

Behavioral Addictions and Dirty Drugs

By Eric Hollander, MD

One concept that is currently being discussed that could have profound implications for how we conceptualize disorders in the forthcoming *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* is the grouping of the behavioral and substance addictions. This stems from the idea that some impulse-control disorders share important features with those of the addictive disorders. Such features include clinical features or phenomenology, similar comorbidity, and family history, similar mesolimbic reward pathways, brain circuitry and genetics, and, ultimately, similar treatment response with the use of opiate or dopamine D₃ antagonists. However, there is much data that remains unknown and unstudied regarding these criteria for determining such a relationship or boundary, and much work remains. This issue of *CNS Spectrums* describes new work with Internet addiction, a new and rapidly growing problem, and pathological gambling, an established impulse-control disorder that has interesting differences in Asian populations.

Excessive Internet use (EIU), also described as Internet addiction or pathological Internet use, has already become a serious social problem around the world. Some researchers consider EIU as a kind of behavioral addiction. However, there are few experimental studies on the cognitive functions of excessive Internet users (EIUs) and limited data are available to compare EIU with other addictive behaviors, such as drug abuse and pathological gambling. Da-Ren Zhang and colleagues examined EIUs' functions of decision-making and prepotent response inhibition. Two groups of participants, EIUs and controls, were compared on these two functions

by using a Gambling Task and a Go/no-go Task, respectively. There were some similarities and dissimilarities between EIU and other addictive behaviors, such as drug abuse and pathological gambling. The findings from the Gambling Task indicated that EIUs have deficits in decision-making function, which are characterized by a strategy learning lag rather than an inability to learn from task contingencies. EIUs' better performance in the Go/no-go Task suggested some dissociation between mechanisms of decision-making and those of prepotent response inhibition. However, EIUs could hardly suppress their excessive online behaviors in real life. Their ability of inhibition still needs to be further studied with more specific assessments. This type of research is needed to better fill in the gaps of our knowledge regarding behavioral and substance addictions. Furthermore, response inhibition appears to be a fundamental defect of compulsive and impulsive disorders.

Some types of behavioral addiction, such as Internet gaming addiction, have been especially problematic in Asian countries such as South Korea, but it is unclear what impact race, ethnicity and culture have on the development of various behavioral addictions. To identify race-related differences in pathological gambling, the characteristics of Asian American and white problem gamblers using a gambling helpline were examined by Declan T. Barry, PhD, and colleagues. Of the 144 phone calls used in the analyses, 72 were from Asian American callers and 72 were from white callers matched on gender, education, income, marital/cohabitation status, and age. Race-related differences were

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observed in forms of gambling problems, psychiatric problems secondary to gambling, substance use problems, and family history. Asian American gamblers were more likely to report suicide attempts related to gambling and problems with non-strategic gambling. White gamblers were more likely to report both casino and non-casino gambling problems and personal and familial alcohol use problems. High proportions of both groups reported problems with strategic gambling, gambling-related anxiety, family and financial problems secondary to gambling, financial debt, daily tobacco use, and a family history of problem gambling. Cultural, ethnic and race-related differences should be considered in optimizing prevention and treatment strategies related to the behavioral addictions and impulse-control disorders.

The Clinical Antipsychotic Trials of Intervention Effectiveness Study was important in comparing second-generation antipsychotics to the older first-generation antipsychotics with regard to side-effect profile and efficacy, and found that sometimes older medications have benefits, in spite of being less often prescribed. Irismar Reis de Oliveira, MD, and colleagues determined in a clinical trial that aripiprazole, a second-generation antipsychotic, and haloperidol, a first-generation antipsychotic, had similar efficacy in terms of reduction of overall psychopathology. Although

aripiprazole has been demonstrated to be superior concerning negative symptoms and, in terms of extrapyramidal symptoms, and preferred by patients and caregivers than haloperidol, of interest, significantly more aripiprazole-treated patients in this trial required benzodiazepines.

In this month's "Trends in Psychopharmacology," Stephen M. Stahl, MD, PhD, examines the development of multifunctional drugs—a novel concept for psychopharmacology. All of our older psychotropics were "dirty drugs," meaning that they had complex mechanisms of action that were associated not only with their efficacy, but also with their side effects. Thus, the true mechanism of action was not clearly understood, and treatment compliance may have been decreased due to multiple and severe side effects that limited their use to patients with severe illness. The pharmaceutical industry spent much time and effort in developing cleaner drugs with more selective actions in order to improve tolerability and limit side effects. This allowed for a broader group of patients to be treated, but did not necessarily improve efficacy. The pendulum has begun to swing back, and most drugs in clinical development, either by serendipity or by design, again seem to be "dirty drugs" or rather multifunctional drugs.

While we continue to describe emerging new problems, such as behavioral addictions, we continue to rediscover that older or more complex medication treatments may have new benefits. **CNS**