

Exploring new diagnostic concepts in psychopathology: a clinical and methodological critique to the obsessive-compulsive spectrum

Nuovi concetti in psicopatologia: una critica clinico-metodologica allo spettro ossessivo-compulsivo

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Summary

Aims

In view of the DSM-V, the limits of the DSM categorial approach to diagnosis have recently been discussed and alternative concepts like spectrum and dimensional diagnosis were proposed. In this investigation the spectrum will be studied in order to understand if it is enough coherent and consistent. Indeed, the spectrum can be accepted as a possible model for the development of an alternative diagnostic system only if it proves to be better than the current model.

Methods

A conceptual analysis of the characteristics of the spectrum in psychopathology was first performed. Then, a computerized PubMed search for the years 1980-2005 was made in order to select possible uses of the term spectrum in psychiatric nosology. This search was then expanded through reference lists and other available sources. In order to focalize the research as much as possible, the obsessive-compulsive spectrum was selected as a typical example of spectrum diagnosis. Therefore, this paper focuses on this specific kind of spectrum. Any of the proposed similarities shared by disorders included in the obsessive spectrum were considered in order to determine whether at least one of them was specific for the spectrum (that is, to be present in all the spectrum disorders considered and to be absent in disorders outside the spectrum boundaries).

Results

The conceptual analysis shows that in psychiatry the term spectrum has been transposed from research in optics to refer to a group of different syndromes the phenomenology of which is partially similar and which are linked on the basis of one common characteristic (usually the hypothesized underlying biological cause). When the obsessive-compulsive spectrum was considered, a single common characteristic, linking all the included disorders, could not be found. On the contrary, it emerged that, even if the included disorders shared some similarities, such as course, sex ratio, age at onset, comorbidity, neurobiology, aetiologic hypotheses and therapeutic response, none of these features was specific to the obsessive spectrum. As a consequence, there were no clear inclusion/exclusion rules, and the list of disorders included into the obsessive-compulsive spectrum was different in different papers, depending mainly on the point of view of the authors rather than on the diagnostic criteria of the spectrum.

Conclusions

The analysis shows that the obsessive spectrum is an "amorphous" concept without clear diagnostic criteria and with uncertain boundaries. The analysis of other kinds of spectra that have recently been proposed in the diagnostic debate shows that they seem to share, with the obsessive spectrum, a similar indetermination; thus, it is likely that the conclusions reported here may be generalized to other spectra. In conclusion, whether this kind of spectra may be of any help for the advancement of psychiatric nosology is questioned and the answer is skeptical. Accordingly, at present, the spectrum seems to be mainly an instrument to disorganize the current diagnostic system rather than heuristic device to improve psychiatric diagnosis.

Introduction

In the last two decades, the DSM (Diagnostic and Statistical Manual of Mental Disorders) published by the American Psychiatric Association, has been the most used diagnostic system worldwide. Language clarity, operational criteria and reliability were among its key points, which contributed to render the DSM the most important and recognized diagnostic classification. In the last few years, “categorical diagnosis” and “disorder according to DSM” become to be used as synonyms, the DSM being the most famous prototype of the categorical approach to mental diseases.

In recent years, despite the success of DSM, empirical research partially undermined the DSM approach, showing some unacceptable consequences of its application in practice: excessive and artifactual comorbidity, extreme diagnostic splitting, as well as internal heterogeneity of many diagnostic categories¹⁻³. In order to overcome these obstacles of the DSM approach, some authors proposed alternative diagnostic concepts. The best known is the dimensional approach, which the DSM itself recognized as a possible alternative diagnostic system^{4*}. A second diagnostic model focuses on the “spectrum” concept, which is actually largely employed to combine distinct diagnostic DSM categories into a single, larger group.

In the present paper, we discuss the theoretical characteristics of the spectrum as well as the effects we may expect if it were introduced in clinical epidemiology, research and clinical practice. In this context, empirical evidence will be reported to support the theoretical discussion. In order to increase the specificity of the critiques, the discussion will be limited to the obsessive-compulsive spectrum, which is one of the most famous and typical spectra. Our hypothesis is that many other new spectra (e.g. the “bipolar spectrum”) share similar diagnostic characteristics and limits, with the obsessive spectrum and thus the conclusions of the present paper may be generalized to other spectra.

The spectrum concept in psychopathology

The term spectrum has been transposed to psychopathology from research in optics. In the science of vision, the word spectrum has a precise meaning and refers to different lines of colour which are the perceptual reflection (through a prism) of the underlying light. In psychiatry, the term spectrum first appeared in studies on the genetics of schizophrenia^{5,6}.

According to Klerman⁷, this use is congruous with that in optics. That is, schizophrenia, schizotypal and schizoid personalities represent different clinical presentations (the lines of colour) which share a common, underlying genetic predisposition (the light).

The original sense of the psychopathological spectrum is thus resumed from the following characteristics:

- *first*, it groups together some syndromes that, in the current categorial nosography, are distinct;
- *second*, these syndromes have something in common, allowing their association;
- *third*, this common characteristic cannot be a known aetiology. In fact, the proper term for different symptoms grouped together in a unique nosologic entity on the basis of a common underlying cause is *disease*. Thus, a spectrum is a *provisional* concept that is isolated in order to facilitate search on the hypothesized common aetiology underlying the syndromes included. It disappears once the aetiology is discovered. In fact, when the aetiology is known, the proper term for this diagnostic entity is no longer considered a spectrum; it is a disease;
- *fourth*, the common characteristic of a spectrum can be either pathogenetic or phenomenal. In the first case, the phenomenal similarity may be present, but it is superfluous to the spectrum determination; in the second case, the phenomenal similarity is essential.

From this analysis of the concept it emerges that, in both cases, only one characteristic is needed (would be sufficient). Accordingly, the psychopathological spectrum has been defined as a *range of syndromes grouped together on the basis of one commonly shared determination*⁸. Here, the term *determination* has been used according to its usual philosophical meaning: the form of definition that limits (and delimits) the extension and generality of a concept “by adding marks to its meaning, that is, by increasing its comprehension or depth”⁹. We have used this term to mark the difference of the chosen fundamental characteristic from other possible similarities. In other words, only one fundamental characteristic should first be chosen to delimit the spectrum. Other characteristics might subsequently be considered and tested and would represent external validators to prove or reject the previously isolated spectrum. However, the risk of choosing a generic or useless characteristic must be taken into account. In this case, the isolated spectrum would be, as a consequence, generic and not specific, bringing very little progress to clinical practice and research.

This methodological need was respected in the original schizophrenic spectrum, in which some nosographically distinct syndromes are grouped together

*The debate “categorical vs. dimensional diagnosis” has been taken into consideration elsewhere³.

on the basis of one common and fundamental characteristic which is the hypothesized genetic predisposition. However, in subsequent papers, the term spectrum has been used in a liberal way and, according to Klerman⁷, there is “some confusion in the use of the term *spectrum*”. For instance, Alarcon et al. suggested considering the spectrum as “an intergrading array in which the constituent elements are usually not sharply isolable”¹⁰. In their view, the spectrum is a broad, encompassing, amorphous, multidimensional and multidirectional concept, with both qualitative and quantitative differences among its various elements. Such a definition seems to consider the spectrum as a key to unhinge the boundaries traced out by nosologists, and, in this sense, Rossi Monti¹¹ considered the spectra as “nosographic disorganizers”. If this sense of the spectrum is to be accepted, its logical consequence would be that we would have different and unrelated syndromes included in the same heterogeneous spectrum, on the one hand, and some syndromes simultaneously included in more than one spectrum, on the other. As a consequence, the final result would be the intersection and overlapping of several putative, non-specific spectra, whose usefulness, for clinical practice (as well as for biological and epidemiological research), would be in doubt.

A review showed that, in psychiatry, the term spectrum was used in several clinical contexts⁸. What appears is that the word spectrum is usually employed as an already accepted term without any previous semantic definition. Being undetermined, the reader is induced to understand the spectrum in its original, specific sense, while, in many cases, the Authors’ spectrum concept appears to be more likethat conceived in the work of Alarcon et al.¹⁰.

The present paper, will take into consideration whether the obsessive-compulsive spectrum is internally homogeneous or heterogeneous, and if it is sufficiently delimited and differentiated from other mental disorders. On the basis of these points, the possible clinical and heuristic value will be discussed.

Brief history of the obsessive-compulsive spectrum

The obsessive-compulsive spectrum concept emerged over the last decade to link together a large number of disorders in “a unique and fascinating category of related disorders”¹². In 1990, Tynes, White and Steketee¹³ discussed the differential diagnosis between the obsessive-compulsive disorder (OCD) and obsessive-compulsive personality disorder, schizophrenia, overestimated, depression and anxiety disorders, while other clinical pictures (Tab. I) were considered as variants of the obsessive-compulsive disorders.

Since then, many authors have studied the obsessive-compulsive boundaries and some argued that a wide range of psychiatric and medical conditions may be related to obsessive-compulsive disorders in a unique family of disorders called the obsessive-compulsive spectrum^{12 14-20}. It is noteworthy that, during the evolution of the concept, the similarities have been stressed while the problem of the differential diagnosis has been progressively abandoned. Moreover, in the various proposed classifications of the obsessive-compulsive spectrum, the number of the included disorders is quite different, as shown in Table I. Finally, the classification criteria are often different. In an early version of the spectrum, the main assessment criterion was the common “inability to delay or inhibit repetitive behaviors”¹⁴.

In a critical paper, Rasmussen¹⁸ argued that this spectrum was too wide to be useful and that the proposed common characteristic was quite generic. This led to two major consequences: on one hand, differences between the included disorders were more evident than were similarities; on the other hand, disorders meeting the required criterion, such as alcoholism, drug abuse, overeating, and “a whole host of other diverse psychopathological states”¹⁸, were arbitrarily excluded. A more recent conceptualization of the obsessive-compulsive spectrum considers several inclusion criteria, at multiple levels:

- symptom profile: characterized by intrusive obsessive thoughts or repetitive behaviors;
- epidemiological features: demographics, family history, comorbidity, clinical course;
- neurobiology: assessed by pharmacologic challenge studies, imaging, immune factors;
- response to selective antiobsessional behavioral therapies and pharmacotherapies;
- aetiology: genetics, environmental factors¹⁵.

A similar point of view can also be found in the more recent works of Phillips²¹ and Hollander²².

The postulated shared features

As listed above, there are many characteristics that are considered useful for the determination of the obsessive-compulsive spectrum. Are they common to all the included disorders (specific determination)? Or, conversely, are they present in other psychiatric disorders as well, disorders which are unrelated to the spectrum (lack of specificity)? These are the questions that the following review will explore.

To be a spectrum determination in its proper sense, a given characteristic should be: a) typical of the obsessive-compulsive disorder, b) present in all the spectrum disorders, and c) absent in non-spectrum psychiatric disorders. Evidence conflicting with one or more of these defining conditions is reported.

Table I. Different putative spectrum disorders in different studies. *Inclusione di disturbi dello spettro differenti, a seconda degli studi.*

References	Tynes et al. 1990	Rasmussen & Eisen 1992	Hollander 1993	McElroy et al. 1994	Hollander et al. 1996	Hollander & Benzaquen 1996
Tourette's Syndrome	X	X		X	X	X
Trichotillomania	X	X	X	X	X	X
Kleptomania	X			X		X
Exhibitionism	X					
Hoarding	X					
Obsessional Slowness	X					
Body Dysmorphic Disorder	X	X	X	X	X	X
Hypochondriasis	X	X	X	X	X	X
Onychophagia		X	X			
Anorexia Nervosa	X	X	X	X	X	X
Bulimia Nervosa	X	X	X	X		
Binge Eating Disorder				X	X	
Delusional Disorder			X	X		
Impulse Control Disorders (In general)		X				
Morbid (Paranoid) Jealousy	X	X				
Morbid Infatuation	X					
Paraphilias			X	X		
Nonparaphilic Sexual Addictions				X		
Pathological Gambling			X	X	X	X
Depersonalization Disorder			X		X	X
Borderline Personality Disorder			X			X
Multiple tic Syndromes			X			
Epilepsy			X		X	X
Sydenham's Chorea			X		X	X
Huntington's Chorea						X
Parkinson's Disease			X		X	
Autism			X		X	X
Asperger's Syndrome						X
Pervasive Developmental Disorders			X			
Intermittent Explosive Disorder				X		
Pyromania				X		
Compulsive Buying					X	
Sexual Compulsions					X	X
Antisocial Personality Disorder						X
Delusional OCD						X
Obsessional Schizophrenia						X
Personality Disorder						X
Schizotypal OCD						X
Self-Injurious Behaviour						X

Evidence from epidemiological studies

a) The age of onset of the obsessive-compulsive disorder is usually in adolescence^{23 24} and its most typical clinical course is chronic²⁵. The same characteristics have also been reported in other obsessive spectrum disorders¹⁶. Nevertheless, these similarities are not specific, because some

obsessive-compulsive disorders have a cyclic course^{23 26}, and the adolescent onset and the chronic course are also features of mental diseases (e.g. schizophrenia) that are not part of the obsessive spectrum.

b) McElroy et al.¹⁶ note that obsessive-compulsive disorder, body dysmorphic disorder and hypochondriasis have a similar gender ratio,

while other disorders (anorexia, bulimia, kleptomania, trichotillomania, compulsive buying) are more prevalent in women. On the other hand, intermittent explosive disorder, pathological gambling, pyromania, paraphilias and nonparaphilic sexual addictions and Tourette's syndrome are more common in men. A more recent review substantially confirms this evidence ²⁷.

- c) The comorbidity domain gives conflicting evidence. On the one hand, OCD has been shown ²⁸ to be frequently comorbid with some obsessive spectrum disorders (hypochondriasis 12%, body dysmorphic disorder 15%, skin picking 11%, sexual addictions 9%, nail biting 10% and motor tics 6%). On the other hand, Phillips ²¹ shows that comorbidity data give strong support for including some putative spectrum disorders (e.g. body dysmorphic disorder and Tourette's disorder) in the obsessive spectrum, while support for inclusion of other disorders (e.g. hypochondriasis and trichotillomania) is weaker. A recent review focused on the relationship between OCD and impulse disorders concluded that a comorbidity among these disorders exists, but it appears to be weak, further studies being needed to confirm it ²⁹. Moreover, comorbidity patterns appear to be non-specific of the obsessive spectrum. High comorbidity rates between OCD and some disorders that are not included within the obsessive spectrum (agoraphobia 39%, alcohol abuse/dependence 34%, major depression 32%, dysthymia 26%) have been reported ³⁰.

The classical observation of a linkage between depression and obsessions was confirmed in a study that considers the negative influence of depression on the outcome of OCD treatment ³¹. Moreover, obsessions and compulsions have frequently been reported (18,3%) in schizophrenia, another important disorder that is not included within the obsessive spectrum ³². Accordingly, recent studies talk of a putative "schizo-obsessive" diagnostic entity ³³. Finally, the putative spectrum disorders often present a closer association with non-spectrum disorders than with OCD. For example, the impulse control disorders "are more likely than OCD to be associated with other conditions characterized by impulsive behaviours, such as bipolar disorder, psychoactive substance use disorders, attention deficit hyperactivity disorder, and impulsive personality disorders" ¹⁶ while the body dysmorphic disorder is highly comorbid with major depression and social phobia ²¹, kleptomania is highly comorbid with affective and anxiety disorders ³⁴, and the compulsive sexual behaviour is more often comorbid with major depression (21%), social phobia (21%), alcohol abuse (21%) and generalized anxiety (17%) than

with OCD (4%) ³⁵. To sum up, comorbidity patterns appear to be non-specific of the obsessive spectrum, and consequently they cannot be considered as proof for a supposed link between OCD and putative obsessive-compulsive spectrum disorders.

- d) Some spectrum disorders (kleptomania, trichotillomania, Tourette's syndrome) show high familial rates of obsessive-compulsive disorder, while body dysmorphic disorder, eating disorders and many impulse control disorders are more likely to have a family history of mood disorders and lower familial rates of obsessive disorder ¹⁶. In the case of kleptomania, a more recent study shows high family rates of affective and anxiety disorders in first-degree relatives, suggesting that the familial pattern does not specifically link only OCD and spectrum disorders to kleptomania, but also kleptomania and non-spectrum disorders ³⁴. According to a recent study, data strongly support a familial relationship between OCD and Tourette's disorder, and probably between OCD and body dysmorphic disorder. Relevant studies of other putative spectrum disorders are limited ²¹. Finally, a study specifically focused on impulse disorders stresses that their family comorbidity with OCD is still largely unexplored, and that the available data are not able to support a common biological substrate between them ²⁹.

In conclusion, according to a recent review ³⁶, data available on comorbidity rates between the obsessive disorder and other putative spectrum disorders are not sufficient for a general conclusion: in some cases, comorbidity evidence suggests a possible linkage between OCD and some spectrum disorders, while for the others, a final hypothesis is impossible on the basis of present evidence.

Evidence from neuroimaging studies

In the last decade, morphological and functional neuroimaging studies have focused on obsessive-compulsive disorder, reporting evidence of hyperactivity in obsessive patients of a neurocircuit involving the orbitofrontal cortex (prefrontal and anterior cingulate cortices), the basal ganglia and the thalamus ³⁷⁻³⁹. It is still being debated whether the site of primary pathology is within the striatum, with the orbitofrontal cortex being secondarily involved as part of the dysfunctional network ⁴⁰; or if we should consider that the neurobiological interactions are much more complex than those postulated in the classic neurocircuit, the frontal and striatal regions being composed of functionally distinct subterritories ^{41 42}. In this second case, the Authors recall that the precise brain centre which hosts the 'primary' dysfunction

'causing' OCD is still unknown⁴¹. Finally, more recent data using functional neuroimaging techniques (PET and SPECT) found consistent differences in radiotracer uptake between patients with OCD and healthy controls only in the orbital gyrus and the head of the caudate nucleus, while no other significant differences were found⁴³.

Briefly, generic "abnormalities in circuitry connecting orbital cortex, cingulum, and caudate nucleus"³⁸ are usually admitted (even if with differences on the evidence supporting the involvement of any of these cerebral regions), while more work is needed to understand the precise mechanism involved. The evidence of a neurobiological involvement is supported by recent data showing that the frontal-subcortical circuits might mediate not only the symptomatic picture, but also cognitive expressions in obsessive patients⁴⁴.

Also at this neurobiological level, the questions to be considered are: a) are these abnormalities sufficiently defined to state that they are typical and specific of the obsessive-compulsive disorder? b) are the same specific abnormalities present in other spectrum disorders? c) are they reported in all the spectrum disorders, or only in some of them? and d) does any non-spectrum disorder share similar abnormalities?

With respect to the first question, Stein underlines that "the frontal and striatal regions are composed of functionally distinct subterritories, so that additional fine-grained neuroanatomical analysis is needed"⁴². In addition, we should consider that other brain regions (e.g. temporal lobes) have been suggested to be involved in OCD⁴⁵. In conclusion, interesting research converges on the role of some neuroanatomical circuits in OCD, but the exact mechanism involved is not yet fully clarified. The answer to the first question is thus far negative, even if we can expect progress on a solution to this point through continuing research programmes.

With respect to the second question, neurobiological abnormalities in the neurocircuits involved in OCD have been found in some spectrum disorders. In particular, dysfunctions in the orbitofrontal-basal ganglionic thalamic neurocircuit have been reported in neurological diseases like chorea and Parkinson's disease, and in many other psychiatric disorders, including Tourette's syndrome³⁷. Moreover, it has been noted that the volumetric findings involving the striatum of some spectrum disorders (Tourette's syndrome and trichotillomania) are analogous to those reported in OCD⁴⁰. In addition, preliminary data showed a relative leftward shift in caudate asymmetry in body dysmorphic disorder, evidence which has been considered consistent with the striatal topography model of the obsessive disorder⁴⁶. However, these findings are not the same as those found in OCD. In Tourette's Syndrome, for example, the or-

bitofrontal and caudate glucose uptake at rest is reduced, while in OCD it is increased³⁸. Differences have also been reported in trichotillomania, in which the caudate is not involved⁴⁷. Moreover, in body dysmorphic disorders, a total white matter greater than in normal controls has been reported⁴⁶, although its role is unclear. To our knowledge, there are no data reporting a similar finding in OCD. White matter abnormalities, if present at all, are limited only to the retrocallosal area⁴⁸. Taken as a whole, these data may suggest some similarities between OCD and at least some spectrum disorders, even if caution is required: in fact, studies on functional neuro-morphology of these obsessive-compulsive spectrum disorders have not yet identified reliable neurofunctional models for these pathologies⁴⁹.

With respect to the third question, few neuroanatomical data exist in other putative obsessive spectrum disorders⁴². As a consequence, there is no evidence that a dysfunction in the orbitofrontal-basal ganglionic thalamic neurocircuit is the common characteristic determining the obsessive spectrum.

Finally, with respect to the fourth question, the neuroanatomical criterion appears to be non-specific. In fact, similar abnormalities have been found in other psychiatric disorders which are not part of the spectrum (e.g. depression and schizophrenia, in Brody and Saxena's³⁷ opinion). More recently, neuroimaging communalities between schizophrenia and obsessive compulsive disorders have been considered as a putative basis for identifying a schizo-obsessive disorder⁵⁰. Moreover, other recent data supporting the hypothesis that the neurobiological abnormalities in the neurocircuits found in OCD are not specific, being also present in non-spectrum disorders, are the following: the neuro-cognitive report of a similar impairment of the right prefrontal areas in both obsessive patients and long-term abstinent heroin addicts⁵¹, as well as the evidence of similar neurobiological features in pathological gambling and substance use disorders⁵².

In conclusion, the neuro-anatomofunctional criterion is an interesting point to be studied in the search for a possible underlying biological mechanism linking some disorders. However, at present, the neuroimaging evidence is not sufficient to judge which disorders should be included in the obsessive spectrum.

Neuromolecular findings and aetiologic hypotheses

- a) The 5-HT agonist m-chlorophenylpiperazine (m-CPP) increases the severity of obsessive symptoms in obsessive patients^{53 54}, but it does not provoke obsessive phenomena in impulsive patients¹⁵. Moreover, obsessive subjects as well as

patients with Tourette's syndrome and anorexia nervosa have blunted prolactin responses to m-CPP challenge, in contrast with borderlines, gamblers and trichotillomaniacs, whose neuroendocrine response to m-CPP is normal or increased¹⁵. These data suggest that the response to m-CPP cannot be considered specific to all the obsessive spectrum disorders. Moreover, as recently suggested, findings on the m-CPP response of the obsessive-compulsive disorder are probably consistent only at the neuroendocrine level, since the effect on obsessive-compulsive symptoms has not always been reported⁵⁵.

- b) Although many obsessive-compulsive spectrum disorders (e.g. eating disorders, intermittent explosive disorder, pyromania, Tourette's syndrome) may involve dysregulation of the central serotonergic metabolism and neurotransmission, "the precise serotonergic abnormalities may vary across disorders and even among individuals with the same disorder"¹⁶. In fact, also within the obsessive-compulsive disorder, the findings on serotonergic dysregulation "are inconsistent given that studies have shown normal, increased, and decreased central nervous system serotonergic neurotransmission"¹⁶. It should be pointed out that recent studies on tryptophan depletion suggest that "the role of 5-HT in OCD is more modulatory and that a dysfunction of 5-HT neurotransmission may not play a major role in its pathophysiology"⁵⁶. Moreover, as Marazziti⁵⁷ observed, we still do not know the 5-HT receptor subtypes involved or the meaning to attribute to the serotonergic abnormalities; nor do we understand the role of the reported abnormalities in other neurotransmitters and neuropeptides. According to Stein, "data from studies of CSF 5-HIAA or serotonergic pharmacological challenges in OCD [...] is arguably itself too inconsistent, or too open to different interpretations, to serve as a valid basis for dissecting out an OCD spectrum of disorders"⁴². Finally, a review suggested that the serotonergic system is involved in OCD pathophysiology, but that its role is not clear: it is involved in aetiology, or simply linked to severity of symptoms or to the pharmacological response?⁵⁸
- c) Other neurochemical systems could be involved in OCD. However, broad neurochemical characterizations (e.g. the hypothesis of dopamine-serotonine interactions) are considered non specific, with "relatively little explanatory power"⁴².
- d) At the level of genetic research, some interesting findings⁵⁹ suggest that, while in ED families a genetic mode of transmission was not revealed when ED was the only affected phenotype, on the other hand side it was possible to find a Mendelian transmission when the affected pheno-

type considered was ED + OCD + Tic Disorders/Tourette Syndrome. These findings suggest a possible common liability for these symptoms and offer preliminary support to the spectrum idea which is interesting but still insufficient. In fact, further research should consider whether a common genetic liability can also be shown when as affected phenotype are considered: 1) ED + the other obsessive spectrum disorders; 2) ED + disorders that are usually comorbid with EDs (e.g. mood disorders) but are not included in the obsessive spectrum. Only if (1) would be positive and (2) negative the current description of the obsessive spectrum would be confirmed through the determination of its genetic basis.

In conclusion, according to Hollander and Benzaquen¹⁵ and considering the above-mentioned data, the aetiology of obsessive-compulsive disorder has yet to be defined. Etiologic research is fundamental for a better understanding of OCD and putative spectrum disorders, but the discussed limitations in our aetiologic knowledge suggest caution. Thus, – if the obsessive spectrum disorders "are a heterogeneous group of disorders and probably multifactorial in terms of pathophysiology"¹⁵, and – if "it is difficult to establish that a particular neurochemical system has a specific role only in OCD or closely related disorders"⁴², – then the aetiologic criterion cannot be considered a valid one for the determination of the obsessive spectrum.

Pharmacotherapy

In the treatment of the obsessive-compulsive disorder, the efficacy of the serotonergic drugs, particularly clomipramine and selective serotonergic reuptake inhibitors (SSRIs), is well known. A specific response to these "anti-obsessive" drugs would be a criterion for the inclusion of a given mental disorder in the obsessive spectrum, as well as an indication of a common underlying pathophysiologic abnormality. Despite these assumptions, the response to pharmacotherapy cannot be considered specific of the obsessive-compulsive spectrum for the following reasons:

- a) Clomipramine and SSRIs are not specific to the obsessive spectrum disorders; in fact, disorders that are not included within this spectrum (e.g. depression) respond to the same treatment. According to Stein, "some disorders in which the SSRIs may be selectively effective, such as premenstrual dysphoric disorders, have entirely different phenomenal features from OCD"⁴²;
- b) For some obsessive spectrum disorders (e.g. kleptomania, pyromania, paraphilias and compulsive sexual behaviour) the efficacy of clomipramine and SSRIs is suggested only on the basis of open

trials and case reports⁶⁰⁻⁶³. Unfortunately, placebo-controlled trials supporting this evidence are still lacking, at least to our knowledge;

- c) Double-blind trials revealed no differences between SSRIs and placebo in the putative obsessive spectrum disorders: compulsive buying, trichotillomania and Tourette's syndrome tics⁶⁴⁻⁶⁷. A recent review on pathological buying stresses that the positive results of pharmacological treatment with antidepressants (usually SSRI) could not be confirmed in controlled trials⁶⁸;
- d) It has been reported that SSRIs, which should lead to an improvement in the obsessive spectrum disorders, in some cases actually provoked the onset of one of them (kleptomania) in depressed patients, showing that "certain individuals may react with the emergence of impulsivity while taking these antiobsessive drugs"⁶⁹;
- e) The modality of response to SSRIs may be different in OCD and the putative spectrum disorder trichotillomania. According to Phillips "trichotillomania's initial response to an SRI is often not maintained with continued treatment, unlike in OCD"²¹;
- f) Many putative spectrum disorders are successfully treated with drugs that are not anti-obsessive. The response to antipsychotics for Tourette's disorder is well-established⁷⁰, and preliminary data suggest potential efficacy of clonidine⁷¹. Pathological gambling is more successfully treated with naltrexone (90,9% of patients being responders) than with SSRIs (45,5% of response)⁷². Moreover, naltrexone could also be effective in the treatment of another putative spectrum disorder such as kleptomania⁷³. Finally, preliminary reports indicate that reboxetine, a noradrenergic antidepressant devoid of any serotonergic activity, could be useful in the treatment of bulimia nervosa⁷⁴.

In conclusion, response to SSRIs is not a sufficient reason to include a disorder within the spectrum (many disorders successfully treated with SSRIs not being included in the obsessive spectrum). Consequently, the pharmacological response is not a sufficient criterion for the determination of an obsessive spectrum, and we agree with Phillips' conclusion that "there are notable hazards [...] of using treatment response as the primary determinant of OC spectrum membership"²¹.

Symptomatological similarities

Due to the limitations of the above-mentioned criteria, the phenomenal similarities have been considered the most important in the obsessive-compulsive spectrum assessment¹⁶. The first proposed symptomato-

logical commonality, the incapacity to delay or inhibit repetitive behaviours¹⁴, has been criticized because of its extreme generality¹⁸. At present^{15,75}, the obsessive-compulsive spectrum disorders are thought to share three distinct phenomenal similarities:

- a) the presence of obsessive concerns or preoccupations with body illness (hypochondriasis), body weight (eating disorders), body appearance (body dysmorphic disorder) or bodily sensations (depersonalization), along with associated behaviours that are performed to decrease the anxiety elicited by these concerns;
- b) the inability to inhibit senseless or harmful driven behaviour (impulsive-style disorders);
- c) the presence of stereotyped and/or ritualistic behaviour (neurological disorders with compulsive features). According to this symptomatological classification, "the obsessive-compulsive spectrum disorders can be viewed in terms of three overlapping clusters"¹⁵.

In our opinion, this recent symptomatological assessment is also inadequate for the following reasons:

- a) the postulated similarities are still quite generic. As a consequence, the obsessive-compulsive spectrum disorders present many fundamental clinical differences that cannot be ignored. The clinical importance and the scientific implications of a clear distinction between prevalent thoughts, overestimated ideation, delusions and obsessive ideas, between compulsions, obsessive impulses and psychopathic impulses, and between compulsive rituals and neurological movements, have been discussed elsewhere^{76,77};
- b) moreover, even if the suggested similarities were fundamental and not simply superficial, every characteristic would unify a group of syndromes, but not the entire spectrum. In the end, three different clusters would emerge: the "fixed ideas" group, the impulsive group and the "repetitive movements" group. Lacking a common determination, the three resulting groups could even be partially overlapping, but they would not be unified in a single spectrum.

Discussion

The spectrum, in its proper sense, is a group of distinct syndromes (whose phenomenology is, in part, similar and, in part, different) linked together on the basis of one common characteristic. The function of such a spectrum is to group together syndromes that, even if partially different at a phenomenal level, are considered to be linked at an underlying level (aetiologic and/or pathogenetic). The isolation of the spectrum is thus useful to enhance biological research when biological hypotheses can be tested in a group

that is sufficiently homogeneous (with respect to at least one characteristic) and clearly distinct from comparison samples.

This leads to the question: Is it the same if we consider the spectrum as a broad, amorphous, multidimensional and multidirectional concept, as suggested by Alarcon et al.^{10?}

We analyzed the obsessive-compulsive spectrum on this point. From the data reported above, it appears that, at the present state of our knowledge, the epidemiological features, the neurobiological and aetiological findings as well as the therapeutic response are not, *per se*, specific for the obsessive-compulsive spectrum disorders. As a consequence, none of these can be used as the common characteristic unifying the spectrum. Thus, their phenomenal similarities with obsessive-compulsive disorder and with one another¹⁶ can still be considered the strongest evidence linking the spectrum disorders. At present, the proposed phenomenal similarities are basically three (“fixed ideas”, impulses, and neurological compulsion-like behaviors), leading to three overlapping clusters^{15 75}.

In previous papers, we have stressed that the differences between these phenomena are greater than their similarities^{76 77}. Therefore, it is suggested that a distinction of the *true* obsessive symptoms would allow empirical research to clearly assess the frequency of these phenomena in the putative spectrum disorders. However, if only the similarities are stressed, the different symptoms risk being considered synonyms and could, therefore, easily be confused. In any case, any differential frequency cannot be estimated. Even if our argument proves false and the suggested similarities are found to be important in reality important, we would still not have a specific spectrum, but only an assessment of three different and partially overlapping clusters.

In conclusion, in the case of the obsessive-compulsive spectrum, we do not have a spectrum in the proper or strict sense but rather a group of disorders linked in several partially overlapping clusters (three, if we consider only the proposed phenomenal similarities, more if we consider other levels: neurobiology, aetiological hypotheses, associated features, therapeutic response). The resulting spectrum is somewhat generic, since the presence of one of the required characteristics is neither necessary nor sufficient for the inclusion of a given disorder in the spectrum (as shown in Table I, the disorders included in the obsessive spectrum vary in different papers, for no specific reason). In a similar spectrum, a given syndrome *X* can be included because it shares the characteristic *x* with the obsessive-compulsive disorder, while the syndrome *Y* shares the characteristic *y*. Both *X* and *Y* will be linked to the obsessive-compulsive disorder, and thus included in the obsessive

spectrum, even if they have nothing in common. The first consequence is the internal heterogeneity of such a spectrum.

Moreover, our analysis of the obsessive spectrum reveals that, in many cases, a given characteristic was used for the inclusion within the spectrum of some syndromes, while other syndromes with the same characteristic were excluded (for example, the involvement of the basal ganglia was an inclusion criterion only for some syndromes, while other syndromes in which a basal ganglia involvement was reported were excluded, for no clear reason). The second consequence is thus the absence of clear boundaries.

In such a spectrum, one encounters several difficulties in testing a biological hypothesis. It is likely that the spectrum sample will be heterogeneous, while the comparison sample will possibly overlap with the spectrum sample. As a result, the explanatory power of the statistical analysis will be reduced.

In addition, a group that is internally heterogeneous and whose boundaries are indistinct is unlikely to provide an appropriate basis for any epidemiological study. As previously shown, data on sex ratio, age at onset, clinical course and comorbidity profile greatly differ between the disorders included within the obsessive spectrum. At the same time, they often overlap with “not-included” disorders. The estimation of any of these epidemiological characteristics in the obsessive spectrum could thus be considered only an average in heterogeneous values. Therefore, any clinical usefulness is doubtful. Moreover, while an estimation of incidence and prevalence of any single spectrum disorder is fundamental for both clinical practice and psychiatric health policy and administration, this is not the case for the obsessive spectrum as a whole. Here, not only is the estimation of incidence and prevalence of such a heterogeneous group clinically meaningless, it is also impossible. In fact, as shown in Table I, the number of disorders that should be included within the obsessive spectrum is uncertain and varies in different reports (often by the same authors) without any discernible reason. As a consequence, the included disorders are not defined and the minimal basis for any epidemiological analysis (namely the definition of a group with at least a provisional stability, as occurs for DSM disorders for which diagnostic criteria are clear and stable for a given period) is lacking.

In conclusion, the obsessive-compulsive spectrum is a typical example of an amorphous concept. According to Phillips²¹, this concept has several limitations, because “it lacks precision, is poorly operationalized, and does not identify criteria for membership [...]. It could be argued that the lack of operationalized criteria has led to over-inclusiveness, with some putative obsessive compulsive spectrum disorders (e.g., borderline personality disorder) seeming strik-

ingly dissimilar form OCD. An additional problem is that OCD itself is likely to be heterogeneous, comprising a number of entities with a somewhat distinct pathogenesis [...]. The obsessive compulsive spectrum disorders are also likely heterogeneous disorders". One can easily understand why Phillips²¹, considering these premises, suggests avoiding prematurely combining the putative spectrum disorders and proposes instead studying each disorder separately: "it is better to split (i.e., describe a larger number of categories) than lump so that the disorders are studied and important differences between them, if they exist, are not missed. The history of psychiatric classification is replete with examples of diagnostic and treatment errors attributable to premature lumping [...]. Studies of homogeneous populations also have greater statistical power than those of heterogeneous populations". We agree with this conclusion, but we cannot understand why the argument is not followed to its logical conclusion, conceding to the obsessive spectrum conceptualization "considerable face validity and heuristic and practical clinical utility"²¹. In our opinion, theoretical considerations as well as substantiated research point in the same direction: the obsessive spectrum is a typical example of an amorphous concept the characteristics of which suggest that it is devoid of any heuristic value.

In fact, the obsessive spectrum is useless:

- a) in epidemiology: some characteristics may be typical of a given single spectrum disorder, while they may greatly differ among the other putative spectrum disorders (for example, while it is typical that eating disorders are more common in

women, other spectrum disorder like pathological gambling, paraphilias and Tourette's syndrome are more common in men). In this case, the estimation of the epidemiological characteristic "gender ratio" calculated for the entire spectrum would be only a senseless average among heterogeneous values. Moreover, since the number of disorders that should be included remains to be determined, the minimal basis for the epidemiological study is lacking;

- b) in research: where heterogeneity, confusion in the inclusion criteria, and inaccuracy of the differential diagnosis greatly reduce the power of statistical analysis in biological research;
- c) in clinical practice: in which the use of SSRIs is not related to the inclusion of a given disorder to the obsessive spectrum, but to scientific double-blind placebo studies showing their efficacy. *De facto*, many disorders are currently treated with SSRIs, and the majority of them are not part of the obsessive spectrum.

Thus, amorphous spectra are not constructive concepts; according to Rossi Monti¹¹ they have only a disorganizing role of the current nosology. The clinical and research use of the DSM classification of mental disorders revealed many critical points (see introduction), but it is not with alternative generic concepts that we may hope to overcome diagnostic problems. Methodological studies, considering not only the clinical impact, but also the philosophical backgrounds of our diagnostic concepts, are needed. In this context, our previous work³ should be considered as an example of an earlier, although still largely insufficient, work on these topics.

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