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## Behavioral Impulsivity in Obsessive–Compulsive Disorder

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*Background:* Grassi et al. (2015) collected data to examine impulsivity in individuals with obsessive–compulsive disorder (OCD) compared to nonpsychiatric controls. Their aim was to examine whether OCD may be fully captured by the behavioral addiction model, using the prototypical mechanism underlying drug addiction as their framework. Based on their findings, Grassi et al. concluded that OCD shares behavioral components with addictions, particularly behavioral impulsivity and risky decision making. Furthermore, the authors suggested that this model may be superior to the prevailing psychological model of OCD. *Findings:* We argue that based on the nature of their data as well as the current dominant conceptualization of OCD in the literature, this conclusion is untenable. The authors inferred behavioral impulsivity, whereas their main finding was concerning cognitive impulsivity or difficulties in planning. Such items on the Barratt impulsiveness scale have been shown in other research to overpredict behavioral impulsive tendencies in OCD, where the nature of the condition involves doubting of action and a conservative estimate of how one's cognitions may impact behavior. *Conclusions:* We conclude that similar to drug addiction, compulsive rituals in OCD may be governed by a negative reinforcement mechanism; the available data indicate that OCD does not share the two main components seen in addiction, namely, behavioral impulsivity and risky decision making.

**Keywords:** obsessive–compulsive disorder, addiction, behavioral addiction, impulsivity, decision making

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In their recent article, Grassi et al. (2015) compared 38 individuals diagnosed with obsessive–compulsive disorder (OCD) with 39 nonpsychiatric control participants, on two tasks of decision making, and the Barratt impulsiveness scale (BIS-11). The authors found significantly higher scores in the OCD group, on two out of three BIS-11 scores, and on the total score, and concluded that “OCD patients are more impulsive than controls and demonstrate risky decision making . . .,” arguing that these results suggest that OCD may share core behavioral component associated with addiction, and thus behavioral addiction. We submit that in light of the results reported by the authors and the available literature, these conclusions cannot be drawn.

First, the authors present evidence supporting their rationale by noting that “several clinical studies suggest that impulsivity may be a feature of OCD” (Grassi et al., 2015, p. 263), referencing two studies (Benatti, Dell’Osso, Arici, Hollander, & Altamura, 2014; Ettelt et al., 2007). However, these studies found elevated scores within the OCD samples only on the BIS-11 “cognitive impulsivity” scale that taps difficulties in regulating thoughts and managing distractions (e.g., “I often have extraneous thoughts when thinking,” “I do not pay attention”). No group differences were found in these studies on motor impulsivity (e.g., “I do things without thinking,” “I act on impulse”) and nonplanning impulsivity (e.g., “I plan trips well ahead of time,” “I plan for job security”). The BIS-11 “motor impulsivity” factor is the only factor that corresponds to the classic definition of impulsive behavior as “actions that appear poorly conceived, prematurely expressed, unduly risky, or inappropriate to the situation and that often result in undesirable consequences” (Daruna & Barnes, 1993, p. 23). On the

other hand, cognitive impulsivity and nonplanning impulsivity do not speak of impulsive disinhibited behaviors, let alone in the context of addiction-related sensation seeking and the need for immediate reward.

In fact, a number of studies, not cited in Grassi et al. that utilized the BIS-11, found similar results, namely, that individuals with OCD score higher than controls on the cognitive impulsivity and not on the motor impulsivity factor (Boisseau et al., 2012; Stein, Hollander, Simeon, & Cohen, 1994; Summerfeldt, Hood, Antony, Richter, & Swinson, 2004). Indeed, Summerfeldt et al. (2004) concluded that the higher score on the total BIS-11 is an artifact of higher cognitive impulsivity scores, and that in fact, OCD is associated with risk aversion, inhibited temperament, and heightened tendency for forethought and premeditation. Moreover, studies employing other measures of impulsivity have found individuals with OCD to show either comparable or less impulsivity than controls (Alonso et al., 2008; Bejerot, Schlette, Ekselius, Adolfsson, & von Knorring, 1998; Fullana et al., 2004; Lyoo, Gunderson, & Phillips, 1998; Richter, Summerfeldt, Joffe, & Swinson, 1996; Shoval, Zalsman, Sher, Apter, & Weizman, 2006; Tavares & Gentil, 2007; Wu, Clark, & Watson, 2006). In fact, one of the largest studies to examine impulsivity in OCD ( $n = 431$ ) compared to controls ( $n = 151$ ) that utilized the BIS-11 reported significantly higher motor impulsivity among controls

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compared to OCD, and no difference on the two other factors (Stein et al., 1994). Lack of difference on self-report impulsivity measures was also recently found between high and low OC symptom groups in an analogue sample study (Abramovitch, Shaham, Levin, Bar-Hen, & Schweiger, 2015). Notably, OCD may be associated with biased perception of control over behavior, evidenced by a study documenting no difference in self-reported behavioral impulsivity scores between OCD and control samples, although a significantly higher proportion of “yes” responses to the question “Are you an impulsive person?” was found in the OCD sample (Abramovitch, Dar, Hermesh, & Schweiger, 2012).

In light of the cumulative evidence, the early notion that OCD has been associated with behavioral impulsivity has been largely abandoned. This was primarily due to the work of Hollander (2005), outlining an impulsive–compulsive continuum supported by converging pharmacological, behavioral, and neurobiological findings pertaining to differences between impulsiveness and compulsivity (Hollander, 2005). This conceptualization has been in development for over 20 years (i.e., Hollander, 1993) and has undergone numerous refinements that have largely involved narrowing the group of putative obsessive–compulsive related disorders. In the most recent iteration of this model (Hollander, Braun, & Simeon, 2008), OCD was classified as a core condition marked by a behaviorally inhibited temperament, but at the same time, as a condition that is associated with response inhibition deficiencies, predominantly on the cognitive level. Indeed, characterized by impulsive behavior, sensation seeking, and risk taking, impulse control and addictive disorders were “eliminated” from the class of putative obsessive–compulsive related disorders. This shift is a result of virtually no data supporting the inclusion of addictions as a group of conditions that share any endophenotypes with OCD (i.e., Abramowitz, Storch, McKay, Taylor, & Asmundson, 2009). In short, there is little in the way of supportive data for defining OCD as a condition that shares characteristics with drug addiction given the relative lack of impulsivity and risk taking.

In fact, compulsive rituals are carefully planned, timed and executed, and individuals with OCD can frequently delay performance of rituals (Abramovitch & Cooperman, 2015). This is in contrast to the former belief that performance of repetitive rituals are indicative of a difficulty inhibiting impulsive responses. The vast majority of studies assessing commission errors (a measure of action suppression) in OCD versus controls do not show any differences between OCD and control samples, while studies assessing “stop reaction time,” a measure of response cancellation, support the notion that individuals with OCD may have difficulty stopping a ritual only once it has been started (Abramovitch & Cooperman, 2015). Notably, impulsivity and compulsivity are thought to have orthogonal factors across some conditions (Fineberg et al., 2010), but notwithstanding, there is no evidence to support the presence of behavioral impulsivity in OCD.

Based on their results, Grassi et al. (2015) concluded that the “. . . behavioral addiction model may be more suitable than the anxiety-avoidance model” for the conceptualization of OCD. The idea of behavioral addiction stems from the notion of non-drug related addictive-like properties of

certain behaviors (Holden, 2001). Compulsive gambling may be a contemporary example. However, in the classic addiction models, first instances of drug use are associated with high impulsivity, risk taking, and a tendency to seek immediate positive reward. Later, with repeated use, this behavior becomes compulsive, where the major motivation changes from sensation seeking and positive reward, to negative reinforcement in which drug administration alleviates withdrawal symptoms. We have previously maintained that the behavioral addiction paradigm may be a useful framework in the context of OCD (Abramovitch, Pizzagalli, Reuman, & Wilhelm, 2014). However, this does not suggest that OCD is a disorder that is similar to drug addiction. While risk taking, impulsivity and sensation seeking are not part of the repertoire of OCD, ritualistic behavioral in OCD is a strong example of a behavioral cycle of negative reinforcement. Initially, individuals diagnosed with OCD, in a series of relatively random behavioral events, come upon behaviors that bring relief from the distress that accompanies obsessive thoughts. Theoretically, these behaviors that become associated with relief acquire reinforcing properties due to simple co-occurrence with a natural reduction in anxiety and distress at some point in the trajectory of the emotional disturbance. This reinforced behavior is then adopted and quickly becomes a powerful ritual that negatively reinforces the distress associated with obsessive thoughts. Thus, behavioral addiction may be a useful framework for understanding OCD, but as opposed to addiction, rituals in OCD are associated with negative reinforcement from the onset of the disorder. Impulsive acts intended to bring positive reward seen in addiction are not a part of the strong behavioral addiction mechanism seen in OCD. Furthermore, Grassi et al. conclude that OCD is associated with risky decision making. This conclusion is based on their results showing one out of six outcome measures from the Iowa gambling task that indicated significant difference from controls, and a significant difference found on the Beads task, favoring controls. Both these findings could be easily accounted for by doubting, which is central to OCD. Moreover, it is harm and risk avoidance that is characteristic of OCD rather than risk taking (Abramowitz, Taylor, & McKay, 2009).

In conclusion, the data described by Grassi et al. (2015) permits the conclusion that individuals with OCD are struggling with futile efforts to control intrusive thoughts, are having problems concentrating to allow intact planning and may underperform on decision-making tasks. These results do not permit the conclusion that individuals diagnosed with OCD are behaviorally impulsive.

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