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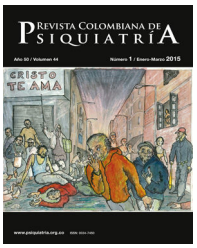

Original article

Structural Study of Anxiety and Mood-related Symptomatology in Psychiatric Outpatients☆

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ABSTRACT

Introduction: Knowledge of the symptomatological structure of mental disorders is relevant for their understanding and classification. In the absence of previous Latin American research on the simultaneous structural exploration of various types of psychiatric symptomatologies, the objective of this study is to examine the structure of anxious and mood-related symptoms, resulting syndromes, and their correlations.

Method: Several instruments for the evaluation of anxious, depressive, and manic symptoms were administered to 305 psychiatric outpatients. Using factor analysis and network graphs based on polychoric correlations between the symptoms, their clustering patterns (syndromes) were explored. Further, correlations between the scores of each resulting syndrome were performed.

Results: The symptom grouping process led to a total of fifteen generally overlapping syndromes: fear of evaluation, fear of people, agoraphobia, general anxiety, somatization, anergy, depressive core, lack of positive mood, cognitive difficulties, mania, post-traumatic stress/obsessions, fear of madness/loss of control, acrophobia, irritability, and sleep disturbances. General anxiety was at the center of the structure. Morning/matinal pole, hypersomnia, and increased appetite were relatively isolated symptoms.

Conclusion: Overlapping and/or highly correlated psychiatric syndromes were prominent findings, underlining the pertinence of a dimensional approach as a substantial strategy toward a more inclusive understanding of mental disorders.

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Estudio estructural de la sintomatología ansiosa y afectiva en pacientes ambulatorios

Palabras clave:
Síndrome
Ansiedad
Síntomas afectivos
Clasificación
Diagnóstico dimensional

RESUMEN

Introducción: Conocer la estructura sintomatológica de los trastornos mentales es relevante para su comprensión y clasificación. En América Latina no hay investigaciones previas que exploren simultáneamente la estructura de diversos tipos de sintomatologías psiquiátricas. El objetivo de este estudio es examinar la estructura de los síntomas ansiosos y afectivos, los síndromes resultantes y sus correlaciones.

Método: Varios instrumentos para evaluar síntomas ansiosos, depresivos y maníacos fueron administrados a 305 pacientes psiquiátricos ambulatorios. Usando análisis factorial y gráficos de redes basados en correlaciones policóricas entre los síntomas, se exploraron sus patrones de agrupación (síndromes). Posteriormente, se calcularon las correlaciones entre los puntajes de cada síndrome.

Resultados: El proceso de agrupación de síntomas resultó en un total de 15 síndromes generalmente superpuestos: miedo a la evaluación, miedo a la gente, agorafobia, ansiedad general, somatización, anergia, núcleo depresivo, falta de afecto positivo, dificultades cognitivas, manía, estrés postraumático/obsesiones, miedo a la locura/pérdida de control, acrofobia, irritabilidad y alteraciones del sueño. «Ansiedad general» se situó en el centro de la estructura. Los síntomas polo matutino, hipersomnia y apetito elevado se mostraron relativamente aislados.

Conclusión: La superposición y la alta correlación entre síndromes psiquiátricos fueron hallazgos prominentes que subrayan la pertinencia de un enfoque dimensional como estrategia sustancial para un entendimiento más integral de los trastornos mentales.

Introduction

The publication of the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) and its subsequent versions by the American Psychiatric Association (APA), as well as the corresponding texts of the International Classification of Diseases (ICD) by the World Health Organization (WHO), represent a significant improvement of the diagnostic processes as the use of a more common language facilitates the scientific communication between mental health professionals from different parts of the world leading to a reduction of the variability in prevalence estimates from epidemiological studies.[1]

Nevertheless, the current mental disorder classifications have been criticized from different perspectives, reflecting a significant dissatisfaction with the descriptive and management aspects of clinically observed phenomena. Some of the main objections focus on the fact that current diagnostic categories ignore important aspects of the total set of problems experienced by the individual patient, neglecting relevant phenomenology, and not adjusting themselves to approaches substantiated by neuroscientific investigations.[2,3]

As examples, critics mention diagnostic categories that have been eliminated, modified, placed together, fragmented or expanded[3,4] in the successive editions of the DSM[5]; the fact that many diagnoses show excessive heterogeneity, i.e., disorders documented by an interchangeable variety of symptom combinations whose clinical weight is considered similar; and the formulation of diagnostic criteria and categories as, essentially, products of experts' opinions and consensus. These approaches subtly neglect the value of consistent research efforts.[4]

Furthermore, the description of numerous psychiatric entities appears to be vague and confused, keeping a weak association with non-specific symptoms, many of which actually overlap with those of other disorders. Many clinicians maintain that such is the case, for instance, with generalized anxiety disorder (GAD) and major depression.[3] There are no clear boundaries between diagnoses and no precise distinctions between normal health states and morbid conditions of varying severity.[2] This would explain the high comorbidity levels found in epidemiological studies: almost half of the individuals carrying a given psychiatric diagnosis may have, at least, an additional one.[6]

Two conceptions can be proposed to understand the characteristic nature of mental disorders: one that assumes a single origin of all mental pathology which, however, is expressed in particular ways in different individuals, which is consistent with the continuity between different mental disorders and a dimensional model. The other position, corresponding to the categorical model, assumes that each mental disorder is independent and has its own etiology, course, prognosis, and treatment.[1]

It is generally assumed that mental disorders have a categorical nature, i.e., they can be either present or absent; however, clinical evidence persuasively suggests that they are, rather, continuous or dimensional constructs, a reason for

which proposals have been made to re-state the how of diagnostic processes in psychiatry, conceiving and coining, for instance, the concept of spectrum. Serious attempts have been made to substantiate this dimensional nature with a variety of empirical data.[4] In fact, the U.S. National Institute of Mental Health (NIMH) proposed in 2015 the Research Domain Criteria (RDoC), a nosological system that intends to link neurobiological factors, i.e., biomarkers, with specifically different aspects of psychiatric symptomatology measured through a dimensional approach.[7]

Due to the relatively scarce knowledge about the ultimate physiological/causal mechanisms of mental problems (the main reason to call them disorders and not diseases),[8] the classification of these entities depends, in good measure, on a careful clinical description based on syndromes of well-demonstrated validity. In 1742, Sydenham was the first who defined a syndrome as a set of interrelated signs and symptoms, showing a characteristically stable structure and a particular prognosis.[3] Throughout history, and particularly in the last two centuries, psychiatrists from different parts of the world have attempted to construct psychiatric syndromes and diagnostic entities that meet these requirements.[9–11] Thus, there are current statistical methods that allow the study of how the symptoms relate to each other in order to establish a structure, a process that, then, makes it possible to identify syndromes and understand their unique interrelationships. Such methodologies include the latent variable and network analysis; the latter, for instance, allows a graphic visualization of relationships, closeness and grouping of symptoms, an approach used in attempts to identify more precise psychopathological syndromes.[12,13]

On this basis, Wright et al.[4] suggested three main psychopathological groups: psychotic experiences, internalization and externalization problems. Internalization problems would involve three types of syndromes: obsessive–compulsive, fear (related to social phobia, agoraphobia and panic), and distress, connected with panic, generalized anxiety, depression and mania. Externalization problems would include alcohol and substance use disorders. In turn, Goekoop and Goekoop,[12] utilizing network analysis, proposed six main syndromes: anxiety, depression, retardation, mania, behavioral disorganization, and psychosis.

Similarly, Caspi et al.[14] found three factors that explain psychiatric symptomatology: internalizing, externalizing, and thought disorder (related to psychosis); but additionally, they identified a dimension of general psychopathology that was called “p factor”, which would suggest a common origin and continuity between the different types of mental disorders.

Paulus et al.,[15] suggest a hierarchical model with negative affectivity as a general factor that would explain, together with anxiety sensitivity and intolerance of uncertainty, emotional disorders such as panic, agoraphobia, social phobia, GAD, obsessive–compulsive disorder, and depression.

Kotov et al. identified, in turn, three factors within internalizing psychopathology: distress, fear, and bipolar. Distress involved depression, generalized anxiety, post-traumatic stress, irritability, and panic; fear was made up of social anxiety, agoraphobia, specific phobia and obsessive–compulsive symptomatology; and bipolarity, included mania and obsessive–compulsive symptomatology.[16] In the same way, Waszczuk et al.,[17] studying the internalizing factor, identified three subfactors with their respective syndromes: distress (which included cognitive depression, vegetative syndrome, post-traumatic stress and panic), fear (which involved social anxiety and phobia), and OCD/mania (made up of such components). In turn, these eight syndromes were made up by a whole of 31 dimensions.

Considering that mental health problems, such as distress, express themselves in particular ways due to the impact of different culture-related factors,[18] it is relevant to study the structure of psychiatric symptomatology in Latin American countries such as Peru.

The knowledge of psychiatric symptom-based structure would contribute to improving the way of understanding and diagnosing mental health problems, with further beneficial implications for research on the treatment and prognosis of mental disorders.[19]

The main objective of the present study is the description of a structure built by correlations between diverse anxious and affective symptoms in psychiatric patients, aimed at the establishment of distinctions that would allow a more objective identification of clinical syndromes.

Method

Design

This is an exploratory, cross-sectional and analytic study conducted between July 2014 and December 2015.

Participants

Male and female psychiatric outpatients between 18 and 65 years of age, with at least a complete elementary school educational level, were included. They were seen at the outpatient clinic of a general hospital in Lima, Perú, and constituted a non-probabilistic convenience sample. Patients with overt psychosis, cognitive deterioration, mental retardation, or those who had received psychiatric treatment within the last month, were excluded.

The study sample included a total of 305 patients: 215 women (70.49%) and 90 men (29.51%). Average age was 40.23 years (SD = 13.82), and years of education, 11.34 (SD = 3.19). 41.31% of the patients were single; 20.00%, common-law; 21.97%, married; 11.80%, separated; 2.62%, divorced; and 2.30%, widow/ers.

The most frequent diagnoses were major depressive disorder (51.15%), generalized anxiety disorder (17.05%), anxiety disorder not otherwise specified (16.39%), panic disorder (8.20%), and adjustment disorder (6.56%). Other less frequent diagnoses (<6%) were substance use, personality, social anxiety, and obsessive–compulsive disorders, and agoraphobia.

According to the Clinical Global Impression-Severity Scale (CGI-S), 60.66% of the patients showed a “moderate”, and 31.15%, “marked” levels of symptomatic severity.

Instruments

The following tools were utilized, the last three specifically for the purpose of symptom identification and assessment:

- General Data Intake Form (GDIF), used for recording of gender, age, education years, marital status, disease duration, psychiatric diagnosis, and physical diagnosis.
- CGI-S, a single-item scale, administered by a team member who, based on a systematic clinical observation, quantified the patient's condition along seven levels of severity: 1 (normal); 2 (minimal); 3 (mild); 4 (moderate); 5 (marked); 6 (severe) and 7 (extreme).[20]
- Depressive Psychopathology Scale-20 items (DPS-20): Instrument developed and validated in Peru, made up of 20 ordinal items that can have scores from 0 to 3, according to the intensity of each symptom, with the exception of the items of appetite (0–2), morning pole (0–2) and suicidality (0–4); it has a Cronbach alpha of 0.86, and a mean completion time of 7.22 min. Its score correlates quite well with the diagnosis of major depression and the Zung Self-rating Depression Scale (ZSDS). Five factors were identified in the original study of DPS-20: "depression", "anergia", "uneasiness", "insomnia" and "absence of positive affect".[21] In our sample, its McDonald's omega was 0.87.
- Additional mood-related ordinal items linked to hopelessness, vulnerability and loneliness, besides 13 other dichotomic items from the Mood Disorders Questionnaire (MDQ), used to evaluate symptoms of mania.[22,23] Regarding the internal consistency of the MDQ, alpha was 0.90 in a validation study of its Spanish version,[23] and McDonald's omega was 0.69 in our sample.
- Lima's Anxiety Scale, 72-item version (LAS-72): Instrument also developed in Perú, with a Cronbach Alpha of 0.96 and Rho of 0.47 ($p < 0.01$) with the CGI-S for anxiety. Its items include symptoms of generalized anxiety and panic disorder, agoraphobia, social phobia, obsessive–compulsive and post-traumatic stress disorder.[24] In our sample, the McDonald's omega was 0.96 for the total scale, and the corresponding values for the subscales were 0.83 (generalized anxiety), 0.89 (panic/physical symptoms), 0.79 (agoraphobia), 0.91 (social anxiety), and 0.72 (obsessive symptoms/post-traumatic stress).

Procedure

The research proposal was approved by the Ethics Committee of the Universidad Peruana Cayetano Heredia. Patients invited to participate were informed about the nature and objectives of the project; following their acceptance, they were asked to sign the informed consent form and fill up the initial part of the GDIF. Next, each participant responded to the mood and anxiety evaluation instruments described above. Finally, each patient was formally interviewed by the treating psychiatrist who would, then, complete the GDIF including mostly DSM-5 based diagnoses, and severity level according to the CGI-S.

Data analysis

Generation of a correlational matrix between symptoms. A matrix of polychoric correlations between each of the symptoms was built.[25] This allows the study of relationships between dichotomic or ordinal variables with different number of possible values, many times asymmetrically distributed as items of many scales.

Exploration of correlations between symptoms and identification of symptom conglomerates (syndromes). For each symptom, >0.40 correlations were counted, a value that reflects, at least, a "moderate" correlation.[26] Through a network graphic, elaborated on the basis of the NodeXL program, the between-symptoms correlations were visualized, beginning with the strongest ones, gradually moving toward the weakest, and finishing up with those whose value was 0.40. Thus, evidence of how the symptoms got together and conformed conglomerates (syndromes) was obtained, as was the level of correlation at which each symptom begins to merge with its corresponding syndrome. This correlation from which the symptom can be visualized in the network will be abbreviated later as Rj. A name for each syndrome was chosen on the basis of those symptoms grouped in each conglomerate. Likewise, "bridge symptoms" were identified and defined in this study as the first symptoms through which one syndrome began to connect with another.

Construction of dimensions corresponding to the identified symptom conglomerates (syndromes). An exploratory polychoric factorial analysis of items of each possible resulting syndrome was conducted, producing factorial loads (FL) of each symptom, each FL representing the degree of relationship with the syndrome to which they belong. The higher the FL, the more representative the symptom of its syndrome. A <1 eigenvalue of the second factor supports the unidimensionality of the syndrome (i.e., all the items are related to a single concept or latent variable which, in turn, would indicate that the syndrome cannot be further divided). If a given item had a FL of >0.40, its belonging to the corresponding dimension was confirmed. Next, the sum of the items from each dimension was calculated.

Evaluation of the relationships between dimensions. Polychoric correlations were calculated between the scores of each dimension, obtained in the preceding step, and the corresponding network graphic was elaborated with the NodeXL program.

Results

Correlations between symptoms and identification of syndromes

Tables 1–3 show the number of relevant ($R > 0.40$) correlations of each symptom with any of the others (nRC). The nRC indicates the level of connectivity that a certain symptom has with the rest (including the symptoms of all the different syndromes), which is a measure of its degree of centrality within the entire symptomatic network. In this context, the

Table 1 – The phobic syndromes and their corresponding symptoms.

Syndrome/symptoms	nRC	Rj	FL
"*Fear of people*"			
Discomfort in approaching and interacting with a group of people	55	0.83	0.89
Avoid interacting with other people	53	0.83	0.85
Discomfort of being surrounded by many people	47	0.77	0.85
Discomfort entering or leaving a crowded place	45	0.77	0.86
Fear of being in classrooms, conference rooms, auditoriums, or large rooms	46	0.73	0.74
Discomfort to claim, ask for a favor, or request information	32	0.68	0.73
Feeling insecure, without self-confidence	72	0.64	0.71
Avoid giving your opinion, defending your own point of view, criticizing or expressing disagreement or disapproval	18	0.57	0.62
"*Fear of evaluation*"			
Fear of making a fool of yourself and feeling humiliated or embarrassed	51	0.78	0.86
Fear of making mistakes in front of others	58	0.78	0.85
Fear of doing things in front of people who may be watching	58	0.76	0.88
Fear of being criticized	41	0.75	0.81
Discomfort of being observed working, writing or walking	35	0.72	0.79
Fear of taking exams or having a job interview	26	0.70	0.81
Fear of being in classrooms, conference rooms, auditoriums, or large rooms	46	0.68	0.76
Discomfort of calling or talking on the phone with someone little known, especially if there are people around	23	0.65	0.65
Feeling insecure, without self-confidence	72	0.64	0.76
Choppy speaking, feeling unsteady or insecure voice	46	0.63	0.63
Feeling nervous about social situations such as parties, meetings or commitments	34	0.62	0.70
Fear of superiors or people of authority	34	0.61	0.71
"*Agoraphobia*"			
Fear of traveling by car, especially if you have to drive or if there may be traffic jams	29	0.69	0.74
Fear of walking down the street, especially along large avenues	38	0.69	0.83
Fear of being in classrooms, conference rooms, auditoriums, or large rooms	46	0.68	0.83
Discomfort when entering or leaving a crowded place	45	0.68	0.71
Fear of queuing	32	0.67	0.77
Fear of leaving home	31	0.66	0.80
Fear of being alone	18	0.52	0.53
"*Acrophobia*"			
Fear of being in high places	4	0.73	0.80
Fear of crossing bridges	11	0.73	0.80

nRC = number of relevant correlations ($R > 0.40$) with any other symptom.
Rj = correlation coefficient with which the symptom starts to be part of or joins the syndrome.
FL = polychoric factor loadings with respect to its corresponding syndrome.

most frequently connected symptoms were "feeling insecure, without self-confidence", "angst/nerves on edge", "nervousness", "fear of losing control", "feeling unsafe as if about to fall", and "feeling numb or confused". On the contrary, those with very low connection to others (no >0.40 correlations, nRC = 0) were "hypersomnia", "morning pole" and "less need to sleep". Finally, some symptoms only had one >0.40 correlation (nRC = 1): "increased appetite" (correlated with "tendency to feel anxious"), "fear to die" (correlated with "fear of something catastrophic to occur"), "excessive spending" (correlated with "acting in an unusual manner"), and "feeling more confident than usual" (correlated with "increased energy").

The same tables (1–3) also show the results of the sequence of largest to smallest correlation coefficients between the different symptoms. The resulting syndromes are presented with their corresponding symptoms, pointing out the correlation coefficient with which each symptom starts to be part of or joins the syndrome (Rj). The first group of symptoms with the highest Rj, are those belonging to social anxiety, beginning with "fear of people" (R of the first pair of linked symptoms, first Rj or fRj = 0.83), and followed by "fear of the evaluation" (fRj = 0.78). Beyond them, other syndromes include "anergia" (fRj = 0.75), "mania" (fRj = 0.75), "posttraumatic stress/obsessive" (fRj = 0.74), "lack of positive affect" (fRj = 0.73), "acrophobia" (fRj = 0.73), "somatic syndrome" (fRj = 0.72), "general anxiety" (fRj = 0.72), "depressive core" (fRj = 0.70), "agoraphobia" (fRj = 0.69), "fear of losing control/getting crazy" (fRj = 0.69), "irritability" (fRj = 0.66), "cognitive difficulties" (fRj = 0.66), and "sleep problems" (fRj = 0.64).

It is clear that, as the threshold of *R* diminishes, more symptoms are added. Additional observations in connection with the *R* values include:

- $R = 0.68$: The syndromes "fear of people", "fear of evaluation", and "agoraphobia" join each other with "fear of being in classrooms, lecture spaces, auditoria or large rooms" as an important bridge-symptom in this connection. In turn, the "somatic" syndrome joins the "general anxiety" syndrome, with "feeling terrorized, panicky" as the bridge-symptom.
- $R = 0.64$: "Anergia" symptoms join those of "lack of positive affect" and "fear of losing control/getting crazy".
- $R = 0.63$: Symptoms of social phobia start to relate with those of "general anxiety" through the symptom "feeling

Table 2 – The "anergia", "lack of positive affect", "depressive core", "post-traumatic stress/obsession", "general anxiety", and "fear of losing control/going crazy" syndromes and their corresponding symptoms.

Syndrome/symptoms	nRC	Rj	FL
"*Anergia*"			
Tiredness, without energy	53	0.75	0.78
Get tired easily	62	0.75	0.86
Feeling heavy arms or legs	13	0.64	0.76
Feeling weak, especially in the legs	35	0.64	0.79
Paresthesia	28	0.60	0.62
Discomfort in having sex	4	0.52	0.47
Do things too slow	5	0.46	0.54
"*Lack of positive affect*"			
Not feeling comfortable, calm and peaceful	39	0.73	0.84
Not feeling relaxed	45	0.73	0.73
Not feeling good, comfortable and satisfied	34	0.71	0.78
Losing interest in activities, not enjoying things.	28	0.64	0.75
Mood does not improve despite something good happening or receiving good news	41	0.56	0.68
Having no hope that problems will be solved and things will improve	10	0.51	0.64
Do not see the future with optimism	8	0.51	0.60
Not feeling pleasure or satisfaction about things	13	0.49	0.64
Feeling numb, unable to feel affection	23	0.47	0.51
Depressive core			
Feeling alone	28	0.70	0.78
Feeling helpless, vulnerable, or unprotected	39	0.70	0.80
Feeling sad	40	0.65	0.82
Feeling useless or worthless	41	0.58	0.72
Wanting to die, hurt yourself or commit suicide	34	0.56	0.69
Feel guilty	14	0.53	0.65
Hypersensitivity to rejection	17	0.48	0.53
Low appetite	4	0.47	0.49
"*Post-traumatic stress/obsession*"			
Memories or images of a traumatic event that generate very painful or unpleasant emotions	33	0.74	0.80
Remembering so intensely a traumatic event that it's like it's happening again	28	0.74	0.79
Imagine horrible events such as deaths, fires, floods, robberies	36	0.55	0.72
Difficulty stopping having unpleasant ideas that come against the will	44	0.55	0.65
"*General anxiety*"			
Feel nervous	67	0.72	0.80
Feeling anguished, with nerves on edge	71	0.72	0.84
Tendency to feel anxious	50	0.67	0.69
Feeling terrified, panicked	53	0.67	0.81
Feeling scared, afraid	57	0.67	0.77
Feeling fear for no reason	63	0.67	0.77
Feeling agitated or upset	50	0.66	0.73
Worsening of mood as the day passes, being worse at night	15	0.63	0.55
Fear of misfortune, something terrible or catastrophic, or receiving very bad news	34	0.63	0.71
Anguish at thinking how to prevent all risks or dangers	21	0.63	0.57
Get scared easily or startle at unexpected noises	36	0.60	0.63
Restlessness, agitation	36	0.59	0.69
Difficulty to stop worrying	14	0.59	0.52
Derealization	35	0.59	0.61
Fear of dying[a]	1	0.57	0.33
Feeling restless, not being able to stay in one place, needing to move or walk	10	0.52	0.53
"*Fear of losing control/going crazy*"			
Fear of losing control	66	0.69	0.77
Fear of going crazy	38	0.69	0.77

nRC = number of relevant correlations (R > 0.40) with any other symptom.
Rj = correlation coefficient with which the symptom starts to be part of or joins the syndrome.
FL = polychoric factor loadings with respect to its corresponding syndrome.
[a] Items with factor loadings with respect to their syndrome <0.40 and that were not included in the sum to calculate the value of the corresponding dimension.

Table 3 – The "irritability", "cognitive difficulties", "sleep problems", "somatic syndrome" and "mania" syndromes, and their corresponding symptoms.

Syndrome/symptoms	nRC	Rj	FL
"*Irritability*"			
Frequently feeling aggressive, with anger, rage, and hatred	40	0.66	0.77
Feeling irritable, getting angry easily	8	0.66	0.78
Get upset easily with people	12	0.58	0.68
Irritability (mania)	10	0.47	0.57
"*Cognitive difficulties*"			
Difficulty concentrating, memory failure	35	0.66	0.72
Easily distracted by things around you, trouble concentrating or staying alert	36	0.66	0.77
Having doubts, not feeling sure that things have been done well, having to review or check them	22	0.57	0.68
Difficulty thinking or concentrating	23	0.56	0.72
Difficulty facing problems	48	0.56	0.64
Difficulty making decisions	38	0.53	0.67
Feeling lightheaded or confused	65	0.49	0.69
"*Sleep problems*"			
Trouble sleeping	7	0.64	0.82
Waking up too early	6	0.64	0.71
Sleep bad	19	0.61	0.69
"*Somatic*"			
Palpitations, feeling your heart beating fast or hard	44	0.72	0.77
Feeling short of breath or choking	49	0.72	0.77
Chest pressure or pain	36	0.70	0.75
Feeling like you might faint	40	0.62	0.76
Shaking chills	46	0.58	0.77
Cold or wet hands or feet	26	0.58	0.63
Paresthesia	28	0.58	0.63
Tremors, shaking	44	0.58	0.69
Feeling insecure, like you're going to fall	65	0.57	0.70
Dry mouth	28	0.54	0.68
Frequent sighs	35	0.52	0.64
Digestive discomfort	8	0.52	0.56
"*Mania*"			
Having much more energy than usual	5	0.75	0.72
Being much more active, doing more things than usual	5	0.75	0.72
Being more talkative or speaking faster than usual	5	0.64	0.78
More social activity than usual, going out more from home, calling by phone late at night	5	0.56	0.65
Being much more interested in sex than usual	5	0.52	0.64
Doing things out of the ordinary or that others consider exaggerated, silly or risky	14	0.46	0.70
Being so irritable that you have yelled at people or started fights or arguments	10	0.46	0.47
Spending money in a way that causes problems for yourself or your family	1	0.45	0.47
Concentration problems (mania)[a]	36	0.43	0.23
Feeling overly good or fast (judging others or getting into trouble because of it)[a]	4	0.43	0.35
Feeling more confident than usual[a]	1	0.41	0.31
Fast thinking[a]	13	0.40	0.23

nRC = number of relevant correlations ($R > 0.40$) with any other symptom.
Rj = correlation coefficient with which the symptom starts to be part of or joins the syndrome.
FL = polychoric factor loadings with respect to its corresponding syndrome.
[a] Items with factor loadings with respect to their syndrome <0.40 and that were not included in the sum to calculate the value of the corresponding dimension.

insecure, without self-confidence". "General anxiety" starts to fuse with "lack of positive affect" by means of the symptom "nervousness", and with "fear of losing control/getting crazy" through the symptom "fear without a cause".

- $R = 0.61$: "Posttraumatic stress/obsessions" joins in with "general anxiety"; and the "depressive core" with "feeling insecure, without self-confidence" a symptom that is also connected to the syndromes "fear of people", "fear of the evaluation" and "general anxiety".
- $R = 0.58$: The syndrome "anergia" starts to relate to the "somatic" syndrome through the bridge-symptom "paresthesias".
- $R = 0.57$: "Acrophobia" starts to connect with "agoraphobia".

The syndromes "irritability", "cognitive difficulties" and "sleep problems" are not closely related to any of the others, so they will be considered as different, outside dimensions.

Verification and depuration of syndromes or dimensions

Tables 1–3 show the polychoric factorial loads (FL) of each syndrome's symptoms, confirming the structure identified and described above for "fear of people", "fear of evaluation", "anergia", "posttraumatic stress/obsessions", "lack of positive affect", "acrophobia", "somatic syndrome", "depressive core", "agoraphobia", "fear of losing control/getting crazy", "irritability", "cognitive difficulties" and "sleep problems". All the symptoms of each of these syndromes had FL of >0.40; likewise, the eigenvalue of the second factor of each of these syndromes was <1, which suggests unidimensionality. However, the syndrome "mania" had four symptoms with <0.40 FL, and in the "general anxiety" syndrome, the factorial load of "fear of dying" was 0.33. The symptoms with low FL were not included in the summation of items for the calculations of values of the corresponding dimensions. The total number of dimensions thus formed was 15.

Correlations between dimensions

A matrix of polychoric correlations between the 15 dimensions was generated (Table 4). Fig. 1 shows the correlations with values above 0.60. It can be seen that "general anxiety" is at the center of the network and has strong correlations with most of the other syndromes. Similarly, there is evidence of close correlations between: (1) Social phobia-related syndromes ("fear of people" and "fear of evaluation") and "agoraphobia"; (2) "Depressive core" and "lack of positive affect"; (3) Somatic symptomatology and "anergia"; and (4) Symptoms of "posttraumatic stress/obsessions" and "fear of losing control/getting crazy". Finally, "cognitive difficulties" correlate with "general anxiety", "fear of the evaluation" and "depressive core".

Discussion

The main findings of the study are: (a) a great correlation between symptoms of various syndromes that generates an overlap and absence of clear limits among the latter; (b) the identification and description of 15 psychiatric syndromes and their own correlations: (1) general anxiety; (2) fear of evaluation; (3) fear of people; (4) agoraphobia; (5) somatic syndrome; (6) depressive core; (7) anergia; (8) lack of positive affect; (9) mania; (10) irritability; (11) cognitive difficulties; (12) sleep problems or disruptions; (13) acrophobia; (14) posttraumatic stress/obsessions; and (15) fear of losing control or "getting crazy"; and (c) the existence of some symptoms isolated from the rest of the syndromes.

The findings can be discussed in the context of other studies that, through various methods, describe how psychiatric symptoms are grouped together to form syndromes. Such methods include principal component analysis, factor analysis, and recently network analysis.[12] The dimensions of the psychometric scales, which will be commented on later, are the result of a factorial analysis of their items, thus providing information on the grouping of symptoms.

The overlap between the different syndromes is consistent with the proposal of one general psychopathology factor (p factor) that would be predisposing to the various types of psychiatric symptomatologies,[14] and explains the vast comorbidity found among a good number of mental disorders.[6]

General anxiety, which includes symptoms such as nervousness, anguish, preoccupations, restlessness and scaring sensations, seems to be at the center of the symptomatology, strongly correlating with the majority of the other syndromes, particularly somatic syndrome, cognitive difficulties, and the depressive core. A symptom also included in such group is mood worsening as the day goes on (vespertine or evening pole). It is worth mentioning, however, that, in a study based on the Comprehensive Psychopathological Rating Scale (CPRS) items, the syndrome at the center of the psychopathology network was depression.[12]

The current concept of depression, represented by major depression in DSM-5[5] or depressive episode in ICD-10,[27] corresponds with the "depressive core", "lack of positive affect" and "anergia" syndromes, dimensions also found in studies on the factorial structure of a variety of psychometric scales.

The "depressive core", characterized by sadness, suicidal tendencies, worthlessness ideas, guilt, feelings of loneliness and vulnerability, has a close relation with the "depression" factor of the Hamilton Rating Scale for Depression (HRSD),[28] the Four-Dimensional Symptom Questionnaire (4DSQ)[29] and the DPS-20[21]; similarly, with the "negative attitude toward oneself" dimension of the Beck Depression Inventory (BDI),[28] the "depressive affect" of the Center for Epidemiological Studies Depression Scale (CES-D),[28] the "negative affect" of the ZSDS,[28] the "affective/cognitive" dimension of the Inventory for Depressive Symptomatology (IDS),[30] and with the conglomerate "depression" based on a network analysis of symptoms of the CPRS.[12]

"Lack of positive affect", that includes symptoms such as loss of interest, anhedonia and lack of mood reactivity, is also present in the similarly named dimension of the CES-D,[28] ZSDS,[28] DPS-20[21] and Mood and Anxiety Symptom Questionnaire (MASQ).[31]

The "anergia" syndrome, characterized by fatigue, tiredness, heaviness in the extremities, slowness and problems in sexual relations, corresponds with the same-named dimension of the DPS-20.[21] Symptoms of anergia are also present in the "performance impairment" factor of the BDI[28] and the "somatic" factor of CES-D.[28] The symptoms of the "depressive core", "lack of positive affect", and "anergia" syndromes are included in the "depression" dimension of the Symptom Checklist 90-R (SCL-90-R).[32]

Another important syndrome is the "somatic" one (that some clinicians would call "somatization"), which includes cardio-respiratory symptoms, fainting or falling sensations, chills, tremors, paresthesia, cold and humid hands or feet, dry mouth and digestive discomfort, and is precisely represented in the "somatization" dimension of SCL-90-R[32] and 4DSQ,[29] the "somatic anxiety" factor of MASQ,[31] and the conglomerate "anxiety" of the CPRS.[12] The same "somatic" syndrome is closely correlated with "anergia", "general anxiety" and "fear of losing control/getting crazy". The symptoms usually considered part of the so-called "panic attack" are also found in the "somatic", "fear of losing control/getting crazy" and "general anxiety" syndromes. In turn, the strong relationship

Table 4 – Matrix of polychoric correlations between the identified dimensions.

	peopl	eval	anergia	mania	acroph	somat	ganx	coredep	positive	agoraph	irrit	sleep	cognit	trau-obs
eval	0.81													
anergia	0.49	0.49												
mania	0.14	0.23	0.15											
acroph	0.23	0.30	0.28	−0.04										
somat	0.56	0.59	0.64	0.13	0.35									
ganx	0.64	0.65	0.60	0.23	0.37	0.72								
coredep	0.54	0.50	0.57	0.11	0.21	0.54	0.67							
positive	0.58	0.48	0.51	0.11	0.16	0.52	0.60	0.64						
agoraph	0.74	0.70	0.48	0.10	0.37	0.57	0.60	0.42	0.44					
irrit	0.44	0.40	0.44	0.26	0.15	0.39	0.54	0.58	0.50	0.37				
sleep	0.26	0.28	0.52	0.13	0.25	0.50	0.49	0.50	0.45	0.32	0.28			
cognit	0.59	0.62	0.57	0.18	0.18	0.58	0.69	0.60	0.58	0.44	0.47	0.38		
trau-obs	0.48	0.53	0.43	0.10	0.37	0.55	0.61	0.49	0.48	0.49	0.42	0.42	0.44	
mad-cntl	0.58	0.56	0.42	0.12	0.34	0.59	0.65	0.57	0.45	0.59	0.44	0.34	0.51	0.60

Abbreviations: peopl = "fear of people", eval = "fear of evaluation", anergia = "anergia", mania = "mania", acroph = "acrophobia", somat = "somatic syndrome", ganx = "general anxiety", coredep = "depressive core", positive = "lack of positive affect", agoraph = "agoraphobia", irrit = "irritability", sleep = "sleep problems", cognit = "cognitive problems", trau-obs = "post-traumatic stress/obsession", mad-cntl = "fear of losing control/going crazy".

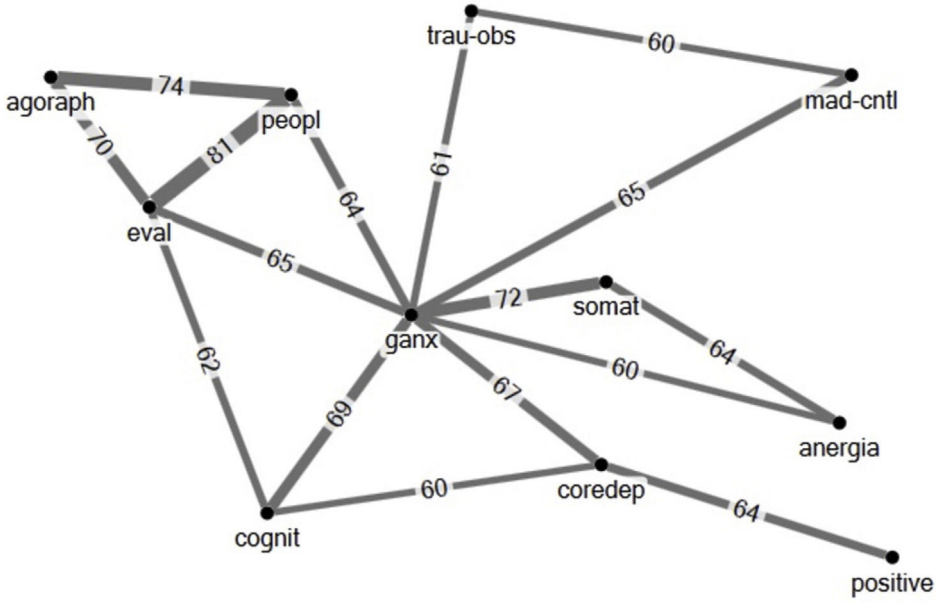

Fig. 1 – Polychoric correlations between syndromes (multiplied by 100). *Abbreviations*: peopl = "fear of people", eval = "fear of evaluation", anergia = "anergia", somat = "somatic syndrome", ganx = "general anxiety", coredep = "depressive core", positive = "lack of positive affect", agoraph = "agoraphobia", cognit = "cognitive problems", trau-obs = "post-traumatic stress/obsession", mad-cntl = "fear of losing control/going crazy".

between anergia and somatic symptoms is supported by network analysis studies[33] and factorial analysis of scales such as the MASQ.[31]

Fig. 1 shows a close connection between "somatic syndrome" and "general anxiety", and between the latter and the "depressive core"; the depression-anxiety-somatic symptoms continuum has also been observed in the symptomatic networks detected by Goekoop and Goekoop,[12] Bekhuis et al.,[33] and van Borkulo et al.[34]

In this study, symptoms belonging to the "irritability", "cognitive difficulties" and "sleep problems" syndromes, usually considered part of the conceptualizations of depression and anxiety, are not sufficiently correlated to be included within the "depressive core", "general anxiety" or another similar syndrome. Such is the case of the dimension "hostility" of the SCL-90-R[32] which corresponds with the "irritability" syndrome identified here. Likewise, in the Interview for Mood and Anxiety Symptoms, irritability symptomatology constitutes an independent subscale and is not part of other subscales such as "generalized anxiety", "depression" or "mania".[16] On the other hand, in the IDS, symptoms related to sleep disturbances are not included in factors such as the affective/cognitive or the anxious/somatic, but constitute a distinct dimension.[30,35] The same occurs with the HRSD that has the

"insomnia" dimension independent of the depressive, anxious and somatic factors.[28]

On their side, symptoms belonging to the "cognitive difficulties" syndrome identified in this study, are included in various dimensions from different scales such as the "affective/cognitive" of IDS,[30] "somatic" dimension of CES-D,[28] "lack of positive affect" of ZSDS,[28] "somatic anxiety" of MASQ[31] and "obsessions and compulsions" of SCL-90.[32]

The "posttraumatic stress/obsessions" syndrome, closely related to "general anxiety" and "fear of losing control/getting crazy", suggests a similarity between obsessive–compulsive and posttraumatic stress disorders as both present clearly intrusive ideas. Other studies also support the link between these disorders.[36]

The concept of "distress" includes most of the previously mentioned syndromes. For instance, the "distress" dimension of the 4DSQ involves symptoms that correspond to "general anxiety", "sleep disturbances", "anergia", "irritability" and "cognitive difficulties".[29] The Kessler Psychological Distress Scale (K10) has items representative of various syndromes: "anergia" (tiredness, feeling that everything is a great effort), "general anxiety" (nervousness, restlessness), "depressive core" (depressive feelings, sadness, sense of handicapping), and "lack of positive affect" (hopelessness).[37]

In the network graphic, three closely correlated syndromes can be observed: "agoraphobia", "fear of people" and "fear of evaluation", the last two corresponding to the concept of social phobia. Comorbidity studies also show a strong association between social anxiety and agoraphobia.[6,38] By the same token, agoraphobia and social phobia belong to the so-called fear/phobic disorders.[4,39] Finally, distress and phobias are found within the internalization disorders group.[4,39]

Mania is the most differentiated syndrome within the symptomatology, i.e., shows little correlation with the rest, and its existence is supported by several studies.[12,40] The manic syndrome identified in the present study corresponds, in general, to the manic or hypomanic episodes described in the DSM-5,[5] with increased levels of energy and general activity plus excessive verbosity as the most noticeable symptoms.

The most consistent finding of this study is that a given psychiatric symptom shows correlations with many others, so it is important to pay attention to those that do not. For instance, hypersomnia is scarcely related to any other symptom, a feature that coincides with those of other investigations that do not find it linked to depression or other psychiatric syndromes or dimensions.[12,21,30,33–35,41,42] Similarly, increased appetite had an important connection only with the item "feeling anxious", but showed irrelevant relationships with depressive symptoms including hypersomnia, considered, like hyperphagia, a reversed vegetative symptom.[41,42] This finding differs from DSM-5 which postulates hypersomnia and increased appetite as diagnostic criteria of major depressive disorder, and the specifier "with atypical features" in depressive disorders.[5]

The matutine (or early morning) pole, part of the "with melancholic features" specifier in depressive disorders, did not have significant links with the remaining psychiatric symptomatologies, a finding that coincides with low factorial loads in dimensions of depression scales such as IDS,[30,35] ZSDS[28] and DPS-20.[21]

The results of this study provide information on the organization and clinical relevance of psychiatric symptoms, which has nosological importance and can be taken into account in the construction of psychometric scales. For example, in the case of depressive syndrome, some symptoms such as the feeling of loneliness and vulnerability stand out due to their relevance, whereas others such as hypersomnia, increased appetite and morning pole perhaps should not be considered part of the syndrome or it might be necessary to improve the way they are evaluated.

The present study explores syndromes on the basis of diverse types of symptoms (belonging to mania, depression, generalized anxiety, somatization, panic disorder, agoraphobia, social phobia, obsessive–compulsive and posttraumatic stress disorders), involving all spectrum of internalizing symptomatology. The literature review shows no similar studies in Latin America. In terms of limitations, however, it does not include psychotic or catatonic symptoms nor those reflecting significant cognitive deterioration. Likewise, the sample has few patients with actual diagnosis of obsessive–compulsive disorder, and none with active mania or posttraumatic stress disorder, limitations that may have impeded to adequately identify their corresponding syndromes or their relationships with others. This could explain the low correlation found between symptoms of the "mania" syndrome, as well as the fusion of posttraumatic stress symptoms with obsessions. Furthermore, the symptomatology was evaluated on the basis of self-administered items and not through a clinical interview which would have allowed an in-depth exploration of the patient's phenomenology. Finally, the sample had a majority of female patients, which makes a different syndromic structure possible if and when compared with a male sample of similar size.

The structure of psychiatric syndromes can be affected by distinctive cultural features, for example, in Asia, a network analysis study showed that the symptomatological configuration of depression is different in patients of different geographic or ethnic origin.[43] Similarly, there could be differences in the structure of the syndromes between Peruvian patients and those from other Latin American countries or from other continents throughout the world. In such context, the structural analysis of syndromes linked to Peruvian culture, such as "susto" (fright), "daño" (curse), "mal de ojo" (evil eye), "aire" (air) and "chucaque" (some kind of headache or pain),[44] could help to understand whether they are independent entities or, on the contrary, particular manifestations of common mental health problems.

Future research could include a larger number of participants, particularly more patients with symptoms of PTSD, OCD and mania; and an assessment of symptoms through a well-delineated clinical interview. Likewise, the internal structure of the network of each identified syndrome could be analyzed in more detail.

Conclusions

The results of this study suggest the existence of 15 psychiatric syndromes with continuity or superposition between and among them. This reinforces the need of a dimensional

approach to the diagnosis of mental disorders in order to reach a thorough comprehensive assessment of complex clinical conditions. The identification of the most representative and relevant symptoms of each syndrome can be subject of future research projects focused on the elaboration of more inclusive clinical psychometric instruments.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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