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Amitai Abramovitch, Jonathan S. Abramowitz, and Dean McKay

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Obsessive-Compulsive and Related Disorders: A Critical Review of the Diagnostic Class

Amitai Abramovitch¹, Jonathan S. Abramowitz², and Dean McKay³

¹ Department of Psychology, University of Texas at Austin

² Department of Psychology and Neuroscience, University of North Carolina at Chapel Hill

³ Department of Psychology, Fordham University

It has been over 10 years since the publication of the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* and the inclusion of a new diagnostic class, the Obsessive-Compulsive and Related Disorders (OCDs). This class of disorders includes obsessive-compulsive disorder, which was removed from the Anxiety Disorders category, and a few other putatively related conditions. Although this new category promised to raise awareness of underrecognized and understudied problems, the empirical validity and practical utility of this new *Diagnostic and Statistical Manual of Mental Disorders* category are questionable. This article reviews the phenomenology of obsessive-compulsive disorder and then presents a critical analysis of the arguments underlying the OCD class. Our analysis leads to a rejection of the OCD classification on both scientific and conceptual/logical grounds. The article closes with a discussion of the treatment implications of the OCD approach.

Public Health Significance Statement

In 2013, the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* removed obsessive-compulsive disorder from the Anxiety Disorders class to form a new Obsessive-Compulsive and Related Disorders class that includes hoarding disorder, excoriation (skin picking) disorder, trichotillomania (hairpulling) disorder, and body dysmorphic disorder. The underlying theoretical premise that promoted the creation of this new class relies primarily on the notion that these disorders revolve around failure in behavior inhibition—the inability to cease one's actions—that is purported to be a core mechanism across obsessive-compulsive and related disorders. In this review, we critically examine the evidence behind this new class of disorders. We review the phenomenology, neurobiology, and neuropsychology of these disorders, as well as psychopathological, pharmacological, and psychotherapeutic mechanisms. We conclude that there are no scientific grounds to cluster these disorders under one category and that the only disorder that exhibits similarities to obsessive-compulsive disorder across these facets is body dysmorphic disorder.

Keywords: obsessive-compulsive disorder, trichotillomania, excoriation, hoarding, body dysmorphic disorder

With the release of the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association, 2013), and the subsequent text revision (American Psychiatric Association, 2022), which did not include any substantive changes to diagnostic criteria, obsessive-compulsive disorder (OCD) was moved out of the Anxiety Disorders category, and it became the flagship diagnosis of its own newly established group

of obsessive-compulsive and related disorders (OCDs). This new category also includes trichotillomania (TTM; renamed hairpulling disorder), body dysmorphic disorder (BDD), skin picking disorder (SPD), and hoarding disorder (HD)—the latter two being newly introduced in DSM-5. The movement toward this new diagnostic class was initiated in the 1990s (see Hollander, 1993). Before the publication of the DSM-5, the disorders in this class were either in

Arthur M. Nezu served as action editor.

Amitai Abramovitch  <https://orcid.org/0000-0001-9640-0970>

Jonathan S. Abramowitz  <https://orcid.org/0000-0002-1721-8060>

Dean McKay  <https://orcid.org/0000-0003-1158-5043>

Amitai Abramovitch contributed equally to investigation, methodology, writing—original draft, and writing—review and editing. Jonathan S. Abramowitz contributed equally to conceptualization,

investigation, methodology, writing—original draft, and writing—review and editing. Dean McKay contributed equally to conceptualization, investigation, methodology, writing—original draft, and writing—review and editing.

Correspondence concerning this article should be addressed to Amitai Abramovitch, Department of Psychology, University of Texas at Austin, 1 University Station, Mail Code A8000, Austin, TX 78712, United States. Email: abramovitch@utexas.edu

other diagnostic classes (such as BDD in somatoform disorders and TTM in impulse control disorders) or were a symptom of OCD proper (as with hoarding disorder). The only new diagnosis is excoriation disorder, which also goes by nonsuicidal self-injury (see McKay & Andover, 2012). Although this reorganization helps to spotlight previously overlooked and underresearched conditions such as hoarding and BDD, the empirical support and clinical utility of the OCRD grouping remain questionable. It has now been over a decade since the official designation of this new category, and thus it is timely to review its suitability in addressing the taxonomic dimensions of this class of disorders. In this article, we begin by reviewing the phenomenology of OCD, then critically examine the rationale behind the *DSM-5*'s OCRD classification, and conclude with a discussion of its broader implications.

Phenomenology of OCD

Obsessions

Obsessions are persistent, intrusive thoughts, images, or doubts that are experienced as unwanted, unacceptable, or senseless. They provoke significant distress, often in the form of anxiety, fear, or doubt, centered on the possibility of negative outcomes (e.g., going to hell or becoming ill). Importantly, obsessions are not ordinary worries about daily life (e.g., work, health, or relationships; American Psychiatric Association, 2013).

Research shows that obsessions cluster around a few core themes: (a) contamination, (b) responsibility for harm, (c) taboo or unacceptable thoughts (e.g., sex, violence, or blasphemy), and (d) symmetry/completeness (Abramowitz et al., 2010). Despite this thematic structure, obsessional content is highly individualized, often reflecting the person's deeply held values, fears, and uncertainties (e.g., fear of harming loved ones, doubts about moral transgressions, or intrusive sexual thoughts). Most individuals with OCD experience multiple types of obsessions (Fontenelle et al., 2006; Leckman et al., 2010). Common examples are listed in Table 1.

Obsessions can also be conceptualized as falling into the broad categories of *autogenous* and *reactive* (Lee et al., 2005; Lee & Kwon, 2003; Lee & Telch, 2010). Autogenous obsessions arise spontaneously, often without clear triggers, and are typically experienced as deeply disturbing (e.g., intrusive thoughts of violence or taboo sexual acts). Reactive obsessions, in contrast, are provoked by identifiable situations or stimuli (e.g., bathrooms or driving) and often seem rational enough to lead to compulsive responses

like checking or washing. These obsessions tend to focus on the possibility of becoming contaminated, becoming culpable for causing harm, or responsibility for committing mistakes.

Neutralizing Behaviors

Neutralizing behaviors are strategies performed in response to obsessions with the aim of trying to resist or control unwanted thoughts and the feelings of distress (e.g., anxiety, fear, guilt, or disgust) associated with them. These behaviors can be ritualistic (i.e., "compulsive") in nature, but they may also be subtle or covert, such as mental strategies like thought suppression or silent prayer. Avoidance is also a neutralizing behavior as it serves a similar purpose to regulate obsessional distress. Collectively, neutralizing may be best understood as a strategy for managing obsessions and compulsions, and not a symptom in itself (see Abramovitch, Abramowitz, et al., 2021).

Rituals

To alleviate the doubt and distress associated with obsessions, individuals with OCD may engage in various topographically distinct, but functionally similar, ritualistic behaviors—repetitive overt or mental acts performed according to idiosyncratic rules. As defined by *DSM-5*, rituals are typically experienced as purposeful and goal-directed, even though they are clearly excessive or irrational in relation to the feared outcome (e.g., checking window locks 10 times before leaving home or repeatedly seeking reassurance that one has not harmed their children).

Unlike involuntary motor behaviors such as tics, or purposeless actions seen in psychosis or developmental disorders (e.g., hand-flapping in autism), OCD rituals are intentional and performed specifically to neutralize obsessional distress or prevent perceived harm (Boyer & Liénard, 2006). Common overt rituals include excessive cleaning or washing, checking (e.g., appliances or doors), counting, repeating actions (e.g., walking through a doorway multiple times), and reassurance-seeking. Covert or "mental" rituals may involve silently repeating certain words or phrases (e.g., "I love God"), mentally reviewing past actions, or using "good" thoughts to counteract "bad" ones. Examples of common rituals are shown in Table 1.

Avoidance

Although not included in the *DSM* criteria, avoidance is common in OCD and is used to prevent exposure to situations that might trigger obsessional distress and the urge to ritualize (Hezel & McNally, 2016; Salkovskis et al., 1997). For example, one man

Table 1
Common Obsessions and Compulsions Associated with OCD Dimensions

OCD dimension	Common obsessions	Common compulsions
Contamination	Thoughts of germs, illness, poison; feelings of disgust	Excessive washing, cleaning, showering; using barriers when touching surfaces
Responsibility for harm and mistakes	Thoughts of being culpable for fires, burglaries, accidents, breaches of security	Excessive checking, seeking reassurance
Unacceptable/taboo thoughts	Thoughts of violence, unwanted sexual images, blasphemous ideas, existential questioning	Reassurance-seeking, mental neutralizing, praying
Symmetry/incompleteness	Ideas that something is not, even, balanced, or "just right"	Excessive ordering, arranging

Note. OCD = obsessive-compulsive disorder.

avoided driving past cemeteries because they evoked intrusive thoughts of death and existential uncertainty about not fully understanding the meaning of life. Others avoid situations to escape the need for time-consuming or embarrassing rituals; for instance, a woman with obsessional fears of inappropriately using racial slurs in social media posts stopped using social media altogether.

Other Forms of Neutralizing

People with OCD may engage in other strategies that do not necessarily meet *DSM-5*'s criteria for compulsions, as they are not rigidly rule-bound or excessively repeated. These behaviors, such as mentally distracting oneself or casually warning others about perceived risks, can be subtle and highly varied. Despite their form, such "in-the-moment" neutralizing behaviors function to reduce obsessional anxiety, suppress or counter intrusive thoughts, or prevent feared outcomes. In this way, they serve a shared function with compulsive rituals and avoidance: seeking relief from obsessional distress.

Insight

Insight into the irrationality of obsessions and compulsions varies widely among people with OCD (Wu & Lewin, 2017). Some recognize their thoughts and behaviors as unreasonable (e.g., "I know touching my shoe probably won't make me sick, but I still can't stop myself from washing my hands"), whereas others view them as entirely rational (e.g., "If I don't turn off the faucet exactly right, my house will flood"). Insight can shift over time and may differ across obsessional themes. For instance, someone might dismiss their fear of stepping on cracks as silly but firmly believe that forgetting to pray will cause harm to his family. *DSM-5* now captures this range of insight with specifiers: (a) Good or fair insight, (b) Poor insight, and (c) Absent insight/delusional beliefs, indicating how much the person accepts their OCD-related fears as unreasonable. Although insight has been characterized in OCD for years (i.e., Kozak & Foa, 1994), the clarity of the definitions for different degrees of insight (Moritz et al., 2025) and how to assess or treat it using available methods remains limited.

Symptom Dimensions

The functional relationship between obsessions and neutralizing behaviors is, unfortunately, not clearly reflected in *DSM-5*, which allows for an OCD diagnosis based on the presence of *either* obsessions *or* compulsions. This has led to the mistaken impression that the two are independent processes and to the notion that OCD can present as "Pure O," namely, obsessions without any compulsions. However, albeit perpetuated by the *DSM*, there is evidence showing that "Pure O" OCD does not exist in the nature (Leonard & Riemann, 2012). That is, clinical observations and empirical research consistently show that obsessions and compulsions are functionally related (Foa et al., 1995) and cluster together in replicable symptom dimensions (e.g., Abramowitz et al., 2010; Deacon & Abramowitz, 2005; McKay et al., 2004). For example, obsessions about responsibility for harm or mistakes are typically paired with checking rituals aimed at gaining reassurance. Obsessions related to symmetry and incompleteness co-occur with

ordering, arranging, or counting compulsions. Contamination fears are usually accompanied by excessive washing and cleaning. Religious, sexual, and violent obsessions are commonly associated with mental rituals, thought suppression, and reassurance-seeking behaviors.

Obsessive-Compulsive-Related Disorders in *DSM-5*

Categorizing OCD among the anxiety disorders in previous iterations of the *DSM* made sense on two levels. First, on purely descriptive level, OCD and the anxiety disorders are characterized by irrational fear, anxious apprehension, and active or passive avoidance behavior. Second, on a mechanistic level, OCD and anxiety disorders are all maintained by the same psychological processes involving threat-relevant cognitive appraisals and negative reinforcement (Gillan & Robbins, 2014). Moreover, these conditions all respond to exposure therapy, which promotes fear extinction (Abramowitz et al., 2019; Sewart & Crask, 2020).

Although some authors have questioned (a) the removal of OCD from the anxiety disorders category, (b) the creation of a new OCRD category, and (c) which conditions were included as OCRDs (e.g., Abramowitz & Jacoby, 2015), proponents (Fineberg et al., 2018; e.g., Fineberg & Robbins, 2021; Reghunandanan et al., 2015) argued that OCD and OCRDs are categorized together based on shared (a) repetitive thoughts/behaviors and behavioral disinhibition; (b) similar onset, comorbidity, and familial patterns; (c) overlapping brain and neurochemical features; and (d) comparable treatment responses. We now turn to an examination of the arguments for and against the current positioning of OCD in *DSM-5*.

Critical Review of the Basis for the OCRD Diagnostic Class

Repetitive Thoughts and Behaviors in OCD and OCRDs

The *DSM-5* provides only a vague overview of how OCD and the other OCRDs are related and why they have been grouped together. After a brief description highlighting the repetitiveness of obsessional thinking and compulsive behavior, the manual states:

Some other obsessive-compulsive and related disorders are also characterized by preoccupations and by repetitive behaviors or mental acts in response to the preoccupations. Other obsessive-compulsive and related disorders are characterized primarily by recurrent body-focused repetitive behaviors (e.g., hair pulling, skin picking) and repeated attempts to decrease or stop the behaviors. (American Psychiatric Association, 2013, p. 235)

Proponents also assert that the repetitive thinking or behavior patterns fall along a spectrum of failure in behavior inhibition—the inability to cease one's actions—with compulsive and impulsive behaviors at opposite ends (Fineberg et al., 2011). Put another way, at one "end" of the continuum are located the "compulsive disorders" such as OCD and BDD, which are characterized by repetitive behaviors that serve to reduce risk and harm. Impulse control problems (e.g., skin picking and hairpulling), in contrast, represent the other "end" as these conditions are characterized by behaviors that often have a pleasurable consequence, even if the

person feels distress over the fact that they cannot resist performing these behaviors. To this end, the unifying factor among the OCRDs is the presence of repetitive behaviors that the person seemingly cannot stop performing. In the 12 years since the publication of the *DSM-5*, however, empirical research has not provided any evidence that such a spectrum of behavioral inhibition exists or, much less, unifies these disorders in a single category. Rather, inhibitory functions appear to be deficient in OCD (e.g., Kashyap & Abramovitch, 2021; Mar et al., 2022), but also across all anxiety disorders, and indeed across most *DSM* disorders (Abramovitch, Short, et al., 2021), with a *lack of specificity* to the OCRDs (Zainal & Newman, 2022).

It is not surprising that the key organizing construct for the OCRD category is unsupported by empirical research because the conceptual pillar upon which it is based is flawed in its basic rationale. By emphasizing the presence of repetitive behaviors (compulsive, body-focused, impulsive, or otherwise) as criteria for the OCRD class, this approach overlooks the more essential mechanistic features of OCD and putatively related conditions, namely the cycle of obsessions → Distress/Anxiety → Compulsions → Relief via negative reinforcement that is driven by factors such as the intolerance of uncertainty, guilt and disgust avoidance, and the misinterpretation of intrusive thoughts (Abramowitz et al., 2026). This oversight is, however, consistent with the *DSM*'s largely descriptive and atheoretical approach to taxonomy wherein the disorders are defined merely by lists of signs and symptoms rather than theoretically grounded conceptual models with empirical support. The definition of OCD as including *either* obsessions *or* compulsions is an emblem of this descriptive approach to diagnosis, and it leads to drawing parallels between OCD and seemingly any other disorders that involve repetitious thinking or behavior (e.g., Hollander, 1993). However, the flaw with this method for grouping disorders is easy to recognize if we apply it as follows:

1. Vomiting is a symptom of bulimia nervosa.
2. Vomiting is a symptom of salmonella poisoning.
3. Therefore, bulimia and salmonella poisoning are part of the same family of disorders.

As we have discussed, however, in OCD, compulsive behavior is uniquely performed in response to specific cues such as particular personally relevant situations or thoughts that evoke anxiety concerning feared outcomes. Moreover, anxiety and compulsive urges generally subside (at least somewhat, and only temporarily) after completion of the ritual. The evocation of compulsive urges by obsessional fear and the immediate reduction in anxiety following compulsive behavior are the hallmarks of OCD. This problem is hardly a failure in behavioral inhibition, as people with OCD are often able to delay or stop their rituals and many do so regularly, for example, if rituals will cause embarrassment or if instructed to do so as part of treatment by exposure and response prevention (ERP). Moreover, research shows that behavioral inhibition itself is a *vulnerability factor* for OCD and anxiety disorders (Coles et al., 2006; Rosenbaum et al., 1993). In addition, research indicates that inhibitory function deficits are transdiagnostic, and not specifically characteristic of disorders associated with real-life behavioral impulsivity (Abramovitch, Short, et al., 2021). In addition, a recent meta-analysis indicated that OCD is not associated with significant

behavioral impulsivity compared with controls (Abramovitch et al., 2026). We next examine whether the functional pattern that characterizes OCD is also present in the other OCRDs.

Trichotillomania (Hairpulling Disorder)

The *DSM-5* includes five criteria for trichotillomania, the first two being (a) recurrent hairpulling resulting in hair loss and (b) repeated attempts to stop the hairpulling (the last three specify that the problem causes distress or impairment, is not attributable to substance use or medical condition, and is not better accounted for by another mental disorder). If we employ these two criteria alone in understanding patients who repetitively pull their hair, they appear to share the presence of repetitive behaviors and seeming failure in behavioral inhibition with people with OCD. Yet a more careful examination reveals that trichotillomania is phenomenologically distinct from OCD.

Although repetitive behaviors can be observed among those with OCD and those with trichotillomania, the intrusive anxiety-evoking obsessional thoughts that occur in OCD are not present in trichotillomania. To explain the inclusion of trichotillomania as a form of OCD, however, Stein et al. (1995) had to minimize the importance of obsessions, writing that the differences in emphasis between obsessions (in OCD) and “compulsive behavior” in trichotillomania are “subtle” (p. 29). Yet this is not a “subtle” difference. Rather, it is a very clear and important distinction because it is obsessional fear that motivates the repetitive behavior (i.e., compulsive rituals) in OCD. In contrast, research indicates that urges to pull hair in trichotillomania are not precipitated by obsessional fears, but instead by feelings of general tension, depression, anger, boredom, frustration, indecision, or fatigue (Christenson et al., 1993; Stanley & Mouton, 1996). Hairpulling in trichotillomania also leads to *pleasurable* feelings (Grant & Potenza, 2004; Schreiber et al., 2011), a phenomenon not at all observed with rituals in OCD (Stanley et al., 1992).

Skin Picking (Excoriation)

The diagnostic criteria for excoriation are identical to those for trichotillomania, substituting “skin picking” for “hairpulling.” Yet, although it has not been as intensively studied as hairpulling, its distinctions from OCD are just as clear. That is, excoriation does not involve obsessional thoughts, and repetitive skin picking has a different function than do compulsive rituals in OCD. Specifically, pathological skin picking may be triggered by an array of antecedents, including general stress, apprehension, time away from scheduled activities (e.g., sitting on the couch, watching television, or reading), boredom, and feeling tired or angry (Arnold et al., 2001; Neziroglu et al., 2008). Moreover, unlike in OCD, emotion regulation difficulties and emotional reactivity have been shown to predict skin picking even after controlling for depression, anxiety, and worry (Snorrason et al., 2010). Skin picking can also be triggered by the feel (e.g., a bump or unevenness) or look (e.g., a blemish or discoloration) of the skin. Moreover, episodes of skin picking (and hairpulling) often begin without the person's awareness (“unfocused”) but become more conscious (“focused”) after a period of time (Keuthen et al., 2000; Lochner et al., 2002). This is all in contrast to the deliberate anxiety-reducing compulsive behavior in OCD, which is a response to specific obsessional stimuli.

Hoarding Disorder

The *DSM-5* describes hoarding disorder as characterized by excessive acquisition and difficulty discarding or parting with possessions—even those of limited value—due to an intense perceived need to save such items and distress associated with discarding them. As a result, large numbers of possessions accumulate and clutter the person's living areas to the extent that it may become difficult to use the living space for its intended purposes. Hoarding is observed in a number of *DSM* conditions, including depression, anorexia nervosa, schizophrenia, and dementia (e.g., Abramowitz et al., 2008; Frankenburg, 1984; Luchins et al., 1992), and the text of the *DSM-5* does not make clear why it is included as an OCRD. For several decades, however, hoarding was considered to be a symptom of OCD (Hayward & Coles, 2009) based on observations that the difficulty discarding possessions was a form of compulsive behavior. This impression was reinforced by early studies conducted in OCD clinics, creating a sampling bias that made hoarding appear closely tied to OCD (e.g., Hayward & Coles, 2009). Yet hoarding symptoms differ markedly from those of OCD. First, although hoarding involves recurring thoughts of acquiring and maintaining possessions, these thoughts are not experienced as fear-provoking in the same way that OCD obsessions are, and they are not particularly intrusive or unwanted (Rachman et al., 2009; Wheaton et al., 2011). Moreover, excessive acquiring and saving does not result in an escape from obsessional anxiety in the way that washing or checking in OCD does and thus cannot be conceptualized as “compulsive” or “ritualistic” in the OCD sense (e.g., Rachman et al., 2009).

Body Dysmorphic Disorder

There are two main diagnostic criteria for BDD in *DSM-5*. The first is preoccupation with one or more perceived defects or flaws in physical appearance (i.e., beliefs that one looks ugly or deformed) that are only slightly or not at all observable to others. The second is excessive repetitive behaviors (e.g., checking one's appearance) or mental acts (e.g., comparing oneself to others) that are performed in response to the preoccupation. Research and clinical observations indicate that in addition to these superficial similarities between BDD and OCD, there are also more genuine similarities in how these repetitive symptoms are experienced and how they function to maintain their respective conditions. In particular, as with obsessions in OCD, the appearance-related preoccupations in BDD are experienced as intrusive, unwanted, and anxiety provoking; and as with compulsive rituals in OCD, the repetitive behaviors have an anxiety-reduction function and are not experienced as pleasurable (Phillips et al., 2010). Moreover, research shows that the excessive checking and comparing behaviors contribute to maintaining the appearance-related preoccupations in much the same way that compulsive rituals maintain obsessional fears in OCD (Phillips et al., 2010; Veale & Riley, 2001; Windheim et al., 2011). Accordingly, the symptoms in BDD appear to overlap in important ways with those of OCD.

Conclusions

Apparent overlaps between the symptoms of OCD and other mental disorders may be found on two levels. The first and more

trivial level is the *form* or *topography* of symptoms. For certain, OCD and the other OCRDs all share repetitive thinking or behavior as a symptom. Yet only some of these repetitive behaviors resemble OCD on the second and more critical level, which is the *experience*, *function*, and *motivation* of that symptom for the individual. Beyond the fact that obsessions and compulsions are repetitive, these phenomena repay careful examination with rich patterns of thinking and behavior that are unique to OCD and BDD among the OCRDs. Careful examination of behaviors such as skin picking and hairpulling leads to a rich understanding of these “impulse control” problems as well, but the experience of thinking and behaving involved here are distinct from those of OCD and BDD.

Do compulsivity and impulsivity exist on a “spectrum” as espoused by OCRD proponents? Do we have a firm basis for considering the OCRDs as characterized by failures in behavioral inhibition? Although there might be some commonsense appeal here, the meanings of “compulsivity,” “impulsivity,” and “spectrum” have not been well defined. What *is* known is that the compulsive behavior in OCD and BDD has an escape function (i.e., from obsessional fear and preoccupation) and is negatively reinforced by the (albeit temporary) reduction in distress that it engenders; the impulsive behavior which characterizes trichotillomania and excoriation is *gratifying* in that the patient feels a rush of excitement when the behavior is performed that is intrinsically positively reinforcing (Grant & Potenza, 2004). Yet the extant research suggests no specific relationship between these types of behaviors. Indeed, as we will discuss shortly, *DSM-IV* (American Psychiatric Association, 1994) impulse control disorders occur at low rates among patients with OCD (Bienvenu et al., 2000), and individuals with OCD do not evidence greater levels of impulsivity than do those with other mental disorders (Abramovitch et al., 2026; Summerfeldt et al., 2004). Accordingly, if we consider an overlap in symptom function as a criterion for relatedness to OCD, only BDD should legitimately be included as an OCRD.

Overlaps in Age of Onset, Comorbidity, and Family Loading

Age of Onset and Course

Findings suggest that although OCD may begin at any time from childhood through old age, it has a mean age of onset in the late teens into the midtwenties (e.g., Anholt et al., 2014; Antony et al., 1998). OCD is also a chronic condition that, absent effective treatment, waxes and wanes throughout its course. Likewise, the other OCRDs typically onset in adolescence through early adulthood and follow a similar course (Phillips & Kelly, 2021; Ricketts et al., 2018; Zaboski et al., 2019). Similarity in age of onset and course, however, is not a persuasive argument for the OCRD diagnostic class because these demographic features are not at all specific to OCD and the other OCRDs. A perusal through the *DSM-5* shows that virtually all depressive, bipolar, anxiety, somatic symptom, dissociative, sexual, sleep, personality, substance-related, psychotic, and eating disorders also begin during this time of life and evidence a generally chronic course if effective treatment is not sought. Thus, the fact that the OCRDs share these characteristics does not indicate anything specific about these conditions, much less that they are related to one another or to OCD.

Patterns of Comorbidity

It has been suggested that OCRDs share similar patterns of comorbidity. Several large studies, however, do not support this assertion. For example, [Bienvenu et al. \(2000\)](#) found that among 80 individuals with OCD, although the comorbidity rate with BDD was 15%, only 4% of these patients had comorbid trichotillomania. This supports our contention that BDD is more closely related to OCD than is trichotillomania. Other studies have reported largely similar results ([Jaisoorya et al., 2003](#); [Lovato et al., 2012](#)), suggesting that other than BDD, the OCRDs are rather *uncommon* among individuals with OCD.

It is surprising that the proponents of moving OCD *out of* the anxiety disorders would appeal to the comorbidity argument to make their case for the OCRDs because research shows that OCD is more consistently comorbid with anxiety disorders than with the OCRDs (e.g., [Jaisoorya et al., 2003](#)). For example, 13% of OCD patients also met criteria for generalized anxiety disorder, 20.8% met criteria for panic disorder, 16.7% for agoraphobia, 36% for social phobia, and 30.7% for specific phobias ([Nestadt et al., 2001](#)). Thus, using this reasoning, the evidence indicates that OCD is 5–10 times more closely related to other anxiety disorders than to most of the OCRDs!

Moreover, a *logical*, as opposed to *empirical*, problem with using comorbidity patterns to group disorders is that comorbidity merely signifies *some* association among disorders, not necessarily an etiologically or nosologically meaningful one. Indeed, comorbidity is commonplace among major mental disorders, and there are numerous explanations for this phenomenon that do not require co-occurring conditions to be related to one another. Consider, for example, that alcohol dependence and posttraumatic stress disorder are more highly comorbid than what would be expected by chance ([Kramer et al., 2014](#)). Although there might be several reasons for this (e.g., both may develop when reintegrating into life following military deployment), we would not suggest these two disorders are part of the same diagnostic category. Similarly, at least half of OCD sufferers meet criteria for a depressive disorder, yet this does not suggest that OCD and depression are part of the same diagnostic class. Thus, comorbidity patterns are of limited value in understanding the uniqueness of OCD and its links to OCRDs. OCRD proponents have never specified how comorbidity suggests meaningful similarity.

Family Patterns

It has been suggested that OCRDs occur frequently in relatives of people with OCD, which may imply a common genetic factor. The available research, however, does not support this simplistic idea. For example, [Bienvenu et al. \(2000\)](#) found that the lifetime prevalence of trichotillomania in first-degree relatives of adults with OCD was only 1%. In contrast, the rates of anxiety disorders among first-degree relatives of people with OCD are far higher than the rates of OCRDs among relatives of OCD sufferers (e.g., [Bienvenu et al., 2000](#); [Nestadt et al., 2001](#)). Therefore, the assertion that familial pattern represents a valid basis for grouping together the OCRDs again more strongly supports the notion that OCD should be grouped with the anxiety disorders. In other words, the available data are more consistent with the notion of shared genetic vulnerability among OCD and the anxiety disorders, as opposed to genetic links between OCD and the putative OCRDs.

Overlaps in Neurobiological Factors

Advocates of the OCRD classification often argue that disorders in this category share neurobiological irregularities—primarily neurocircuitry and neurotransmitter abnormalities ([Fineberg et al., 2011](#); [Hollander et al., 2005](#)). [Fineberg et al. \(2011\)](#), for example, argued that “the focus has shifted from learning models in which anxiety-driven obsessions entrain neutralizing compulsions to an emphasis on the primacy of obsessional thoughts and compulsive behaviors as disorders of basal ganglia dysregulation” (p. 1). There are, however, a number of crucial empirical and logical difficulties with strong contentions such as this one. In this section, we discuss how data from brain imaging, pharmacotherapy outcome studies, and studies of neurotransmitter systems have been misrepresented as suggesting a common neurobiological etiology of the OCRDs.

Brain Structure and Function

A large body of brain imaging research has consistently identified statistically significant differences between OCD and control samples across the cortical–striatal–thalamo–cortical (CSTC) neuronal pathway (e.g., [Shephard et al., 2022](#)). Specifically, OCD is associated with resting-state hyperactivity in this pathway, as well as central regions across this neuronal network, including the orbital frontal cortex, caudate nucleus, and hypothalamus ([Saxena & Rauch, 2000](#)). Structural brain imaging studies yielded more inconclusive results ([Boedhoe et al., 2017](#)). However, only a limited body of brain imaging literature is available for other OCRDs, and virtually no imaging study has directly compared OCD samples with OCRD samples. Within this small body of literature, HD is associated with different neurobiological correlates compared with OCD (e.g., [Stevens et al., 2020](#)). Similarly, albeit based on limited imaging research, less than a few imaging studies on body-focused repetitive behaviors (BFRBs), such as hairpulling, did not find evidence for the consistently replicate CSTC alterations found in OCD ([Slikboer et al., 2018](#)). In fact, research suggests that BFRBs may be more neurologically akin to impulse control disorders (e.g., gambling disorder) or tic disorders. Finally, although only limited research exists, imaging studies in BDD highlight several similarities with OCD studies including similar CSTC findings (e.g., [Grace et al., 2017](#)). These similarities are not surprising, given our hypothesis that BDD is the only OCRD that is mechanistically similar to OCD. Nevertheless, proponents of the OCRDs category propose that neurological findings suggest that the OCRDs share common and overlapping “brain abnormalities” that support the inclusion of these disorders under the same category (e.g., [Fineberg et al., 2020](#)).

It is also important to highlight some critical conceptual and methodological caveats of the OCRD neuroimaging literature. First, imaging studies in OCRDs typically include very small sample sizes; for example, SPD studies included between 18 and 25 clinical participants ([Huggins et al., 2020](#); [Odlaug et al., 2016](#); [Schienle et al., 2018](#)). Although some studies on HD and BDD include somewhat larger samples, these sample sizes are far smaller than that required for generalizable imaging findings ($n > 1,000$; [Marek et al., 2022](#)). Moreover, a systematic review reported that only 3% of neuroimaging studies reported a power calculation ([Szucs & Ioannidis, 2020](#)).

Another issue pertains to the extent of false-positive findings that limits generalizability and replicability in imaging studies.

Imaging studies typically include a large number of comparisons, and to facilitate interpretation of the study's results, the standard practice is for researchers not only to employ a correction for familywise inflation of Type I error (multiplicity correction) but also to determine the appropriate (conservative) cluster defining primary threshold (Eklund et al., 2016). Unfortunately, multiple large studies and systematic reviews indicate that most imaging studies do not adequately employ those necessary corrections (Woo et al., 2014; Yeung, 2018) and that this may result in up to 70% of all imaging results being positives (e.g., Eklund et al., 2016). In fact, in the context of imaging research in psychopathology, this problem frequently leads to multiple positive results by chance (Vul et al., 2009).

Additional limitations prevalent in brain imaging research in general, as well as in the context of OCRDs research, pertain to the specificity of imaging results. First, there is a dearth of research conducting direct comparisons between OCRDs that would facilitate examination of similarities and differences between the disorders. There is also a lack of research comparing individuals diagnosed with OCRDs and with other psychiatric disorders to ascertain whether brain functions and structures in OCRDs are specific to this cluster or whether these are associated with other forms of psychopathology. This is a central concern because the formation of the *DSM-5* OCRDs category relied heavily on the assumption that these disorders share common underlying pathophysiology (e.g., Stein et al., 2010).

A further issue is that OCD itself is not associated with any type of distinct disorder-specific pathophysiological finding. Indeed, an umbrella review of meta-analyses examining all biomarkers available for analyses (including neurocognitive and neurobiological markers) found no disorder-specific diagnostic marker for OCD across 73 markers (Fullana et al., 2020). Moreover, an examination of imaging studies across OCRDs indicates variability and inconsistency between different OCRDs. For example, there is evidence that BFRBs are associated more with patterns of brain activity related to impulsivity, as well as disgust and emotional responsivity (i.e., insula and amygdala; Wabnegger et al., 2018), and OCD and BDD are more associated with compulsivity (i.e., orbital frontal cortex and CSTC pathways; e.g., Milad & Rauch, 2012), even though some researchers continue to suggest similar pathophysiology across OCRDs (e.g., Fineberg et al., 2018). Therefore, it is imperative to conduct research to examine overlap in brain abnormalities between multiple OCRDs, but to date, this type of research is lacking.

Finally, proponents of the biomedical conceptualization OCRDs often draw causal inferences from neuroimaging data, neglecting that correlational findings do not justify causal conclusions. As brain imaging studies are cross-sectional group comparisons, they can only establish *associations* between having an OCRDs diagnosis and brain structure or function. It is a fallacy to infer that these associations indicate brain *abnormalities* that *cause* these disorders, much like one cannot claim that the link between carrying a lighter and lung cancer suggests that carrying a lighter is an abnormality or a cause of lung cancer. Without true experimental data, claims about OCRDs and brain imaging must be restrained. It is also possible, and indeed more likely, that differences in brain function between OCRDs and controls are a result of *having* OCRDs. This is supported by a body of literature indicating that differences in patterns of brain activity normalize after a

successful course of cognitive-behavioral therapy (CBT) without any biochemical intervention (Stephenson et al., 2025).

In sum, after more than a quarter century of brain imaging research, there have been no major advances toward understanding the causes of psychological disorders (Insel, 2009). Considering the limitations described in this section, it is evidently more appropriate to conclude from such studies that, for example, *compared with nonclinical controls, people diagnosed with OCRDs sometimes exhibit increased striatal brain activity*, compared with the all-to-prevalent but unscientific conclusion that increased *striatal activity represents a brain abnormality that causes OCRDs*. Therefore, arguments pertaining to overlaps in brain “abnormalities” as a basis for creating and justifying the OCRD classification category are not credible.

Neurotransmission

One of the most consistent findings in the psychiatric literature on OCD (and related disorders) is that pharmacotherapy by serotonin reuptake inhibitors (SRIs) and selective serotonin reuptake inhibitors (SSRIs; e.g., clomipramine and sertraline) can be effective, albeit with approximately 50% response rate (Pittenger, 2021). This has recently been echoed in the International OCD Foundation's OCD Treatment Guidelines (International OCD Foundation, 2025). Together with a few studies examining serotonergic dynamics in OCD (Insel et al., 1985), the finding that SRIs/SSRIs were effective for OCD led to the “serotonin hypothesis” that OCD is caused by an “imbalance” of serotonin (Barr et al., 1993; Zohar et al., 2004). Given the oversimplification and lack of supporting empirical evidence (discussed later in this section) for the serotonin hypothesis, and unsatisfactory treatment response rates, additional “chemical imbalance” models of OCD and related disorders have been proposed, including dopamine (Koo et al., 2010), and glutamate (Grassi et al., 2024).

Yet, here as well, OCRD proponents draw unwarranted causal conclusions inferring that the effectiveness of SRIs/SSRIs demonstrates that the OCRDs overlap in terms of abnormally functioning serotonin or dopamine systems (e.g., Sachdev et al., 2019). This inference is problematic for several reasons. First, SRIs have not demonstrated efficacy for several OCRDs, including HD, SPD, and hairpulling disorder (Borue et al., 2015). More fundamentally, etiological conclusions cannot be logically derived from treatment response data, as doing so commits the *ex juvantibus* fallacy—inferring disease mechanisms from responsiveness to an intervention. This reasoning error has long been recognized and critiqued in the context of psychiatric pharmacotherapy (e.g., Lacasse & Leo, 2005). This etiological model is also vulnerable to the *post hoc ergo propter hoc* (“after this, therefore because of this”) fallacy, a reasoning error that has been widely recognized in psychiatric research for decades (Valenstein, 2002; Whitaker, 2011). To illustrate this logical fallacy, consider that some individuals use cannabis to alleviate stress. It would be unreasonable to conclude, on this basis, that stress is caused by low levels of cannabis (or Delta-9-tetrahydrocannabinol) in the brain. Accordingly, treatment response cannot provide a conclusive or definitive basis for determining the etiology of a disorder.

Without question, obsessive-compulsive behavior, and the behaviors or symptoms characterizing other OCRDs, *involve* neurotransmitter systems. However, there is little (if any) evidence

that these symptoms are *caused by abnormalities* in these neurotransmitter systems (Moncrieff et al., 2023). Moreover, these neurotransmitters are associated with a myriad of behaviors and cognitions and therefore likely also with numerous *DSM* diagnoses. Accordingly, alterations in monoamines may be a transdiagnostic finding across disorders and symptoms and not specific to any subgroups of disorders (e.g., Buckholz & Meyer-Lindenberg, 2012).

Neurocognitive Function

An ever-growing body of neuropsychological research in OCD has accumulated, focusing on neurocognitive functions, with particular interest in executive functions (Abramovitch et al., 2013, 2015; Fradkin et al., 2018; Kashyap & Abramovitch, 2021; Leopold & Backenstrass, 2015; Shin et al., 2014; Snyder et al., 2015). Taken together, this research indicates that OCD is associated with underperformance on neuropsychological tests across domains, with small-to-medium effect sizes. Larger effect sizes have been found for inhibitory functions, and planning, but also for nonverbal memory (for a brief overarching review of meta-analyses, see Kashyap & Abramovitch, 2021). Importantly, however, the magnitude of these effects does not meet criteria for *impairment* in any of those domains (i.e., the between-group differences are not clinically meaningful). A comprehensive review examining all available candidate disorder-specific biological and cognitive markers concluded that “our results suggest that there is currently no single specific or incrementally valid diagnostic biomarker for OCD” (Fullana et al., 2020, p. 509).

Far fewer neuropsychological studies have been conducted on other OCRDs. The second most researched disorder in terms of neuropsychological studies is BDD. Two systematic reviews are available, the first of which was a meta-analysis of 23 studies that examined selective attention and memory (Johnson et al., 2018). The authors reported that BDD was associated with significant underperformance on memory and selective attention tests, with medium effect sizes. More recently, a more comprehensive systematic review ($K = 54$) found that BDD was associated with deficient test performance across several domains, including attention and memory, but also across several executive functions, including working memory, flexibility, and planning (Holmes à Court et al., 2025). Notably, given the similarity in phenomenology and psychopathological mechanisms between OCD and BDD, it is not surprising that these domain deficiencies reported in BDD are very similar to the deficiencies found in OCD.

A somewhat smaller body of neuropsychological literature is available for HD, albeit the few available systematic reviews differ quite significantly in their findings. In the first review HD, Woody et al. (2014) examined data from 15 studies and concluded that compared with controls, there was “replicable evidence” that HD is associated with deficits in visuospatial functioning, attention, and two executive functions: problem-solving and organization. A later systematic review that included 12 studies identified deficits only in attention and inhibition (Gledhill et al., 2021). Interestingly, a more recent systematic review that included 22 studies concluded that there is no evidence for cognitive deficits in HD, other than in categorization (Stumpf et al., 2023). Notably, this investigation included studies examining neuropsychological function in HD versus other clinical samples. Taken together, despite

these discrepancies, it appears that HD may be associated with some deficiencies in executive functions.

Finally, far less neuropsychological research has been conducted on SPD and TTM. Given the hallmark symptoms in these two disorders, namely frequent difficulties managing urges to engage in behaviors, some of which are automatic, most neuropsychological investigations in TTM and SPD largely focused on two main cognitive functions: motor inhibition and cognitive flexibility. In a recent meta-analysis of cognitive function in TTM, the authors reported that there is evidence for deficient performance on response cancellation (a type of inhibitory function) and extra-dimensional shifting (related to cognitive flexibility and working memory), both of which were associated with small effect sizes (Ali et al., 2024). A more recent systematic review examined executive function in TTM and SPD and concluded that “TTM and SPD do not seem to be characterized by broad deficits in executive function; rather, individuals with TTM and SPD show specific deficits in response inhibition, with some evidence of shifting difficulties in TTM” (Barber & Lee, 2025, p. 6). However, both reviews note that the included studies suffer from small sample sizes and the inclusion of comorbidities.

Taken together, all OCRDs are associated with some deficiencies in executive functions, whereas BDD and OCD have been also found to perform more poorly than controls on other cognitive functions, including attention, processing speed, visuospatial functions, and memory—with small-to-medium effect sizes reported across OCRDs. However, these differences cannot be attributed to or used as disorder-specific indicators for any disorder or groups of disorders. Over and above the fact that there is a significant difference in terms of the number and scope of neuropsychological studies investigating each disorder, it has been consistently demonstrated that cognitive dysfunction is a transdiagnostic dimension (i.e., the C factor; Abramovitch, Short, et al., 2021). Moreover, in the vast majority of disorders, including OCRDs, the effect sizes are mostly small to medium, which does not meet criteria for impairment on these functions.

Conclusions

The view that OCD and the other OCRDs are best conceptualized as disorders of basal ganglia dysfunction or impaired inhibitory control—rather than as conditions rooted in learned behavioral responses to fear-provoking stimuli—implicitly prioritizes biological and neurocognitive processes over psychological ones. However, it has become increasingly clear that neurocognitive deficits and differences in brain structure and function are neither disorder-specific nor symptom-specific (e.g., Abramovitch, Short, et al., 2021). Indeed, lack of specificity has been also found for neural functions associated with cognitive control (McTeague et al., 2017), as well as for “peripheral” biological markers (Pinto et al., 2017), all of which have been identified as transdiagnostic. This point has been articulated in a meta-analysis concluding that neural correlates of cognitive control reflect a general vulnerability to psychopathology rather than mechanisms unique to any single disorder: “Neuropsychological performance, gray matter volume, and now functional brain activation evidence converge to implicate transdiagnostic disruptions in the neurocircuits underlying general cognitive control capacity” (McTeague et al., 2017, p. 683).

Although biological processes are necessary for the existence of OCRDs, biological and neurocognitive processes are not more essential than psychological processes. Reducing OCRDs to the level of biological function is therefore not an optimal way to understand these (or any other) mental disorders. By analogy, the best way to understand a painting is not to reduce it to the exact chemical composition of acrylic paint. Although the molecular structure of paint constrains what can be depicted, it does not explain painting's design, meaning, or function.

Correspondingly, whereas brain imaging and neurocognitive data offer information unavailable through self-report, these data are not inherently more accurate, meaningful, or valid than psychological data (Miller & Keller, 2000). Rather, biological and psychological approaches offer different domains of information. In this light, neo-reductionistic appeals (Abramovitch & Schweiger, 2015) to a shared neurobiological or neurocognitive *etiology* as ground for grouping the OCRDs appear less as cautious, methodologically rigorous scientific arguments and more as post hoc efforts to legitimize the OCRD classification itself.

Overlaps in Treatment Response

Treatment response is perhaps the most important litmus test for the validity of the OCRD category because successful treatment is the ultimate goal of identification, classification, and research on potential etiological factors (discussed in McKay & Neziroglu, 2009). Yet, once more, the OCRD conceptualization faces considerable conceptual and empirical difficulties. The *DSM-5* notes the "clinical utility" (p. 235) of grouping OCRDs together in the same diagnostic class, and OCRD proponents have specifically argued that these conditions overlap in terms of their response to *pharmacological* interventions—namely preferential response to SSRIs (i.e., SSRIs; Fineberg et al., 2011). The appeal to this preferential response, however, is only clinically useful in delineating a class of OCRDs if three conditions are met: (a) preferential response to SSRIs is observed uniformly among the OCRDs, (b) the preferential response to SSRIs is *only* observed among the OCRDs, and (c) SSRIs are the best treatment available for the OCRDs. Careful examination of the most prudently conducted research (i.e., randomized controlled trials [RCTs]) indicates that *none* of these conditions are met.

Examining the OCRDs as a group that share common etiological factors and yet are taxonomically distinct as demanded by the *DSM-5* would imply that an examination of treatment would fulfill three criteria. First, (a) treatments should have *generality* across diagnoses such that the same class of medication provides relief to all members of that class. This is premised on the topographic similarities (i.e., repetitive behavior and problems in inhibitory control) and on functional similarities. Treatments for this class of disorders should also have (b) *specificity* in that the application of these interventions would not demonstrate substantial benefit for disorders outside this class. And finally, (c) these treatments need to demonstrate *congruence* in that they relate to each other in a meaningful way in connection with targeting the putative class of OCRDs.

Assumption A: Uniform Response to SSRIs

Meta-analysis of the numerous RCTs with thousands of OCD patients indicates the efficacy of SSRIs (as well as clomipramine,

which is a less selective SRI) relative to placebo (Eddy et al., 2004; Greist et al., 1995). The only available placebo-controlled trial in BDD also indicates that fluoxetine (an SSRI that is effective for OCD) is efficacious for this OCRD (Phillips et al., 2002). Yet SSRI response in the other OCRDs is inconsistent. One meta-analytic study by Bloch et al. (2007) found that with the exception of clomipramine, SSRIs were no more effective than placebo in the treatment of trichotillomania. A second meta-analysis by Bloch et al. (2014) revealed that patients with hoarding symptoms were about 50% less likely than patients with OCD to respond to SSRIs. Only two placebo-controlled studies have been published for SPD: one showing significant reduction with fluoxetine on only one of three outcome measures (Simeon et al., 1997) and the other finding that citalopram was no more effective than placebo (Arbabi et al., 2008). The only conclusion that can be drawn from these data is that the OCRDs do *not* show a uniform response to SSRIs. Accordingly, SSRIs do not demonstrate generality across diagnoses within the OCRDs.

Assumption B: Preferential Response to SSRIs Is Specific to OCRDs

Numerous RCTs demonstrate that the SSRIs are efficacious in the treatment of problems other than the OCRDs, including unipolar depressive disorders (e.g., Fournier et al., 2010; Schatzberg & Nemeroff, 2013) and anxiety disorders such as social anxiety disorder (Hedges et al., 2007). Thus, the OCRD conceptualization lacks specificity: Because SSRIs help numerous conditions, the observation that a group of problems respond preferentially to these agents cannot reveal anything unique about these disorders.

Assumption C: SSRIs Are the Best Treatment for OCRDs

A meta-analysis of 13 RCTs directly comparing SSRIs and CBT (mainly ERP) in the treatment of OCD revealed that CBT is at least as effective (if not more so) than SSRIs for OCD (Romanelli et al., 2014). Indeed, it is widely acknowledged that CBT is the first-line treatment for OCD (before SSRIs in most cases; Koran et al., 2007; NICE, 2005). Many of these studies included patients with hoarding, yet no RCTs to date have compared SSRIs with other forms of treatment (e.g., CBT) in an exclusively hoarding disorder sample. In BDD, although larger effect sizes and more consistently positive findings are reported in studies of CBT (usually ERP) compared with those evaluating SSRIs, there are no direct comparison RCTs (Ipser et al., 2009; Williams et al., 2006). Similarly, data from RCTs for SPD indicate more consistency in response to behavioral interventions (e.g., habit reversal training) than to SSRIs (e.g., Grant et al., 2012), although there are as yet no direct comparison studies. In trichotillomania, Bloch et al.'s (2007) meta-analysis revealed that habit reversal training had a larger effect size than did SSRIs. Thus, research suggests that SSRIs are *not* the most effective treatment for *any* of the OCRDs and lack congruence as the interventions do not address the disparate symptoms expressed among the putative disorder class.

Rather, the empirical evidence suggests that psychological interventions (i.e., behavioral and cognitive-behavioral) are at least as effective as the SSRIs across the OCRDs. A noteworthy aspect of cognitive and behavioral interventions often overlooked by OCRD proponents is that they are derived from specific models of psychopathology (not necessarily etiology) that have a sound

empirical basis. The use of ERP for OCD and BDD, for example, is guided by a literature of experimental research demonstrating that these conditions are characterized by irrational (obsessional) fears that are maintained by avoidance, compulsive rituals, and other neutralizing responses that reduce fear in the short term, but that impede longer term fear extinction (e.g., [Rachman & Hodgson, 1980](#); [Veale & Riley, 2001](#)). This is in contrast to antidepressant medications, which were discovered serendipitously and which gave rise to general theories about serotonin primarily on the basis of treatment response ([Whitaker, 2011](#)).

Moreover, as discussed previously, chemical imbalance models have not been clearly articulated and have received limited support from other types of research designs beyond treatment response studies. For this reason, pharmacotherapy response alone may provide limited guidance for understanding how mental disorders should be classified. By contrast, cognitive and behavioral interventions are designed to target specific, empirically supported psychological processes, and therefore patterns of response to CBT may offer potentially useful information about the boundaries and relationships among disorders ([Abramowitz et al., 2026](#)). From this perspective, similarities and differences in the mechanisms targeted by CBT across conditions may be informative when considering classification frameworks. For example, although ERP is widely used in the treatment of OCD, the topography and functional targets of CBT interventions differ substantially between OCD and BDD ([Abramowitz et al., 2019](#)). As a result, treatment procedures and typical patterns of response are not necessarily comparable between these conditions, despite their phenomenological similarities within the OCRD grouping.

Accordingly, it is worth considering CBT as a litmus test of the OCRD approach and evaluating the first two assumptions discussed earlier with respect to these interventions. Regarding the first parameter of preferential response, whereas OCD and BDD respond preferentially to ERP as discussed previously ([Romanelli et al., 2014](#); [Williams et al., 2006](#)), ERP is not used in the treatment of other OCRDs such as trichotillomania and skin picking because these problems do not involve obsessional fears and are not maintained by avoidance and rituals. Instead, these impulse control problems are addressed using habit reversal training, which involves three types of techniques: awareness training (identifying “high-risk” situations), developing a competing response until the urge to pull or pick passes (e.g., wearing gloves or holding an object), and stimulus control (eliminating cues for pulling and picking; [Azrin & Nunn, 1973](#); [Odlaug & Grant, 2012](#)). CBT for hoarding involves a mix of some exposure-based techniques, some strategies similar to habit reversal, and some cognitive therapy strategies to help patients modify exaggerated beliefs about their own possessions (e.g., “I *couldn’t* live without this”; [Frost & Tolin, 2008](#)). As a result, CBT for the full class of OCRDs lacks generality because the same interventions (ERP, habit reversal) are inapplicable for some of the disorders in the class.

With respect to the second assumption regarding specificity, both exposure-based ERP and habit reversal training are used successfully in the treatment of disorders outside the OCRD classification. Numerous RCTs indicate that exposure therapy is the most effective intervention in CBT for anxiety disorders, which all involve some form of irrational fear that is maintained by avoidance behavior or safety-seeking strategies that are functionally similar to compulsive rituals and neutralizing in OCD (e.g.,

[Abramowitz et al., 2012](#)). Numerous RCTs also indicate that habit reversal training, on the other hand, is effective in the treatment of tic disorders along with other undesirable habits such as thumb sucking and nose picking, which are maintained by different processes than OCD, BDD, and the anxiety disorders (e.g., [Azrin & Nunn, 1973](#); [Piacentini & Chang, 2006](#)).

From the standpoint of clinical practice, treatment response is probably the most important gauge of the validity of the OCRD class of disorders. Not only is successful treatment the ultimate goal of identification, classification, and research on potential etiological factors, but there are no reliable or valid biological or laboratory tests for OCD or the other OCRDs ([Hyman, 2007](#)). Even if such tests were available, how feasible would it be for the average practicing clinician to conduct examinations of genetics, brain circuitry, or neurotransmitter functioning to decide on a treatment regimen considering costs and insurance reimbursement practices? Taken together, the treatment response data on pharmacological and psychological interventions have two broad implications for the OCRD classification. First, they suggest that although OCD and BDD overlap and could be considered OCRDs, hoarding, trichotillomania, and SPDs would not fit into the same category. Second, they suggest that OCD and BDD bear substantial overlaps with the other anxiety disorders.

Conclusions: What Is OCD and Where Does It Belong in the *DSM*?

We have critically evaluated the basis for *DSM-5*’s repositioning of OCD from the anxiety disorders into a new category of OCRDs that include BDD, trichotillomania, hoarding disorder, and SPD. With the exception of BDD, which appears to have substantial phenomenological and treatment response overlaps with OCD, the pertinent empirical literature largely suggests that this marked conceptual and nosological shift lacks scientific merit. The case for the OCRDs classification is undermined by the lack of a fine-grained conceptualization of OCD and OCRDs, reliance on high base rates of overlapping features with poor sensitivity and specificity (e.g., comorbidity, response to SRI medications), misinterpretation of data from brain imaging and treatment outcome research, and omission of data that largely do not support the diagnostic shift (e.g., differential response to ERP, comorbidity data). Although we would never espouse majority opinion as a substitute for scientific data, it is worth noting that many expert clinicians ([Mataix-Cols et al., 2007](#)) and even prominent psychiatric researchers ([Hyman, 2007](#)) unmistakably recognize that the basis for the OCRD chapter in *DSM-5* is dubious.

The *DSM* classification system, which focuses on the superficial form of symptoms, as opposed to the psychological processes involved in these symptoms, has led to a cursory conceptualization of OCD as a problem characterized by repetitive thoughts and behavioral patterns. This has given rise to the illusion that OCD overlaps with other disorders that involve repetitious thinking or behavior. Attempts to incorporate neuroscience into this diagnostic system—although vastly premature—would move this focus further away from understanding psychological processes and closer to reducing problems like OCD to putative dysfunctions in brain structure and functioning associated with repetitive thinking and behavior. We argue here that the essence of OCD is not to be found in the repetitive nature of obsessions and compulsions, but

rather in functional aspects of these signs and symptoms and the relationships between them.

The evidence is compelling that people with OCD experience thoughts that they misperceive as highly significant and foreboding of danger, and then engage in attempts to reduce the chances of danger, or control the thought itself, with tactics such as compulsive rituals, avoidance, or other neutralizing strategies. These strategies become habitual because they often reduce obsessional fear immediately, yet they maintain the problem in the long run by interfering with the natural extinction of obsessional fear. We understand that for those who focus exclusively on symptom *form* (as in the *DSM*), and for those invested in a neurobiological explanation for such symptoms, the illusion that OCD is a disorder of behavioral inhibition would be very seductive. The movement toward this shift was being developed for over 20 years before the publication of the *DSM-5*. Hollander (1993) introduced the obsessive-compulsive spectrum, where diagnoses with any repetitive actions were characterized as unified by a breakdown in behavioral inhibition. This original framing included virtually every diagnosis in the *DSM*. Later iterations refined that perspective (i.e., Hollander et al., 2008). Despite decades of conceptualizations, empirical research does not support this position. It does, however, show that (a) obsessional thoughts and anxiety arise largely from mistaken perceptions of normal cognitive intrusions (the distal etiology of which is unclear), (b) compulsive rituals are deliberate acts, and (c) the processes of classical conditioning and negative reinforcement maintain obsessional fears and compulsive urges (Abramowitz et al., 2009). A clear multidisciplinary research agenda is called for to clarify whether and how behavioral inhibition operates in these disorders. In one case, this is already under way. Excoriation disorder, also known as nonsuicidal self-injury, has been criticized for inclusion in the OCRD category (McKay & Andover, 2012). Research has demonstrated that inclusion in the broader OCRD category is problematic, considering the substantial difference in treatment approaches compared with disorders marked by fear-based compulsivity (i.e., Selles et al., 2016). Indeed, treatment appears to demand addressing the positive reinforcing aspects of self-injury itself and the negative reinforcement that comes with alleviating emotional distress that prompts the behavior (Andover et al., 2017).

These key phenomenological processes are internally valid and accessible via proper assessment. They are also the same processes involved in the maintenance of anxiety disorders such as social anxiety disorder, panic disorder and agoraphobia, and PTSD (Abramowitz et al., 2012; Barlow, 2004). Also maintained in this fashion is BDD, which traditionally has been categorized in *DSM* as a somatoform disorder because the content of its “obsessions” concerns the body (another example of *DSM*’s superficial focus). In all of these conditions, there is (a) the perception that some unlikely feared outcome will occur and be catastrophic and (b) the use of maladaptive strategies to deal with the perceived threat. Although the focus of the fear and maladaptive safety behaviors vary across these problems (e.g., in OCD, it is intrusive thoughts, symmetry, or contamination; in BDD, it is the concern with physical appearance; in social phobia, it is social situations; and in panic, it is arousal-related body sensations), the key psychological processes overlap. Each anxiety disorder involves overestimates of threat and subsequent responses that prevent realization that fear is groundless.

Moreover, treatment based on this conceptualization, which aims to extinguish irrational fear using exposure to conditioned fear stimuli in the absence of safety maneuvers and cues, is highly effective for OCD, BDD, and other anxiety disorders. Trichotillomania, skin picking, and hoarding disorder, on the other hand, would not be expected to show a response to exposure-based treatments because of the absence of irrational fear. Instead, habit reversal training is a first-line treatment for hairpulling and skin picking (which includes techniques such as *eliminating* cues of picking and pulling vs. systematically *confronting* them as is done in exposure). Similarly, strategies similar to habit reversal as well as cognitive therapy techniques for challenging exaggerated beliefs about possessions supplement exposure-based techniques for hoarding. Grouping all of these problems in the same diagnostic class because they are “OCD-related,” however, gives the clinician the false impression that all OCRDs should be conceptualized and treated in a similar fashion. Thus, the OCRD concept and its superficial focus on *form* of symptoms rather than their functional relationship may ultimately lead patients astray away from receiving the evidence-based treatment of their problem.

Looking ahead, the arguments presented here suggest that future efforts to refine the classification of OCRDs would benefit from greater attention to the empirically derived psychological processes that maintain these problems, rather than relying primarily on similarities in surface features. Such an approach could help clarify which conditions share common mechanisms and which may be more meaningfully grouped elsewhere. From this perspective, questions about the long-term placement of disorders currently included within the OCRD chapter, such as BDD, hairpulling, SPD, and hoarding, may be most productively addressed through research that examines shared and distinct functional processes (e.g., threat appraisal, disgust sensitivity, incompleteness, habit formation, or reward-driven urges). We therefore encourage future classification efforts, including deliberations surrounding the next version of the *DSM* or other classification schemes, to incorporate process-focused evidence when evaluating how these conditions are organized, with the goal of developing a taxonomy that better reflects the underlying structure of emotional and behavioral disorders.

References

- Abramovitch, A., Abramowitz, J. S., & McKay, D. (2021). The OCI-12: A syndromally valid modification of the Obsessive-Compulsive Inventory-Revised. *Psychiatry Research*, 298, Article 113808. <https://doi.org/10.1016/j.psychres.2021.113808>
- Abramovitch, A., Abramowitz, J. S., & Mittelman, A. (2013). The neuropsychology of adult obsessive-compulsive disorder: A meta-analysis. *Clinical Psychology Review*, 33(8), 1163–1171. <https://doi.org/10.1016/j.cpr.2013.09.004>
- Abramovitch, A., Abramowitz, J. S., Mittelman, A., Stark, A., Ramsey, K., & Geller, D. A. (2015). Research review: Neuropsychological test performance in pediatric obsessive-compulsive disorder—A meta-analysis. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 56(8), 837–847. <https://doi.org/10.1111/jcpp.12414>
- Abramovitch, A., Borrelli, D. F., Curran, C., & Dar, R. (2026). Impulsivity in obsessive-compulsive disorder: A systematic review and meta-analysis. *Journal of Affective Disorders*, 394, Article 120498. <https://doi.org/10.1016/j.jad.2025.120498>

- Abramovitch, A., & Schweiger, A. (2015). Misuse of cognitive neuropsychology in psychiatry research: The intoxicating appeal of neo-reductionism. *The Behavior Therapist*, 38(7), 187–191.
- Abramovitch, A., Short, T., & Schweiger, A. (2021). The C factor: Cognitive dysfunction as a transdiagnostic dimension in psychopathology. *Clinical Psychology Review*, 86, Article 102007. <https://doi.org/10.1016/j.cpr.2021.102007>
- Abramowitz, J. S., Abramovitch, A., McKay, D., & Draffin, A. (2026). Management of obsessive-compulsive disorder in adults. *BMJ*, 392, Article e083443. <https://doi.org/10.1136/bmj-2024-083443>
- Abramowitz, J. S., Deacon, B. J., Olatunji, B. O., Wheaton, M. G., Berman, N. C., Losardo, D., Timpano, K. R., McGrath, P. B., Riemann, B. C., Adams, T., Björqvinnsson, T., Storch, E. A., & Hale, L. R. (2010). Assessment of obsessive-compulsive symptom dimensions: Development and evaluation of the Dimensional Obsessive-Compulsive Scale. *Psychological Assessment*, 22(1), 180–198. <https://doi.org/10.1037/a0018260>
- Abramowitz, J. S., Deacon, B. J., & Whiteside, S. P. H. (2012). *Exposure therapy for anxiety: Principles and practice*. Guilford Press.
- Abramowitz, J. S., Deacon, B. J., & Whiteside, S. P. H. (2019). *Exposure therapy for anxiety: Principles and practice* (2nd ed.). The Guilford Press.
- Abramowitz, J. S., & Jacoby, R. J. (2015). Obsessive-compulsive and related disorders: A critical review of the new diagnostic class. *Annual Review of Clinical Psychology*, 11, 165–186. <https://doi.org/10.1146/annurev-clinpsy-032813-153713>
- Abramowitz, J. S., Taylor, S., & McKay, D. (2009). Obsessive-compulsive disorder. *Lancet*, 374(9688), 491–499. [https://doi.org/10.1016/S0140-6736\(09\)60240-3](https://doi.org/10.1016/S0140-6736(09)60240-3)
- Abramowitz, J. S., Wheaton, M. G., & Storch, E. A. (2008). The status of hoarding as a symptom of obsessive-compulsive disorder. *Behaviour Research and Therapy*, 46(9), 1026–1033. <https://doi.org/10.1016/j.brat.2008.05.006>
- Ali, A., Ioannidis, K., Grant, J. E., & Chamberlain, S. R. (2024). Cognition in trichotillomania: A meta-analysis. *CNS Spectrums*, 29(3), 158–165. <https://doi.org/10.1017/S1092852924000129>
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.).
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.).
- American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.; DSM-5-TR).
- Andover, M. S., Schatten, H. T., Morris, B. W., Holman, C. S., & Miller, I. W. (2017). An intervention for nonsuicidal self-injury in young adults: A pilot randomized controlled trial. *Journal of Consulting and Clinical Psychology*, 85(6), 620–631. <https://doi.org/10.1037/ccp0000206>
- Anholt, G. E., Aderka, I. M., van Balkom, A. J. L. M., Smit, J. H., Schruers, K., van der Wee, N. J. A., Eikelenboom, M., De Luca, V., & van Oppen, P. (2014). Age of onset in obsessive-compulsive disorder: Admixture analysis with a large sample. *Psychological Medicine*, 44(1), 185–194. <https://doi.org/10.1017/S0033291713000470>
- Antony, M. M., Downie, F., & Swinson, R. P. (1998). Diagnostic issues and epidemiology in obsessive-compulsive disorder. In R. P. Swinson, M. M. Antony, S. Rachman, & M. A. Richter (Eds.), *Obsessive-compulsive disorder: Theory, research, and treatment* (pp. 3–32). Guilford Press.
- Arbabi, M., Farnia, V., Balighi, K., Mohammadi, M. R., Nejati-Safa, A. A., Yazdchi, K., Golestan, B., & Darvish, F. (2008). Efficacy of citalopram in treatment of pathological skin picking, a randomized double blind placebo controlled trial. *Acta Medica Iranica*, 46(5), 367–372.
- Arnold, L. M., Auchenbach, M. B., & McElroy, S. L. (2001). Psychogenic excoriation: Clinical features, proposed diagnostic criteria, epidemiology and approaches to treatment. *CNS Drugs*, 15(5), 351–359. <https://doi.org/10.2165/00023210-200115050-00002>
- Azrin, N. H., & Nunn, R. G. (1973). Habit-reversal: A method of eliminating nervous habits and tics. *Behaviour Research and Therapy*, 11(4), 619–628. [https://doi.org/10.1016/0005-7967\(73\)90119-8](https://doi.org/10.1016/0005-7967(73)90119-8)
- Barber, K. E., & Lee, H.-J. (2025). Executive functioning in trichotillomania and skin picking disorder: A review of neurocognitive findings. *Journal of Obsessive-Compulsive and Related Disorders*, 44, Article 100919. <https://doi.org/10.1016/j.jocrd.2024.100919>
- Barlow, D. H. (2004). *Anxiety and its disorders: The nature and treatment of anxiety and panic*. Guilford Press.
- Barr, L. C., Goodman, W. K., & Price, L. H. (1993). The serotonin hypothesis of obsessive compulsive disorder. *International Clinical Psychopharmacology*, 8(2), 79–82. <https://doi.org/10.1097/00004850-199311002-00011>
- Bienvenu, O. J., Samuels, J. F., Riddle, M. A., Hoehn-Saric, R., Liang, K. Y., Cullen, B. A., Grados, M. A., & Nestadt, G. (2000). The relationship of obsessive-compulsive disorder to possible spectrum disorders: Results from a family study. *Biological Psychiatry*, 48(4), 287–293. [https://doi.org/10.1016/S0006-3223\(00\)00831-3](https://doi.org/10.1016/S0006-3223(00)00831-3)
- Bloch, M. H., Bartley, C. A., Zipperer, L., Jakubovski, E., Landeros-Weisenberger, A., Pittenger, C., & Leckman, J. F. (2014). Meta-analysis: Hoarding symptoms associated with poor treatment outcome in obsessive-compulsive disorder. *Molecular Psychiatry*, 19(9), 1025–1030. <https://doi.org/10.1038/mp.2014.50>
- Bloch, M. H., Landeros-Weisenberger, A., Dombrowski, P., Kelmendi, B., Wegner, R., Nudel, J., Pittenger, C., Leckman, J. F., & Coric, V. (2007). Systematic review: Pharmacological and behavioral treatment for trichotillomania. *Biological Psychiatry*, 62(8), 839–846. <https://doi.org/10.1016/j.biopsych.2007.05.019>
- Boedhoe, P. S. W., Schmaal, L., Abe, Y., Ameis, S. H., Arnold, P. D., Batistuzzo, M. C., Benedetti, F., Beucke, J. C., Bolletini, I., Bose, A., Brem, S., Calvo, A., Cheng, Y., Cho, K. I. K., Dallaspezia, S., Denys, D., Fitzgerald, K. D., Fouché, J.-P., Giménez, M., . . . van den Heuvel, O. A., & ENIGMA OCD Working Group. (2017). Distinct subcortical volume alterations in pediatric and adult OCD: A worldwide meta- and mega-analysis. *The American Journal of Psychiatry*, 174(1), 60–69. <https://doi.org/10.1176/appi.ajp.2016.16020201>
- Borue, X., Sharma, M., & Hudak, R. (2015). Biological treatments for obsessive-compulsive and related disorders. *Journal of Obsessive-Compulsive and Related Disorders*, 6, 7–26. <https://doi.org/10.1016/j.jocrd.2015.03.003>
- Boyer, P., & Liénard, P. (2006). Why ritualized behavior? Precaution Systems and action parsing in developmental, pathological and cultural rituals. *The Behavioral and Brain Sciences*, 29(6), 595–613. <https://doi.org/10.1017/s0140525x06009332>
- Buckholtz, J. W., & Meyer-Lindenberg, A. (2012). Psychopathology and the human connectome: Toward a transdiagnostic model of risk for mental illness. *Neuron*, 74(6), 990–1004. <https://doi.org/10.1016/j.neuron.2012.06.002>
- Christenson, G. A., Ristvedt, S. L., & Mackenzie, T. B. (1993). Identification of trichotillomania cue profiles. *Behaviour Research and Therapy*, 31(3), 315–320. [https://doi.org/10.1016/0005-7967\(93\)90030-x](https://doi.org/10.1016/0005-7967(93)90030-x)
- Coles, M. E., Schofield, C. A., & Pietrefesa, A. S. (2006). Behavioral inhibition and obsessive-compulsive disorder. *Journal of Anxiety Disorders*, 20(8), 1118–1132. <https://doi.org/10.1016/j.janxdis.2006.03.003>
- Deacon, B. J., & Abramowitz, J. S. (2005). The Yale-Brown Obsessive Compulsive Scale: Factor analysis, construct validity, and suggestions for refinement. *Journal of Anxiety Disorders*, 19(5), 573–585. <https://doi.org/10.1016/j.janxdis.2004.04.009>
- Eddy, K. T., Dutra, L., Bradley, R., & Westen, D. (2004). A multidimensional meta-analysis of psychotherapy and pharmacotherapy for obsessive-compulsive disorder. *Clinical Psychology Review*, 24(8), 1011–1030. <https://doi.org/10.1016/j.cpr.2004.08.004>
- Eklund, A., Nichols, T. E., & Knutsson, H. (2016). Cluster failure: Why fMRI inferences for spatial extent have inflated false-positive rates.

- Proceedings of the National Academy of Sciences of the United States of America*, 113(28), 7900–7905. <https://doi.org/10.1073/pnas.1602413113>
- Fineberg, N. A., & Robbins, T. W. (Eds.). (2021). *The neurobiology and treatment of OCD: Accelerating progress* (Vol. 49). Springer International Publishing. <https://doi.org/10.1007/978-3-030-75393-1>
- Fineberg, N. A., Apergis-Schoute, A. M., Vaghi, M. M., Banca, P., Gillan, C. M., Voon, V., Chamberlain, S. R., Cinosi, E., Reid, J., Shahper, S., Bullmore, E. T., Sahakian, B. J., & Robbins, T. W. (2018). Mapping compulsivity in the DSM-5 obsessive compulsive and related disorders: Cognitive domains, neural circuitry, and treatment. *The International Journal of Neuropsychopharmacology*, 21(1), 42–58. <https://doi.org/10.1093/ijnp/pyx088>
- Fineberg, N. A., Hollander, E., Pallanti, S., Walitza, S., Grünblatt, E., Dell'Osso, B. M., Albert, U., Geller, D. A., Brakoulias, V., Janardhan Reddy, Y. C., Arumugham, S. S., Shavitt, R. G., Drummond, L., Grancini, B., De Carlo, V., Cinosi, E., Chamberlain, S. R., Ioannidis, K., Rodriguez, C. I., . . . Menchon, J. M. (2020). Clinical advances in obsessive-compulsive disorder: A position statement by the International College of Obsessive-Compulsive Spectrum Disorders. *International Clinical Psychopharmacology*, 35(4), 173–193. <https://doi.org/10.1097/YIC.0000000000000314>
- Fineberg, N. A., Saxena, S., Zohar, J., & Craig, K. J. (2011). Obsessive-compulsive disorder: Boundary issues. In E. Hollander, J. Zohar, P. J. Sirovatka, & D. A. Regier (Eds.), *Obsessive-compulsive spectrum disorders: Refining the research agenda for DSM-V* (pp. 1–32). American Psychiatric Association.
- Foa, E. B., Kozak, M. J., Goodman, W. K., Hollander, E., Jenike, M. A., & Rasmussen, S. A. (1995). DSM-IV field trial: Obsessive-compulsive disorder. *The American Journal of Psychiatry*, 152(1), 90–96. <https://doi.org/10.1176/ajp.152.1.90>
- Fontenelle, L. F., Mendlowicz, M. V., & Versiani, M. (2006). The descriptive epidemiology of obsessive-compulsive disorder. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 30(3), 327–337. <https://doi.org/10.1016/j.pnpbp.2005.11.001>
- Fournier, J. C., DeRubeis, R. J., Hollon, S. D., Dimidjian, S., Amsterdam, J. D., Shelton, R. C., & Fawcett, J. (2010). Antidepressant drug effects and depression severity: A patient-level meta-analysis. *JAMA*, 303(1), 47–53. <https://doi.org/10.1001/jama.2009.1943>
- Fradkin, I., Strauss, A. Y., Pereg, M., & Huppert, J. D. (2018). Rigidly applied rules? Revisiting inflexibility in obsessive compulsive disorder using multilevel meta-analysis. *Clinical Psychological Science*, 6(4), 481–505. <https://doi.org/10.1177/2167702618756069>
- Frankenburg, F. R. (1984). Hoarding in anorexia nervosa. *The British Journal of Medical Psychology*, 57(1), 57–60. <https://doi.org/10.1111/j.2044-8341.1984.tb01581.x>
- Frost, R. O., & Tolin, D. F. (2008). Compulsive hoarding. In J. S. Abramowitz, D. McKay, & S. Taylor (Eds.), *Clinical handbook of obsessive-compulsive disorder and related problems* (pp. 76–94). Johns Hopkins University Press.
- Fullana, M. A., Abramovitch, A., Via, E., López-Sola, C., Goldberg, X., Reina, N., Fortea, L., Solanes, A., Buckley, M. J., Ramella-Cravarro, V., Carvalho, A. F., Tortella-Feliu, M., Vieta, E., Soriano-Mas, C., Lázaro, L., Stein, D. J., Fernández de la Cruz, L., Mataix-Cols, D., & Radua, J. (2020). Diagnostic biomarkers for obsessive-compulsive disorder: A reasonable quest or ignis fatuus? *Neuroscience and Biobehavioral Reviews*, 118, 504–513. <https://doi.org/10.1016/j.neubiorev.2020.08.008>
- Gillan, C. M., & Robbins, T. W. (2014). Goal-directed learning and obsessive-compulsive disorder. *Philosophical Transactions of the Royal Society of London*, 369(1655), Article 20130475. <https://doi.org/10.1098/rstb.2013.0475>
- Gledhill, L. J., Bream, V., Drury, H., & Onwumere, J. (2021). Information processing in hoarding disorder: A systematic review of the evidence. *Journal of Affective Disorders Reports*, 3, Article 100039. <https://doi.org/10.1016/j.jadr.2020.100039>
- Grace, S. A., Labuschagne, I., Kaplan, R. A., & Rossell, S. L. (2017). The neurobiology of body dysmorphic disorder: A systematic review and theoretical model. *Neuroscience and Biobehavioral Reviews*, 83, 83–96. <https://doi.org/10.1016/j.neubiorev.2017.10.003>
- Grant, J. E., & Potenza, M. N. (2004). Impulse control disorders: Clinical characteristics and pharmacological management. *Annals of Clinical Psychiatry*, 16(1), 27–34. <https://doi.org/10.1080/10401230490281366>
- Grant, J. E., Odlaug, B. L., Chamberlain, S. R., Keuthen, N. J., Lochner, C., & Stein, D. J. (2012). Skin picking disorder. *The American Journal of Psychiatry*, 169(11), 1143–1149. <https://doi.org/10.1176/appi.ajp.2012.12040508>
- Grassi, G., Scillitani, E., & Cecchelli, C. (2024). New horizons for obsessive-compulsive disorder drug discovery: Is targeting glutamate receptors the answer? *Expert Opinion on Drug Discovery*, 19(10), 1235–1245. <https://doi.org/10.1080/17460441.2024.2387127>
- Greist, J. H., Jefferson, J. W., Kobak, K. A., Katzelnick, D. J., & Serlin, R. C. (1995). Efficacy and tolerability of serotonin transport inhibitors in obsessive-compulsive disorder. A meta-analysis. *Archives of General Psychiatry*, 52(1), 53–60. <https://doi.org/10.1001/archpsyc.1995.03950130053006>
- Hayward, L. C., & Coles, M. E. (2009). Elucidating the relation of hoarding to obsessive compulsive disorder and impulse control disorders. *Journal of Psychopathology and Behavioral Assessment*, 31(3), 220–227. <https://doi.org/10.1007/s10862-008-9106-0>
- Hedges, D. W., Brown, B. L., Shwalb, D. A., Godfrey, K., & Larcher, A. M. (2007). The efficacy of selective serotonin reuptake inhibitors in adult social anxiety disorder: A meta-analysis of double-blind, placebo-controlled trials. *Journal of Psychopharmacology*, 21(1), 102–111. <https://doi.org/10.1177/0269881106065102>
- Hezel, D. M., & McNally, R. J. (2016). A theoretical review of cognitive biases and deficits in obsessive-compulsive disorder. *Biological Psychology*, 121(B), 221–232. <https://doi.org/10.1016/j.biopsycho.2015.10.012>
- Hollander, E. (1993). Obsessive-compulsive spectrum disorders: An overview. *Psychiatric Annals*, 23(7), 355–358. <https://doi.org/10.3928/0048-5713-19930701-05>
- Hollander, E., Braun, A., & Simeon, D. (2008). Should OCD leave the anxiety disorders in DSM-V? The case for obsessive-compulsive-related disorders. *Depression and Anxiety*, 25(4), 317–329. <https://doi.org/10.1002/da.20500>
- Hollander, E., Friedberg, J. P., Wasserman, S., Yeh, C.-C., & Iyengar, R. (2005). The case for the OCD spectrum. In J. S. Abramowitz & A. C. Houts (Eds.), *Concepts and controversies in obsessive-compulsive disorder* (pp. 95–118). Springer.
- Holmes à Court, K., Malcolm, A., Toh, W. L., & Rossell, S. L. (2025). A systematic review of neurocognition and social cognition in body dysmorphic disorder. *Australian and New Zealand Journal of Psychiatry*, 59(3), 224–247. <https://doi.org/10.1177/00048674241309747>
- Huggins, A. A., Harvey, A. M., Miskovich, T. A., Lee, H.-J., & Larson, C. L. (2020). Resting-state functional connectivity of supplementary motor area associated with skin-picking symptom severity. *Journal of Obsessive-Compulsive and Related Disorders*, 26, Article 100551. <https://doi.org/10.1016/j.jocrd.2020.100551>
- Hyman, S. E. (2007). Can neuroscience be integrated into the DSM-V? *Nature Reviews. Neuroscience*, 8(9), 725–732. <https://doi.org/10.1038/nrn2218>
- Insel, T. R. (2009). Translating scientific opportunity into public health impact: A strategic plan for research on mental illness. *Archives of General Psychiatry*, 66(2), 128–133. <https://doi.org/10.1001/archgenpsychiatry.2008.540>
- Insel, T. R., Mueller, E. A., Alterman, I., Linnoila, M., & Murphy, D. L. (1985). Obsessive-compulsive disorder and serotonin: Is there a connection? *Biological Psychiatry*, 20(11), 1174–1188. [https://doi.org/10.1016/0006-3223\(85\)90176-3](https://doi.org/10.1016/0006-3223(85)90176-3)

- International OCD Foundation. (2025). *OCD treatment guide: Best evidence-based therapies, medications, and new advances*. Retrieved February 15, 2026, from <https://iocdf.org/ocd-treatment-guide/>
- Ipsier, J. C., Sander, C., & Stein, D. J. (2009). Pharmacotherapy and psychotherapy for body dysmorphic disorder. *The Cochrane Database of Systematic Reviews*, 2009(1), Article CD005332. <https://doi.org/10.1002/14651858.CD005332.pub2>
- Jaisoorya, T. S., Janardhan Reddy, Y. C., & Srinath, S. (2003). The relationship of obsessive-compulsive disorder to putative spectrum disorders: Results from an Indian study. *Comprehensive Psychiatry*, 44(4), 317–323. [https://doi.org/10.1016/S0010-440X\(03\)00084-1](https://doi.org/10.1016/S0010-440X(03)00084-1)
- Johnson, S., Williamson, P., & Wade, T. D. (2018). A systematic review and meta-analysis of cognitive processing deficits associated with body dysmorphic disorder. *Behaviour Research and Therapy*, 107, 83–94. <https://doi.org/10.1016/j.brat.2018.05.013>
- Kashyap, H., & Abramovitch, A. (2021). Neuropsychological research in obsessive-compulsive disorder: Current status and future directions. *Frontiers in Psychiatry*, 12, Article 721601. <https://doi.org/10.3389/fpsy.2021.721601>
- Keuthen, N. J., Deckersbach, T., Wilhelm, S., Hale, E., Fraim, C., Baer, L., O'Sullivan, R. L., & Jenike, M. A. (2000). Repetitive skin-picking in a student population and comparison with a sample of self-injurious skin-pickers. *Psychosomatics*, 41(3), 210–215. <https://doi.org/10.1176/appi.psy.41.3.210>
- Koo, M.-S., Kim, E.-J., Roh, D., & Kim, C.-H. (2010). Role of dopamine in the pathophysiology and treatment of obsessive-compulsive disorder. *Expert Review of Neurotherapeutics*, 10(2), 275–290. <https://doi.org/10.1586/ern.09.148>
- Koran, L. M., Hanna, G. L., Hollander, E., Nestadt, G., Simpson, H. B., & American Psychiatric Association. (2007). Practice guideline for the treatment of patients with obsessive-compulsive disorder. *The American Journal of Psychiatry*, 164(Suppl 7), 5–53.
- Kozak, M. J., & Foa, E. B. (1994). Obsessions, overvalued ideas, and delusions in obsessive-compulsive disorder. *Behaviour Research and Therapy*, 32(3), 343–353. [https://doi.org/10.1016/0005-7967\(94\)90132-5](https://doi.org/10.1016/0005-7967(94)90132-5)
- Kramer, M. D., Polusny, M. A., Arbisi, P. A., & Krueger, R. F. (2014). Comorbidity of PTSD and SUDs: Toward an etiologic understanding. In P. Ouimette & J. P. Read (Eds.), *Trauma and substance abuse: Causes, consequences, and treatment of comorbid disorders* (2nd ed., pp. 53–75). American Psychological Association.
- Lacasse, J. R., & Leo, J. (2005). Serotonin and depression: A disconnect between the advertisements and the scientific literature. *PLoS Medicine*, 2(12), Article e392. <https://doi.org/10.1371/journal.pmed.0020392>
- Leckman, J. F., Denys, D., Simpson, H. B., Mataix-Cols, D., Hollander, E., Saxena, S., Miguel, E. C., Rauch, S. L., Goodman, W. K., Phillips, K. A., & Stein, D. J. (2010). Obsessive-compulsive disorder: A review of the diagnostic criteria and possible subtypes and dimensional specifiers for DSM-V. *Depression and Anxiety*, 27(6), 507–527. <https://doi.org/10.1002/da.20669>
- Lee, H. J., & Kwon, S. M. (2003). Two different types of obsession: Autogenous obsessions and reactive obsessions. *Behaviour Research and Therapy*, 41(1), 11–29. [https://doi.org/10.1016/S0005-7967\(01\)00101-2](https://doi.org/10.1016/S0005-7967(01)00101-2)
- Lee, H. J., & Telch, M. J. (2010). Differences in latent inhibition as a function of the autogenous-reactive OCD subtype. *Behaviour Research and Therapy*, 48(7), 571–579. <https://doi.org/10.1016/j.brat.2010.03.006>
- Lee, H. J., Kwon, S.-M., Kwon, J. S., & Telch, M. J. (2005). Testing the autogenous-reactive model of obsessions. *Depression and Anxiety*, 21(3), 118–129. <https://doi.org/10.1002/da.20063>
- Leonard, R. C., & Riemann, B. C. (2012). The co-occurrence of obsessions and compulsions in OCD. *Journal of Obsessive-Compulsive and Related Disorders*, 1(3), 211–215. <https://doi.org/10.1016/j.jocrd.2012.06.002>
- Leopold, R., & Backenstrass, M. (2015). Neuropsychological differences between obsessive-compulsive washers and checkers: A systematic review and meta-analysis. *Journal of Anxiety Disorders*, 30, 48–58. <https://doi.org/10.1016/j.janxdis.2014.12.016>
- Lochner, C., Simeon, D., Niehaus, D. J. H., & Stein, D. J. (2002). Trichotillomania and skin-picking: A phenomenological comparison. *Depression and Anxiety*, 15(2), 83–86. <https://doi.org/10.1002/da.10034>
- Lovato, L., Ferrão, Y. A., Stein, D. J., Shavitt, R. G., Fontenelle, L. F., Vivan, A., Miguel, E. C., & Cordioli, A. V. (2012). Skin picking and trichotillomania in adults with obsessive-compulsive disorder. *Comprehensive Psychiatry*, 53(5), 562–568. <https://doi.org/10.1016/j.comppsy.2011.06.008>
- Luchins, D. J., Goldman, M. B., Lieb, M., & Hanrahan, P. (1992). Repetitive behaviors in chronically institutionalized schizophrenic patients. *Schizophrenia Research*, 8(2), 119–123. [https://doi.org/10.1016/0920-9964\(92\)90027-3](https://doi.org/10.1016/0920-9964(92)90027-3)
- Mar, K., Townes, P., Pechlivanoglou, P., Arnold, P., & Schachar, R. (2022). Obsessive compulsive disorder and response inhibition: Meta-analysis of the stop-signal task. *Journal of Psychopathology and Clinical Science*, 131(2), 152–161. <https://doi.org/10.1037/abn0000732>
- Marek, S., Tervo-Clemmens, B., Calabro, F. J., Montez, D. F., Kay, B. P., Hatoum, A. S., Donohue, M. R., Foran, W., Miller, R. L., Hendrickson, T. J., Malone, S. M., Kandala, S., Feczko, E., Miranda-Dominguez, O., Graham, A. M., Earl, E. A., Perrone, A. J., Cordova, M., Doyle, O., . . . Dosenbach, N. U. F. (2022). Reproducible brain-wide association studies require thousands of individuals. *Nature*, 603(7902), 654–660. <https://doi.org/10.1038/s41586-022-04492-9>
- Mataix-Cols, D., Pertusa, A., & Leckman, J. F. (2007). Issues for DSM-V: How should obsessive-compulsive and related disorders be classified? *The American Journal of Psychiatry*, 164(9), 1313–1314. <https://doi.org/10.1176/appi.ajp.2007.07040568>
- McKay, D., & Andover, M. (2012). Should nonsuicidal self-injury be a putative obsessive-compulsive-related condition? A critical appraisal. *Behavior Modification*, 36(1), 3–17. <https://doi.org/10.1177/0145445511417707>
- McKay, D., & Neziroglu, F. (2009). Methodological issues in the obsessive-compulsive spectrum. *Psychiatry Research*, 170(1), 61–65. <https://doi.org/10.1016/j.psychres.2009.01.004>
- McKay, D., Abramowitz, J. S., Calamari, J. E., Kyrios, M., Radosky, A. S., Sookman, D., Taylor, S., & Wilhelm, S. (2004). A critical evaluation of obsessive-compulsive disorder subtypes: Symptoms versus mechanisms. *Clinical Psychology Review*, 24(3), 283–313. <https://doi.org/10.1016/j.cpr.2004.04.003>
- McTeague, L. M., Huemer, J., Carreon, D. M., Jiang, Y., Eickhoff, S. B., & Etkin, A. (2017). Identification of common neural circuit disruptions in cognitive control across psychiatric disorders. *American Journal of Psychiatry*, 174(7), 676–685. <https://doi.org/10.1176/appi.ajp.2017.16040400>
- Milad, M. R., & Rauch, S. L. (2012). Obsessive-compulsive disorder: Beyond segregated cortico-striatal pathways. *Trends in Cognitive Sciences*, 16(1), 43–51. <https://doi.org/10.1016/j.tics.2011.11.003>
- Miller, G. A., & Keller, J. (2000). Psychology and neuroscience making peace. *Current Directions in Psychological Science*, 9(6), 212–215. <https://doi.org/10.1111/1467-8721.00097>
- Moncrieff, J., Cooper, R. E., Stockmann, T., Amendola, S., Hengartner, M. P., & Horowitz, M. A. (2023). The serotonin theory of depression: A systematic umbrella review of the evidence. *Molecular Psychiatry*, 28(8), 3243–3256. <https://doi.org/10.1038/s41380-022-01661-0>
- Moritz, S., Leucht, S., Hoyer, L., Schmotz, S., Abramovitch, A., & Jelinek, L. (2025). Towards the DSM-6: The intersection of OCD and psychosis. Expert perspectives on insight in the diagnosis of OCD. *Psychiatry Research*, 344, Article 116306. <https://doi.org/10.1016/j.psychres.2024.116306>
- Nestadt, G., Samuels, J., Riddle, M. A., Liang, K. Y., Bienvenu, O. J., Hoehn-Saric, R., Grados, M., & Cullen, B. (2001). The relationship between obsessive-compulsive disorder and anxiety and affective disorders: Results

- from the Johns Hopkins OCD Family Study. *Psychological Medicine*, 31(3), 481–487. <https://doi.org/10.1017/S0033291701003579>
- Neziroglu, F., Rabinowitz, D., Breytman, A., & Jacofsky, M. (2008). Skin picking phenomenology and severity comparison. *Primary Care Companion to the Journal of Clinical Psychiatry*, 10(4), 306–312. <https://doi.org/10.4088/pcc.v10n0406>
- National Institute for Clinical Excellence (NICE). (2005). *Obsessive-compulsive disorder: Core interventions in the treatment of obsessive-compulsive disorder and body dysmorphic disorder*. <https://www.nice.org.uk/guidance/cg31/resources/obsessivecompulsive-disorder-and-body-dysmorphic-disorder-treatment-pdf-975381519301>
- Odlaug, B. L., & Grant, J. E. (2012). Pathological skin picking. In J. E. Grant, D. J. Stein, D. W. Woods, & N. J. Keuthen (Eds.), *Trichotillomania, skin picking, and other body-focused repetitive behaviors* (pp. 21–41). American Psychiatric Publishing.
- Odlaug, B. L., Hampshire, A., Chamberlain, S. R., & Grant, J. E. (2016). Abnormal brain activation in excoriation (skin-picking) disorder: Evidence from an executive planning fMRI study. *British Journal of Psychiatry*, 208(2), 168–174. <https://doi.org/10.1192/bjp.bp.114.155192>
- Phillips, K. A., & Kelly, M. M. (2021). Body dysmorphic disorder: Clinical overview and relationship to obsessive-compulsive disorder. *Focus*, 19(4), 413–419. <https://doi.org/10.1176/appi.focus.20210012>
- Phillips, K. A., Albertini, R. S., & Rasmussen, S. A. (2002). A randomized placebo-controlled trial of fluoxetine in body dysmorphic disorder. *Archives of General Psychiatry*, 59(4), 381–388. <https://doi.org/10.1001/archpsyc.59.4.381>
- Phillips, K. A., Wilhelm, S., Koran, L. M., Didie, E. R., Fallon, B. A., Feusner, J., & Stein, D. J. (2010). Body dysmorphic disorder: Some key issues for DSM-V. *Depression and Anxiety*, 27(6), 573–591. <https://doi.org/10.1002/da.20709>
- Piacentini, J. C., & Chang, S. W. (2006). Behavioral treatments for tic suppression: Habit reversal training. *Advances in Neurology*, 99, 227–233.
- Pinto, J. V., Moulin, T. C., & Amaral, O. B. (2017). On the transdiagnostic nature of peripheral biomarkers in major psychiatric disorders: A systematic review. *Neuroscience and Biobehavioral Reviews*, 83, 97–108. <https://doi.org/10.1016/j.neubiorev.2017.10.001>
- Pittenger, C. (2021). Pharmacotherapeutic strategies and new targets in OCD. *Current Topics in Behavioral Neurosciences*, 49, 331–384. https://doi.org/10.1007/7854_2020_204
- Rachman, S., & Hodgson, R. J. (1980). *Obsessions and compulsions*. Prentice Hall.
- Rachman, S., Elliott, C. M., Shafran, R., & Radomsky, A. S. (2009). Separating hoarding from OCD. *Behaviour Research and Therapy*, 47(6), 520–522. <https://doi.org/10.1016/j.brat.2009.02.014>
- Reghunandanan, S., Fineberg, N. A., & Stein, D. J. (2015). *Obsessive-compulsive and related disorders* (2nd ed.). Oxford University Press.
- Ricketts, E. J., Snorrason, Í., Kircanski, K., Alexander, J. R., Thamrin, H., Flessner, C. A., Franklin, M. E., Piacentini, J., & Woods, D. W. (2018). A latent profile analysis of age of onset in pathological skin picking. *Comprehensive Psychiatry*, 87, 46–52. <https://doi.org/10.1016/j.comppsych.2018.08.011>
- Romanelli, R. J., Wu, F. M., Gamba, R., Mojtabai, R., & Segal, J. B. (2014). Behavioral therapy and serotonin reuptake inhibitor pharmacotherapy in the treatment of obsessive-compulsive disorder: A systematic review and meta-analysis of head-to-head randomized controlled trials. *Depression and Anxiety*, 31(8), 641–652. <https://doi.org/10.1002/da.22232>
- Rosenbaum, J. F., Biederman, J., Bolduc-Murphy, E. A., Faraone, S. V., Chaloff, J., Hirshfeld, D. R., & Kagan, J. (1993). Behavioral inhibition in childhood: A risk factor for anxiety disorders. *Harvard Review of Psychiatry*, 1(1), 2–16. <https://doi.org/10.3109/10673229309017052>
- Sachdev, R. A., Ruparel, R., Reid, J., Mpavenda, D., & Fineberg, N. A. (2019). Pharmacological treatments for obsessive compulsive and related disorders—A trans-diagnostic perspective. In L. F. Fontenelle & M. Yücel (Eds.), *A transdiagnostic approach to obsessions, compulsions and related phenomena* (pp. 183–206). Cambridge University Press.
- Salkovskis, P. M., Westbrook, D., Davis, J., Jeavons, A., & Gledhill, A. (1997). Effects of neutralizing on intrusive thoughts: An experiment investigating the etiology of obsessive-compulsive disorder. *Behaviour Research and Therapy*, 35(3), 211–219. [https://doi.org/10.1016/s0005-7967\(96\)00112-x](https://doi.org/10.1016/s0005-7967(96)00112-x)
- Saxena, S., & Rauch, S. L. (2000). Functional neuroimaging and the neuroanatomy of obsessive-compulsive disorder. *The Psychiatric Clinics of North America*, 23(3), 563–586. [https://doi.org/10.1016/S0193-953X\(05\)70181-7](https://doi.org/10.1016/S0193-953X(05)70181-7)
- Schatzberg, A. F., & Nemeroff, C. B. (2013). *Essentials of clinical psychopharmacology*. American Psychiatric Association.
- Schienle, A., Übel, S., & Wabnegger, A. (2018). Visual symptom provocation in skin picking disorder: An fMRI study. *Brain Imaging and Behavior*, 12(5), 1504–1512. <https://doi.org/10.1007/s11682-017-9792-x>
- Schreiber, L., Odlaug, B. L., & Grant, J. E. (2011). Impulse control disorders: Updated review of clinical characteristics and pharmacological management. *Frontiers in Psychiatry*, 2, Article 1. <https://doi.org/10.3389/fpsyt.2011.00001>
- Selles, R. R., McGuire, J. F., Small, B. J., & Storch, E. A. (2016). A systematic review and meta-analysis of psychiatric treatments for excoriation (skin-picking) disorder. *General Hospital Psychiatry*, 41, 29–37. <https://doi.org/10.1016/j.genhosppsych.2016.04.001>
- Sewart, A. R., & Crask, M. G. (2020). Inhibitory learning. In J. S. Abramowitz & S. M. Blakey (Eds.), *Clinical handbook of fear and anxiety: Maintenance processes and treatment mechanisms* (pp. 265–286). American Psychological Association.
- Shephard, E., Batistuzzo, M. C., Hoexter, M. Q., Stern, E. R., Zuccolo, P. F., Ogawa, C. Y., Silva, R. M., Brunoni, A. R., Costa, D. L., Doretto, V., Saraiva, L., Cappi, C., Shavitt, R. G., Simpson, H. B., van den Heuvel, O. A., & Miguel, E. C. (2022). Neurocircuit models of obsessive-compulsive disorder: Limitations and future directions for research. *Revista Brasileira de Psiquiatria*, 44(2), 187–200. <https://doi.org/10.1590/1516-4446-2020-1709>
- Shin, N. Y., Lee, T. Y., Kim, E., & Kwon, J. S. (2014). Cognitive functioning in obsessive-compulsive disorder: A meta-analysis. *Psychological Medicine*, 44(6), 1121–1130. <https://doi.org/10.1017/S0033291713001803>
- Simeon, D., Stein, D. J., Gross, S., Islam, N., Schmeidler, J., & Hollander, E. (1997). A double-blind trial of fluoxetine in pathologic skin picking. *The Journal of Clinical Psychiatry*, 58(8), 341–347. <https://doi.org/10.4088/jcp.v58n0802>
- Slikboer, R., Reser, M. P., Nedeljkovic, M., Castle, D. J., & Rossell, S. L. (2018). Systematic review of published primary studies of neuropsychology and neuroimaging in trichotillomania. *Journal of the International Neuropsychological Society*, 24(2), 188–205. <https://doi.org/10.1017/S1355617717000819>
- Snorrason, I., Smári, J., & Olafsson, R. P. (2010). Emotion regulation in pathological skin picking: Findings from a non-treatment seeking sample. *Journal of Behavior Therapy and Experimental Psychiatry*, 41(3), 238–245. <https://doi.org/10.1016/j.jbtep.2010.01.009>
- Snyder, H. R., Kaiser, R. H., Warren, S. L., & Heller, W. (2015). Obsessive-compulsive disorder is associated with broad impairments in executive function: A meta-analysis. *Clinical Psychological Science*, 3(2), 301–330. <https://doi.org/10.1177/2167702614534210>
- Stanley, M. A., & Mouton, S. G. (1996). Trichotillomania treatment manual. In V. B. Van Hasselt & M. Hersen (Eds.), *Sourcebook of psychological treatment manuals for adult disorders* (pp. 657–687). Plenum Press. https://doi.org/10.1007/978-1-4899-1528-3_17
- Stanley, M. A., Swann, A. C., Bowers, T. C., Davis, M. L., & Taylor, D. J. (1992). A comparison of clinical features in trichotillomania and obsessive-compulsive disorder. *Behaviour Research and Therapy*, 30(1), 39–44. [https://doi.org/10.1016/0005-7967\(92\)90094-W](https://doi.org/10.1016/0005-7967(92)90094-W)

- Stein, D. J., Fineberg, N. A., Bienvenu, O. J., Denys, D., Lochner, C., Nestadt, G., Leckman, J. F., Rauch, S. L., & Phillips, K. A. (2010). Should OCD be classified as an anxiety disorder in *DSM-V*? *Depression and Anxiety*, 27(6), 495–506. <https://doi.org/10.1002/da.20699>
- Stein, D. J., Simeon, D., Cohen, L. J., & Hollander, E. (1995). Trichotillomania and obsessive-compulsive disorder. *The Journal of Clinical Psychiatry*, 56(Suppl 4), 28–34; discussion 35. <https://doi.org/10.1176/ajp.150.7.1131-a>
- Stephenson, C., Philipp-Muller, A., Moghimi, E., Nashed, J. Y., Cook, D. J., Shirazi, A., Milev, R., & Alavi, N. (2025). Effects of cognitive behavioural therapy and exposure–response prevention on brain activation in obsessive-compulsive disorder patients: Systematic review and meta-analysis. *European Archives of Psychiatry and Clinical Neuroscience*, 275(5), 1491–1507. <https://doi.org/10.1007/s00406-024-01852-6>
- Stevens, M. C., Levy, H. C., Hallion, L. S., Wootton, B. M., & Tolin, D. F. (2020). Functional neuroimaging test of an emerging neurobiological model of hoarding disorder. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, 5(1), 68–75. <https://doi.org/10.1016/j.bpsc.2019.08.010>
- Stumpf, B. P., Souza, L. C. D., Mourão, M. S. F., Rocha, F. L., Fontenelle, L. F., & Barbosa, I. G. (2023). Cognitive impairment in hoarding disorder: A systematic review. *CNS Spectrums*, 28(3), 300–312. <https://doi.org/10.1017/S1092852922000153>
- Summerfeldt, L. J., Hood, K., Antony, M. M., Richter, M. A., & Swinson, R. P. (2004). Impulsivity in obsessive-compulsive disorder: Comparisons with other anxiety disorders and within tic-related subgroups. *Personality and Individual Differences*, 36(3), 539–553. [https://doi.org/10.1016/S0191-8869\(03\)00113-2](https://doi.org/10.1016/S0191-8869(03)00113-2)
- Szucs, D., & Ioannidis, J. P. A. (2020). Sample size evolution in neuroimaging research: An evaluation of highly-cited studies (1990–2012) and of latest practices (2017–2018) in high-impact journals. *NeuroImage*, 221, Article 117164. <https://doi.org/10.1016/j.neuroimage.2020.117164>
- Valenstein, E. (2002). *Blaming the brain: The truth about drugs and mental health*. Simon & Schuster.
- Veale, D., & Riley, S. (2001). Mirror, mirror on the wall, who is the ugliest of them all? The psychopathology of mirror gazing in body dysmorphic disorder. *Behaviour Research and Therapy*, 39(12), 1381–1393. [https://doi.org/10.1016/S0005-7967\(00\)00102-9](https://doi.org/10.1016/S0005-7967(00)00102-9)
- Vul, E., Harris, C., Winkielman, P., & Pashler, H. (2009). Puzzlingly high correlations in fMRI studies of emotion, personality, and social cognition. *Perspectives on Psychological Science*, 4(3), 274–290. <https://doi.org/10.1111/j.1745-6924.2009.01125.x>
- Wabnegger, A., Übel, S., Suchar, G., & Schienle, A. (2018). Increased emotional reactivity to affective pictures in patients with skin-picking disorder: Evidence from functional magnetic resonance imaging. *Behavioural Brain Research*, 336, 151–155. <https://doi.org/10.1016/j.bbr.2017.08.040>
- Wheaton, M. G., Abramowitz, J. S., Fabricant, L. E., Berman, N. C., & Franklin, J. C. (2011). Is hoarding a symptom of obsessive-compulsive disorder? *International Journal of Cognitive Therapy*, 4(3), 225–238. <https://doi.org/10.1521/ijct.2011.4.3.225>
- Whitaker, R. (2011). *Anatomy of an epidemic: Magic bullets, psychiatric drugs, and the astonishing rise of mental illness in America*. Broadway Books.
- Williams, J., Hadjistavropoulos, T., & Sharpe, D. (2006). A meta-analysis of psychological and pharmacological treatments for body dysmorphic disorder. *Behaviour Research and Therapy*, 44(1), 99–111. <https://doi.org/10.1016/j.brat.2004.12.006>
- Windheim, K., Veale, D., & Anson, M. (2011). Mirror gazing in body dysmorphic disorder and healthy controls: Effects of duration of gazing. *Behaviour Research and Therapy*, 49(9), 555–564. <https://doi.org/10.1016/j.brat.2011.05.003>
- Woo, C.-W., Krishnan, A., & Wager, T. D. (2014). Cluster-extent based thresholding in fMRI analyses: Pitfalls and recommendations. *NeuroImage*, 91, 412–419. <https://doi.org/10.1016/j.neuroimage.2013.12.058>
- Woody, S. R., Kellman-McFarlane, K., & Welsted, A. (2014). Review of cognitive performance in hoarding disorder. *Clinical Psychology Review*, 34(4), 324–336. <https://doi.org/10.1016/j.cpr.2014.04.002>
- Wu, M. S., & Lewin, A. B. (2017). Insight in obsessive-compulsive disorder. In J. S. Abramowitz, D. McKay, & E. A. Storch (Eds.), *The Wiley handbook of obsessive compulsive disorders* (pp. 492–510). Wiley.
- Yeung, A. W. K. (2018). An updated survey on statistical thresholding and sample size of fMRI studies. *Frontiers in Human Neuroscience*, 12, Article 16. <https://doi.org/10.3389/fnhum.2018.00016>
- Zaboski, B. A., Merritt, O. A., Schrack, A. P., Gayle, C., Gonzalez, M., Guerrero, L. A., Dueñas, J. A., Soreni, N., & Mathews, C. A. (2019). Hoarding: A meta-analysis of age of onset. *Depression and Anxiety*, 36(6), 552–564. <https://doi.org/10.1002/da.22896>
- Zainal, N. H., & Newman, M. G. (2022). Executive functioning constructs in anxiety, obsessive-compulsive, post-traumatic stress, and related disorders. *Current Psychiatry Reports*, 24(12), 871–880. <https://doi.org/10.1007/s11920-022-01390-9>
- Zohar, J., Kennedy, J. L., Hollander, E., & Koran, L. M. (2004). Serotonin-1D hypothesis of obsessive-compulsive disorder: An update. *The Journal of Clinical Psychiatry*, 65(Suppl 14), 18–21.

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