



## REVIEW ARTICLE

# Differential diagnosis between obsessive compulsive disorder and restrictive and repetitive behavioural patterns, activities and interests in autism spectrum disorders<sup>☆</sup>

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### Abstract

**Introduction:** The obsessive compulsive disorder (OCD) and the restricted and repetitive patterns of behaviour, interests and activities inherent to autism spectrum disorders (ASD) share a number of features that can make the differential diagnosis between them extremely difficult and lead to erroneous overdiagnosis of OCD in people with autism.

**Development:** In both cases there may appear to have a fixation on routine, ritualised patterns of verbal and nonverbal behaviour, resistance to change, and highly restrictive interests, which becomes a real challenge for differentiating rituals, stereotypes and adherence to routines in ASD from obsessions and compulsions in OCD. This article provides key points to clarify this differential diagnosis through the analysis of emotional valence, content, function and psychological theories that explain the obsessions and compulsions in OCD, and the desire for sameness, stereotyped movements and limited interest in autism.

**Conclusion:** The terms "obsession" and "compulsion" should no longer be used when referring to patterns of behaviour, interests or restricted and repetitive activities in autism due to syntonic characteristics, low perception of personal responsibility and low neutralising efforts. Treatment focuses on changing the environment, the use of socio-communicative compensatory strategies and behavioural modification techniques to improve cognitive and behavioural flexibility. When there is comorbidity between, exposure behavioural and response prevention techniques are then used, followed by others of more cognitive orientation if necessary.

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**PALABRAS CLAVE**

Trastorno obsesivo compulsivo;  
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Obsesiones;  
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Comportamientos, intereses y actividades restrictivos y repetitivos

## Diagnóstico diferencial entre el trastorno obsesivo compulsivo y los patrones de comportamiento, actividades e intereses restringidos y repetitivos en los trastornos del espectro autista

**Resumen**

**Introducción:** El trastorno obsesivo compulsivo (TOC) y los patrones de comportamientos, intereses y actividades restringidos y repetitivos inherentes a los trastornos del espectro autista (TEA) comparten una serie de características que pueden hacer su diagnóstico diferencial extremadamente difícil y, provocar un erróneo sobrediagnóstico de TOC en personas con autismo.

**Desarrollo:** En ambos casos pueden aparecer fijación en rutinas, patrones ritualizados de conducta verbal y no verbal, resistencia al cambio, e intereses altamente restrictivos y fijos de intensidad desmesurada. El artículo ofrece las claves para la clarificación de dicho diagnóstico diferencial mediante el análisis de la valencia emocional, el contenido, la función y las teorías psicológicas que explican las obsesiones y compulsiones en el TOC, y el deseo de invarianza, los movimientos estereotipados y los intereses limitados en el autismo.

**Conclusión:** Los términos «obsesión» y «compulsión» deberían dejar de ser empleados cuando nos referimos a los patrones de comportamiento, intereses o actividades restringidos y repetitivos en el autismo debido a sus características egosintónicas, la baja percepción de responsabilidad personal y los bajos esfuerzos neutralizadores. El tratamiento se centra en medidas de modificación del entorno, el uso de estrategias compensatorias en el área socio-comunicativa y técnicas conductuales para mejorar la flexibilidad cognitiva y comportamental. En los casos en que se produce comorbilidad entre ambos trastornos se procederá, además, con técnicas conductuales de exposición y prevención de respuesta, seguidas de otras de corte más cognitivo.

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**Introduction**

Obsessive compulsive disorder (OCD) and restricted and repetitive patterns of behaviour, interests and activities inherent to autism spectrum disorders (ASD) share a series of characteristics that can make their differential diagnosis extremely difficult. It can also lead to an erroneous over-diagnosis of OCD in individuals with autism. In both disorders a fixation on routine, ritualised patterns of verbal and nonverbal behaviour, resistance to change and fixed, highly restrictive interests of disproportionate intensity may appear. These make differentiating between the rituals, stereotypes and adherence to routines in ASD and the obsessions and compulsions in OCD a true challenge. However, such differentiation is highly important at the clinical level due to the implications it has for treatment. If there is ASD-OCD comorbidity, the people affected can benefit from pharmacological treatments with selective serotonin reuptake inhibitors (SSRI) and from cognitive-behavioural therapy given for individuals with OCD. It is in the last few years that there has been an increase in research that validates the effectiveness of these treatments in people with autism.

The evidence from research and from clinical practice leaves no doubt: the comorbidity of the anxiety disorders in the autistic population compared with the control groups is significantly much higher, more than 84% of the sample studied.<sup>1,2</sup> Van Steensel et al.<sup>3</sup> performed a meta-analysis on comorbidity of anxiety in people with ASD through the review of 31 studies that involved 2121 people with autism younger than 18 years old, whose anxious symptomatology was evaluated using standardised questionnaires. In the

studies, it was found that 39.6% of the individuals with ASD younger than 18 presented some anxiety disorder. The most frequent were social phobia (30%), followed by OCD (17%), agoraphobia (17%), generalised anxiety (15%), separation anxiety (9%) and anxiety attack (2%), while the rest showed some other subtype of anxiety disorders. This prevalence agrees with previous reviews of the literature.<sup>4,5</sup> More controversial research points to the presence of autistic traits in 27% of the cases of people with OCD,<sup>6-8</sup> with the incidence of autism in individuals with OCD being around 3.8%.<sup>9</sup>

The subject is more complex than what it may appear at first glance. It is possible to have OCD together with alterations in communication, sensorial integration problems and/or motor coordination problems, among others, and not be within the autistic spectrum. It can also happen that repetitive motor mannerisms can seem like compulsions of OCD and lead to an erroneous diagnosis.

The research coincide in that people with autism are clearly differentiated from people with anxiety disorders because of their persistent deficits in communication and in social interaction<sup>10,11</sup>: deficits in social and emotional reciprocity, deficits in non-verbal communication skills and deficits in developing and maintaining relationships that are appropriate for the level of development. If restrictive interests and ritual behaviour present together alterations in social communication, and they have been present since early infancy, the traits are more likely to be part of the autistic syndrome. In contrast, the diagnosis of OCD makes more sense when these traits mark a milestone in the psychosocial functioning of the individual, from even pre-adolescence, in the teen years or in adult life.

This article offers keys for differentiating the obsessions and compulsions in OCD with traits found in ASD, such as the desire for sameness, stereotyped movements, stereotyped manipulation of objects, abnormal attachment to and concern about specific objects, rigid adherence to routines and rituals, a repetitive use of language and limited interests.

## Development of the subject

The first question that is appropriate to ask is: *What are obsessions and compulsions?*

“*Obsessions*” are defined by: (1) recurrent and persistent thoughts, impulses or images experienced in some moment of the disorder as intrusive and inappropriate, and which cause significant anxiety or distress; (2) the thoughts, impulses or images are not merely simple excessive worrying about real life problems; (3) the individual attempts to either ignore or suppress these thoughts, impulses or images, or tries to neutralise them through other thoughts or actions; and (4) the person recognises that these obsessive thoughts, impulses or images are the product of his or her mind (and that they do not come imposed from outside as in thought insertion).<sup>12</sup> They are thoughts that interrupt, involuntarily and suddenly, the normal flow of conscious thought. The thoughts are experienced as intrusive, invasive, unacceptable, uncontrollable and inappropriate. The individual suffers in the face of the presence of these thoughts and tries to reduce them and eliminate them through voluntary compulsions.

“*Compulsions*” are defined by: (1) behaviour (for example, washing one’s hands, putting objects in order, rechecking things) or mental acts (for example, praying, counting or repeating words in silence) of a repetitive nature, which the individual sees herself or himself obliged to perform in response to an obsession or in accordance with certain rules that have to be followed strictly; and (2) the goal of these behaviours or mental operations is preventing or reducing the distress felt or preventing some negative event or situation; however, these behaviours or mental operations are either unconnected realistically with what the person is trying to neutralise or prevent, or they are clearly excessive. They are secondary manifestations—apparently more spectacular—that attempt, in a voluntary manner, to prevent or reduce the suffering and eliminate the obsession as a coping mechanism.<sup>12</sup>

Compulsions, then, have a relationship of functionality with obsessions when, with them, the individuals try to ignore or suppress these thoughts or impulses or to neutralise them through other ideas or activities. For example, a person plagued with doubts over whether he or she has shut off the gas attempts to neutralise the doubts by checking over and over to see if indeed the gas has been shut off.

To answer the question about what “*restricted and repetitive patterns of behaviour, interests or activities*” are, we turn to the most complete taxonomy the literature offers about this<sup>13</sup>:

*Tics*: abrupt, brief, recurrent and involuntary movements and/or vocalisations that, in contrast to stereotyped movements, vary in intensity and are non-rhythmic in nature.

Examples are spasmodic movements of individual facial muscles, blinking, shrugging one’s shoulders, etc.

*Stereotyped movements*: rhythmic body movements, which are apparently voluntary, which are repeated constantly and are inappropriate to the situational context. Examples are waving one’s hands, rocking the body, snapping one’s fingers, etc.

*Self-aggression*: repetitive actions that are topographically invariable and apparently voluntary that can cause pain or even physical injury to the person. Examples are hitting oneself in the head, biting oneself, etc. *Stereotyped manipulation of objects*: topographically invariable manipulation of objects repeated in a manner that is inappropriate to the normal nature or function of the object in question. Examples are spinning objects, examine a toy repeatedly, line objects up in rows, etc. *Abnormal attachment to and concern toward specific objects*: persistent attachment to or disproportionate concern over an object (which is at times unusual) or part of it that is not used to provide the person calmness or security in a normal way. Such as persistent concern to carry a stick, a rubber glove, etc.

*Insistence on keeping the environment the same*: insistence on keeping 1 or more characteristics of the environment exactly the same without there being a logical or apparent reason for it; any attempt to change causes resistance. Examples are insisting that the curtains remain open, that ornaments are always left in a specific position, always putting the same music on, etc.

*Strict adherence to routines and rituals*: a routine or ritual to which the individual clings in all situations, characterised by complete invariability and inflexibility. An example is insisting on buying a newspaper each time that the individuals go to the newsagents, without it mattering if they had already bought one (even when there is no interest in reading it).

*Repetitive use of language*: a phrase or linguistic expression copied from others or supposedly invented by the person, used repeatedly in different moments and situations. Examples are immediate or delayed echolalia, repetitive use of the same phrases or questions (palilalia) and verbal rituals.

*Limited interests*: repetitive, absorbing search for a single, extremely limited subject or activity. An example is looking at maps and speaking every day (even at all hours throughout the day) about different countries and their flags (although the person shows a lack of interest in seeing documentaries about these countries).

This polymorphic manifestation of the “*restricted and repetitive behaviour, interests or activities*” has, in all of them, 3 common characteristics: “*high frequency of repetition*” in the demonstration of the behaviour, “*invariable form*” in which the behaviour or capability is performed, and the fact that the behaviour is “*inappropriate or strange*”.

Except for the cases in which, truly, both disorder are comorbid, the keys to proceed in the differential diagnosis are based in the emotional valence of the thought and the compulsion; the content of the obsessions and compulsions; the function of the obsessive-compulsive behaviour and of the restrictive and repetitive patterns of behaviour; and the psychological theories that explain both disorders.

## The emotional valence of the thought and the compulsion

In autism, the restricted and repetitive patterns of behaviour, interests or activities represent a pleasurable affective experience, intrinsically motivating and reinforcing. The individual likes to put them into motion: put things in order, constantly observe a detail of an object, comply with a fixed ritual to perform a specific activity, obsessively read and speak about a specific subject, collect objects and things related with that subject, etc. In the people with autism these patterns of behaviour are "ego-syntonic"; that is, that the individuals feel good about themselves when they perform it, without the behaviour generating any conflict or negative judgement about themselves, even becoming a source of pleasure and satisfaction, intrinsically motivating and reinforcing.<sup>14,15</sup> If obsessions are defined as "*repetitive and intrusive thoughts and images that are considered unacceptable to the individual, causing him or her discomfort and often accompanied by some form of resistance*",<sup>16</sup> can we truly speak about obsessions and compulsions in ASD when the content of the restricted and stereotyped patterns of behaviour is acceptable to and accepted by the person? The answer is: no. We should be prudent when we use the terms "obsessions" and "compulsions" about people with autism, given that they have different clinical meanings.

In OCD obsessions and compulsions are, generally speaking, "ego-dystonic". That is, they are perceived as intrusive and unwanted by the individual who has them, unpleasant and with a very clear objective of reducing or eliminating the threatening obsessive thought. Ego-dystonic refers to the sensation had by the person that the content of the obsession is foreign, out of their control and that it does not fit with the type of thoughts that she or he would expect to have. In fact, the DSM-IV-TR<sup>12</sup> clarifies that obsessions and compulsions "*provoke significant clinical discomfort*" in those who have them, in addition to representing a loss of time (involving more than an hour a day) or markedly interfering with the individual's daily routine, work or scholastic relationship and social life. That is why these people attempt, as often as possible, to hide their obsessions and compulsions and evaluate themselves negatively to themselves ("*I'm a disaster*", "*I'll never overcome this*", "*nobody can understand what's happening to me*" or "*I do everything wrong*"). Whatever way these obsessions and compulsions are experienced, they cause discomfort so significant that it forces the individuals to try to stop them and to put them away from their minds, considering them intrusive elements that invade them against their will. In this case, the definition of obsession does indeed correspond fully.

Consequently, for the differential diagnosis it is important to evaluate the experience of anxiety and stress that the person undergoes in relation to with patterns of obsessive thought and the compulsions. In OCD obsessions are intrusive, unacceptable, uncontrollable, ego-dystonic and provoke resistance in the person to whom they appear. This is not so in ASD, except of course in the cases in which there is comorbidity. Nevertheless, in the first case, when we speak of infancy and adolescence, there is a possibility

that such obsessions and compulsions are not totally ego-dystonic.

Some of the difficulties that can arise in determining the differential diagnosis are as follows: variability in the degree of ego-dystonia among the people with OCD, and the fact that emotional valence is not currently a criterion in the DSM-IV-TR for the diagnosis of childhood OCD, when the diagnosis of ASD is made.

## The content of obsessions and compulsions

In OCD the "*most frequent obsessions*" have to do with subjects such as "*contamination*" (for example, pick up a disease upon shaking hands with someone, get dirty, get contaminated or catch a disease from touching objects, etc.); "*repetitive doubts*" (e.g., ask oneself over and over if a specific act has been performed, if I have shut off the gas, the light, closed the doors or the windows, if I have made a mistake in something without meaning to, if I have run over someone accidentally, etc.); "*need to arrange things in a specific order*" (e.g., intense discomfort in the face of disorderly or asymmetric objects); "*impulses of an aggressive or horrible character*" (for example, injure a child, shout out obscenities in a church, push someone off from high floor in a building, run people down, etc.); "*sexual fantasies*" (for example, a recurring pornographic image, taking the clothes off a stranger, rape someone, have sex with animals, etc.); and "*superstitions*" (e.g., something bad will happen if I don't do or say something, my brother will have an accident if I don't do or say something, someone will die if I don't do or say something, etc.).

These thoughts, impulses or images do not constitute simple excess worries about problems in the real world, such as momentary uneasiness or difficulties, or economic, work or school difficulties. What is more, the content of the obsessions rarely relates to real life facts and the person considers them inappropriate; for example, the perturbing and intrusive idea that "*God*" [in English in the original] is the same as "*dog*" [in English in the original] spelled backwards.

In individuals with ASD, however, "*the restricted interests*" reflect what is interesting to them. Consequently, it is rare that they are random with respect to content; the interests tend to group together in specific basic cognitive domains. These people usually like to talk about a specific subject, collecting things related to this subject or reading and compiling related information, in an obsessive and in-depth manner. None of these examples given are symptoms of OCD although they suggest certain similarities with it.

The intellectual functioning of the person with ASD also conditions the content of the restricted behaviour and interests. Those with greater cognitive deterioration tend to persist in stereotypes, adherence, fixation on or hoarding of specific objects, touching or rubbing a specific surface, etc.<sup>17</sup> In the case of individuals with high-functioning autism, the most recent studies coincide in stating that restrictive interests are the rule rather than the exception. These interests tend to "focus on the area of the physical world". Examples are the functioning of a system; the mechanical properties of inanimate objects; a fascination with subjects related to biology, mathematics, space and physics; taxonomies, classifications and lists: videogames

and the internet; mechanical apparatus-gadgets; historical facts; technical guidelines; in brief, non-intentional physical systems,<sup>15,18,19</sup> which seriously interfere in personal daily activities and with others. In both cases we seldom see interests centred on the area of the social world, such as what others tell us with their emotional expressions, forecasting how people will act, and understanding tricks, double meanings, lies, etc.

The level of interference is generally proportional to the qualitative alteration of the adaptive and social-communicative alteration.

The study by McDougle et al.<sup>20</sup> was the first to compare 50 people with ASD and 50 people with OCD, administering the *Yale-Brown Obsessive Compulsive Scale* (Y-BOCS, Goodman et al., 1989). The results showed that people with autism were less likely to manifest obsessive thoughts or somatic symptoms (of cleanliness, checking and counting), but were more likely to manifest behaviour of repetition, touching, hoarding or self-injury in comparison with people with OCD. In cases of comorbidity, 25% of the individuals with high-functioning ASD described obsessions and compulsions experienced as intrusive, stressful and time-consuming, but that were less serious and sophisticated than in the individuals with OCD.

In relation to the different manifestations of repetitive behaviour and symptoms of anxiety in ASD, it was found that children with autism that exhibited a symbolic representation of the restrictive behaviours were more likely to display a great number of anxious symptoms such as OCD or generalised anxiety.<sup>21</sup> In contrast, restrictive behaviour expressed by mean of attachment to atypical objects or memorised repetition of great amounts of information was less related to the symptoms of anxiety. This result coincides with studies that propose that children who manifest repetitive, more symbolic type behaviours display more serious and more anxiety symptoms than children displaying other forms of repetitive behaviours (such as reciting lists or learning fact by heart), in the same way that children without ASD face anxiety using symbolic games.<sup>22</sup>

### The function of obsessive-compulsive behaviour and of the patterns of restrictive and repetitive behaviour

In OCD obsessions are associated with a significant increase in suffering, anguish or feeling of blame. This causes the triggering of compulsions that attempt to reduce the discomfort that the obsession provokes. Consequently, the *“objective of the compulsion”* –behaviours or mental operations –lies in preventing or reducing the discomfort that the obsessive thought produces, such as the prevention of some negative event or situation. In OCD the *“compulsive behaviour”* (such as hand-washing, putting objects in order, checking and rechecking, petitions or demands of certainty, and acts of a repetitive character) or the *“compulsive mental acts”* (such as praying and counting or repeating words silently) are performed to reduce the discomfort a specific obsession brings, or to prevent some negative event or situation. However, these behaviours or mental operations are either not connected realistically with what the individual wants to neutralise, avoid or prevent,

or the behaviours or mental operations are clearly excessive.

For example, the people obsessed with the possibility of contaminating themselves can relieve this mental discomfort by washing their hands until their skin gets wrinkled and cracked; people perturbed by the idea of having forgot to lock a door can feel the impulse to check the door every 5 min; people obsessed with unwanted blasphemous thoughts can find relief by counting 100 times from 1 to 10 and from 10 to 1 for each of these undesired thoughts. In some cases the individuals perform fixed or stereotyped acts in agreement with idiosyncratic personal rules without being able to indicate why they carry these acts out.

Some of the coping strategies to avoid compulsion in OCD are: *“Neutralising the obsession”*, which acts as a tranquiliser as it destroys the prejudicial effect of the obsession (for example, good thoughts that compensate the bad ones).

*“Searching for confirmation by asking people in the immediate environment”*, which makes the individual sure that he or she has not committed any undesirable act or that none will be produced.

*“Avoiding people, stimuli, places, situations, etc.”*, which would trigger the appearance of the compulsions: for example, not going to a restaurant to avoid cleaning the silverware, plates and glasses, not going up to a high floor in a building so that ideas of pushing someone or throwing myself off do not appear, etc.

When different manifestation of *“restricted and repetitive patterns of behaviour, interests or activities”* in ASD and in OCD are analysed, one of the questions that arises is: Do these patterns represent a form of maladaptive response to negative emotional experiences? Thanks to functional analysis of behaviour in people with ASD we can at present state that, in a large proportion of cases and situations, the manifestation of restricted behaviour usually has a *“function of pleasure and enjoyment, but also a soothing function”*. The behaviour serves as a strategy for coping with emotionally negative stimuli or events, and as distractors from sensations of distress or from possible perception of an environmental threat, given that they confer a sensation of organisation and predictability.<sup>23</sup> It is normal for individuals with high-functioning ASD to describe negative emotions and feelings of stress derived from interaction with the environment, both at the social communicative level (not understand the behaviour of another, nor be able to predict it, have difficulties with understanding colloquial language, perceive social rejection, etc.) and at the sensory level (consider specific normal sounds as unbearable, feel pain when caressed or hugged, not be able to bear the texture of certain foods, etc.) or environmental level (little tolerance and flexibility for changes in general, getting unsettled in the face of changes to routines or not accepting changing an object from the place in which it is usually found).

Another hypothesis adds that restricted and repetitive behaviour reduces the anxiety that social demands cause.<sup>15</sup> The list is infinite and idiosyncratic for each person. However, the common denominator is reflected in a social, sensorial world that becomes a potential source of stress and not of well-being. If that is how it is, it is normal for these ritualistic and stereotyped behaviours to increase in

people with ASD who are susceptible to experiencing higher levels of anxiety.

One element of repetitive behaviour that has been well documented is the impact that it has on the general functioning of children with ASD, making it impossible for them to pay attention to other possible relevant information produced in their environment.<sup>15</sup> While these children are ‘submerged’ in their repetitive and stereotyped activities, they are losing opportunities for learning or for social interaction with people in their environment, or for implementing adaptive abilities.

The recent study by Wood and Gadow<sup>24</sup> contemplated the nosology and pathogenesis of anxiety disorders in young people with autism. The researchers suggested that this anxiety could have 3 different roles: (1) an inherent consequence of the symptoms of ASD (for example, the stress that perceiving social rejections causes); (2) a moderator of the severity of the ASD symptoms (such as deficits in social abilities and the exacerbation that may occur to the repetitive behaviours); and (3) an indicator of the nuclear symptoms of ASD.

The debate that is created questions if the restricted and repetitive patterns of behaviour, interests or activities present in autism arise as a consequence of a low capacity for response to social stress and stimulation. The high prevalence of anxiety in people with autism leads us to wonder whether these behaviours justify a separate diagnosis or whether they should be interpreted as part of autism.<sup>25</sup>

### Psychological theories that explain obsessive compulsive disorder and restricted and repetitive behaviour patterns, interests or activities in autistic spectrum disorders

The current psychological theories that explain OCD fall in the framework of 2 orientations: the hypothesis of deficit in cognitive functioning and the hypothesis of inadequate assessment or interpretation that the person makes of the intrusive thoughts.

The first of these hypotheses, ‘*hypothesis of deficit in cognitive functioning*’, sustains that people with OCD suffer a series of neurochemical alterations that affect the processing of information, especially memory and attention. The hypothesis is expanded to general cognitive control, over and above the focus in memory and attention. For example, control over repeated intrusion of thoughts, or deficiencies in inhibitory mechanisms of irrelevant or unwanted stimuli, or deficiencies in being able to disregard the information that they are requested to ignore.<sup>26</sup>

With respect to memory, generalised deficiencies in memory or lack of confidence in how their memory works are found.<sup>26,27</sup> Examples are that individuals with OCD find it very difficult to forget information related to their obsessions or they remember stimuli related with their obsessions better than those that are neutral or unrelated. With respect to attention, it is hypothesised that there is a selective attention towards stimuli related with the content of their obsessions, causing the person to be hypervigilant or making them unable to ignore the threatening information.

The second of the hypotheses, ‘*hypothesis of inadequate assessment*’ considers the existence of reactions of extreme anxiety in the face of a specific thought that

the individual interprets very negatively or catastrophically. When this happens, the individual implements coping strategies of neutralisation, avoidance or compulsion that increase the sensation of control and reduce the discomfort. Consequently, these individuals enter a vicious circle that never ends and worsens the perturbing symptoms.<sup>28</sup>

The Obsessive-Compulsive Cognitions Working Group (OCCWG) has established 6 domains of beliefs or metacognitive processes linked with OCD<sup>29</sup>: (1) ‘*inflated responsibility*’ as beliefs that one has the basic power to produce or prevent subjectively crucial negative results; (2) ‘*over-importance of thoughts*’ as beliefs related to the mere presence of a thought indicates that something is important; (3) ‘*over-estimation of threat*’ as an exaggeration of the probability or seriousness of harm; (4) ‘*excessive importance of controlling thoughts*’ as an overestimation of the importance of exercising absolute control over intrusive thoughts, images and impulses and the belief that it is possible and desirable; (5) ‘*intolerance of uncertainty*’ as beliefs as to the need to be right, personal incapability of facing unforeseeable changes and difficulty to function in ambiguous situations; and (6) ‘*perfectionism*’ as a tendency to believe that there is a perfect solution for every problem and that doing something perfectly, without any mistakes, is not only possible but necessary, as even small errors will have serious consequences.

The inadequate assessment to which this point refers also includes ‘*secondary appraisal processes of one’s own ability to cope*’, misinterpreting failure to control obsessive intrusions as a highly significant threat.

O’Connor et al.<sup>30</sup> defend the position that OCD is explained by an error in information processing consisting of inferential confusion of reality or processes of false deductive/inductive reasoning: errors in categorisation, confusion of comparable events, selective use of facts outside of the context, confidence in purely imaginary sequences, inverted inference and lack of confidence in normal perception.

A simple, useful way to differentiate restricted and stereotyped patterns of behaviour, interests or activities in ASD from those of OCD leads us back to the criterion of emotional valence using the individuals’ response to whether they believe that something bad will happen if they discontinue what they do, or the consequences involved in not fulfilling the ritual or restrictive behaviour. This is the point in which you can see that in ASD (lacking comorbidity with OCD, of course) the obsessive thought does not play any role and the compulsion lacks any effect of functionality with respect to these primary thoughts. There are no negative feelings or discomfort when they are experienced. The thoughts are not avoided but rather the total opposite, they do not threaten the individual’s moral integrity or values, nor is there any need to control or reduce them.

In contrast, the psychological theories that restricted and repetitive patterns of behaviour, interests or activities in ASD currently focus on the theory of executive dysfunction as part of the explanation, but not in an absolute and convincing fashion. Russell et al.<sup>31</sup> were the first to suggest that the obsessions and repetitive and stereotyped behaviour in autism were the result of an executive dysfunction, probably mediated by lesions in the prefrontal cortex of the frontal lobe. Executive functions (EF) represent a construct under which various functions are contemplated, such as planning

abilities, working memory, impulse control and inhibition, change of attentional focus, flexibility, generativity, initiation and self-regulation of action, among others. Although there may be nuances in the different definitions of what EF are, all of them share the central aspects that relate to the organisation of action and thought. An executive dysfunction can make it more difficult for the individual to carry out an independent life and have consistent behaviour; the dysfunction affects higher-order functions such as making decisions, mental abilities, resolving problems, emotional regulation, generalisation of learning, adapting to unforeseen or novel situations, etc., which are indispensable for functioning in a socially adapted way.<sup>32</sup>

The primary alterations in controlling and regulating voluntary behaviour could explain the characteristic presence of repetitive behaviour in people within the autistic spectrum. On the one hand, there is the difficulty in "generating" appropriate behaviours; on the other, we see the difficulty in "inhibiting" unwanted actions that are being executed.

The alteration of the "*generative capacity*" stems from the difficulty in incorporating new cognitive schemes that make it possible to integrate and infer the information of what happens in the environment, and to accept and assimilate what is new. When this mental process of generating new cognitive structures deteriorates, it provokes difficulties in foreseeing and anticipating events and temporal sequencing of facts, as well as a rejection of what is new and a limited innovative character or character "curious about the future". This would explain the desire for environmental stability and the rejection of new and unexpected situations, which are lived as terrifyingly novel, cognitively incomprehensible and emotionally unacceptable. This changes the behaviour of a person with autism to very predictable and limited with respect to initiative, creativity, spontaneity, flexibility and adaptation to environments and situations, generation of plans for action and, in the worst case, continual repetition of a specific behaviour and the stereotyped and repetitive use of objects. In short, the behaviour "seizes up".

However, "*inhibition of unwanted actions that are being executed or are overwhelming*" is one of the essential mental processes for regulating and controlling behaviour, its flexibility and adaptation. That is why an alteration of these processes of inhibition can also become the psychological substrate of the repetitive and stereotyped behaviour and of the desire for invariability that people with ASD have. If the individual is unable to inhibit thoughts or actions before or during an activity, there will be a tendency towards perseverance, rigidity and persistence. The result is as if the individuals were not in control of their ability to stop and direct their behaviour in another direction. The degree of seriousness of the processes of behavioural inhibition predicts that the preservation can be differentiated between: persevering in the simple response, repeating the same sequence of behaviour, with repetition of low-level behaviours (for example, stereotyped movements, stereotyped manipulation of objects, etc.); or persevering in high-level behaviours, with sequences of variable actions around a theme that never changes (for example, limited interests, rigid adhesion to routines and rituals, repetitive language, etc.). At this point it is important to clarify that

cognitive flexibility and problems with response inhibition are not specific to individuals with ASD, but can also be manifested in patients with OCD.

In studies with young people and adults with ASD and OCD, the neurocognitive processes related to executive functions that, hypothetically, underlie the repetitive behaviours in people with ASD received lower scores in the tasks that required generation of multiple responses; in contrast, people with OCD tended to display alterations in tasks that required inhibition of response.<sup>25,33</sup>

## Conclusions

To carry out the differential diagnosis between the obsessions and compulsions in OCD and the restricted and stereotyped patterns of behaviour, interests or activities in ASD, it is important to assess the following aspects:

- (1) "*The experience of anxiety and stress*" that the individual feels in relation to the patterns of obsessive thought and compulsions. In OCD the obsessions are intrusive, unacceptable, uncontrollable and ego-dystonic and provoke resistance against their appearance; in ASD this is not so (except, of course, of cases in which there is comorbidity).
- (2) "*The content of the obsessions*" in OCD, is rather more related to contamination, repeated doubts, sexual fantasies, superstitions, etc., as opposed to the "*content of the restrictive interests*" related to the physical world or to activities such as collecting things, reading books about a specific subject, hoarding things, touching, hitting or rubbing movements, etc.
- (3) "*The function of the compulsion*" in OCD tends to be related to preventing or reducing the discomfort the obsessive thought produces, in contrast to the "*function*" of pleasure and enjoyment, and also of calming, that "*restricted and repetitive patterns of behaviour*" in ASD have.
- (4) "*The hypothesis of deficit in cognitive functioning of information processing and the hypothesis of inadequate appraisal*" found in the inadequate interpretation that the person makes of the intrusive thoughts as psychological theories to explain OCD, in contrast to the "*theory of executive dysfunction*" that stands as an essential part of the psychological theory to explain thought in ASD (alteration of the generative capacity, inhibition of unwanted actions that are being executed or are overwhelming, etc.).

The impact that what has been described has for "*treatment*" is fundamental. Given the high prevalence of OCD in people with ASD, it is important to address the treatment for these cases. There are studies that have assessed cognitive-behavioural focuses adapted for people with ASD and comorbid anxiety disorders.<sup>34-36</sup> In autism "*measures of modification of the environment*" or the use of "*compensatory strategies in the social-communicative area*" are much more effective. Examples are visual strategies, externalising rules and social norms with lists, anticipating and clarifying expectations, etc., as well as potential cognitive-behavioural techniques.

It can be considered that the thoughts of individuals with ASD can also become abilities, skills or extraordinary or unusual capabilities related to mathematical skills (they can multiply very large figures mentally in a short time); great memory potential; complex understanding of rules, sequences and concepts; artistic skills; hyperlexia (they decipher written language even before being able to understand it, at very early ages); etc. Many of these skills, far from having a function that serves them in life, become activities with certain mechanical overtones. Providing functionality and protagonism to these natural skills will improve the perception that we have of them, it offsets the negative view that autism provokes in them and it offers them the opportunity to receive reinforcement for something that they do and, on occasion, do very well. In addition, the development of areas affected can be strengthened towards those that show little interest: language, specific games and social interaction.

The prospect of research in autism should analyse whether the techniques of exposition and prevention of response to minimise the rituals and restricted interests are truly effective. Given that there is not experience of stress or anxiety, but quite the reverse. The person with ASD does not need a process of habituation to extinguish anxiety, because the stereotyped rituals or behaviours are pleasurable. In contrast, habituation is indeed useful for people with OCD to reduce their compulsions.

In OCD the individualised cognitive conceptualisation of each case is the most efficient clinical strategy for treating the presentation idiosyncratic and heterogeneous of the symptoms. This can be handled using forms of "appraisal and ideographic diaries on the characteristics of the obsessions" (lists of trigger situations, daily frequency of the obsession, type and strength of the emotion associated with the obsession, threat perceived or negative consequences due to the obsession, efforts for control and success perceived, along with consequences perceived of failure to control the obsession), and on the "compulsions" (type of compulsions, daily frequency of the compulsion, urgency to carry out the compulsion, degree of and success perceived in resistance to the compulsion, identification of other types of neutralisation and strategies of control, and level of *insight* into the excessive or irrational nature of the obsessions and compulsions).<sup>37</sup>

"Cognitive treatment" based on modifying the false appraisals and beliefs is added to "behavioural treatment" of exposition and prevention of the standard response for those with OCD. The "key therapeutic components of cognitive-behavioural treatment for OCD" are: (1) "train the patient" based on the role of the appraisals and of neutralisation in the persistence of the obsessions and compulsions; (2) "distinguish erroneous appraisals"; (3) "cognitive restructuring" based on collection of tests, cost-benefit analysis, decatastrophising and identifying cognitive errors to weaken the false belief; (4) "alternate explanation" more benign of the obsession and its control; (5) "prevention of response" introducing strategies to block or prevent compulsive rituals, safety behaviours, avoidance, neutralisation and other mental control strategies; (6) "behavioural experimentation" using exercises of exposition during and between sessions to modify the false beliefs and appraisals; (7) "modification of nuclear beliefs" is

introduced towards the end of therapy about the danger and control of thoughts and personal vulnerability; and (8) "prevention of relapses".<sup>37</sup>

When comorbidity between both disorders is produced, there should first be treatments of exposition and prevention of response; the next step is treating the symptoms related to ASD: training in social skills and adaptive behaviour, behavioural therapy, limiting and "agreeing on" the patterns of repetitive and stereotyped behaviour, and using the subjects that interest the patient to strengthen or advance other areas of development, expanding his or her interests, little by little, towards other subjects or activities.

Ultimately, we should stop using the terms "obsession" and "compulsion" to refer to the restricted and repetitive behaviour patterns, interests or activities of ASD. We can only speak of obsessions in autism –and consequently, of ASD-OCD comorbidity –if these: (a) are experienced as recurrent and unwanted mental intrusions; (b) significant effort is expended to suppress, control or neutralise the thoughts; (c) the thoughts are recognised as a product of one's own mind; (d) there is an elevated sensation of personal responsibility; (e) they involve ego-dystonic content; and (f) they tend to be associated with neutralising efforts.

## Conflict of interests

The author has no conflict of interests to declare.

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