

Are There Cognitive and Behavioural Approaches Specific to the Treatment of Pathological Gambling?

Hermano Tavares, MD, PhD¹, Monica L Zilberman, MD, PhD², Nady el-Guebaly, MD³

Objective: Treatment approaches for pathological gambling have been modelled after preexisting substance addiction models. This paper reviews cognitive-behavioural models in a search for original insights that are specific to gambling treatment.

Method: A computerized search of major health care databases (Medline and PsycINFO) was performed.

Results: New cognitive-behavioural approaches to the treatment of pathological gambling provide 3 original additions to the traditional multimodal treatment of addictions: cognitive restructuring, in vivo exposure, and imaginal desensitization. Other cognitive-behavioural techniques, such as relapse prevention, problem solving, and social skill training, are shared by gambling treatment and addictions treatment.

Conclusions: When treating pathological gamblers, clinicians must consider introducing techniques to address cognitive distortions related to gambling. Also, cue exposure—whether in vivo or imaginal—may help deal with urges prompted by such cues. The blending of these new techniques into a multimodal addiction treatment potentially balances the rational and external orientation of the cognitive-behavioural approach with interpersonal and introspective components of the traditional addiction treatment.

(Can J Psychiatry 2003;48:22–27)

Information on funding and support and author affiliations appears at the end of the article.

Clinical Implications

Pathological gambling and substance dependence overlap partially. Thus, when incorporating new treatment techniques and when adapting more traditional approaches, we must consider features that are unique to gambling.

Cognitive-behavioural theory has found in gambling a suitable heuristic model that contributes significantly to the treatment of pathological gambling.

The combination of cognitive-behavioural and traditional multimodal approaches holds the potential of bringing together rational and external orientation with interpersonal and introspective approaches.

Limitations

This review focuses narrowly on original cognitive-behavioural contributions to the treatment of pathological gambling.

To be considered an original contribution to the treatment of pathological gambling, a given technique that takes into account gambling particularities had to be devised and empirically tested. Had the criteria been less stringent, other techniques also could have been regarded as original.

Cognitive-behavioural approaches may be culturally sensitive. Further study of cultural groups is required for empirical confirmation.

Key Words: *pathological gambling, treatment, cognitive restructuring, in vivo exposure, imaginal desensitization, cognitive-behavioural approach*

Almost all treatment approaches for pathological gambling have been modelled after preexisting substance addiction models (1). Recent studies have provided initial evidence for the validity of gambling as “a dependence without drugs” (2–4). Nonetheless, the overlap of etiologic and

clinical aspects with substance dependence is not a complete one, calling for the investigation of treatment techniques specific to gambling psychopathology.

In the 1960s, the first behavioural approaches in gambling treatment were based mostly on aversion therapy; however,

subsequent case reports and small, uncontrolled studies failed to provide consistent evidence of its usefulness (5). Since the late 1980s, case reports described the treatment of pathological gamblers based on cognitive therapy (6,7), which also brought a renewed interest in behavioural interventions (8,9).

This paper reviews the new generation of cognitive-behavioural models in a search for original insights that are specific to gambling treatment.

Method

We conducted a computerized search of the literature on Medline and PsycINFO databases from 1965, using the following key words: gambling, treatment, cognitive, cognition, and behaviour therapy. The abstracts of the articles identified on this search were examined, and articles addressing cognitive and behavioural techniques that were empirically tested for pathological gambling were selected. Further, to enhance the search, other relevant articles were drawn from the reference lists.

Behavioural Approaches to Gambling

Based on the principles of classical and operant conditioning theory (10), the first behavioural treatments for gambling tried coupling aversive stimuli, usually small electrical shocks, to the memory of gambling. Two studies comparing aversion therapy with other treatment modalities (11,12) failed to confirm an initial enthusiasm prompted by case reports (13–19).

Dickerson first emphasized the role of intermittent reinforcement schedules in the persistence of gambling (20). Petry and Roll highlighted 4 other factors that related to operant learning principles found in gambling (21). First, low response cost relates to the effort required to place a single bet and to the possibility that winning is usually low, from both physical and economic points of view. Second, magnitude of reinforcement indicates that, to guarantee the business profitability, gambling odds have to be in favour of the gambler losing money rather than winning. Nevertheless, occasional big wins are expected, providing the illusion of a pro-player activity. Priming, the third, signifies that gambling machines will also offer small wins, which aside from lowering the cost of continuous playing and enhancing variability of the reinforcement schedule, may also suggest that a bigger win is just around the corner. Other priming strategies include casinos' sending invitations for a free meal to regular customers who have been away for longer than usual. Fourth, immediacy in deliverance of the reinforcement is crucial; recent evidence has demonstrated that fast-paced gambling machines are more likely to develop problem gambling than are lotteries and other games that allow longer intervals between the bet and the outcome (22).

Indeed, gambling reinforcement schedules seem like a real-life compendium of Skinnerian principles. The operant conditioning approach, however, does not explain the recurrence of gambling behaviour after a gambling session is terminated, including relapses after long-term abstinence (23). Brown postulated that the arousing properties of gambling enabled the association of the behaviour to circumstantial stimuli (24). Such stimuli would become triggers for gambling behaviour. For this reason, Brown proposed a return to the classical conditioning model—but this time, with emphasis on cue exposure rather than on aversion therapy (25).

Two therapeutic processes of exposure and desensitization have been described: imaginal and in vivo. The imaginal exposure has the patient seated or lying down and relaxed. Next, the therapist asks the patient to mentally picture the typical circumstance that leads to gambling. The therapist conducts the client through a script, whereby the patient ends up with a mental picture of facing a gambling opportunity. At this point, the therapist actively suggests a response other than gambling (that is, to leave the place and to engage in another activity). The session ends with breathing and other relaxation techniques (26). In vivo exposure follows the same process: it leads the patient to face a gambling opportunity and then prevents the response. Yet, it differs in that the client is asked to actually stand for a while in front of the gambling machine, table, or game device. To reduce the potential for relapsing, the client is gradually exposed by manipulating other elements; specifically, distance, money availability, and external aide from a cotherapist (27–29).

Data on the efficacy of both methods are scarce. Imaginal desensitization compared positively over aversion therapy in 1 study (11). In vivo exposure has been compared with cognitive restructuring, using a combination of both techniques and with a waiting list control group (9). In vivo exposure had the best outcome. Surprisingly, the combined treatment did not show a better outcome than did the waiting list. Only 1 study compared both exposure methods (12). In this study, we compared imaginal desensitization with in vivo exposure, aversion therapy, and relaxation technique. Imaginal desensitization had the best outcome, and aversion therapy had the worst outcome. Yet, brief descriptions preclude appraising whether the in vivo exposure was properly conducted. In fact, Echeburua has stressed the importance of carefully coaching the patients to observe gambling machines, as well as to watch players, but to restrain from actively following the outcomes on the screen, which could be equivalent to a mental relapse that would invalidate the exposure (9).

Further, behavioural approaches have been criticized for not taking into account individual differences and internal

processes, such as personality, cognitions, and emotions (23,25,30).

Cognitive Approaches to Gambling

The behaviourists' dismissal of internal processes left a void that was later occupied by cognitive theory. Since the late 1970s, authors have pointed out how random outcomes in chance games influenced cognition and how distorted thinking is associated with gambling persistence (31–33). To crack the mind's "black box," researchers have applied a method called "thinking aloud," which includes subjects taking part in gambling and in talking about their reactions and interpretations of the outcome (34). Initially, this method was used in the laboratory (6,34,35) and then further validated in actual gambling settings (36–40). These studies demonstrated that a series of small wins prompted illusions of skill and control over chance games, as well as a direct relation between irrationality and increased values per bet (41). Moreover, cognitive researchers have pointed out that, in addition to the variable intermittent schedule of reinforcement prompted by chance, other features have been added to games that may further reinforce false beliefs of control and skill. Games like Keno allow the player some choices, such as controlling the speed of the draw and selecting the numbers before the draw takes place. Although none of these actions can influence the outcome, the players are more confident in a positive outcome if they are the ones choosing rather than having to endorse a predetermined setting (42). The other mechanism is the so-called "near-miss effect," (43), which is more readily observed in scratch cards, slot machines, and other games that require the gambler to obtain a series of numbers or symbols, (for example, 2 cherries in a row when the minimum prize combination is 3). Usually by law, gambling operators are forced to ensure game fairness by guaranteeing the randomness of the general outcome and by assuring a minimum proportion between wins and losses. Near misses occur more frequently than expected if due to chance, and they augment the reinforcing properties of gambling at no extra expense to the game's owner (44).

Recently, Toneatto catalogued several types of cognitive distortions that are held by pathological gamblers (45). In summary, the distortions evolve around misconceptions about randomness and its main derivatives: unpredictability and independence of events (46). Prediction skills play, at best, only a partial role in gambling (that is, in horse races, sports betting, or cards), and virtually no role in games such as craps, slot machines, lotteries, and video lottery machines. Likewise, because each draw is independent, the next outcome will hold no commitment to past results or to the gambler's needs. Nevertheless, gamblers believe that their actions, their betting choices, or their personal attributes are likely to influence the

outcome. This is usually expressed in terms of "gambling systems," held by heavy gamblers (47), which combine reading spurious signs in the environment, becoming confident in their ability to persuade fate, and using betting methods with varying degrees of complexity that deny the independence of events.

Cognitive restructuring therapy is based on identifying false beliefs about gambling and replacing these with realistic understandings (6). Cognitive restructuring is most likely the most studied treatment modality for pathological gambling (48), but most reports are still based on uncontrolled case series (6,7,49–52). So far, 2 controlled studies have evaluated cognitive restructuring for pathological gambling. In 1 study, cognitive restructuring was part of a treatment package that also included problem-solving, social skill training, and relapse prevention (53). This study, however, did not discriminate between whether therapeutic success was due to cognitive restructuring or to other techniques in the package. Hence, Ladouceur and colleagues compared a cognitive restructuring that solely combined with relapse prevention, with a wait-list control group (46). In general, the studies showed that treated subjects had significantly improved on various measures, such as frequency of gambling, perception of control, perceived self-efficacy, and desire to gamble.

Eliciting and Addressing Cognitive Distortions in Gambling Treatment

As originally proposed, cognitive restructuring should be carried out on an individual basis in weekly sessions. In the first session, the therapist trains the patient to keep a journal, with the intent to monitor gambling behaviour and related thoughts and triggers. The subsequent sessions open with a review of the previous week and with an examination of the journal in a search for triggers and gambling cognitions to be challenged (46). Although proven efficient, this structure has constraints, 2 of which are limiting therapeutic interventions to 1 patient at a time and depending upon the patient's ability and willingness to provide an adequate journal. In our treatment centre, we have worked on adapting cognitive restructuring and other therapeutic tools for group therapy. To complement the journal, we developed group exercises that were meant to elicit and address common misconceptions about gambling. Each exercise takes 1 session.

For instance, the most common distortion about gambling, "gambler's fallacy," refers to gamblers who assume that machines that have produced several losing outcomes are more likely to produce a win on the next bet. Some of these beliefs include the following: "If you take your time, or ask the bartender, you will find out the machine that has taken too much money that day. That machine is due!" or "It is best to go to the casinos when they are about to close because by then the

machines are full and they have to give back some of the money they've taken." To deal with such misconceptions, we play the following exercise: 1 patient sits in a corner of the room, holding 3 stacks of plastic chips, while another holds a die in the opposing corner. The therapist assumes the role of a desperate gambler about to place a bet, while the patients represent different parts of the machine. The die keeper is the computer with its random number generator; the stack holder represents the money compartment. The therapist explains to the "machine" that it has taken a lot of money from several people including himself, and now it is time to pay back. The following is a session's excerpt:

Therapist: How are you feeling John?

John (the stack holder, laughing): I am loaded. I wouldn't mind sharing some with you.

Therapist: How about you Anne?

Anne (the die holder): I feel terrible. I certainly would like to help you.

Therapist: Yes, but you are a machine—you obey a program, and all you can do is throw the die. I will win if number 6 comes up, and I will lose if any other number comes up. But before you throw the die, let's talk to John again. John, what can you do?

John: Nothing!

Therapist: Are you sure? Explain to Anne that you are full.

John: She will throw the die anyway.

Therapist: Then yell at the die; do something!

John: It won't make a difference—wait a second, isn't there any sensor that can indicate to the program that I am full?

Therapist: There is no such thing. You are different parts of the machine, and you do not communicate. Even if you did, all she could do is throw the die, and my chances are still 1 out of 6.

John pales: Then a machine is never due.

A third patient: You are lucky if you are in front of the machine when it turns the right way, but since it is random, you can never say when it is going to happen.

The therapist may allow some die throws for further illustration. In 1 situation, a patient threw the die several times, and the number 6 came up in the first 2 throws, prompting cheers from other group members and more distorted statements such as, "I feel lucky! Does anyone want to rub me?" These statements illustrate what Toneatto has called superstitious beliefs and perception of luck as contagious (45). The strategy to deal with this particular situation was to allow the client to throw the die more times until losses had clearly outnumbered wins. A cotherapist took note of all distorted statements prompted by the prolonged exercise, and they were addressed at subsequent sessions. In the same way, immediately

following the group session, for the patient who threw the die, a brief 20-minute individual session was performed to prevent a relapse triggered by potential insufficient debriefing.

Integrating Behavioural and Cognitive Perspectives

Sharpe and Tarrrier proposed an integration of behavioural and cognitive insights as follows: 1) operant conditioning factors that relate to gambling prompt initial persistence at gambling, 2) continuous exposure to variable intermittent schedules of reinforcement foster the development of unrealistic expectations toward gambling and further investment in the activity, 3) repeatedly experiencing the arousing effects of gambling consolidates the establishment of conditioned cues that prompt reoccurrence of the behaviour, even when the gambler contemplates reduction or abstinence (23). At the core of this model, however, lies the gambler's lack of coping skills that result in vulnerability to craving and relapses. Attempts at empirically testing such integration have only begun and have yielded contradictory results. In fact, 2 studies reported a positive correlation between irrational verbalizations and heart rate, suggesting that cognitive processes could mediate arousal at gambling (37,54). Conversely, Coventry and Norman failed to find such association, indicating that, with persistence of gambling, the initial weight of cognition is transferred to automatic conditioned reactions (55).

Integrative models usually result in additional interventions that attempt to address the shortcomings of the cognitive-behavioural approach (for example, acknowledging the roles of individual differences, personality, and emotions). Blaszczynski and Silove noted that, if principles of behavioural conditioning sufficed, all subjects exposed to gambling would become pathological gamblers (8). The same can be said of misconceptions about randomness, whereby a game as simple as coin tossing can induce gambling in normal subjects (56). Brown adds to the classical conditioning model the components of optimum level of arousal theory, and the dissociation properties of gambling (24,25). According to Brown, excitement and temporary relief from negative emotional states would constitute the main reinforcements of gambling, but what remains to be explained is how these reinforcements could keep their strength in the face of obvious progressive damage. One possible explanation is that most often the positive outcomes of gambling are immediate, whereas negative consequences are delayed in time. Using a discount-delay paradigm, Petry has demonstrated that gamblers have difficulty refusing smaller gratification in the face of a bigger-but-postponed reward, indicating difficulties in appraising long-term consequences of their choices (57). This and other studies stress the association between impulsivity and problem gambling and thus could explain the vulnerability to behavioural conditioning by gambling (58).

Cognitive-Behavioural vs Traditional Addiction Approaches—What Is New?

Despite their different origins, cognitive-behavioural and traditional multimodal addiction treatments for gambling share common features; namely, relapse prevention (59) and motivation enhancement (60), as well as problem solving and social skill training (53). However, these techniques have been adapted to gambling without further empirical testing.

New behavioural and cognitive perspectives bring to gambling the treatment features that are alien to the older addiction model. For example, cue exposure, originating from the experience of anxiety disorder treatment, subverts the assumption held by a 12-step philosophy that avoiding triggers is the best strategy to keep relapses away (61). Craving models, on the other hand, hold that repeated exposure to addiction cues will increase craving rather than decrease it (62). However, McConaghy's behaviour completion model suggested that habitual behaviours develop a mental schema (30). When facing a cue, the subject is stimulated to act; if the behaviour is not completed to the extension of its mental schema, arousal follows. Possibly the result of cue exposure in gambling is a habituation response to the tension caused by resisting gambling when there is an opportunity. Using a neo-Pavlovian model, Brown suggested that future behavioural research in gambling should address the interaction between personality factors and classical conditioning, which in turn could identify the clients who are best suited for this approach (24).

Cognitive psychology has provided the gambling field with original content by considering the unique features of gambling activity. Even so, several points remain to be clarified. Both problem and nonproblem gamblers have distortions. Why do some individuals act upon these false beliefs and others not? Jacobs suggests that, to establish an addiction, the substance or the behaviour has to provide wishful compensatory fantasies to an identity previously harmed by poor parenting or environment misfit (63). Understanding the role of cognitive distortions in filling developmental voids could lead to better treatments. Likewise, it remains to be clarified whether cognitive restructuring treatment is better than other nonspecific therapeutic approaches.

In summary, when treating pathological gamblers, clinicians should introduce techniques to address cognitive distortions toward gambling. A better understanding of gambling and chance processes foster treatment compliance. With the current explosion in gambling opportunities, cue exposure—whether in vivo or imaginal—may help deal with urges prompted by gambling triggers. Notably, such techniques were developed by working groups addressing different cultures (that is, cognitive restructuring by Ladouceur's group in Canada, in vivo exposure by Echeburua in Spain, and imaginal desensitization by McConaghy in Australia). Such "regionalisms" call for an appraisal of the suitability of these

techniques to the patient's sociocultural background before they are introduced in the treatment.

The blending of these new techniques into a multimodal treatment of addiction potentially balances the rational and external orientation of the cognitive-behavioural approach with interpersonal and introspective components of the more traditional approach to addiction treatment.

Funding and Support

Dr Tavares and Dr Zilberman were supported by the National Research Council-Brazil (CNPq); Dr el-Guebaly was supported by Alberta Gaming Research Institute.

References

- Blume SB, Tavares H. Pathological Gambling. In: Galanter M, Kleber HD, editors. *The American Psychiatric Press Textbook of Substance Abuse*. 3rd ed. Washington (DC): American Psychiatric Press; 2003.
- Breiter HC, Aharon I, Kahneman D, Dale A, Shizgal P. Functional imaging of neural responses to expectancy and experience of monetary gains and losses. *Neuron* 2000;30:619–39.
- Potenza MN. The neurobiology of pathological gambling. *Semin Clin Neuropsychiatry* 2001;6:217–26.
- Dickerson M. Gambling: a dependence without a drug. *Int Rev Psychiatry* 1989;1:157–71.
- National Research Council. *Pathological gambling: a critical review*. Washington (DC): National Academy Press; 1999.
- Ladouceur R, Sylvain C, Duval C, Gaboury A, Dumont M. Correction of irrational verbalizations among video poker players. *Int J Psychol* 1989;24:43–56.
- Toneatto T, Sobell LC. Pathological gambling treated with cognitive behavior therapy: a case report. *Addict Behav* 1990;15:497–501.
- Blaszczynski A, Silove D. Cognitive and behavioral therapies for pathological gambling. *J Gambl Stud* 1995;11:195–220.
- Echeburua E, Baez C, Fernandez-Montalvo J. Comparative effectiveness of three therapeutic modalities in the psychological treatment of pathological gambling: long-term outcome. *Behavioural and Cognitive Psychotherapy* 1996;24:51–72.
- Brown RI. Classical and operant paradigms in the management of gambling addictions. *Behavioural Psychotherapy* 1987;15:111–22.
- McConaghy N, Armstrong M, Blaszczynski A, Allcock C. Controlled comparison of aversive therapy and imaginal desensitization in compulsive gambling. *Br J Psychiatry* 1983;142:366–72.
- McConaghy N, Blaszczynski A, Frankova A. Comparison of imaginal desensitization with other behavioural treatments of pathological gambling: a two- to nine-year follow-up. *Br J Psychiatry* 1991;159:390–3.
- Cross I. Aversion therapy treatment for compulsive gambling. *Nursing Mirror Midwives* 1966;123:159–60.
- Gorney AB. Treatment of a compulsive horse race gambler by aversion therapy. *Br J Psychiatry* 1968;114:329–33.
- Barker JC, Miller ME. Treatment of compulsive gambling. *J Nerv Ment Dis* 1968;146:285–302.
- Seager CP. Treatment of compulsive gamblers by electrical aversion. *Br J Psychiatry* 1970;117:545–53.
- Cotler SB. The use of different behavioral techniques in treating cases of compulsive gambling. *Behav Ther* 1971;2:579–84.
- Koller KM. Treatment of poker-machine addicts by aversion therapy. *Med J Aust* 1972;1:742–5.
- Salzmann MM. Treatment of compulsive gambling. *Br J Psychiatry* 1982;141:318–9.
- Dickerson M. The role of the betting shop environment in the training of compulsive gamblers. *BABP Bulletin* 1977;5:3–8.
- Petry NM, Roll JM. A behavioral approach to understanding and treating pathological gambling. *Semin Clin Neuropsychiatry* 2001;6:177–83.
- Tavares H, Martins SS, Lobo DSS, Silveira CM, Gentil V, Hodgins DC. Factors at play in faster progression for female pathological gamblers: an exploratory analysis. *J Clin Psychiatry*; 2003. Forthcoming.
- Sharpe L, Tarrier N. Towards a cognitive-behavioural theory of problem gambling. *Br J Psychiatry* 1993;162:407–12.
- Brown RI. Arousal and sensation-seeking components in the general explanation of gambling and gambling addictions. *Int J Addict* 1986;21:1001–16.
- Brown RI. Gambling addictions, arousal, and an affective/decision-making explanation of behavioral reversions or relapses. *Int J Addict* 1987;22:1053–67.
- McConaghy N. Assessment and management of pathological gambling. *Br J Hosp Med* 1988;40:1133–5.

27. Echeburua Odriozola E, Baez Gallo C, Fernandez-Montalvo J. Comparative effectiveness of different therapeutic modalities in psychological treatment of pathological gambling: an experimental study. *Analisis y Modificacion de Conducta* 1994;20:617-43.
28. Baez Gallo C, Echeburua Odriozola E. Stimulus control and exposure with response prevention as psychological treatment of a pathological gambler in an adolescent. *Analisis y Modificacion de Conducta* 1995;21:125-45.
29. Symes BA, Nicki RM. A preliminary consideration of cue-exposure, response-prevention treatment for pathological gambling behaviour: two case studies. *J Gambl Stud* 1997;13:145-57.
30. McConaghy N, Armstrong MS, Blaszczynski A, Allcock CC. Behavior completion versus stimulus control in compulsive gambling: implications for behavioral assessment. *Behav Modif* 1988;12:371-84.
31. Langer E. The illusion of control. *J Pers Soc Psychol* 1975; 32:311-28.
32. Gilovich T. Biased evaluation and persistence in gambling. *J Pers Soc Psychol* 1983;44:1110-26.
33. Comey WJ, Cummings WT. Gambling behavior and information processing biases. *J Gambling Behav* 1985;1:111-8.
34. Ladouceur R, Gaboury A, Dumont M, Rochette P. Gambling: relationship between the frequency of wins and irrational thinking. *J Psychol* 1988;122:409-14.
35. Gaboury A, Ladouceur R. Erroneous perceptions and gambling. *J Soc Behav Pers* 1989;4:411-20.
36. Ladouceur R, Gaboury A, Bujold A, Lachance N, Tremblay S. Ecological validity of laboratory studies of videopoker gaming. *J Gambl Stud* 1991;7:109-16.
37. Coulombe A, Ladouceur R, Desharnais R, Jobin J. Erroneous perceptions and arousal among regular and occasional video poker players. *J Gambl Stud* 1992;8:235-44.
38. Walker MB. Irrational thinking among slot machine players. *J Gambl Stud* 1992;8:245-61.
39. Griffiths MD. The role of cognitive bias and skill in fruit machine gambling. *Br J Psychol* 1994;85:351-69.
40. Fernandez-Alba Luengo A, Labrador Encinas FJ, Rubio Herranz G, Ruiz Gonzalez B, Fernandez Sastron O, Garcia Mendoza M. Analysis of thought verbalization in pathological gamblers while playing slot machines: descriptive study. *Psicothema* 2000;12:654-60.
41. Delfabbro PH, Winefield AH. Predictors of irrational thinking in regular slot machine gamblers. *J Psychol* 2000;134:117-28.
42. Griffiths MD. Fruit machine gambling: the importance of structural characteristics. *J Gambl Stud* 1993;9:101-20.
43. Reid RL. The psychology of the near miss. *J Gambling Behav* 1986;2:32-9.
44. Griffiths MD. Psychobiology of the near-miss in fruit machine gambling. *J Psychol* 1991;125:347-57.
45. Toneatto T. Cognitive psychopathology of problem gambling. *Subst Use Misuse* 1999;34:1593-604.
46. Ladouceur R, Sylvain C, Boutin C, Lachance S, Doucet C, Leblond J, and others. Cognitive treatment of pathological gambling. *J Nerv Ment Dis* 2001;189:774-80.
47. Toneatto T, Blitz-Miller T, Calderwood K, Dragonetti R, Tsanos A. Cognitive distortions in heavy gambling. *J Gambl Stud* 1997;13:253-66.
48. Oakley-Browne MA, Adams P, Mobblerley PM. Interventions for pathological gambling. *Cochrane Database Syst Rev* 2000;2:CD001521.
49. Sylvain C, Ladouceur R. Corrective cognition and gambling habits of players of video poker. *Can J Behav Sci* 1992;24:479-89.
50. Ladouceur R, Boisvert JM, Dumont J. Cognitive-behavioral treatment for adolescent pathological gamblers. *Behav Modif* 1994;18:230-42.
51. Bujold A, Ladouceur R, Sylvain C, Boisvert JM. Treatment of pathological gamblers: an experimental study. *J Behav Ther Exp Psychiatry* 1994;25:275-82.
52. Ladouceur R, Sylvain C, Letarte H, Giroux I, Jacques C. Cognitive treatment of pathological gamblers. *Behav Res Ther* 1998;36:1111-9.
53. Sylvain C, Ladouceur R, Boisvert JM. Cognitive and behavioral treatment of pathological gambling: a controlled study. *J Consult Clin Psychol* 1997;65:727-32.
54. Sharpe L, Tarrier N, Schotte D, Spence SH. The role of autonomic arousal in problem gambling. *Addiction* 1995;90:1529-40.
55. Coventry K, Norman AC. Arousal, erroneous verbalizations and the illusion of control during a computer-generated gambling task. *Br J Psychol* 1998;89:629-45.
56. Langer E, Roth J. Heads I win, tails it's chance: the illusion of control as a function of the sequence of outcomes in a purely chance task. *J Pers Soc Psychol* 1975;32:951-5.
57. Petry NM. Pathological gamblers, with and without substance use disorders, discount delayed rewards at high rates. *J Abnorm Psychol* 2001;110:482-7.
58. Vitaro F, Brendgen M, Ladouceur R, Tremblay RE. Gambling, delinquency, and drug use during adolescence: mutual influences and common risk factors. *J Gambl Stud* 2001;17:171-90.
59. Echeburua E, Fernandez-Montalvo J, Baez C. Relapse prevention in the treatment of slot-machine pathological gambling: long-term outcome. *Behav Ther* 2000;31:351-64.
60. Hodgins DC, Currie SR, el-Guebaly N. Motivational enhancement and self-help treatments for problem gambling. *J Consult Clin Psychol* 2001;69:50-7.
61. Marks I, Dar R. Fear reduction by psychotherapies. Recent findings, future directions. *Br J Psychiatry* 2000;176:507-11.
62. Robinson TE, Berridge KC. The psychology and neurobiology of addiction: an incentive-sensitization view. *Addiction* 2000;95 (Suppl 2):91-117.
63. Jacobs DF. A general theory of addictions: application to treatment and rehabilitation planning for pathological gamblers. In: Galski T, editor. *The handbook of pathological gambling*. Springfield (IL): Charles C Thomas; 1987. p 169-94.

Manuscript received and accepted December 2002.

¹ Psychiatrist, Addiction Centre, University of Calgary, Calgary, Alberta; Fellow, University of Calgary, Calgary, Alberta.

² Psychiatrist, Addiction Centre, University of Calgary, Calgary, Alberta; Fellow, University of Calgary, Calgary, Alberta.

³ Professor, Substance Abuse Division, University of Calgary, Calgary, Alberta; Head, Substance Abuse Division, University of Calgary, Calgary, Alberta.

Address for correspondence: Dr H Tavares, Addiction Centre, Foothills Medical Centre, University of Calgary, 1403-29th Street NW, Calgary, AB T2N 2J79

e-mail: hermano.tavares@calgaryhealthregion.ca

Résumé : Y a-t-il des approches cognitives et comportementales spécifiques pour le traitement du jeu pathologique?

Objectif : Les approches du traitement du jeu pathologique ont été modélées d'après des traitements de la toxicomanie préexistants. Cet article passe en revue les modèles cognitivo-comportementaux à la recherche d'idées originales qui sont propres au traitement du jeu pathologique.

Méthode : Une recherche informatique des principales bases de données de la santé (Medline et Psychinfo) a été exécutée.

Résultats : De nouvelles approches cognitivo-comportementales du traitement du jeu pathologique offrent 3 ajouts originaux au traitement multimodal classique des dépendances : une restructuration cognitive, une exposition en situation réelle et une désensibilisation imaginale. D'autres techniques cognitivo-comportementales comme la prévention des rechutes, la résolution de problèmes et l'entraînement aux habiletés sociales sont communes au traitement du jeu et à celui des dépendances.

Conclusions : Les cliniciens qui traitent des joueurs pathologiques doivent envisager d'instituer des techniques qui tiennent compte des distorsions cognitives liées au jeu. De même, l'exposition aux signaux, que ce soit en situation réelle ou en imagination, peut contribuer à traiter les pulsions déclenchées par ces signaux. L'amalgame de ces techniques en un traitement multimodal des dépendances équilibre potentiellement les orientations rationnelles et externes – une approche cognitivo-comportementale avec des éléments interpersonnels et introspectifs du traitement des dépendances.