense is not identical to the “general neurotic syndrome” [43] and is inconsistent with the attribution of the primary importance to the emotional aspects of neurotic disorders, as well as the concept of “axial symptoms” – e.g., the special role of anxiety or vegetative disorders [40 and others]. As it results from the presented research, symptoms of this kind do not occupy any distinguished place in the set of dysfunctions occurring in patients.

The assumption that all neurotic symptoms are equivalent elements of the structured whole makes it possible to give up the hypothesis of coexistence in one patient of several different functional disorders (“comorbidity”). It also leads to undermining the belief about the existence of *a continuum*, about the blurring of the border between the neurosis and “psychophysiological” dysfunctions and problems of healthy people [44]. But first and foremost, the basic conclusion from the taxonomic analyzes presented here, indicating that all neurotic symptoms¹⁵ create in fact one syndrome, whose various fragments temporarily appear depending on the current experiences and the circumstances that trigger them (especially those of feedback character), is an argument against distinguishing many different types of neurotic disorders.

¹² Causing, for example, the formation of hypochondriac symptoms as a consequence of ailments caused by functional somatic dysfunctions.

¹³ This hypothesis refers to the concept of information metabolism, formulated by A. Kepiński [40].

¹⁴ The symbolic function of neurotic symptoms speaks for the legitimacy of treating them as “signifiers”.

¹⁵ And at least those of them to which refer the symptom checklist “O” variables.

If these results are confirmed in further studies, they can be an experimental basis for changing the way of categorizing and classifying functional disorders, introducing order to the knowledge about these disorders and increasing the effectiveness of therapeutic interactions.

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ANNEX

RESULTS OF TAXONOMIC ANALYSIS (SINGLE LINKAGE METHOD) OF QUESTIONARIES OF THE STUDIED GROUP DESCRIPTION OF VARIABLES FROM GRAPH II

12. Checking over and over whether everything has been done properly (door locked, oven turned off, and so on); 7. Dissatisfaction with your sex life. 80. Reddening (blushing) of the face, neck or chest; 49. Dryness of the mouth; 69. Diarrhea; 11 Skin itching or a rash that quickly disappears; 74. Constipation; 31. Wind (flatulence), involuntary passing of gas; 132. Heartburn; 3. Choking, having a “lump” in your throat; 118. Feeling rebellious; 79. Frequently waking up at night; 99. Insomnia; 39. Difficulty falling asleep; 19. Nightmares, frightening dreams; 128. Feeling low intensity of emotions; 95. Losing yourself in daydreams; 70. Shyness and embarrassment in the company of persons of the opposite sex; 65. Inability to control expressing your emotions, irrespective of the consequences; 54. Loss of appetite; 81. Anxiety when in crowds; 59. Hunger pangs, for example, having to eat at night; 116. Constantly feeling anger, wrath; 96. Uncontrollable bursts of anger, wrath; 40. Chest pain; 37. Performing rituals to try to avoid disease; 131. Heartburn; 91. Allergic reactions such as hay fever, brief swellings and so on; 134. Muscle pains – for example, in the back, chest, and so on; 124. Fears of doing something terrible (like jumping out of the window) or of something terrible happening; 21. Anxiety and/or other unpleasant feelings arising every time there is no one around (e.g., in an empty flat); 138. Déjà vu (a feeling that you have been somewhere or done something you are actually doing for the first time); 108. Having an impression that you have already seen something you are actually seeing for the first time; 129. Feeling muscle tension; 114. Excessive perspiration in stressful situations; 135. Buzzing in the ears; 121. Fears about the safety of your close relatives who are not currently in any danger; 44. Panic attacks; 24. Paralysing, unexplainable fear that makes it impossible for you to do anything; 119. Hard to control sleepiness during the day that forces you to fall asleep briefly, regardless of the circumstances; 85. Unexpected, turbulent bursts of joy, happiness, ecstasy; 113. Involuntary trembling of the eyelids, face, head or other parts of your body; 89. Trembling in the legs, hands or your whole body; 93. Muscle cramps in various parts of the body; 13. Muscle cramps that happen only during certain activities, for example, fingers cramping when writing or playing an instrument, and so on; 45. Becoming deeply moved very easily; 5. Frequent crying; 84. Feeling you are in danger for no reason at all; 30. Longing for someone close to you; 56. Restless, chaotic movements that make you less effective; 115. A feeling of being under the influence of the environment, of having to conform; 90. Feeling easily influenced by other people; 110. Feelings that people do not like you (are prejudiced against you) 130. A need to be alone; 50. Avoiding people, even close friends; 15. Lack of independence; 55. Feeling clumsy and helpless; 10. Feeling uncomfortable in a large group; 126. A pressure (floods) of thoughts; 22. Strong feelings

of guilt, self-blame, 125 Feeling that people do not care about you and your problems: 18. Compulsive, bothersome and relentless thoughts, words, fantasies; 105. A feeling that people do not appreciate you; 72. Apathy, slowed down movements and thinking; 106. A feeling that your thinking is slowed down, less sharp; 46. A feeling that it is harder to think and that your thinking is not as clear as usual; 26. Worsening memory; 36. Distractedness that interferes with what you are doing; 25. Experiencing unpleasant events intensively and deeply; 104. Feeling anxious (‘stage fright’) before meetings and events; 4. Constantly feeling anxious with no reason at all; 82 Pessimism, predicting future failures or disasters; 75. A feeling that you are worse than other people; 35. Lack of self-confidence that is making your life difficult; 66. Difficulty concentrating and paying attention; 102. Lack of strength and energy to do anything; 86. Constant fatigue; 6. Feeling fatigue and weakness in the morning that disappears during the day; 42 Loss of self-confidence; 64. Anxiousness; 16. Feeling acute internal tension; 2. Feeling sad, feeling low; 60. Feeling hot or/and cold without an apparent reason; 20. Quickened heartbeat (palpitations) that does not follow any physical activity; 29. Debilitating headaches; 14 Dizziness; 136. Nausea, feeling sick; 98. Excessive thirst; 57. Paying close attention to your bodily functions – for example, heartbeat, pulse, digestion, and so on; 77. Worrying about your health, being afraid of contracting a serious illness; 97. Having a feeling that you may have a serious, life-threatening illness; 17. Discovering signs of various serious illnesses in yourself; 109. Experiencing pain or discomfort when faced by noise, bright light, light touch; 103. Difficulty breathing – for example, breathlessness, shortness of breath that appears and disappears suddenly; 34. Blood rushing into your head; 92. Internal pressure to perform all actions very slowly and precisely; 32. Frequently repeating the same or pointless actions; 52. A strong, uncontrollable need to perform unnecessary actions, for example repeated, unnecessary hand washing, touching things unnecessarily, and so on; 137. Weakened libido; 67. A marked lowering or lack of libido; 47. Aversion to sexual contacts with persons of the opposite sex; 62. Suicidal thoughts; 117. Undefined, “traveling” pains; 123. Disorders of balance; 87. Unpleasant feelings connected with masturbation; 53. Sudden involuntary movements (tics); 58. Obsessive, uncontrollable immoral or blasphemous thoughts; 127. Menstrual disorders in women; 38. Struggling with persistent thoughts of hurting or insulting someone; 78. Persistent, obsessive, unnecessary counting – for example, of pedestrians, street lights, cars, and so on; 112. Excessive drinking of alcohol; 41 Feeling anxious every time you are in a moving car, train, bus; 33. Stuttering; 107. Pain or other ailments affecting your sexual organs; 101. Strong, unfounded fear of objects, animals or places; 27. Sexual life problems due to, for instance, muscle spasms in women or early ejaculation in men, and so on; 76. Smashing, crushing, destroying things when you are angry or upset; 73. Muteness, inability to speak that suddenly appears and disappears; 63. Periodic blindness or deafness; 133. Cramps (spasms) that force you to constantly tilt your head; 94. Excessive saliva in the mouth; 71. Anxiety or other unpleasant sensations that arise only when you are in closed rooms; 61. Feeling anxious when you are in open spaces, for example, in a large

square; 111. Involuntary passing of urine, for example in your sleep; 83 Feeling faint in difficult or unpleasant situations, 51. Fainting; 43. Temporary numbness, paralysis of arms or legs; 23. Numbness (loss of feeling) in a part of your body (skin); 9. Being sick (vomiting) in stressful situations; 28. Feeling as if you are looking at the world (your surroundings) through a fog; 88. Feeling that you are living as if in a dream; 48. Feeling that the world around you is unreal; 68. A feeling that your body is strange, not like your own; 8. Having a feeling that familiar things have become strange and unfamiliar; 1. Feeling anxious whenever you are on a balcony, a bridge or a cliff edge.

CONTROL GROUP – DESCRIPTION OF VARIABLES IN WHICH THERE WERE ANSWERS NOT CONFIRMING PRESENCE OF SYMPTOMS

132. An urge to frequently pass urine; 9. Being sick (vomiting) in stressful situations; 124. Fears of doing something terrible (like jumping out of the window) or of something terrible happening; 123. Disorders of balance; 111. Involuntary passing of urine, for example in your sleep; 107. Pain or other ailments affecting your sexual organs; 101. Strong, unfounded fear of objects, animals or places; 94. Excessive saliva in the mouth; 87. Unpleasant feelings connected with masturbation; 83. Feeling faint in difficult or unpleasant situations; 81 Anxiety when in crowds; 76. Smashing, crushing, destroying things when you are angry or upset; 71. Anxiety or other unpleasant sensations that arise only when you are in closed rooms; 68. A feeling that your body is strange, not like your own; 62 Suicidal thoughts; 51. Fainting; 44. Panic attacks; 43. Temporary numbness, paralysis of arms or legs; 41. Feeling anxious every time you are in a moving car, train, bus; 37. Performing rituals to try to avoid disease; 24. Paralyzing, unexplainable fear that makes it impossible for you to do anything; 23. Numbness (loss of feeling) in a part of your body (skin); 61. Feeling anxious when you are in open spaces, for example, in a large square; 8. Having a feeling that familiar things have become strange and unfamiliar;