The concept of behavioural addiction as a way to classify behaviours that mirror the symptoms and consequences of classic alcohol and drug addictions has become of great interest to researchers and clinicians. This is, in part, due to ongoing discussions regarding the creation of a category for behavioural addictions within the general class of substance use disorders in DSM-5, scheduled for release in May 2013. To date, PG is the only proposed member of the category, but it signals the recognition by the scientific community of what the National Institute on Drug Abuse considers relatively pure models of addiction because the presence of an exogenous substance does not contaminate their processes.

What defines a behavioural addiction? The simplest definition is that these are disorders whose overt symptoms are behaviourally expressed, and are viewed—at least initially—as pleasurable (for example, gambling, sex, shopping, and Internet use), and have attained an irresistible quality, such as the substance addictions. The boundaries of this emerging category are relatively fluid, appearing to expand or contract depending on an expert's own particular views. Some investigators choose to include impulse control disorders, currently listed in DSM-IV-TR (for example, PG, kleptomania, and pyromania) as members of the behavioural addiction category, but have also included disorders not currently recognized in the DSM system (for example, CB, Internet addiction, and CSB). In this edition of The Canadian Journal of Psychiatry, both Dr Jon E Grant and colleagues and Dr Robert F Leeman and Dr Marc N Potenza write about the behavioural addictions, yet appear to disagree about its members. For example, Dr Grant and colleagues include pyromania and binge eating disorder, but Dr Leeman and Dr Potenza do not. Conversely, Dr Leeman and Dr Potenza include video game playing, but Dr Grant and colleagues do not. This perfectly illustrates how, even among those actively writing on the topic, there remains disagreement of its breadth. And while classification should rest on research evidence, the data we have are imperfect and subject to varying interpretation.

While controversy remains about the optimal categorization of the behavioural addictions, research evidence supports the linkage between these disorders and substance addictions, strengthening the rationale to include both behavioural and substance addictions in the same general class. One of the benefits from recognizing this category is that improved classification could enable a more accurate description of endophenotype and biological markers that characterize these conditions. More precise classification could lead to specific treatments.

Scientists and others writing about behavioural addictions have described common elements that link them with substance addiction. A growing body of phenomenological, genetic, and neurobiological evidence supports a relation among proposed behavioural addictions to the substance addictions. As outlined in this issue by Dr Grant and colleagues and Dr Leeman and Dr Potenza, they share common core clinical features. For example, both involve the performance of repetitive or compulsive behaviours, despite negative consequences; diminished control over the behaviours; craving prior to engaging in the behaviour, and experiencing a pleasurable response while engaged in...
the behaviour. Further, they appear to share features of tolerance, withdrawal, repeated attempts to cut back, and impairment in multiple life domains. Phenomenological data also suggest a relation between the behavioural and substance addictions. They often begin in the late teens or early twenties, and while several of the behavioural addictions, such as CB and kleptomania, are more common in women, other behaviourally expressed addictions appear to have a male preponderance (for example, PG and CSB), similar to that seen in substance addictions. The telescoping phenomenon, which reflects the rapid rate of progression from initial to problematic behaviour in women, initially found in alcohol disorders, also has been described in PG. Clinical data suggest that the disorders are all either chronic or recurrent, though none have been carefully studied longitudinally. Studies of psychiatric comorbidity show that many of the behavioural addictions are associated with elevated rates of substance misuse, particularly, PG, CB, and CSB.

Family studies have suggested a clear association between substance addictions and several behavioural addictions. For example, first-degree relatives of people with PG have high rates of substance abuse or dependence, as do the relatives of people with CB. Neuroimaging studies suggest that similar brain circuits are activated in both PG and substance addictions. Last, several behavioural addictions are reported to benefit from CBT (for example, PG and CB) or 12-step programs (for example, PG and CSB), similar to improvement seen in the substance addictions.

Research suggests that the opioid antagonists help dampen the drive to engage in addictive behaviour in several of the behavioural addictions. For example, naltrexone, which has an indication from the US Food and Drug Administration to treat alcohol dependence, has been found to reduce the drive to engage in addictive behaviour in both PG and kleptomania. Where do we go from here? First, whether officially recognized or not, psychiatrists and psychologists agree that the disorders exist, are relatively common, and contribute to the emotional distress and impairment experienced by many. While interest in behavioural addictions has grown, important gaps remain in our understanding of them. First, which disorders should we include in the category and how shall we define them? Whether these disorders comprise a single, unified category related to the substance addictions remains to be determined. While psychometrically sound instruments for screening and diagnosis are available for some of the disorders (for example, PG, CB, and Internet addiction), researchers have devoted scant scientific attention to others (for example, CSB and kleptomania). Little is known about the natural history of any of these conditions, yet nearly all are assumed to be chronic, though fluctuating in severity and intensity, based on clinical experience. Follow-up studies are necessary to chart their course, track their emergence and (or) subsidence, and determine their relation with co-occurring disorders, including other behavioural addictions. Neurobiological and genetic research has been sparse, and while early work with PG suggests commonalities with substance addiction, there are few brain-imaging or genetic studies of other behavioural addictions. Finally, there have been no systematic studies of proposed treatments, and it is unclear which patients may benefit from CBT or other psychotherapeutic methods, or whether medication has any role in treating these disorders.

Research is needed to explore the connections among these disorders and with the substance addictions. Researchers have been further hampered by the lack of federal funding in this area, and have had to turn to industry or private foundations for support. Until the federal government chooses to broaden its concept of addictions, funding will probably continue to be limited, and require that scientists be creative in conducting research. The creation of a proposed behavioural addictions category in DSM-5 may help push this process along by recognizing that scientific and clinical evidence supports the connection among these disorders. To obtain a fully informed understanding of the disorders, these disorders should be viewed as different and unique behavioural expressions of addictions.

Acknowledgements
Dr Black has received a research grant on borderline personality disorder from AstraZeneca.

The Canadian Psychiatric Association proudly supports the In Review series by providing an honorarium to the authors.

References