

Disorders Characterized by Poor Impulse Control

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***Background.** Impulse Control Disorders (ICDs) are an eclectic group of conditions in which a person has a drive, urge, or temptation, to perform a potentially harmful act, or fails to resist an impulse.*

***Methods.** Authors reviewed the current medical literature addressing this diverse group of disorders.*

***Results.** Although the behaviors associated with these conditions can cause a great deal of suffering for patients and their families, they have remained relatively under-researched and poorly characterized.*

***Conclusions.** Recent studies have explored both pharmacological and psychosocial treatments, giving rise to greater hope for the development of more effective treatments for these challenging disorders.*

Keywords Impulse control disorders, Pharmacological, Psychosocial

INTRODUCTION

Impulse Control Disorders (ICDs) are an eclectic group of conditions in which a person has a drive, urge, or temptation, to perform a harmful act or fails to resist an impulse (1). DSM-IV-TR ICDs include pathological gambling, kleptomania, pyromania, intermittent explosive disorder, and impulse control disorder NOS. We will explore these disorders herein, with the exception of trichotillomania. Additionally, we will explore several disorders not codified in DSM-IV-TR, yet that are problematic and may be related to the ICDs. Compulsive shopping, compulsive sexual behavior and compulsive computer use have all been the subject of increasing interest in both the professional and lay literature.

Table 1 shows screening questions that psychiatrists or primary care physicians can use to screen for these disorders. As noted elsewhere in this issue, some investigators have linked the ICDs to the obsessive compulsive disorder (OCD), most likely because these conditions all involve unrestrained, excessive, or poorly regulated behaviors that superficially resemble rituals (e.g., a woman with kleptomania preoccupied with stealing who experiences relief with shoplifting).

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Pathological Gambling

Pathological gambling (PG) has been an area of increasing interest to researchers. Until recently PG was relatively poorly studied and was only formally incorporated into the DSM in 1980 (2). PG is characterized by an uncontrollable urge to gamble which progressively becomes more difficult to resist (1). The lifetime adult prevalence is between 1–2%, which suggests that more than two million adults in North America suffer from this disorder, with roughly twice that many having gambling-related difficulties without meeting the DSM-IV criteria (3). PG may be more common in youth. Gambling itself is on the rise in our society; a recent national survey reported that 82% of respondents had gambled in the past year with lottery and casino gambling showing the largest rates of increase from previous surveys (4). The well-documented psychosocial costs of the disorder include financial, legal, employment and relationship problems (3,5), as well as medical and psychiatric complications, including suicide (6).

Although one-quarter to one-third of all pathological gamblers are women, most gambling research studies have historically underrepresented female pathological gamblers (7). A recent study from Spain (8) evaluating male and female participants in an outpatient gambling treatment program found that women had later age at first bet and a faster evolution of the disease. Although men and women had similar gambling severity and overall rates of psychiatric comorbidity, women

Table 1 Suggested Screening Questions for Impulse Disorders

Condition	Possible Screening Questions
Compulsive buying	Have you ever spent more than you wanted to? Do you often buy items only to return many of them later?
Pathological gambling	Have you ever gambled more than you wanted to? Have your gambling losses ever prevented you from meeting your financial responsibilities?
Kleptomania	Have you ever stolen or shoplifted items that you didn't need or could have easily purchased?
Compulsive sexual behavior	Do you have any persistent or repetitive sexual thoughts or behaviors that have made you feel out of control? Do you feel increasingly anxious when you try to resist those thoughts or actions?
Compulsive computer use	Have you ever felt that you were unable to control your computer use? Have you changed or cancelled outside activities in order to spend time on the computer?

had higher rates of mood disorders and physical abuse, and lower rates of alcohol abuse and antisocial personality disorder (8). Women's faster progression from first bet to pathological gambling, referred to as "telescoping effect" has been observed by other researchers including a Brazilian group who evaluated female pathological gamblers (9). They identified two possible factors for the effect: a gender vulnerability and/or a cultural environment in which females have access to a narrower range of gambling games including the most addictive forms.

Older Americans have shown a dramatic rise in gambling during the past 30 years. A 1975 national survey found that less than one-quarter of adults older than 65 had gambled in the previous year, a rate that had doubled by 1998 (10). A multi-site study of 492 adults older than 65 showed a 10.6% prevalence of combined pathological and problem gambling. Pathological and problem gamblers tended to be younger (73 versus 76 years) and male (52 versus 27%) (10). Overall, almost 40% of the sample reported gambling in the past year and 30% had wagered over \$50 in the previous two months.

Researchers have also begun to use functional neuroimaging to try to better understand the neural correlates of the disorder. A recent study used echoplanar functional magnetic resonance imaging in a group of 10 pathological gamblers and 11 matched control subjects. Gambling cues elicited subjective gambling urges and a temporally dynamic pattern of brain activity changes in the frontal, paralimbic and limbic brain structures in subjects with pathological gambling. Compared to the controls the subjects with pathological gambling demonstrated decreased activity in brain regions associated in impulse regulation (11).

Investigators, noting clinical similarities between pathological gambling and bipolar disorder, employed mood stabilizers in early treatment trials. Although studies showed positive results with a variety of mood stabilizers, including lithium, carbamazepine and valproic acid, many of these studies used unclear methodology and/or had small sample sizes (12). A recent study showed that pathological gamblers refractory to selective serotonin reuptake inhibitor (SSRI) therapy improved on a mood stabilizer (13), while a 14-week controlled trial showed significant improvement in pathological gamblers treated with both lithium and valproate (14).

As noted, serotonin dysregulation has been suggested as a contributory mechanism for impulse disorders. Accordingly, several recent trials have focused on exploring the efficacy of SSRIs in treating pathological gambling. The findings suggested that SSRIs may be associated with short-term improvement, but a high placebo response has complicated these findings. Some investigators have suggested that medication trials should be extended to at least 16 weeks to take the high placebo effect into account (12).

Another proposed mechanism for pathological gambling is dysregulation of the opioid system. A case study of a patient diagnosed with alcoholism and pathological gambling showed marked reduction in both alcohol and gambling urges with naltrexone, a partial opioid agonist (15). Two other clinical trials, one open-label and the other double-blind and placebo controlled, suggested symptomatic improvement with naltrexone (16,17). Preliminary data suggested that patients with pathological gambling may require higher dosing than patients being treated for alcohol or opiate dependence (e.g., greater than 150 mg daily).

Some researchers have used atypical antipsychotics to treat pathological gambling. Studies have hypothesized that these medications' ability to modulate the dopaminergic and serotonergic systems (which have both been linked with impulse disorders) could make them an effective treatment. However, a recent placebo controlled trial with olanzapine did not demonstrate significant differences between the treatment and placebo arms although investigators believed the groups may not have been appropriately matched (12).

Black has recently reported the use of bupropion in treating pathological gambling (18). In a small case series, seven of ten subjects receiving bupropion improved. Bupropion was used because of its efficacy in treating symptoms of attention deficit hyperactivity disorder, a comorbid condition for many gamblers. A randomized, controlled study is now underway to further explore the role of bupropion in treating pathological gambling.

Several studies have examined the utility of psychotherapy in treating pathological gambling. Early studies using supportive psychotherapy suggested efficacy, but the inability to standardize their therapy modality as well as a lack of consistent outcome measures limited the replicability of these studies. More recent studies that have utilized cognitive behavioral treatment modalities have shown some success (19).

Kleptomania

Kleptomania is characterized by persistent, irresistible impulses to steal items without secondary gain (1), and is associated with tension buildup and a sense of release following the act, similar to other ICDs. The prevalence of kleptomania is unknown, but probably affects fewer than one percent of the adult population (20). Some studies have suggested that from 4–24% of shoplifters are kleptomaniacs. Because it is estimated that businesses may lose up to \$24 billion each year due to shoplifting, the disorder may have an impact on society out of proportion to its prevalence (21,22). In clinical settings, up to 75% of persons with kleptomania are women (23).

Clinical research shows substantial comorbidity with mood disorders, and these patients often display antisocial, borderline and obsessive-compulsive personality traits. A study of 12 kleptomaniacs with no other Axis I disorder showed that they had significantly higher traits of novelty-seeking, harm-avoidance, and lower reward dependence than normal control subjects (24). In addition, these subjects reported lower levels of paternal and maternal affection and decreased maternal encouragement to explore their environment.

To our knowledge, there have been no randomized controlled trials of medication or psychotherapy for this disorder, though case reports and small case series involving a wide variety of antidepressants and mood stabilizers have shown promise (23,25). Interestingly, there is one report of a patient being treated for depression with SSRIs who subsequently developed kleptomania (26). A 2002 11-week, open-label study examined the efficacy of naltrexone. The findings suggested that high-dose naltrexone (mean daily study dose was 145 mg) may be effective in treating kleptomania, but there have been no follow-up studies (27). A recent small case series noted successful treatment of three kleptomaniacs with topiramate, both alone and in conjunction with SSRIs (28).

Pyromania

The essential feature of pyromania is the presence of multiple episodes of deliberate and purposeful fire-setting (1). The DSM-IV-TR notes that these individuals are fascinated with fire and/or its associations (e.g., fire-fighting), experience tension or affective arousal before setting a fire and do not perform these acts for secondary gain. The disorder is apparently rare. One early study reported that 39% of a sample of convicted arsonists suffered from pyromania, but more recent studies have reported that as few as 3% of fire-setters met criteria for pyromania (29,30). Typical patients with this disorder are reported to be men with a borderline or lower intelligence (29).

But while pyromania is a rare disorder, fire-setting behaviors in psychiatric patients are not. One study of psychiatric in-patients showed a near 30% lifetime prevalence rate of fire-setting (31). Among a group of Englishwomen imprisoned for arson, 92% had a psychiatric diagnosis, but none of them met criteria

for pyromania (32). This presents a challenge for clinicians, and points to the importance of obtaining a longitudinal history and establishing a formulation for each patient. In the case of fire-setting, a key element of the interview should focus on whether the fire-setting itself is meeting a psychological need or if the act is being performed to meet some other primary or secondary gain.

There have been no studies evaluating pharmacologic treatment of pyromania. Behavioral researchers initially focused on aversive therapy, but a wide variety of therapeutic modalities including cognitive-behavioral therapy have been used to treat this disorder, although their efficacy is unknown (33,34).

Intermittent Explosive Disorder

Intermittent explosive disorder was first established as a psychiatric diagnosis in the International Classification of Diseases, 9th Revision Clinical Modification (ICD-9-CM) (35) and later included in the DSM-III in 1980 (2). The ICD described the disorder as recurrent, significant outbursts of aggression not appropriate to outside stressors that could not be explained by another psychiatric diagnosis. Similar diagnostic criteria were adopted by the American Psychiatric Association, yet many clinicians have been skeptical about the existence of a discrete syndrome of episodic outbursts that could not be explained by another Axis I or II disorder (36). In fact, one study of 27 patients diagnosed with IED showed that there was an 83% current and 93% lifetime comorbidity with mood disorders, and a 37% and 48% current and lifetime comorbidity with one or more anxiety disorders, respectively (37).

Coccaro and his associates have argued that IED is a discrete psychiatric disorder of impulsive aggressiveness associated with serotonin dysregulation and a family history positive for aggression and impulsivity (38–41). In a recent epidemiologic study he noted that roughly 11% of a community sample met criteria for IED (41). Other investigators are skeptical that IED truly represents a discrete disorder (42).

Recently IED has received more scrutiny because of its association with “road rage.” Road rage is the commonly used term used to describe a criminal offense defined as “an assault with a motor vehicle or other dangerous weapon by the operator or passenger(s) of another motor vehicle or an assault precipitated by an incident that occurred on a roadway”(42). The National Highway Traffic Safety Administration estimated that road rage was associated with one-third of all motor vehicle accidents and two-thirds of all highway fatalities (42). One research group comparing court- and self-referred aggressive drivers noted that roughly one-third of the aggressive drivers met DSM-IV-TR criteria for IED (42). Interestingly, this study found few differences between aggressive drivers who met IED criteria with those who did not, although both groups showed marked differences on anxiety, hostility and anger as well as on specific measures focusing on driving competitiveness and

irritability at slow drivers and traffic obstructions when matched with nonaggressive controls.

Although episodic impulsive and aggressive behavior is common among psychiatric patients as a group, only a small subset of these patients are diagnosed with IED (31). Consequently, most of the literature focuses on the treatment of episodic aggressive behavior generally rather than specifically in persons diagnosed with IED. However, some investigators have suggested that patients with IED respond to treatment with antidepressants (both tricyclic antidepressants and SSRIs) and mood stabilizers (37).

Compulsive Buying Disorder

Compulsive buying (or shopping) disorder is not listed in the DSM-IV-TR, although it is widely considered an example of an ICD. Compulsive buying is characterized by persistent or poorly controlled preoccupations, urges, or behaviors regarding shopping or spending leading to adverse consequences. There are many anecdotal cases throughout history of individuals spending extravagantly during periods of stress (43). Kraepelin gave one of the earliest clinical descriptions of compulsive buying in 1915 (44).

Although the earliest writings on the disorder focused on psychodynamic interpretations, more recent investigators have argued that there is a neurobiological component to the disorder (43). Proponents of the obsessive-compulsive spectrum have placed compulsive shopping within that grouping (44), yet others describe it as a disorder of impulse control (46), or mood disorder (47). Proponents of each theory point to the disorder's strong correlations with associated Axis I and II disorders, notably eating, mood, anxiety and other impulse control disorders as well as the personality disorders. Similarly, patients usually have a positive family history for these disorders as well. To date, there is presently little evidence favoring its classification in any of these categories (47).

Community samples suggest a prevalence ranging from 1.8% to 16% (48,49). This disorder predominately affects women, with recent work suggesting a female preponderance of 80–95% among self-identified compulsive shoppers, with a similar gender distribution noted in community studies (43). Age of onset has ranged in clinical studies from 18 to 30 years old, with study participants ranging from 31 to 41 years old at the time of interview for the clinical study (43). Black observes that the disorder is confined to the developed countries, with the exception perhaps of the wealthy elite of the developing world (43).

Psychiatric comorbidity is common in this disorder. Two studies have compared compulsive shoppers with matched controls. In one, the investigators found a significant correlation with major depression and "any" mood disorder, while in the significant correlations in anxiety, substance abuse, eating and other impulse control disorders were noted (50,51).

Compulsive shoppers often differ from matched controls when dimensional scales are used. Christenson has noted (51)

that subjects diagnosed with compulsive shopping had significantly higher scores on the Beck Depression Inventory, the Spielberger Trait Anxiety Inventory and the checking/washing, obsessional slowness and total scales of the Maudsley Obsessive Compulsive Inventory. Another study noted patients self-identified as compulsive shoppers identified higher levels of compulsivity, materialism and fantasy, but lower levels of self esteem than individuals with normal buying behavior (43).

Case studies suggest that the condition is either chronic or recurrent for most subjects, with marked fluctuations in symptomatic severity (43). Two separate studies have examined the first-degree relatives of compulsive shoppers. The first found that of 18 individuals with compulsive shopping, 17 had at least one relative with major depression, 11 with substance abuse, three with an anxiety disorder, and three with compulsive shopping (52). The second study found that first-degree relatives of compulsive shoppers were significantly more likely than first-degree relatives of matched controls to have depression, alcoholism and other substance abuse disorders, "any" psychiatric disorder and multiple psychiatric disorders, and nearly 10% were compulsive shoppers themselves (50).

There are no standard treatments for compulsive shopping. Early case reports focused on the use of psychodynamic psychotherapy in treating the condition, but cognitive-behavioral techniques have been employed more recently (53,54). An early study employing a cognitive approach suggested that this therapy may be helpful (55) and a recent controlled study employing cognitive-behavioral therapy was also encouraging (56). Group therapy, marital counseling, financial counseling, peer support groups and even self-help books may be helpful (43).

An open-label trial suggested that fluvoxamine may be an effective treatment for compulsive shopping, but two separate double-blind placebo-controlled trials using fluvoxamine were unable to demonstrate any superiority of fluvoxamine over placebo (57,58). A recently published seven-week open-label trial with citalopram reported a 63% response rate during the initial study. Responders were then randomized to drug or placebo and while 63% of the initial responders relapsed on placebo, none of the patients remaining on citalopram experienced a return of symptoms (59). A one-year follow-up study reported that an acute response to a three-month course of citalopram predicted a greater likelihood of continued remission over the following year (60).

Compulsive Sexual Behavior

Compulsive sexual behavior (CSB) is characterized by inappropriate or excessive sexual behaviors or thoughts that lead to subjective distress and/or impaired functioning. CSB can involve a wide range of sexual behaviors, often including a mixture of paraphilic and non-paraphilic behaviors. Non-paraphilic CSB involves conventional sexual behaviors, such as masturbation, that have become excessive or uncontrolled.

CSB is not included in the DSM-IV-TR, yet many persons with CSB would probably satisfy criteria for one of the paraphilias, such as pedophilia, voyeurism, sexual masochism and sadism, or transvestic fetishism. Sexual urges in CSB may be intermittent or continuous, and paraphilias may be part of or the only expression of an individual's sexuality. The prevalence of CSB in adults is estimated to range from 3–6%. The disorder is believed to predominately affect men, although these estimates are not based on clinical studies nor community surveys (61). However, researchers have begun to develop and test diagnostic tools that may provide a consistent measure for future community surveys (62).

CSB may be underreported in women because women typically focus on the romantic or emotional aspects of sexual behavior while men with CSB focus on the physical aspects of sexuality, leading women to underreport compulsive sexual behaviors (63). Patients with compulsive sexual behaviors frequently meet criteria for other Axis I disorders, particularly mood, anxiety and substance use disorders. One study of 36 subjects found that other impulse control disorders were also frequent in this population (61). The investigators in that study argued that although the concept of compulsive sexual behavior may be useful clinically, it describes an extremely diverse patient population with substantial psychiatric comorbidity.

There are no standard treatments for CSB, perhaps because it includes such a diverse patient population. Psychotherapy is commonly recommended, and a variety of behavioral techniques have been employed such as imaginal desensitization, aversion therapy; group therapy and psychodynamic therapies have been used as well. These techniques are reported to be helpful in the short term, but relapses are common (64). To our knowledge there have been no clinical trials comparing therapeutic modalities or contrasting their effectiveness with placebo or pharmacologic treatments (65).

Kafka has reported good response with fluoxetine and sertraline at typical antidepressant doses by the fourth week of treatment (66), although his reports are uncontrolled. One consideration in using serotonergic medication is that they frequently produce sexual side effects that may prevent long-term use due to patient non-compliance. In the case of sexual offenders these side effects, which can include decreased sexual drive and erectile dysfunction, may potentially be useful in treating CSB. A retrospective study looking at 14 patients receiving nefazodone suggested that this medication might be effective in treating CSB (67). Although excessive dopamine has been associated with disinhibition and increased sexual behavior, Kafka has argued that there is a role for dopaminergic agonists. He cites the connection between attention deficit hyperactivity disorder and a subset of compulsive sexual disorder patients as well as demonstrated efficacy of these agents as an adjunct to SSRIs (58).

A case study reported success in treating a male patient with kleptomania and compulsive sexual behavior with naltrexone (68). The article noted that the patient had been refractory to fluoxetine, behavioral therapy, and psychotherapy but that the

treatment with high dose naltrexone (150 mg daily) led to remission of his urges to steal and his abnormal sexual urges. When the medication was discontinued the patient's symptoms returned after several days. A rechallenge of naltrexone at the previous dose restored the patient to remission.

Compulsive Computer Use

Compulsive computer use, which has been described as "internet addiction," has become of increasing interest to lay persons and clinicians, yet has only begun to receive attention by researchers (69,70,71). The paucity of work in this field is further hampered in that much of the initial work in this area was supported by a group of psychologists that also purported to treat the identified disorder online (72). This in turn has prompted others to question the validity of this group's findings (73).

Internet addiction has been described as a preoccupation with computer usage that is overly time-consuming, causes personal distress, and has the potential to cause serious psychosocial consequences (71). Researchers have estimated that as many as 5–10% of Internet users have an Internet addiction, although there have been no formal surveys. The focus of the computer use varies, but frequently involves web surfing, games, chat rooms, and even pornography. Internet gambling is becoming increasingly problematic for many with an estimated \$12.6 billion being wagered annually by 2006 (74). There may be more subtle costs to problematic Internet use; a 2-year prospective study of 169 subjects in 73 households noted an association between increasing Internet use and withdrawal from family activities, increases in depressive symptoms and feelings of isolation (75).

It has been argued that compulsive computer use is best considered an impulse control disorder. Shaffer has cautioned that it is premature to define computer addiction as a distinct diagnostic entity in the absence of empirical data (76). It was noted that computer users' focus of overindulgence frequently involves areas such as pornography or gambling that overlap other compulsive disorders or a primary psychiatric disorder that may provide a better explanation of the patient's behavior than excessive computer use per se. Others have warned that labeling compulsive computer use as a discrete disorder may lead to the misdiagnosis of more established psychiatric disorders for which there are proven treatments (76,77). Mitchell also noted that without a clear natural history of the disorder it is difficult to differentiate whether problematic Internet use develops on its own or is preceded by an underlying comorbid psychiatric disorder (78). Shaffer has warned that adapting checklists derived from DSM criteria for pathological gambling is likely to overestimate the prevalence of the disorder (76). Recently Shapira and associates have proposed a classification and diagnostic criteria for problematic internet use in the style of other impulse disorders in the DSM-IV-TR. Table 2 describes these criteria (79).

Table 2 Proposed Diagnostic Criteria for Problematic Internet Use

Maladaptive preoccupation with Internet use, as indicated by at least one of the following:

1. Preoccupation with use of the Internet that are experienced as irresistible;
2. Excessive use of Internet for periods of time longer than planned.

The use of the Internet or the preoccupation with its use causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Excessive Internet use does not occur exclusively during periods of hypomania or mania and is not better accounted for by other Axis I disorders.

From: Shapira NA, Lessig MC, Goldsmith et al. Problematic Internet use: proposed classification and diagnostic criteria. *Depression and Anxiety*. 2003; 17:207–16.

Currently, there have been no controlled studies examining treatment options for patients with this disorder, yet in one survey no subject had sought treatment (70).

CONCLUSION

ICDs present a challenge to both clinicians and researchers. Although the behaviors associated with these conditions can be devastating to patients and their families it has been difficult to study, or even characterize the disorders that create the impulsivity. In particular, the challenge is to identify discrete impulsive disorders without creating a superfluous diagnosis for patients whose illness can be explained by established disorders with proven treatments. As mentioned earlier clinicians need to identify if the impulsive act is meeting a need itself or is acting to satisfy some other primary or secondary goal for the patient. Recent studies have explored both pharmacological and psychosocial treatments, giving rise to greater hope for the development of more effective treatments for these challenging conditions.

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