Journal Information
Journal ID (publisher-id): jgi
ISSN: 1910-7595
Publisher: Centre for Addiction and Mental Health

Article Information

Received Day: 19 Month: August Year: 2005
Publication date: August 2006
Publisher Id: jgi.2006.17.16
DOI: 10.4309/jgi.2006.17.16

Problem gambling treatment research: An annotated bibliography

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This article was not peer-reviewed.

Manuscript history: This paper was prepared during the month of April, 2005.

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Contributors: TT planned the annotated bibliography project, BK searched for and retrieved materials, both TT and BK surveyed and analyzed the papers, and TT wrote the final ms. with assistance from BK.

Competing interests: None declared.

Funding: This project was funded by the Ontario Ministry of Health and Long-Term Care.

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system for problem gamblers." She is a co-author of *Going beyond treatment outcomes in addiction treatment: Process and predictors of behaviour change* (2005) and *Tele-counselling program for problem gamblers: How to quit or reduce your gambling* (2003, unpublished), both with CAMH.

The preparation of this annotated bibliography was guided by a desire to include all of the problem gambling research articles that have been published in the English language. Some exceptions were made for articles published in other languages but for which an English abstract was available that provided sufficient details about the study. All studies were included, regardless of their methodological quality. In some cases, studies utilizing the same treated sample but providing additional results of the study were included. The studies are listed chronologically, from 1966 to 2005.

The annotations are very brief and simply provide the reader with the full bibliographic reference, the basic treatment approach that is evaluated in the study, and, when available, information about the results. No effort was made to critically appraise or review the study.

The descriptive details for each study (*type of treatment, study design, sample size, follow-up length, year of publication*) are included in the Appendix. The Appendix permits the reader to quickly identify and select certain subsets of articles based on a theme (e.g., aversion therapy, case studies, pharmacological treatments).

Since the problem gambling research field is a growing area of inquiry, this bibliography will become quickly outdated and will require regular update to remain current.

1. Cross, I. (1966). Aversion therapy treatment for compulsive gambling. *Nursing Mirror and Midwives Journal, 123* (7), 159–160.

> This case study describes the use of chemical (apomorphine) aversion therapy in the treatment of a male track gambler. The timing of injection of the chemical is such that nausea and vomiting are induced when the client is presented with tape recordings, objects, and pictures related to gambling. No results are presented.

2. Victor, R., & Krug, C. (1967). "Paradoxical intention" in the treatment of compulsive gambling. *American Journal of Psychotherapy, 21*, 808–814.

> This case study describes the treatment of a compulsive gambler using paradoxical intention. The aim of this treatment is to have the therapist

gain control of the therapeutic relationship by taking control of the gambling behaviour (i.e., by telling the patient when, where, and how much he may gamble). The patient is reported to have lost his desire to gamble.

3. Barker, J. C., & Miller, M. (1968). Aversion therapy for compulsive gambling. *Journal of Nervous and Mental Disease, 146*, 285–302.

This article describes three case studies of compulsive gamblers treated with aversion therapy. Subject 1 reported no desire to resume gambling at 18 months posttreatment although he did relapse eventually. He received a “booster” treatment and was abstinent for an additional 6 months. Subject 2 maintained abstinence for 2 years. Subject 3 lapsed on one occasion 12 months posttreatment but was abstinent another 6 months following four “booster” sessions. The authors conclude that aversion therapy is effective.

4. Goorney, A. B. (1968). Treatment of a compulsive horse race gambler by aversion therapy. *British Journal of Psychiatry, 114*, 329–333.

This is a case study of a compulsive horse race gambler whose treatment by aversion therapy led to the remission of a long-standing marital disharmony, a major precipitating cause of the gambling.

5. Boyd, W. H., & Bolen, D. W. (1970). The compulsive gambler and spouse in group psychotherapy. *International Journal of Group Psychotherapy, 20*, 77–90.

Nine pathological gamblers and their wives were treated in psychodynamic group therapy for 1 year, supplemented with supportive individual therapy. It was noted that although therapy led to an improvement in the husband, it was accompanied by a deterioration in the wife and subsequent regression by the husband. It is suggested that this mode of therapy was effective in decreasing gambling, but not in improving the marital relationships.

6. Seager, C. P. (1970). Treatment of compulsive gamblers by electrical aversion. *British Journal of Psychiatry, 117*, 545–553.

Sixteen subjects were recruited for electrical aversion treatment for problem gambling, as inpatients or outpatients. Six did not complete treatment. The number of shocks varied and there were two types of exposure to gambling (paper or slides). Of the 10 subjects who completed treatment, the 12-month follow-up showed that 5 were abstinent, 1 denied gambling (author sceptical), 1 relapsed, 1 was

controlling his or her gambling, and 2 were in prison.

7. Cotler, S. B. (1971). The use of different behavioural techniques in treating a case of compulsive gambling. *Behavior Therapy, 2*, 579–584.

In a 32-year-old male problem gambler, positive reinforcement and contingency contracting were used to increase desirable behaviours while aversive electric shock, time-out from spousal contact, and covert sensitization were applied to eliminate gambling behaviour.

8. Koller, K. M. (1972). Treatment of poker-machine addicts by aversion therapy. *The Medical Journal of Australia, 1*, 742–745.

Twenty poker machine gamblers were treated by electrical aversion therapy and 12 were followed up. In most cases, treatment was effective and in three cases it was quite successful.

9. Bannister, G. (1977). Cognitive and behavior therapy in a case of compulsive gambling. *Cognitive Therapy and Research, 1*, 223–227.

This case study describes a 46-year-old male who was treated for compulsive gambling using a modified form of rational emotive therapy (RET) and covert sensitization (CS). Treatment consisted of nine 1-hour sessions over a 3-week period. During each session, the first 20 minutes consisted of RET and the remaining 40 minutes consisted of CS. At 30 months posttreatment, the client had remained abstinent from gambling and reported no urges to gamble.

10. Dickerson, M. G., & Weeks, D. (1979). Controlled gambling as a therapeutic technique for compulsive gamblers. *Journal of Behavior Therapy and Experimental Psychiatry, 10*, 139–141.

A 40-year-old male with a 3-year history of recurrent uncontrolled gambling was allowed restricted controlled gambling under the temporary (20 weeks) services of a bet-placing intermediary. This treatment was followed by behavioural retraining over an additional 12 weeks. Follow-up indicated that the treatment effects were maintained.

11. Moskowitz, J. A. (1980). Lithium and lady luck: Use of lithium carbonate in compulsive gambling. *New York State Journal of Medicine, 80*, 785–788.

This article describes three case reports using lithium carbonate in the treatment of compulsive gamblers. The author concludes that lithium carbonate seemed to dull the gamblers' affective effects such as the excitement of winning.

12. Greenberg, D., & Rankin, H. (1982). Compulsive gamblers in treatment. *British Journal of Psychiatry, 140*, 364–366.

Twenty-six male compulsive gamblers were treated behaviourally: 5 attained control over their gambling, 7 experienced intermittent lapses, and 14 were gambling at last contact.

13. Rankin, H. (1982). Control rather than abstinence as a goal in the treatment of excessive gambling. *Behaviour Research and Therapy, 20*, 185–187.

This case study describes a 44-year-old male's efforts to control his gambling. He was asked to adhere to the following criteria: (1) limit gambling to £5 per week, (2) do not reinvest winnings, (3) do not carry over from week to week, and (4) only gamble on Friday and Saturday. The subject was able to comply for most of the next 2 years, although he did relapse once after 8 months.

14. McConaghy, N., Armstrong, M. S., Blaszczynski, A., & Allcock, C. (1983). Controlled comparison of aversive therapy and imaginal desensitization in compulsive gambling. *British Journal of Psychiatry, 142*, 366–372.

Twenty compulsive gamblers were randomly assigned to receive either aversion relief therapy or imaginal desensitization (ID). At the 1-year follow-up, individuals in the ID group reported greater reduction of gambling urges and behaviour. The ID group also showed a significant reduction in trait anxiety and state anxiety. The authors concluded that compulsive gambling is driven by aversive tension.

15. Russo, A. M., Taber, J. I., McCormick, R. A., & Ramirez, L. F. (1984). An outcome study of an inpatient treatment program for pathological gamblers. *Hospital and Community Psychiatry, 35* (8), 823–827.

Sixty male patients who completed a 3-day structured inpatient program for pathological gamblers were included in this study. At the 1-year follow-up, 55% of subjects were abstinent. A significant relationship was found between abstinence and improved interpersonal relationships, better financial status, decreased depression, and participation in aftercare and Gamblers Anonymous.

16. Tepperman, J. H. (1985). The effectiveness of short-term group therapy upon the pathological gambler and wife. *Journal of Gambling Behavior, 1*, 119–130.

This study evaluated the efficacy of short-term conjoint group therapy

with pathological gamblers and their wives. Ten couples self-selected to the experimental condition (a 12-week, 12 Step recovery program and actively involved in GA and/or Gam-Anon) and 10 couples self-selected to the control condition (actively involved in GA and/or Gam-Anon). The experimental condition consisted of twelve 90-minute sessions. Assessments were conducted at pretest and posttest. No group differences were found.

17. Taber, J. I., McCormick, R. A., Russo, A. M., Adkins, B. J., & Ramirez, L. F. (1987). Follow-up of pathological gamblers after treatment. *American Journal of Psychiatry, 144*, 757–761.

Sixty-six subjects who met DSM-III criteria for pathological gambling participated in a “comprehensive” treatment program. Assessment took place pretreatment and 6 months posttreatment. Follow-up (n = 57) revealed that 56% reported abstinence and significant improvement on outcome measures (i.e., number of days gambling, money spent gambling per week, number of GA meetings attended per month).

18. McConaghy, N., Armstrong, M. S., Blaszczynski, A., & Allcock, C. (1988). Behavior completion versus stimulus control in compulsive gambling: Implications for behavioural assessment. *Behavior Modification, 12*, 371–384.

Twenty compulsive gamblers were randomly assigned to either imaginal relaxation (IR) treatment or imaginal desensitization (ID) treatment. Consistent with the behavioural completion model (but not a stimulus control model), subjects' responses to either treatment were comparable and correlated with levels of tension following treatment.

19. Blackman, S., Simone, R. V., Thomas, D. R., & Blackman, S. (1989). The Gamblers Treatment Clinic of St. Vincent's North Richmond community Mental Health Center: Characteristics of the clients and outcome of treatment. *International Journal of the Addictions, 24*, 29–37.

In this study of 128 gamblers treated as outpatients, posttreatment reductions in gambling were observed as well as improvements in social relationships. Little information is provided about the specific treatment modalities.

20. Ladouceur, R., Sylvain, C., Duval, C., & Gaboury, A. (1989). Correction of irrational verbalizations among video poker players. *International Journal of Psychology, 24*, 43–56.

Four male video poker players were trained to think aloud while playing. Subjects were also audiotaped during play. Over seven sessions of

cognitive restructuring, each irrational verbalization was corrected. The number and nature of verbalizations, the frequency of video poker playing, and motivation to play were determined before, immediately after, and at 3 months after treatment.

21. Dickerson, M., Hinchy, J., & England, S. L. (1990). Minimal treatments and problem gamblers: A preliminary investigation. *Journal of Gambling Studies, 6*, 87–107.

Twenty-nine problem gamblers, recruited though advertisements, received a self-help manual, with or without an initial in-depth interview. Twenty-one subjects completed the 6-month follow-up. The frequency of gambling, frequency of overspending, and weekly expenditure were reduced at the follow-up but expenditure per session did not improve. The in-depth interview did not contribute to the effectiveness of the manual.

22. Toneatto, T., & Sobell, L. C. (1990). Pathological gambling treated with cognitive behavior therapy: A case report. *Addictive Behaviors, 15*, 497–501.

This case study describes a 47-year-old male who presented for treatment to curtail his gambling behaviour. He met DSM-III-R criteria for problem gambling. Treatment consisted of 10 weekly sessions aimed at challenging cognitions about gambling (i.e., probability of events). The results indicated that the frequency of gambling was decreased at the 6-month follow-up. The patient also reported a better understanding about his ability to win. The authors conclude that cognitive-behavioural interventions may prove efficacious in the treatment of pathological gambling.

23. Blaszczynski, A., McConaghy, N., & Frankova, A. (1991). Control versus abstinence in the treatment of pathological gambling: A two to nine year follow-up. *British Journal of Addiction, 86*, 299–306.

Sixty-three of 120 gamblers who received a behavioural treatment 5 years previously completed several questionnaires related to personality functioning, depression, anxiety, and sensation seeking. Subjects showed continued improvement on these variables independent of whether the gamblers had adopted an abstinence or controlled-gambling goal except for the uncontrolled gamblers. The authors concluded that adopting controlled gambling is a legitimate treatment goal that does not invariably lead to uncontrollable gambling.

24. Lesieur, H. R., & Blume, S. B. (1991). Evaluation of patients treated for

pathological gambling in a combined alcohol, substance abuse and pathological gambling treatment unit using the Addiction Severity Index. *British Journal of Addiction, 86*, 1017–1028.

Seventy-two pathological gamblers were followed up 6 to 14 months after treatment in a combined alcohol, substance abuse, and compulsive gambling treatment program. Subjects reduced their intake of alcohol and other drugs and their gambling as well as improved in legal, family/social, and psychological functioning. Combined treatment appears to be effective for patients whose gambling problems are discovered when they enter treatment for another addiction.

25. McConaghy, N., Blaszczynski, A., & Frankova, A. (1991). Comparison of imaginal desensitization with other behavioural treatments of pathological gambling: A two to nine year follow-up. *British Journal of Psychiatry, 159*, 390–393.

One hundred and twenty pathological gamblers were randomly assigned to imaginal desensitization (ID) or to another “behavioural” treatment group. Treatment was administered over a 1-week time period. After a 2- to 9-year follow-up period, a significantly greater number of subjects in the ID treatment group reported controlled gambling or abstinence.

26. McCormick, R. A., & Taber, J. I. (1991). Follow-up of male pathological gamblers after treatment: The relationship of intellectual variables to relapse. *Journal of Gambling Studies, 7*, 99–108.

Eleven male problem gamblers were followed up for 12 months following completion of a “comprehensive” treatment program. Fifty-five percent were abstinent 1 year later. The Weschler Adult Intelligence Scale subtests Digit Span and Block Design were found to contribute to outcome.

27. Bujold, A., Ladouceur, R., Sylvain, C., & Boisvert, J.-M. (1994). Treatment of pathological gambling: An experimental study. *Journal of Behavior Therapy and Experimental Psychiatry, 25*, 275–282.

A primarily behavioural treatment (enhanced by cognitive interventions, problem solving, and relapse prevention) was administered to 3 male pathological gamblers on a weekly basis. At posttreatment, all 3 gamblers were abstinent, reported increased perception of self-control of gambling, and rated the gambling problem as less severe. Therapeutic benefits were maintained at the 9-month follow-up.

28. Haller, R., & Hinterhuber, H. (1994). Treatment of pathological gambling with carbamazepine. *Pharmacopsychiatry, 27*, 129.

A case study of a double-blind, placebo-controlled successful treatment (12 weeks for each phase) of a pathological gambler with carbamazepine is described.

29. Ladouceur, R., Boisvert, J.-M., & Dumont, J. (1994). Cognitive-behavioral treatment for adolescent pathological gamblers. *Behavior Modification, 18*, 230–242.

Four late-adolescent pathological gamblers meeting DSM-III-R criteria were treated with cognitive-behavioural treatment in a multiple-baseline design. The results showed clinically significant changes for all subjects with all remaining abstinent at the 6-month follow-ups.

30. Baez Gallo, C., & Echeburúa Odriozola, E. (1995). Stimulus control and exposure with response prevention as psychological treatment of a pathological gambler in an adolescent. *Análisis y Modificacion de Conducta, 21* (75), 125–145.

In this case study, exposure and stimulus control treatment was found to be successful in maintaining abstinence up to the 2-year follow-up with additional benefits in the level of depression and anxiety.

31. Echeburúa, E., Baez, C., & Fernandez-Montalvo, J. (1996). Comparative effectiveness of three therapeutic modalities in the psychological treatment of pathological gambling: Long-term outcome. *Behavioural and Cognitive Psychotherapy, 24*, 51–72.

Three treatments were compared—(1) individual stimulus control and exposure with response prevention, (2) group cognitive restructuring, and (3) both 1 and 2—in 64 DSM-III-R-diagnosed pathological gamblers. A 1-year follow-up was conducted. The success rate was higher in the individual treatment compared to the group cognitive restructuring and combined treatment. There was no difference between the combined treatment and the control group. Individual stimulus control and exposure with response prevention were concluded to be a cost-effective treatment for pathological gambling.

32. Henry, S. L. (1996). Pathological gambling: Etiologic considerations and treatment efficacy of eye movement desensitization/reprocessing. *Journal of Gambling Studies, 12*, 395–405.

Twenty-two gamblers who met DSM-IV criteria for pathological

gambling, with or without a trauma history, were treated with eye movement desensitization and reprocessing (EMDR) cognitive therapy or cognitive therapy alone. Gambling frequency decreased significantly for pre- versus post-EMDR and for those with a history of trauma. The authors concluded that anxiety may be an important etiological factor in pathological gambling.

33. Sylvain, C., Ladouceur, R., & Boisvert, J.-M. (1997). Cognitive and behavioural treatment of pathological gambling: A controlled study. *Journal of Consulting and Clinical Psychology, 65*, 727–732.

Twenty-nine male pathological gamblers who met problem gambling criteria according to DSM-III-R were randomly assigned to a cognitive-behavioural treatment group or a wait-list control group. Assessment was conducted at pretest, posttest, and 6-month and 12-month follow-up. The results indicated that the cognitive-behavioural treatment group showed positive significant changes on all outcome measures including the South Oaks Gambling Screen, perception of control, frequency of gambling, perceived self-efficacy, desire to gamble, and DSM-III-R criteria met. These gains were maintained at both follow-up assessments.

34. Symes, B. A., & Nicki, R. M. (1997). A preliminary consideration of cue-exposure, response-prevention treatment for pathological gambling behaviour: Two case studies. *Journal of Gambling Studies, 13*, 145–157.

This article describes 2 volunteer participants (1 male and 1 female), each of whom received cue exposure and response prevention treatment. Both were considered probable pathological gamblers based on their South Oaks Gambling Screen scores. Gambling behaviour and urges decreased substantially.

35. Hollander, E., DeCaria, C. M., Mari, E., Wong, C. M., Mosovich, S., Grossman, R., et al. (1998). Short-term single-blind fluvoxamine treatment of pathological gambling*. American Journal of Psychiatry, 155*, 1781–1783.

Sixteen patients with pathological gambling entered an 8-week placebo lead-in phase. Ten patients completed an 8-week single-blind fluvoxamine trial. Seven were judged treatment responders (i.e., less than 25% decrease on the pathological gambling modification of the Yale-Brown Obsessive Compulsive Scale). Clinical Global Impression scores for gambling severity were at least much improved.

36. Ladouceur, R., Sylvain, C., Letarte, H., Giroux, I., & Jacques, C. (1998).

Cognitive treatment of pathological gamblers. *Behaviour Research and Therapy, 36*, 1111–1119.

Five pathological gamblers were treated in a "multiple baseline across subjects" design with cognitive therapy in one or two weekly sessions lasting 60 to 90 minutes. Four subjects reported a clinically significant decrease in the urge to gamble and an increase in their perception of control and no longer met DSM-IV criteria for pathological gambling, with gains maintained at the 6-month follow-up.

37. Echeburúa, E., Fernandez-Montalvo, J., & Baez, C. (2000). Relapse prevention in the treatment of slot-machine pathological gambling: Long-term outcome. *Behavior Therapy, 31*, 351–364.

The efficacy of stimulus control and exposure with response prevention in stopping pathological gambling was evaluated (either individually or group administered). Sixty-nine DSM-IV-diagnosed pathological gamblers were recruited. The results showed that all treated subjects stopped gambling. Subjects receiving individual and group relapse prevention were more improved than the control group (who did not receive relapse prevention). The authors suggest that relapse prevention is important in the treatment of pathological gambling.

38. Hollander, E., DeCaria, C. M., Finkell, J. N., Begaz, T., Wong, C. M., & Cartwright, C. (2000). A randomized double-blind fluvoxamine placebo crossover trial in pathologic gambling. *Biological Psychiatry, 47*, 813–817.

In a 16-week randomized double-blind crossover design of fluvoxamine, each subject received 8 weeks of fluvoxamine and 8 weeks of a placebo. Fifteen patients entered and 10 subjects completed the study. Fluvoxamine-treated subjects had significantly greater improvement in overall gambling severity, gambling urges, and cognitions. Post hoc analysis, treating each phase as a separate trial, showed a significant difference between fluvoxamine and the placebo in the second phase of the trial but not in the first.

39. Breen, R. B., Kruedelbach, N. G., & Walker, H. I. (2001). Cognitive changes in pathological gamblers following a 28-day inpatient program. *Psychology of Addictive Behaviors, 15*, 246–248.

The hypothesis that irrational beliefs and attitudes about gambling could maintain pathological gambling was evaluated in a sample of 66 consecutive admissions to a Veterans Affairs 28-day inpatient program for problem gambling. Treatment was found to improve gambling-

specific attitudes and beliefs. Although uncontrolled and not followed up, this study is one of the few that evaluate the impact of treatment on gambling-related cognitions.

40. Echeburúa, E., Fernandez-Montalvo, J., & Baez, C. (2001). Predictors of therapeutic failure in slot-machine pathological gamblers following behavioural treatment. *Behavioural and Cognitive Psychotherapy, 29*, 379–383.

Sixty-nine DSM-IV-diagnosed pathological gamblers who dropped out of treatment or relapsed within a 1-year follow-up period were more anxious and more dissatisfied with treatment, abused alcohol, and scored higher on a neuroticism scale than those who did not drop out or relapse.

41. Hodgins, D. C., Currie, S. R., & el-Guebaly, N. (2001). Motivational enhancement and self-help treatments for problem gambling. *Journal of Consulting and Clinical Psychology, 69*, 50–57.

Problem gamblers were randomized to one of three treatments (motivational enhancement telephone intervention and a self-help workbook, workbook only, wait-list control). Eighty-four percent of participants ($N = 102$) reported a significant reduction in gambling over a 12-month follow-up period. Those who received the motivational enhancement telephone intervention and a self-help workbook did better than those in the wait-list control. At the 12-month follow-up, the two active treatments differed only for those with a less severe gambling problem.

42. Kim, S. W., & Grant, J. E. (2001). An open naltrexone treatment study in pathological gambling disorder. *International Clinical Psychopharmacology, 16*, 285–289.

Seventeen subjects meeting DSM-IV criteria for pathological gambling disorder participated in a 6-week open naltrexone flexible dose trial. Naltrexone reduced urges to gamble and gambling behaviour.

43. Kim, S. W., Grant, J. E., Adson, D. E., & Shin, Y. C. (2001). Double-blind naltrexone and placebo comparison study in the treatment of pathological gambling. *Biological Psychiatry, 49*, 914–921.

Eighty-three DSM-IV-diagnosed pathological gamblers were randomized to receive 11 weeks of either naltrexone or placebo in a double-blind trial. Based on 45 treatment completers, significant improvement was found on the patient and clinician-rated Clinical

Global Impressions Scale scores and on the Gambling Symptom Rating Scale. Three quarters of subjects taking naltrexone were much/very much improved compared to a quarter of those on placebo.

44. Ladouceur, R., Sylvain, C., Boutin, C., Lachance, S., Doucet, C., Leblond, J., et al. (2001). Cognitive treatment of pathological gambling. *Journal of Nervous and Mental Disease, 189*, 774–780.

Sixty-six gamblers meeting DSM-IV criteria for pathological gambling were randomly assigned to cognitive treatment or wait-list control conditions. Thirty-five subjects completed the full program and 31 dropped out. Posttest results (e.g., South Oaks Gambling Screen, DSM symptoms) indicated significant improvement by the treatment group on all outcome measures, with gains maintained at the 1-year follow-up.

45. Stinchfield, R., & Winters, K. C. (2001). Outcome of Minnesota's gambling treatment programs. *Journal of Gambling Studies, 17*, 217–245.

This article measured the efficacy of four state-supported gambling treatment programs in Minnesota. Five hundred sixty-eight subjects took part in this pretest/posttest design and follow-up at 6 months and 12 months posttreatment. Treatment was eclectic and consisted of individual, group, education, 12 Step, family, and financial counselling. The results indicated statistically significant improvements on all outcome measures between pretest and follow-up including gambling frequency, gambling severity, amount of money gambled, number of friends involved in gambling, psychosocial problems, and number of financial problems.

46. Amor, P. J., & Echeburúa, E. (2002). Psychological treatment in pathological gambling: A case study. *Análisis y Modificacion de Conducta, 28* (117), 71–107.

A case study is described of a 40-year-old man with a 2-year history of pathological gambling. Treatment consisted of nine individual sessions (six sessions of stimulus control and exposure with response prevention, one session of emotional support, and two sessions related to relapse prevention). At the 1-year follow-up, the patient was abstinent from gambling and less depressed and anxious.

47. Blanco, C., Petkova, E., Ibanez, A., & Saiz-Ruiz, J. (2002). A pilot placebo-controlled study of fluvoxamine for pathological gambling. *Annals of Clinical Psychiatry, 14*, 9–15.

Fluvoxamine (200 mg/day) was evaluated in a double-blind, placebo-

controlled study of 32 problem gamblers over a 6-month period. Fluvoxamine was not statistically significantly different from placebo in the overall sample on the key gambling outcome measures (reduction in expenditures, time spent gambling per week) except among males and younger patients. The study lacked any follow-up.

48. Echeburúa, E., & Fernandez-Montalvo, J. (2002). Psychological treatment of slot machine pathological gambling: A case study. *Clinical Case Studies, 1*, 240–253.

In this case study, a 47-year-old woman was treated with stimulus control, exposure, and relapse prevention over nine individual sessions. At the 1-year follow-up, the patient remained abstinent from gambling.

49. Freidenberg, B. M., Blanchard, E. B., Wulfert, E., & Malta, L. S. (2002). Changes in physiological arousal to gambling cues among participants in motivationally enhanced cognitive-behavior therapy for pathological gambling: A preliminary study. *Applied Psychophysiology and Biofeedback, 27*, 251–260.

Cognitive-behavioural therapy for pathological gamblers augmented with motivational enhancement was administered to 9 subjects. Measures of psychophysiological arousal following exposure to imagined gambling vignettes were collected at pre- and posttreatment. Decreases in arousal during exposure to the vignettes were observed with a significant correlation between reductions in gambling symptoms and reductions in arousal.

50. Kim, S. W., Grant, J. E., Adson, D. E., Shin, Y. C., & Zaninelli, R. (2002). A double-blind placebo-controlled study of the efficacy and safety of paroxetine in the treatment of pathological gambling. *Journal of Clinical Psychiatry, 63*, 501–507.

In a randomized, double-blind, placebo-controlled study of paroxetine in the treatment of pathological gambling, subjects entered a 1-week placebo run-in phase followed by 8 weeks' treatment with paroxetine or placebo. Significantly greater reductions in the total score of the Gambling Symptom Assessment Scale and Clinical Global Impressions Scale were found in the paroxetine group compared to the placebo group.

51. Milton, S., Crino, R., Hunt, C., & Prosser, E. (2002). The effect of compliance-improving interventions on the cognitive behavioural treatment of pathological gambling. *Journal of Gambling Studies, 18*, 207–229.

Forty pathological gamblers were recruited according to DSM-IV criteria. They were randomly assigned to either a cognitive-behavioural treatment group or a cognitive-behavioural treatment group that included interventions designed to improve compliance. Dependent variables included a structured clinical interview, South Oaks Gambling Screen scores, and percent of income gambled. At posttest, the group that received cognitive-behavioural treatment and compliance-enhancing treatment was found to have a significantly reduced dropout rate, which resulted in better outcomes. However, this gain was not maintained at the 9-month follow-up.

52. Pallanti, S., Quercioli, L., Sood, E., & Hollander, E. (2002). Lithium and valproate treatment of pathological gambling: A randomized single-blind study. *Journal of Clinical Psychiatry, 63*, 559–564.

Forty-two DSM-IV-diagnosed pathological gamblers (nonbipolar) entered a 14-week single-blind study of lithium and valproate. Subjects were randomly assigned. At posttreatment, both groups showed a significant improvement on the Yale-Brown Obsessive Compulsive Scale (modified). There were no differences between groups on this measure. Sixty-one percent of the lithium group and 68% of the valproate group were considered “responders” based on their Clinical Global Impressions-Improvement score.

53. Pallanti, S., Rossi, N. B., Sood, E., & Hollander, E. (2002). Nefazodone treatment of pathological gambling: A prospective open-label controlled trial. *Journal of Clinical Psychiatry, 63*, 1034–1039.

Fourteen subjects who met DSM-IV criteria for pathological gambling took part in an 8-week open-label trial of oral nefazodone. In the 12 subjects who completed the study, a significant improvement was found in all outcome measures including anxiety and depression. The authors conclude that nefazodone may be an effective treatment for pathological gamblers.

54. Robson, E., Edwards, J., Smith, G., & Colman, I. (2002). Gambling decisions: An early intervention program for problem gamblers. *Journal of Gambling Studies, 18*, 235–255.

This article describes an evaluation of the “Gambling Decisions” treatment program, a cognitive-behavioural approach intended for early-stage problem gamblers. Seventy-nine subjects were recruited and were given the choice of the program in either (a) Self Help Plus format (two 1-hour sessions with a nurse facilitator) or (b) Group (six

weekly 90-minute sessions led by a nurse practitioner). Both groups were provided with a copy of the Client Handbook. The results indicated that there was a significant reduction in the number of hours and days spent gambling. There was also a significant reduction in money lost gambling, with gains maintained at the 12-month follow-up.

55. Zimmerman, M., Breen, R. B., & Posternak, M. A. (2002). An open-label study of citalopram in the treatment of pathological gambling. *Journal of Clinical Psychiatry, 63*, 44–48.

This study evaluated the efficacy of 12 weeks of citalopram in 15 DSM-IV-diagnosed pathological gamblers in an open-label study. Significant improvement was found on outcome measures including number of days gambled, amount of money lost, preoccupation with gambling and gambling urges, depression, and overall quality of life. Eighty-seven percent were rated as at least “much improved” on the Clinical Global Impressions Scale for gambling. The authors concluded that citalopram may be efficacious in the treatment of problem gambling.

56. Grant, J. E., Kim, S. W., Potenza, M. N., Blanco, C., Ibanez, A., Stevens, L., et al. (2003). Paroxetine treatment of pathological gambling: A multi-centre randomized controlled trial. *International Clinical Psychopharmacology, 18*, 243–249.

A 16-week, double-blind, placebo-controlled trial of paroxetine in the treatment of 76 pathological gamblers was conducted at five outpatient academic research centres in the U.S. and Spain. Subjects were randomized to acute treatment with paroxetine or placebo. Both the paroxetine- and the placebo-treated groups demonstrated comparable improvement at 16 weeks with no statistical differences on the Clinical Global Impressions Scale scores, the Yale-Brown Obsessive Compulsive Scale Modified for Pathological Gambling, or the Gambling Symptom Assessment Scale.

57. Kuentzel, J. G., Henderson, M. J., Zambo, J. J., Stine, S. M., & Schuster, C. R. (2003). Motivational interviewing and fluoxetine for pathological gambling disorder: A single case study. *North American Journal of Psychology, 5*, 229–248.

An adult male gambler completed a 10-week trial of fluoxetine and four sessions of motivational interviewing. Weekly expenditures were reduced posttreatment and sustained at the 3-month follow-up. Negative mood decreased significantly throughout the study and at follow-up.

58. Ladouceur, R., Sylvain, C., Boutin, C., Lachance, S., Doucet, C., & Leblond, J. (2003). Group therapy for pathological gamblers: A cognitive approach. *Behaviour Research and Therapy, 41*, 587–596.

In a study of group cognitive treatment for pathological gambling, subjects were randomly assigned to treatment ($N = 34$) or wait-list control ($N = 24$). Posttreatment results showed that 88% of the treated gamblers and 20% in the control group no longer met the DSM-IV criteria, with gains maintained at the 2-year follow-up.

59. Grant, J., & Grosz, R. (2004). Pharmacotherapy outcome in older pathological gamblers: A preliminary investigation. *Journal of Geriatric Psychiatry and Neurology, 17*, 9–12.

Fourteen older (aged 60 or older) patients who fulfilled DSM-IV criteria for pathological gambling were treated in an outpatient clinic. In a retrospective assessment using information collected on gambling symptoms during clinic visits, 8 patients achieved sustained response to pharmacotherapy.

60. Hodgins, D. C., Currie, S., el-Guebaly, N., & Peden, N. (2004). Brief motivational treatment for problem gambling: A 24-month follow-up. *Psychology of Addictive Behaviors, 18*, 293–296.

A 2-year follow-up of a randomized clinical trial of two brief treatments for problem gambling ($N = 67$) showed better outcomes for those who received a motivational telephone intervention plus a self-help workbook compared to those who received only the workbook. The motivational intervention group gambled less frequently and showed decreased financial losses and lower South Oaks Gambling Screen scores. This study supported the efficacy of a mail-based treatment accompanied by a brief telephone intervention for problem gamblers.

61. Melville, C. L., Davis, C. S., Matzenbacher, D. L., & Clayborne, J. (2004). Node-link-mapping-enhanced group treatment for pathological gambling. *Addictive Behaviors, 29*, 73–87.

In experiment 1, 13 pathological gamblers were randomly assigned to one of three groups: a mapping group, a nonmapping group, and a wait-list control group. Treatment sessions consisted of 90-minute sessions, twice weekly for 8 weeks. Assessments were conducted at pretreatment, posttreatment, and 6-month posttreatment. The dependent variables included DSM-IV criteria, control of gambling, gambling expenditure, and duration. In experiment 2, 9 pathological

gamblers were randomly assigned to either a mapping treatment group or a wait-list control group. The dependent variables in this experiment included changes in comorbid depression and anxiety. The results from both experiments showed that the node-linked mapping group reported a greater decrease in depression and anxiety and desire to gamble, met fewer DSM-IV criteria at posttest and follow-up, and had increased ratings of control.

62. Hollander, E., Pallanti, S., Allen, A., Sood, E., & Rossi, N. B. (2005). Does sustained-release lithium reduce impulsive gambling and affective instability versus placebo in pathological gamblers with bipolar spectrum disorders? *American Journal of Psychiatry, 162*, 137–145.

In a 10-week randomized, double-blind, placebo-controlled treatment study, 40 pathological gamblers with bipolar spectrum disorders were treated with sustained-release lithium carbonate. Subjects with bipolar spectrum disorders significantly improved while taking sustained-release lithium carbonate compared to placebo on scores on the Yale-Brown Obsessive Compulsive Scale and the Clinical Global Impressions severity of pathological gambling scale. Ten of 12 treatment completers in the medication group were rated as compared to 5 of 17 completers in the placebo group.

63. Saiz-Ruiz, J., Blanco, I. A., Masramon, X., Gomez, M. M., Madrigal, M., & Diez, T. (2005). Sertraline treatment of pathological gambling: A pilot study. *Journal of Clinical Psychiatry, 66*, 28–33.

This study evaluated the efficacy of sertraline in the treatment of pathological gamblers. Sixty patients who met DSM-IV criteria for problem gambling were included in this 6-month double-blind, flexible dose, placebo-controlled study. Three quarters of both the sertraline group and the placebo group were considered responders based on the Criteria for Control of Pathological Gambling Questionnaire. The authors concluded that sertraline was not significantly more efficacious than placebo.

Appendix

Key descriptive details for each study

Tables

Article	Type of treatment	Study design	Sample size	Follow-up	Year
1	chemical aversion therapy	case study	$n = 1$	none	1966
2	"paradoxical intention"	case study	$n = 1$	none	1967
3	Faradic aversion therapy	case study	$n = 3$	18–26 months	1968
4	Faradic aversion therapy	case study	$n = 1$	12 months	1968
5	outpatient group therapy	program evaluation	$n = 9$ (& spouses)	none	1970
6	Faradic aversion therapy	single group	$n = 16$	12 months	1970
7	behavioural therapy, Faradic aversion therapy	case study	$n = 1$	3 months	1971
8	Faradic aversion therapy	case study	$n = 20$	6–24 months	1972
9	rational emotive therapy & covert sensitization	case study	$n = 1$	30 months	1977
10	behavioural therapy	case study	$n = 1$	15 months postreferral	1979
11	lithium carbonate	case study	$n = 3$	none	1980
12	behavioural therapy	single group	$n = 26$	9 months–4.5 years	1982
13	behavioural therapy	case study	$n = 1$	24 months	1982
14	Faradic aversion therapy, imaginal desensitization	randomized clinical trial	$n = 20$	12 months	1983
15	residential treatment	program evaluation	$n = 60$	12 months	1984
16	group psychotherapy	quasi-experimental	$n = 20$ couples	none	1985
17	residential treatment	program evaluation	$n = 66$	6 months	1987
18	imaginal relaxation, imaginal desensitization	randomized clinical trial	$n = 20$	12 months	1988
19	outpatient group therapy	program evaluation	$n = 128$	none	1989
20	cognitive therapy	single case	$n = 4$	3 months	1989
21	self-help manual & in-depth interview	single group	$n = 29$	6 months	1990
22	cognitive-behavioural therapy	case study	$n = 1$	6 months	1990
23	cognitive-behavioural therapy	controlled clinical trial	$n = 64$	12 months	1991
24	residential treatment	program evaluation	$n = 72$	6–14 months	1991
25	imaginal desensitization, behavioural therapy	post hoc analysis	$n = 63$	2–9 years	1991
26	residential treatment	program evaluation	$n = 66$	12 months	1991
27	cognitive-behavioural therapy	case study	$n = 3$	9 months	1994
28	carbamazepine	case study	$n = 1$	30 months	1994
29	cognitive-behavioural therapy	multiple-baseline	$n = 4$	6 months	1994
30	stimulus control & exposure treatment	case study	$n = 1$	24 months	1995
31	behavioural therapy	post hoc analysis: relapsed vs. nonrelapsed	$n = 63$	9 years	1996
32	eye movement desensitization and reprocessing & cognitive therapy	single group	$n = 22$	none	1996
33	cognitive-	randomized	$n = 29$	12 months	1997

	behavioural therapy	clinical trial			
34	cue-exposure, response prevention	case study	$n = 2$	none	1997
35	fluvoxamine	single-blind, placebo-controlled	$n = 16$	none	1998
36	cognitive therapy	multiple-baseline	$n = 5$	6 months	1998
37	stimulus control & exposure with response prevention	controlled clinical trial	$n = 69$	12 months	2000
38	fluvoxamine	randomized, double-blind, placebo-controlled, cross-over	$n = 15$	none	2000
39	inpatient cognitive therapy	program evaluation	$n = 66$	none	2001
40	stimulus control & exposure with response prevention	post hoc analysis of completers	$n = 69$	12 months	2001
41	self-help manual, motivational telephone intervention	randomized clinical trial	$n = 102$	12 months	2001
42	naltrexone	open-label	$n = 17$	none	2001
43	naltrexone	randomized, double-blind, placebo-controlled	$n = 83$	none	2001
44	cognitive therapy	randomized clinical trial	$n = 66$	12 months	2001
45	outpatient treatment	program evaluation	$n = 568$	12 months	2001
46	stimulus control, exposure, & response prevention	case study	$n = 1$	12 months	2002
47	fluvoxamine	randomized, double-blind, placebo-controlled	$n = 32$	none	2002
48	stimulus control, exposure, & relapse prevention	case study	$n = 1$	12 months	2002
49	cognitive-behavioural therapy, motivational enhancement	single group	$n = 9$	none	2002
50	paroxetine	randomized, double-blind, placebo-controlled	$n = 45$	none	2002
51	cognitive-behavioural therapy	randomized clinical trial	$n = 40$	9 months	2002
52	lithium carbonate, valproate	randomized, single-blind	$n = 42$	none	2002
53	nefazodone	open-label	$n = 14$	none	2002
54	cognitive-behavioural therapy, self-help manual	randomized clinical trial	$n = 79$	12 months	2002
55	citalopram	open-label	$n = 15$	none	2002
56	paroxetine	randomized, double-blind, placebo-controlled	$n = 76$	none	2003
57	fluoxetine & motivational interviewing	case study	$n = 1$	3 months	2003
58	cognitive therapy	randomized clinical trial	$n = 58$	24 months	2003
59	SSRIs, naltrexone	chart review	$n = 14$	not applicable	2004
60	self-help manual, motivational telephone	randomized clinical trial	$n = 67$	24 months	2004

	telephone intervention				
61	node-link mapping	randomized clinical trial	$n = 13$, $n = 19$	6 months	2004
62	lithium carbonate	randomized, double-blind, placebo-controlled	$n = 40$	none	2005
63	sertraline	randomized, double-blind, placebo-controlled	$n = 60$	none	2005