A framework for reporting outcomes in problem gambling treatment research: the Banff, Alberta Consensus

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ABSTRACT

Objective   The objective is provide a framework concerning the minimum features of reporting efficacy of treatment in the problem gambling field. Research to date has not used uniform outcome measures and it is, therefore, difficult to compare the relative efficacy of various approaches. Some studies emphasize self-reported behavioural measures such as frequency and intensity of gambling whereas others emphasise change with respect to the criteria used to diagnose problem gambling or use composite measures of symptom severity in multiple domains involving gambling-related thoughts, urges, and behaviours. **Methods**   An expert panel consensus. **Results**   The proposed minimum features of reporting the efficacy of treatment outcome studies are: *measures of gambling behaviour* - the net expenditure each month, the frequency (in days per month) with which gambling takes place, and the time spent thinking about or engaged in the pursuit of gambling each month; *measures of the problems caused by gambling* - especially problems in the areas of personal health, relationships, financial, and legal; these measures can be complemented by additional measures of quality of life. *measures of the processes of change* - whatever mechanisms of change are assumed to occur. **Conclusions**   We believe that these guidelines are broad enough to allow clinical research conducted from diverse perspectives to allow valid cross study evaluations of intervention studies. Such conditions will facilitate the development of empirically validated best practice guidelines for use by clinicians in the management of problem gambling.

Keywords   Gambling, outcome, treatment.

INTRODUCTION

A major task currently confronting problem gambling research is the development of effective interventions. Recent reviews of treatment effectiveness for problem gambling have noted that the research is characterized by a wide range of outcome domains and measures (Toneatto & Ladouceur 2003). Some studies emphasize self-reported behavioural measures such as frequency and intensity of gambling (e.g. Hodgins *et al.* 2004), whereas others emphasize change with respect to the criteria used to diagnose problem gambling (e.g. Lesieur & Blume 1987; Sylvain *et al.* 1997) or other measures of multiple symptoms of pathological gambling that include indicators of behaviour, urges and consequences (e.g.

Hollander *et al.* 1998; Kim *et al.* 2002; Grant *et al.* 2003a,b).

While it is appropriate that the focus of research should vary from one study to another, the substantial degree of variation in the outcome measures reported in this area obscures the extent to which results across studies are similar or different. The Banff consensus is an agreement concerning the minimum features of reporting comparative efficacy and effectiveness of treatment outcome studies. The goal is to systematize the reporting of outcome measures in therapeutic interventions designed to reduce problem or pathological gambling, and thereby increase the ability of research in this area to reach conclusions concerning optimal treatment methods. The Banff Consensus was the result of an expert com-

mittee invited by the Alberta Gaming Research Institute to discuss the status and future directions of outcome research.

A FRAMEWORK FOR DETERMINING APPROPRIATE OUTCOME VARIABLES IN TREATMENT EFFECTIVENESS STUDIES

Gambling refers to a transaction between two parties in which an item of value (usually money) is transferred according to the outcome of a chance event. Negative financial, personal, social and familial effects of gambling follow as a consequence of excessive expenditures of money or time with the severity of such attendant harm varying along a continuum from transient inconsequential to recurrent, chronic and severe harm affecting the individual or significant others.

The distinction between gambling behaviour and the problems that follow from excessive gambling behaviour is central to determining the minimum outcome measures necessary in a controlled trial of gambling interventions. Pathological gambling represents a syndrome that is expressed phenotypically as a mixture of repetitive behaviours and negative consequences assumed to reflect an underlying impairment in control. Successful interventions eliminate excessive gambling behaviour and thus provide a basis on which the problems caused by the gambling can be resolved. Clearly, the effectiveness of an intervention is measured directly by the extent to which problematic gambling behaviour decreases and indirectly by consequent increases in the quality of life as the problems caused by the gambling are resolved.

Given the complex interaction between gambling and gambling-related harm, it does not necessarily follow that reduction in gambling behaviour will invariably reduce negative consequences immediately or in the short term. For example, once triggered, marital discord may persist as a consequence of loss of trust and anger long after the gambling behaviour has ceased.

An effective intervention causes a reduction in excessive gambling with consequent amelioration of associated gambling-related problems. However, it is possible for an intervention to be associated with positive outcomes without the causal relation assumed. In general, the claim that an intervention is effective in causing a decrease in problematic gambling behaviour depends on evidence that there has been a change in the theoretically relevant variables. If erroneous cognitions cause excessive gambling behaviour, the claim that cognitive therapy is an effective intervention implies not only that the problematic gambling behaviour decreases but that it does so as a result of a change to more accurate or realistic beliefs.

Accordingly, there are three important elements in determining the effectiveness of treatment interventions. Researchers should demonstrate that:

- there is a reduction in the frequency and/or intensity of gambling behaviour;
- problems caused by gambling ultimately decrease as a result of the successful reduction in gambling behaviour; and
- the reduction in gambling behaviour is the direct result of the therapy's hypothesized mode of action.

Therefore, the Banff consensus holds the principle that future studies of treatment effectiveness in problem gambling should include outcome measures that reflect a minimum set of behavioural changes in levels of gambling activity, severity of problems and, for theoretical reasons, a demonstration that the process of change was achieved by the intervention's hypothesized mechanism of action.

MEASURING CHANGES IN GAMBLING BEHAVIOUR

Different forms of gambling involve varied intermittent frequencies of play, time or expenditure (purchasing lottery or raffle tickets), large gains and losses over short periods (wagering and table games) or continuous play, involving relatively small initial losses per session progressing to increased frequencies of play and larger levels of expenditures and accumulated losses (electronic gambling machines). All forms have the potential to create harm of varying intensity, including lotteries (Shepherd *et al.* 1998).

Variation in the forms, frequency and intensity of gambling suggest that any single measure of involvement is unlikely to capture all of the aspects of gambling relevant to gambling-related problems. Nevertheless, indices of money lost and time spent gambling capture the more potent causes of subsequent problems. The majority of negative consequences associated with excessive gambling originate from individuals exceeding (a) available discretionary disposable income or (b) discretionary leisure time thresholds. Although these two indicators appear minimally necessary, there is also value in including a greater number of indices if special features pertaining to particular forms of gambling are captured.

Measuring financial loss resulting from gambling

Estimating financial losses caused by gambling is complicated for a number of reasons. In contrast to the concept of a 'standard drink' in alcohol, there is no comparable 'standard unit' for gambling. When assessing alcohol consumption, all forms of alcohol are included. However, questions arise as to whether all forms of

gambling or only those causing problems should be included. A 'standard drink' has a well-defined meaning whereas the phrase 'money lost gambling' is inherently ambiguous. 'Money lost gambling' may refer to either all money lost including money won during the session and subsequently lost (turnover) or cash in minus cash out (net expenditure). Gamblers may not be able to recall losses accurately. Nevertheless, even if the money lost is accurately recalled, the critical aspect may not be the absolute quantity of money lost but the proportion of total income or personal expendable income that is lost.

Financial loss should refer to the net losses

Asking how much money has been spent gambling results in ambiguous responses subject to the respondent calculating amounts in terms of cash in, turnover or net expenditure (Blaszczynski *et al.* 1997). It is net loss that is relevant; that is, the actual amount of money the gambler brings to a session (which includes cash or cash equivalents such as cheques or money orders plus subsequent withdrawals or borrowings) less the actual amount remaining at the conclusion of the session. For example, an individual who brings $400 to the casino, withdraws $200 and borrows $300 from a friend would have a net loss of $900 if he leaves with $0, but would have broken even had he won $900.

Money lost should not be normed against total income or expendable income

The same loss of money may cause no difficulties for one individual with a high income but major problems for another individual with much less income. In general, financial loss relative to income is likely to be related more closely to gambling-related problems than the absolute amount of money lost. However, in evaluating treatment efficacy, the same individual is assessed before and after treatment. Under such circumstances, the normalizing function of income is relatively less important. However, having to report two error-prone measures (net loss and income) reduces overall accuracy. Reporting percentage of income gambled may be inappropriate, in that it requires the client to provide additional estimates of net or expendable income for either the individual or the household, estimates that may introduce another source of measurement unreliability. For this reason, gambling treatment outcome studies should report net loss in preference to proportion of income lost. Comparisons across studies will be complicated by use of different currencies in different countries as well as changes in value due to inflation but comparisons can be made by calculating the proportional change in net losses resulting from treatment.

Accumulated financial loss per week should be an average from a longer period

Actual losses in any short period of time (for example, one week) may be atypical if a large win or a gambling binge occurred during that period. Furthermore, access to funds for gambling can also vary over time depending on employment pay schedules and attempts to limit access to money. Losses averaged over longer periods can be expected to involve a smaller error variance than data obtained over shorter periods. One procedure eliciting reliable information on gambling losses is the use of diary recording. Alternatively, the time-line follow-back interview method has been validated for this purpose (Hodgins & Makarchuk 2003; Weinstock, Whelan & Meyers 2004), although other structured questions may prove to be equally valid and reliable but more time efficient.

Focus should be on problematic forms of gambling

A final complication in measuring financial losses is that an individual may engage in multiple forms of gambling, not all of which are causing problems. However, it is the money lost on the problematic form of gambling that is relevant to treatment effectiveness (although expenditures on non-problem forms of gambling may have an impact on overall functioning). If only electronic machine gambling is problematic, then success is measured by reductions in expenditure on that, rather than all forms, of gambling. If multiple forms are causing problems, then expenditure on all problematic forms should be included.

Measuring time spent gambling or preoccupied with gambling

Relatively little research has explored the relationships between different indices of gambling involvement measured by time or frequency. Involvement can be measured by reference to frequency of sessions (e.g. number of sessions per month), days or hours per month spent gambling or at gambling venues, and hours per month spent thinking about gambling (including actual time spent gambling). A high degree of correlation can be expected among these measures. Among electronic machine gamblers, the frequency of gambling in days per week is related strongly to the hours spent gambling on machines and the hours spent at the venue (Walker 2004). The days on which gambling takes place each week is likely to be reported with an acceptable degree of reliability, whereas time spent gambling may be more difficult for clients to recall (Hodgins & Makarchuk 2003). For this reason, frequency of gambling in days per month is recommended as the preferred index of gambling involvement. Investigators may also report the proportion of subjects who are abstinent or who meet a specific

controlled gambling goal based upon these data. The denominator used to calculate these proportions (e.g. treatment completers, all randomized subjects, etc.) needs to be indicated clearly to allow comparability across studies.

Unfortunately, little is known currently about the relationship of time spent thinking about gambling to the frequency of gambling per week. It would appear likely that the relationship between these variables would depend heavily on the form of gambling. For example, betting on horses may involve a greater proportion of time in preparation than betting on bingo. However, pre-occupation with gambling is likely to be measured more accurately by time spent thinking about gambling than it is by frequency of gambling. For this reason it is recommended that an estimate of hours spent thinking about gambling, including hours spent gambling, be provided in addition to frequency of gambling. Preoccupation may involve more than thinking ahead to the next gambling session or reviewing previous sessions. The individual may spend time in gambling-related knowledge acquisition (such as reading the racing forms or sports pages in order to guide wagers) and gambling-related plans and activities, both solitary (such as practising card-counting for blackjack) and social (e.g. discussing sports or horses with other gamblers). Time spent thinking about gambling might also include time spent thinking about the consequences of gambling, such as worrying about possible detection of debts, financial problems caused by gambling and how to conceal gambling related behaviours from significant others. Thus, preoccupation may reflect time spent looking forward to and planning to gamble, or a reaction to consequences of gambling (two functionally different components). Nevertheless, with this caveat in mind, use of preoccupation may, in combination with other variables, provide an index of involvement with significant clinical relevance.

MEASURING CHANGES IN GAMBLING-RELATED PROBLEMS

Problems caused by excessive gambling can be categorized in a number of domains. Dickerson (1989, p. 161) suggested that the harmful effects of excessive gambling be considered under five headings:
• mental health;
• relationships, marital and family;
• financial;
• employment and productivity; and
• related legal problems/offences.

Although there is a wide range of available psychometric instruments designed to assess these domains, many have not been evaluated or validated in the context of problem gambling. It is not the intent of this paper to be prescriptive in its recommendation for the use of specific instruments (see review by Stinchfield, Govoni & Frisch 2004). Nevertheless, the development of a broad-ranging measure of the problems caused by excessive gambling is identified in this paper as an area in need of urgent attention. Until such measures are developed, it is recommended that clinicians select an appropriate standardized measure from those currently available in reporting outcomes.

MEASURING PROCESS OF CHANGE

Process variables or mediators, both specific and non-specific, are those factors that are responsible for therapeutic change. Specific process variables are related to the theoretical basis of the therapy evaluated, whereas non-specific process variables that may also contribute to therapeutic effectiveness include aspects of the therapeutic environment and therapist-related variables. The question of whether specific process variables make a significant contribution to outcome efficacy is a topic of debate at this time across the broad range of psychological disorders (Deegear & Lawson 2003). Against specific processes of change is the claim by Frank & Frank (1991) that the necessary conditions for psychotherapeutic change involve various aspects of the quality of the relationship between the client and therapist, and not the specific characteristics of the therapy. Thus, studies of the efficacy of therapies for problem gambling should demonstrate that specific features of the therapy are present when change occurs and absent when it does not.

Consider, for example, cognitive therapy as an intervention for problem gambling. Because the non-specific factors that are common both to the cognitive therapy treatment and another type of treatment should account for the same degree of change in both groups, the hypothesized increased improvement for cognitive therapy can be assumed to be associated with the specific process factors in cognitive therapy that are not present in the other therapy. In cognitive therapy it is assumed that gambling occurs because of a set of erroneous beliefs about the nature of gambling and the prospects of winning (Ladouceur & Walker 1996), and it is assumed that therapeutic change occurs because the client has moved from an erroneous set of beliefs to an accurate or realistic set of beliefs. Thus, the researcher who undertakes a controlled trial of cognitive therapy should demonstrate that the post-treatment beliefs are more accurate than the pre-treatment belief set; the extent of change is greater in the cognitive therapy group than in the control group; and that there is a functional relationship between changes in erroneous cognitions and improvement in gambling behaviour.

A hypothesis prompting pharmacological trials in the treatment of gambling problems involves the role of mu-opioid receptor antagonists (e.g. naltrexone) in targeting urges in addictive disorders such as alcohol dependence (O'Malley *et al.* 1992; Volpicelli *et al.* 1992). Initial pharmacotherapy trials of naltrexone with pathological gamblers evaluated self-reported gambling urges and found that individuals who reported strong gambling urges at study onset were significantly more likely to demonstrate gambling symptom improvement in response to naltrexone than were individuals with less intense urges (Kim *et al.* 2001). In addition, it is crucial to demonstrate that a functional relationship exists between urge reduction during treatment and gambling reductions.

To a large extent, the researcher must determine how best to measure the variables associated with the specific processes involved. Unfortunately, few such psychometrically validated measures are available even in fields that have had a much longer research history than gambling. Moreover, practical factors can also limit researchers' ability to measure process variables. Investigators examining the efficacy and tolerability of psychopharmacological treatments have hypothesized that specific treatments target specific aspects of pathological gambling. For example, drugs that target serotonin systems [e.g. serotonin reuptake inhibitors (SRIs) such as paroxetine and fluvoxamine] have been used for treating gambling problems in part because of data suggesting serotonergic differences between individuals with and without pathological gambling (DeCaria, Begaz & Hollander 1998; Potenza & Hollander 2002). Although it would be of scientific interest to measure changes in serotonin systems in trials employing drugs that modulate serotonin systems, the technical challenges and prohibitive costs (e.g. for neuroimaging scans or spinal taps) have limited their routine use.

Support for the hypothesized changes in key processes is a necessary condition for a complete understanding of the efficacy of a treatment approach. It is however, not a sufficient condition. Confounding variables, such as allegiance bias (the influence caused by researchers with an allegiance to one therapeutic conducting outcome studies), may account for some of the observed outcomes in psychotherapeutic treatments. Eliminating confounding variables is, however, an aspect of experimental design rather than a requirement for specific outcome measures.

OTHER RELEVANT ISSUES

The Banff meeting identified a range of issues that are relevant to the conduct and reporting of trials of gambling treatment. It is not the intention of the consensus group to prescribe which research designs should be employed in outcome studies (Najavits 2003; Caetano 2004).

Rather, this paper seeks to specify the outcome measures which should be presented routinely in research reports concerning the efficacy of specific therapies for problem gambling. Nevertheless, some issues of design interact with those of measurement and require comment.

Describing the participants

The capacity to evaluate treatment outcome studies and generalize results depends on the sample characteristics studied. In the absence of well-formulated diagnostic criteria in the gambling area, inconsistencies exist in defining cases. Liberal criterion thresholds result in the inclusion of a wider population base compared to more stringent thresholds. Currently, the diagnosis of pathological gambling is based typically on either the South Oaks Gambling Screen (SOGS) (Lesieur & Blume 1987) or *Diagnostic and Statistical Manual* (DSM) criteria assessed using a variety of self-report scales and interviews (Stinchfield 2003; Grant *et al.* 2004). Because SOGS and the DSM criteria do not define identical populations of pathological gamblers (Abbott & Volberg 1991; Orford, Sproston & Erens 2003), the current state of diagnosis of problem gambling is not ideal. Nevertheless, the currency of the DSM criteria is an advantage. The consensus of opinion at the Banff meeting was that DSM criteria should be used to define treatment populations until criteria for problem gambling are developed further.

The practice of reporting diagnostic test scores as a primary outcome measure in treatment trials should be considered carefully and cautiously. The number of DSM criteria met before and after treatment is sometimes used as a measure of change. However, it is possible for an individual to continue gambling at significant levels but not meet any of the criteria for pathological gambling. The long-term prospects for such gamblers are unknown. In addition, some gamblers may have indeed resolved their gambling problems and not meet any of the diagnostic criteria, but continue to face the serious sequelae of their past gambling (e.g. relationship breakdown, financial ruin, prison sentences). It is evident from an examination of the major severity indicators such as the DSM criteria and the SOGS that the consequences of problem gambling are confounded with the impaired control that may define problem gambling.

Treatment attrition

The rate of treatment attrition should be reported (Caetano 2004). Thus, outcome studies should report the numbers of individuals who remain in treatment at each stage of the programme. An effective therapy is not simply one in which all of the clients improve who complete treatment. It is also a therapy which retains individuals in therapy during the process of change. Thus the following client numbers should be specified:

- the total pool of gamblers seeking treatment;
- the number of clients defined by intention-to-treat;
- the number of clients entering treatment (at least one treatment session);
- the number of clients completing treatment; and
- the number of clients in each category who receive follow-up evaluation.

The degree to which individuals tolerate a treatment is particularly relevant to pharmacological treatments. Structured scales designed to assess the emergence of adverse effects, such as the Dosage Record and Emergent Symptom Scale (DOTES; Guy 1976; Grant *et al.* 2003a), have been used in trials involving subjects with pathological gambling. Both intention-to-treat and completer analyses should be used in statistical evaluations of outcome in order to assess the efficacy versus the effectiveness of the intervention.

Validation of self-report with collateral report

Self-reports from gamblers in treatment studies agree reasonably well with reports from collaterals (Echeburua *et al.* 1996; Hodgins & Makarchuk 2003). An unresolved issue is whether accuracy is enhanced when the participants know that their reports will be confirmed. At this point, it is recommended that collateral verification be used routinely for at least some of the assessment points. This may be difficult if the gambler has not been truthful or if the primary collateral has not had access to sufficient information to validate corroboration. In such cases, it may be useful to ask collaterals to rate their confidence in the information they are providing as well as the extent of their contact with the gambler.

Timing of assessments

Research to date is highly variable in terms of the timing and frequency of follow-up assessments. Follow-up assessments have different functions at different times in the evaluation of treatment efficacy and effectiveness. The role of assessment immediately following treatment is concerned primarily with short-term symptom improvement, including gambling-related thoughts and behaviours and with the extent to which primary processes of change have been instigated. Follow-up rates are also likely to be highest at this point after treatment. None the less, many of the problems caused by excessive gambling are unlikely to show a rapid response even if the individual is fully abstinent following completion of the treatment programme. Debt repayment, for example, may take months or years before any significant changes occur in the debt or financial aspects of life functioning. Moreover, relapse to gambling after an attempt to change is a normative experience that should be assessed (Hodgins & el-Guebaly 2004). Because relapses are to be expected, their duration and severity should be assessed.

An assessment after a moderate time has the important function of determining whether changes in gambling behaviour have been maintained and relapses minimized in frequency and severity. If gambling has stopped or decreased markedly, changes in indices of gambling-related problems would be expected together with an increase in the quality of life.

The long-term follow-up has the important role of indicating whether the changes in gambling are likely to be permanent. It is entirely possible that gambling may not occur for some time after the termination of treatment for reasons other than the efficacy of the therapy. The individual may have had little access to funds for months or even years after treatment ceases (although this may be a measure of therapeutic success if restricted access to money was a planned intervention), may have moved to a community where gambling may be difficult, may have progressed to other addictive behaviours, may have developed a serious psychiatric disorder as a result of past gambling and related losses (e.g. major depression), may have spent considerable time in prison or the legal system facing the legal consequences of gambling behaviour or may have been under severe social restrictions related to any gambling (e.g. marital separation should gambling re-occur; violation of probation). Therapeutic success may take many years to establish fully and it may be useful to ask the individual to attribute any positive changes to the treatment versus other potential correlates of change.

It is recommended that follow-up assessments be conducted at four time-points:
- post-treatment;
- short-term follow-up (3–6 months following completion of treatment);
- medium term (1 year following completion of treatment); and
- long-term (2 years or more following completion of treatment).

SUMMARY

Compliance with this agreement concerning the minimum features of reporting in treatment outcome studies could move the field to more uniform reporting and thereby facilitate the task of determining how best to help problem gamblers overcome their problems. In particular, the Banff consensus recommends that outcome studies on therapies for problem gambling should report:
- measures of gambling behaviour—especially the net expenditure each month, the frequency (in days per month) with which gambling takes place and the time spent thinking about or engaged in the pursuit of gambling each month;

- measures of the problems caused by gambling—especially personal health, relationship, financial and legal problems; these measures can be complemented by additional measures of quality of life; and
- measures of the processes of change—the hypothesized mechanisms of therapeutic change.

These guidelines are broad enough to allow clinical research conducted from diverse perspectives to allow valid cross study evaluations of intervention studies. Such conditions will facilitate the development of empirically validated best practice guidelines for use by clinicians in the management of problem gambling.

Acknowledgements

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