



# The relationship between impulse-control disorders and obsessive–compulsive disorder: A current understanding and future research directions

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## ABSTRACT

Impulse-control disorders (ICDs) constitute a heterogeneous group of conditions linked diagnostically by difficulties in resisting “the impulse, drive, or temptation to perform an act that is harmful to the person or to others.” Specific ICDs share clinical, phenomenological and biological features with obsessive–compulsive disorder (OCD) that have suggested that these disorders might be categorized together. However, other data suggest significant differences between OCD and ICDs. In this article, clinical, phenomenological and biological features of the formal ICDs are reviewed and compared and contrasted with those of OCD. Available data indicate substantial differences between ICDs and OCD that suggest independent categorizations. Existing research gaps are identified and avenues for future research suggested.

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## 1. Introduction

In anticipation of the generation of the next editions of the Diagnostic and Statistical Manual and the International Classification of Diseases, the American Psychiatric Association, National Institutes of Health and World Health Organization have sponsored a series of meetings entitled, “The Future of Psychiatric Diagnosis: Refining the Research Agenda.” The conference focusing on Obsessive-Compulsive Spectrum Disorders was convened on June 20–22, 2006. Among the topics discussed were which disorders should be considered within the obsessive–compulsive (OC) spectrum and whether disorders currently classified elsewhere might be alternatively grouped in a manner supported by empirical data. Among the disorders warranting consideration for grouping within an OC spectrum were the impulse-control disorders (ICDs), including pathological gambling (PG) and intermittent explosive disorder (IED). Multiple domains representing

potential endophenotypes were identified prior to the meeting to foster exploration and discussion of this topic. These domains included phenomenology, co-morbidity, course of illness, family history, genetics, brain circuitry, cross-species considerations, pharmacology, treatments and interventions, and cultural influences.

### 1.1. Impulse-control disorders (ICDs): current categorization in DSM-IV-TR

ICDs are currently classified within the DSM-IV-TR in the category of “Impulse Control Disorders Not Elsewhere Classified” (American Psychiatric Association Committee on Nomenclature and Statistics, 2000). As the category name implies, other disorders characterized by impaired impulse control (e.g., substance abuse and dependence, cluster B personality disorders, and eating disorders) are categorized elsewhere in the DSM-IV-TR. Included in the formal ICD category are IED, kleptomania, pyromania, PG, trichotillomania, and ICD not otherwise specified (NOS). Whereas formal criteria for other ICDs have been proposed [e.g., for excessive, problematic or compulsive behavior in the domains of shopping or buying, computer or internet use, sex, and skin picking (McElroy et al., 1994; Lejoyeux et al., 1996; Potenza and Hollander, 2002; Grant and Potenza, 2004; Koran et al., 2006; Liu and Potenza, 2007)], clinically significant behaviors in these areas would currently be diagnosed as ICDs NOS. This article will focus

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on those ICDs with specific diagnostic criteria already defined in the DSM since the ICDs without clearly defined diagnostic criteria have been less studied.

### 1.2. Common features of ICDs: relationship to OCD

As described in the DSM-IV-TR, the essential feature of ICDs is “the failure to resist an impulse, drive, or temptation to perform an act that is harmful to the person or to others.” Each ICD is characterized by a recurrent pattern of behavior that has this essential feature within a specific domain. The repetitive engagement in these behaviors ultimately interferes with functioning in other domains. In this respect, ICDs resemble OCD. That is, individuals with OCD often report difficulties resisting the urge to engage in specific behaviors (e.g., cleaning, ordering or other ritualistic behaviors) that interfere with functioning. However, this resemblance is not unique to OCD. For example, individuals with drug addictions often report difficulty in resisting the urge to use drugs. Perhaps for these reasons, two of the most common conceptualizations of ICDs link them to an OC spectrum or to addictive disorders (Hollander and Wong, 1995; Potenza et al., 2001a,b). Although the categorizations of ICDs as OC-spectrum or addictive disorders are not mutually exclusive, they have important theoretical and clinical implications given differences in the prevention and treatment strategies for these disorders (Tamminga and Nestler, 2006). Heterogeneities in OCD and addictions and changes that occur during the course of these disorders complicate comparisons across disorders, particularly as investigations concurrently examining OCD, substance addictions, and ICDs are scarce.

ICDs and OCD have been conceptualized to lie along an impulsive/compulsive spectrum with disorders with high harm avoidance like OCD positioned closer to the more compulsive end and those with low harm avoidance like many ICDs positioned closer to the more impulsive end (Hollander and Wong, 1995). Although data indicate that individuals with OCD score high on measures of harm avoidance and those with ICDs like PG score high on measures of impulsivity and related measures like novelty seeking (Potenza, 2007), recent data suggest a more complex relationship between impulsivity and compulsivity as they relate to OCD and ICDs. For example, individuals with OCD as compared to control subjects demonstrated high levels of cognitive impulsiveness (Ettelt et al., 2007). An association between measures of cognitive impulsiveness and aggressive obsessions and checking suggests that impulsiveness may be particularly relevant to specific sub-groups of individuals with OCD (Ettelt et al., 2007). Another study of OCD, PG and control subjects found that the majority of both PG and OCD subjects were characterized by high levels of both impulsivity and harm avoidance, suggesting a more complex relationship between impulsivity and compulsivity than originally proposed (Potenza, 2007). More research is needed to examine the extent to which some of these similarities across these disorders might explain similarities in specific clinical phenomena; e.g., whether high levels of impulsiveness in PG and OCD account for high levels of suicidality reported across these disorders (Ledgerwood et al., 2005; Torres et al., 2006). Furthermore, the complex relationship between impulsivity may be influenced by different factors in specific populations. For example, gender differences in the relationship between measures of impulsivity and compulsivity have been reported in a sample of high school students (Li and Chen, 2007), and the extent to which these findings extend to groups with OCD and/or ICDs has yet to be systematically investigated.

As described in the DSM-IV-TR (American Psychiatric Association Committee on Nomenclature and Statistics, 2000), additional features common to ICDs are feelings of “tension or arousal before committing the act” and “pleasure, gratification or relief at the time of committing the act.” There may or may not be feelings of regret, self-reproach or guilt following the act. In multiple respects, the motivations and sensations preceding and relating to the repetitive acts in ICDs and OCD are

different. Among the most striking differences is the ego-dystonic nature typically ascribed to the obsessions and compulsions in OCD as compared with the ego-syntonic feelings typically associated with ICD behaviors such as gambling (Stein and Lochner, 2006). The ego-syntonic nature of ICD behaviors is at least superficially more similar to the experience of drug use behaviors in drug dependence. Similarly, the variability in the degree of guilt or remorse following the ICD behavior is reminiscent of the variability observed in individuals with drug addictions. However, the motivational and emotional processes underlying engagement in and experiencing of the repetitive behaviors in ICDs may change over time (Chambers et al., 2007; Brewer and Potenza, 2008). For example, individuals with PG often report that while they initially gambled to win money, later they became motivated simply by the experience of gambling itself (to be “in action”). Whereas gambling urges early in the course of PG are typically pleasurable, over time they often become less ego-syntonic as people more fully appreciate the negative consequences of their gambling and struggle to refrain. Although these changes appear similar to those reported during the course of the addictive process, they also resemble processes in OCD. That is, as the urge to engage in an ICD behavior and the behavior itself become more ego-dystonic, less driven by seeking of pleasure and more driven by a desire to reduce an anxious or distressing state, the urge and behavior more closely resemble the phenomenological features of obsessions and compulsions, respectively, in OCD. On the other hand, the ego-dystonic quality of OCD symptoms may diminish over time (Rasmussen and Eisen, 1992).

### 1.3. Heterogeneity of ICDs: unique features

The behavioral domains covered by the current ICDs include anger management, stealing, fire-setting, gambling and hair-pulling. Since these domains are in many ways distinct and disparate, a question arises as to whether the disorders should be grouped together. The DSM-IV-TR groups some other disorders characterized by excessive or interfering levels of engagement separately according to the specific target behavior (e.g., substance-related and eating disorders). Data examining the extent to which ICDs warrant clustering are sparse. Until recently, ICDs were typically omitted from large, epidemiological studies. Although recent studies like the National Epidemiologic Survey on Alcoholism and Related Conditions (NESARC) and the National Co-morbidity Survey Replication Study (NCS-R) included measures of specific ICDs like PG and IED (Petry et al., 2005; Kessler et al., 2006), the entire group of disorders has not been assessed concurrently in a large, population-based sample. Thus, the extent to which they form a cohesive group has not been directly examined, nor has the extent to which they fit into an empirically supported structure of psychiatric disorders. That is, data indicate that most psychiatric disorders can be categorized into internalizing or externalizing clusters (Krueger, 1999; Kendler et al., 2003). Although ICDs often share with externalizing disorders a disinhibited personality style or a lack of constraint (Slutske et al., 2000; Slutske et al., 2001; Slutske et al., 2005), they also share features with internalizing disorders such as major depression (Potenza et al., 2005; Potenza, 2007). Where OCD and ICDs best fit within this structure warrants direct investigation. Whereas the disabling distress and anxiety associated with OCD contribute to its current classification in DSM-IV-TR as an anxiety disorder, it is categorized separately in the 10th edition of the International Classification of Diseases (World Health Organization, 2003).

Existing studies suggest that the ICDs represent a heterogeneous group of disorders. Within a clinical sample of subjects with OCD, pathological skin-picking and nail-biting were frequently endorsed and other ICDs were relatively uncommon (Grant et al., 2006a). OCD subjects with ICDs were more likely than those without OCD to acknowledge hoarding and symmetry obsessions and hoarding and repeating rituals, suggesting a differential association of ICDs with

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