



A naturalistic study of recovering gamblers: What gets better and when they get better



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ABSTRACT

Gambling recovery has typically been assessed through the lens of gambling behavior and its consequences. Little attention has been given to less obvious features of gambling disorder, such as negative affectivity, gambling cognitive distortions, impulsivity, cognitive flexibility, planning, inhibitory control, and decision-making. The current study investigates how gambling treatment affected these variables and if any are related to gambling recovery. One hundred and thirteen patients were assigned to psycho-education and psychiatric treatment. A subset of 48 patients was additionally assigned to cognitive behavioral therapy (CBT). Seventy-two patients were reassessed 6 months after treatment onset. Recovered and non-recovered gamblers did not differ in pre-treatment demographic, gambling, and psychiatric profiles. Three outcome variables were strongly related with gambling recovery: negative affectivity, cognitive distortions and decision-making. Logistic regression identified reduction of gambling cognitive distortions and better performance on decision-making as the best predictors of gambling recovery, regardless of the type of treatment received. Beyond the standard outcome measures for gambling treatment, increased sensitivity to loss and decreased positive expectancies towards gambling are key targets to promote recovery in gambling treatment.

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1. Introduction

Gambling disorder (GD), previously named pathological gambling, had been classified within the Impulse Control Disorders section of the Diagnostic and Statistical Manual of Mental Disorders (DSM) since the DSM-III (American Psychiatric Association [APA], 1980). It was recently moved, however, to a new addictions section in the DSM-5 (APA, 2013). GD is characterized by continued gambling behavior despite the accrual of financial losses and major personal distress.

Despite the need for further studies on GD, evidence suggests that it is a treatable condition (Rosenthal, 2008). Nonetheless, doubts remain regarding how to define and assess gambling recovery (Nower and Blaszczynsky, 2008). In 2006, a panel of experts met in Banff, Canada and proposed a consensus regarding three domains that should comprise GD treatment assessment (Walker et al., 2006). The first domain, gambling behavior, encompasses direct measures such as monthly gambling expenditure, gambling days per month, and time spent gambling. The second domain focuses on gambling harm, such as damage to relationships and financial and legal consequences. The last domain encompasses

measures related to the process of change, including variables that mirror the applied therapeutic technique, variables that ideally covary with gambling reduction (e.g., measures of gambling cognitive distortions for cognitive restructuring interventions).

The Banff consensus represents a step forward, as it establishes conceptually clear-cut domains of assessment for GD treatment. However, beyond observable gambling behavior and its related consequences, a host of relevant features pertaining to GD was ignored by this proposal. Psychiatric comorbidities, especially mood, anxiety, and substance use disorders, are standard in GD, as nearly three-quarters of disordered gamblers present at least one such condition (Petry et al., 2005), and neglect of psychiatric comorbidities would most likely compromise any treatment effort. For instance, attempts at controlling depression and anxiety symptoms (i.e., negative affectivity) have been related to recurrent betting and GD maintenance, at least for the “escape-seeker” subtype of gamblers (Ledgerwood and Petry, 2006). Another subtype of stimulus-seeking gamblers has been described, usually associated with executive dysfunction encompassing deficits of inhibitory control and planning (Goudriaan et al., 2004), comorbidity with attention deficit hyperactivity disorder (ADHD; Rodriguez-Jimenez et al., 2006), and tobacco smoking in both clinical (Grant et al., 2008) and community (McGrath et al., 2012) samples. This subtype usually shows greater severity.

In the psychopathology domain, cognitive distortions, impulsivity, and bias in the decision-making process have been reported

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as important aspects related to the initiation and maintenance of gambling. Two dimensions of cognitive distortions related to gambling have been described: luck as a personal attribute (rather than a product of chance) and misperceptions about random events (which lead to illusions of prediction and control; [Letarte et al., 1986](#)). Higher levels of gambling-related cognitive distortions have been associated with greater involvement with gambling. Reductions of these distortions have been associated with recovery ([Fortune and Goodie, 2012](#)).

Impulsivity has been defined as a personality trait associated with a predisposition to hasty behavior without sufficient forethought, and a tendency to favor responses to immediate over delayed consequences ([Barratt, 1985](#); [Moeller et al., 2001](#)). Cohort studies have shown that impulsivity identified in children as early as kindergarten increases the odds of gambling involvement in the sixth grade ([Pagani et al., 2009](#)). Further, clinical reports have consistently described disordered gamblers as being more impulsive than non-gambling controls in terms of self-reported impulsivity ([Tavares and Gentil, 2007](#)). Unfortunately, the term impulsivity has been used to describe many different patterns of behavior that are assessed in different ways, producing measures that are usually unrelated. Indeed, an earlier contribution from our group ([Fuentes et al., 2006](#)) reported that, compared to non-gambling controls, GD patients scored higher on self-reported impulsivity and presented poorer inhibitory control. However, the two dimensions – subjective and objective impulsivity measures – were largely unrelated. There is greater convergence of findings regarding the self-assessment of impulsivity in GD, with gamblers presenting higher scores than control individuals in all dimensions of the most-used self-report scales, such as the Barratt Impulsiveness Scale version 11 (BIS-11) and the urgency, premeditation, perseverance, sensation-seeking scale (UPPS), except for the sensation-seeking subdomain ([Michalczyk et al., 2011](#)). Conversely, some studies have failed to find differences in inhibitory control between GD individuals and matched controls ([Lorains et al., 2014](#)), but other features related to impulsivity, such as cognitive inflexibility and vulnerability to distraction, were found in GD patients ([Álvarez-Moya et al., 2009](#)). Even in the studies in which differences were found on both domains, self-assessment measures and neuropsychological testing remained utterly segregated in different dimensions ([Kräplin et al., 2014](#)).

Despite these previous reports of impulsivity and altered decision-making in GD ([Goudriaan et al., 2006](#)), no previous study has verified the effects of treatment on these and other features beyond the standard gambling outcome measures (i.e., frequency of gambling behaviors and related negative consequences), and if they help to identify changes that could be critical to clinical recovery.

Thus, the main goal of this study was to measure treatment outcomes and identify factors that could be associated with clinical recovery among features of GD psychopathology, namely, negative affectivity, gambling-related cognitive distortions, trait impulsivity, cognitive flexibility, planning, inhibitory control, and decision-making. We also sought to control for pre-treatment features that could modulate treatment response (i.e., variations in demographic, gambling, and psychiatric profiles) and differences in treatment delivery. Our hypothesis was that improvement in GD-related psychopathology would be greater for patients who recovered from GD as opposed to those who did not.

2. Methods

2.1. Participants and treatment intervention

The patients enrolled in the study were individuals who sought treatment for gambling problems at the Gambling Outpatient Unit of the Institute of Psychiatry. The Institute is located at a public university hospital, and treatment is offered free of charge. Patients may apply for treatment via self-referral, or they can be referred from

other sectors of the hospital. The group of patients analyzed in this study was a convenience sample of individuals who presented for treatment from February 2006 to August 2008. Individuals presenting current comorbidity with substance addictions (except nicotine), organic mental disorders, acute psychotic symptoms, intellectual disabilities, illiteracy, or who did not meet all criteria for GD according to the DSM-IV-TR ([APA, 2000](#)) were excluded following a pre-clinical assessment conducted by both a psychiatrist and a neuropsychologist. One patient was treated but refused to sign the informed consent form, and thus was not included in the sample.

Our outpatient gambling program operates with a combination of assessment and treatment of psychiatric comorbidity and enrollment in group cognitive behavioral therapy (CBT) with 12 weekly sessions. However, for 3 years (2006–2008) gambling parlors explored loopholes in the laws regulating gambling in the country and managed to function with no restrictions on location and operating hours ([Tavares, 2014](#)). As a result, treatment seeking for GD at our program more than doubled, and the projected waiting time to start treatment increased to almost a year. An emergency plan was conceived, as the CBT groups were the bottleneck of the treatment process, and we devised a simpler approach based on the same principles delivered in four monthly open-group psycho-educational meetings of, usually, 10–15 patients (maximum 30 individuals per meeting). Thus, all patients admitted for treatment in this period received psychiatric treatment and were referred to the psycho-education group (PEG) program, while a smaller proportion received additional CBT. CBT groups occurred twice a year with a maximum of eight patients per group. The patients who were on the treatment waiting list at the time of a group opening were randomly designated to group CBT using a random numbers table.

Out of an initial sample of 142 candidates, 20.4% ($n=29$) were excluded based on the criteria described above. The patients who completed at least half of the programmed sessions (two for patients designated to PEG and six for patients designated to CBT) were classified as treatment completers. The overall treatment attrition rate was 14%, with a rate of 11% for PEG ($n=7$) and 19% for CBT ($n=9$). Approximately a quarter of the patients who completed the programs did not show up for post-treatment assessment (26% for PEG [$n=15$] and 26% for CBT [$n=10$]). We compared the programs on treatment and assessment attrition rates and found no statistically significant differences ($p=0.299$ and 0.981 , respectively). Further, comparisons between non-completers, no-shows, and treatment completers did not reveal any statistically significant differences on demographic or clinical profiles. [Fig. 1](#) shows a detailed flowchart of the sample selection.

A detailed description of both treatment modalities and a comparison between them are beyond the scope of the current communication; these are available from the authors upon request. Both interventions lasted around 4 months. Pre-treatment assessment was divided into two visits. The first comprised gambling assessment, filling out self-report scales, and neuropsychological testing, and the second visit, which was scheduled 1 week prior to PEG initiation, comprised the psychiatric assessment and the Iowa Gambling Task (IGT; [Malloy-Diniz et al., 2008](#)). Post-treatment assessment was completed 2 months after the completion of therapy. The time period between the pre-treatment and follow-up assessments totaled approximately 6 months.

2.2. Determining gambling recovery

We used a self-report format ([Galetti, 2006](#)) of the Gambling Follow-up Scale (GFS; [Castro et al., 2005](#)) to ease the administration process. The GFS is designed to assess gamblers who are undergoing treatment. It has 10 items rating the following topics in the last 4 weeks: frequency of gambling, time spent on gambling, money spent on gambling, craving for gambling, debts, emotional distress, family relationships, autonomy, frequency of leisure activities, and satisfaction with leisure. All items, except items #5 and #9, are rated on a five-point scale (one for the worst-case scenario, five for the best), with higher scores indicating less gambling and better emotional and social adjustment. Item #5, which assesses emotional distress related to gambling, is scored in a four-point scale. For item #9, the frequency of various leisure activities is summed and mathematically adjusted to fit within the 1–5 range. The whole-scale score is obtained by adding up the item scores, ranging from 10 to 49. The GFS score is strongly correlated with the total and sub-scores of the Social Adjustment Scale ([Gorenstein et al., 2002](#)). The reliability of the self-report format of the GFS was tested in a previous study comparing patients' answers to 52 collateral informant answers (a family member indicated by the patient). The agreement rate varied from good to excellent, with Kappa's coefficient ranging from 0.241 to 0.486 (all $p < 0.001$). Internal consistency analysis revealed a Cronbach's alpha of 0.855, with all items contributing. A receiver operating characteristic curve analysis revealed a cutoff score of 33 with 87% sensitivity and 80% specificity for gambling recovery. Gambling recovery was defined as the patient no longer fulfilling the criteria of either pathological or problem gambling according to the DSM-IV-TR within the last 6 months (less than four positive criteria out of 10). Pathological gambling criteria were verified using a semi-structured interview modeled after the Structured Clinical Interview for DSM-IV Impulse Control Disorders ([Grant et al., 2004](#)) applied by trained psychologists or psychiatrists. These criteria were reviewed for the DSM-5, and criterion #8 from the DSM-IV-TR, which addressed the adoption of illegal activities to maintain gambling, was dropped. All other criteria remained generally unaltered, and the diagnostic cutoff was reduced to four positive criteria out of nine. Therefore, we re-performed the classification analysis of the GFS and found that the cutoff score remained

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