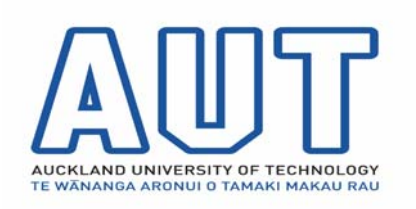

GAMBLING RESEARCH CENTRE

CONFIDENTIAL REPORT

A REVIEW OF RESEARCH ON ASPECTS OF PROBLEM GAMBLING

FINAL REPORT

October 2004

Prepared for:
Responsibility in Gambling Trust
38, Grosvenor Gardens
London
SW1W 0EB
United Kingdom

Authors:
Professor Max Abbott
Dr Rachel Volberg
Dr Maria Bellringer
Dr Gerda Reith

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This report has been prepared by the Gambling Research Centre, National Institute for Public Health and Mental Health Research, Division of Public Health and Psychosocial Studies, Faculty of Health, Auckland University of Technology, Private Bag 92006, Auckland 1020, New Zealand.

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EXECUTIVE SUMMARY

What were we asked to do?

In May 2004, the Gambling Research Centre, Auckland University of Technology, Auckland, New Zealand was commissioned to prepare a critical review of research on aspects of problem gambling to enable the Responsibility in Gambling Trust (the Trust) to clarify its understanding of these issues and establish priorities for future research. The aspects of problem gambling that the Reviewing Team was asked to examine included:

- Research on the development of, and risk factors for, problem gambling
- Research on intervention options for the treatment of problem gambling and the effectiveness of these options
- Research on alternative approaches to public education and awareness raising about the risks of gambling and assessment of their effectiveness

We were also asked to indicate areas where the existing research provides a secure knowledge base, sufficient to inform policy and professional practice, and where understanding is thin or absent. Finally we were asked to make specific recommendations for future research projects on gambling problems in the U.K.

During the course of the review, the Trust requested additional information from the Reviewing Team on several topics. For the most part, this additional information is included in the relevant sections of the literature review. The role of research and its contribution to policy, practitioner contact with problem gamblers and relevant industry practice are addressed individually for each of the original three areas of concern. Issues related to measurement and monitoring of gambling problems are dealt with separately. Another separate section addresses potential areas for collaboration with non-specialist organisations in the U.K. Additionally, the Reviewing Team's comments relating to recommendations in two other U.K. reports in regard to legislation and regulatory reforms in the gambling area are dealt with towards the end of this review.

What did we do?

The Reviewing Team included Professor Max Abbott, Dr Rachel Volberg, Dr Maria Bellringer and Dr Gerda Reith. Professor Abbott, based in New Zealand, had primary responsibility for the review of international research on the causes of and risk factors for problem gambling. Dr Volberg, based in the United States, had primary responsibility for international reviews of research on treatment and prevention of problem gambling. Dr Reith, based in Scotland, was responsible for reviewing research on all of these topics from the United Kingdom. The organisation and management of the project including drafting the methodological section and final preparation of the full report was the responsibility of Dr Bellringer, based in New Zealand.

In preparing the literature reviews for this project, the Reviewing Team members retrieved and reviewed hundreds of publications identified through online databases as well as in specialist libraries accessed through web-based searches. Each of the team members reviewed publications and reports already in their personal collections and retrieved and reviewed additional publications and reports located by way of professional and informal networks, as

well as through requests for relevant materials via personal communications and online discussion groups.

Key U.K. stakeholder groups including government, industry, researchers, and primary and secondary service providers were identified and consulted between May and July 2004. In May, Dr Reith met personally or spoke by telephone with several U.K. gambling researchers as well as representatives of primary and secondary service agencies. Also in May, Dr Volberg visited New Zealand to attend an International Think Tank and associated conference and met in person with Professor Abbott and Dr Bellringer as well as with several U.K. stakeholders who were in New Zealand for the same event. In June, Dr. Volberg travelled to London and met personally with members of the Trust, with staff at the Department for Culture, Media and Sport and the Gaming Board for Great Britain, and with several other U.K. researchers and stakeholders.

What did we find?

Monitoring and measurement

An important step toward minimising the impacts of problem gambling in the U.K. is to monitor the impacts of legal gambling over time. A comprehensive monitoring system would provide the full range of stakeholders with a neutral database for strategic analysis and decision-making to promote responsible gambling and to implement services that meet the needs of individuals with gambling problems. In our view, a model gambling monitoring system must include three basic elements. These are an *integrated database* of information on gambling participation, expenditures, problems and services; a *basic research effort* generating information to inform policy analysis and service development; and a process for *dissemination* so that responses to new developments or information can be made quickly.

Monitoring

- Regular prevalence surveys with adequate sample sizes are an important first step in monitoring the impacts of legal gambling. Additional information is required regarding the availability, utilisation and effectiveness of problem gambling services, gambling industry revenues, and health, family, workplace, financial and legal impacts of gambling.

- Basic research on the development of gambling problems is needed as are studies of the impacts of specific gambling introductions. These basic research needs require multi-year commitments of funding.

- There is a need for a clearinghouse to gather information from U.K. and international studies, synthesise this information, and provide stakeholders with reliable and valid information about the impacts of gambling in different regions of the country and in relation to different types of gambling.

Whilst a number of governments have begun to establish systems to monitor the impacts of legal gambling, these efforts are only a few years old and little is known about 'best practices' in this regard. Although all of the stakeholders concerned must take responsibility for feeding information into the system, Government and the gambling industry have the greatest resources and should take joint responsibility for ensuring that a suitable system, run by an independent agency, is established and maintained.

Measurement

The assumption underlying all gambling research is that gambling problems are a robust phenomenon that exist in the community and can be measured. Despite widespread agreement at this fundamental level, there is disagreement about the concepts and measurement of gambling-related difficulties. Disputes among experts have led to a significant degree of public confusion and uncertainty about the prevalence of problem gambling and the impacts of legal gambling on society.

- ❖ Early conceptualisations of problem gambling were based primarily on clinical experience and expert group consensus. The tools that were developed during this period to identify problem gamblers reflect a strong psychological perspective.

- ❖ The emerging public health approach to gambling problems has led to a focus on 'harm' as the foundation of several new measures of problem gambling although these new tools reflect a continued emphasis on the psychological aspects of problem gambling.

Moving forward, there is a need for the development and use of *credible* measures of problem gambling that derive from a clear conceptual account of problem gambling and its components and with demonstrated reliability, validity, applicability and practicability.

Development of, and risk factors for, problem gambling

Identification of risk factors and determining the nature and relative strength of their influence is important to advance understanding of problem gambling and develop effective interventions to assist problem gamblers and prevent problem onset and progression. Like other physical and mental health disorders, problem gambling has multiple risk factors, some common to many different conditions and others specific to this disorder.

In reviewing the literature on risk factors for problem gambling, we adopted a strong public health approach (as opposed to an approach based on the narrower medical model) and distinguished as far as possible between the agent (i.e. exposure to gambling activities), the host (i.e. individual attributes and experiences that increase susceptibility and resistance to problem development) and the environment (i.e. the wider physical, social and cultural setting in which gambling occurs).

Many risk factors have been identified for problem gambling, some of which emerge consistently in a broad range of studies and others which vary over time and across populations. There is also significant overlap between risk factors for problem gambling and other disorders, particularly substance misuse and dependence. Unfortunately, understanding of the development of problem gambling and the relative role of different risk factors in the evolution of the disorder is still limited.

Role of research and contribution to policy

- ❖ While there are significant gaps in knowledge about problem gambling, what is known suggests that legislation and policies that significantly increase access to electronic gaming machines and other continuous gambling forms (such as those increasingly available via the Internet) will generate increases in problem gambling and related flow-on costs to families and communities.

- The risk profile for problem gambling is also likely to change, with disproportionate increases among women and other population sectors including ethnic and new migrant minorities. Problem gambling may also move 'up market', becoming somewhat more evenly distributed throughout socioeconomic strata and age groups.

- Whilst prevalence is likely to rise initially, research suggests it will eventually level out, even when gambling accessibility continues to increase. However, rates may rise three- or four-fold before this occurs and even then, active measures may be required to achieve stabilisation.

- Raising public awareness of the risks of excessive gambling, expanding services for problem gamblers and strengthening regulatory, industry and public health harm reduction measures can counteract some adverse effects from increased availability. What is not known is how quickly such endeavours can have a significant impact and whether or not they can prevent problem escalation entirely if introduced concurrently with increased access. A better understanding of which measures are effective is also required before we can be confident that problem escalation can be prevented.

- The small number of prospective studies undertaken to date consistently show that problem gambling is more mutable than previously thought. The potential of prospective studies to identify more precisely which factors are most responsible for problem onset, as well as for subsequent problem escalation, maintenance, reduction, relapse and resolution, is to date largely unfulfilled.

- Moving forward, research and evaluation of problem gambling must incorporate risk factors across the domains of agent, host and environment and employ multivariate analyses to examine their independent and interactive impacts on problem development. In addition to risk factors, it is important to identify protective factors that moderate or mediate the effects of exposure to risk factors. There is little research that explicitly examines protective factors related to problem gambling although it is likely that many of the factors that are protective against the development of problems with alcohol, tobacco and other substances are likely to be relevant to problem gambling.

- It is imperative that increasing use is made of prospective studies with large, representative samples of non-problem and problem gamblers followed over periods of years, including some studies that commence during childhood.

- With the notable exception of research on the prevalence of, and risk factors for, problem gambling among youth, gambling research is rudimentary in the U.K. This appears to be a consequence of problem gambling not being considered part of mainstream health services and health research agendas in this country.

- Given the rudimentary development of problem gambling research, both in the U.K. and internationally, it would be prudent to pilot and evaluate new policies and interventions and use that information for ongoing refinement and enhancement.

Practitioner contact with problem gamblers

- The majority of health and related professionals who have contact with problem gamblers are probably unaware that they do. Internationally, general population surveys indicate that the great majority of people identified as having problems with gambling do not report them to, or receive assistance from, professionals of any kind.

- Even in settings where moderate to large percentages of clients have gambling problems, such as alcohol and drug treatment facilities, mental health centres and outpatient clinics, probation services and prisons, it appears that screening for problem gambling and specialist referral or treatment is very much the exception rather than the rule.

- Education and training in early intervention, assessment, treatment and referral could usefully occur in all of the aforementioned settings as well as in child and family, relationships and other counselling services including financial advice.

- In the case of specialist gambling helpline and counselling services, high levels of substance misuse and some other mental disorders among problem gamblers point to the importance of practitioners understanding these conditions. In counselling situations, this includes competence in assessment of these comorbid conditions and ongoing management or referral.

- There appear to be several subtypes of problem gambler with some distinct treatment needs. Further research is required to specify these differences more clearly so that therapeutic interventions can be developed or refined to address them. This may include pharmacological as well as psychological and social approaches.

- While few in number, prospective general population studies have consistently found that most problem gamblers have fairly transient problems. These studies have also found most people overcome their problems without professional help and that those people usually return to non-problematic gambling. This is at variance with the long-held clinical view that abstinence is the only legitimate or sustainable treatment goal for problem gambling.

- There is a minority of problem gamblers with particularly serious problems, many of whom do present for treatment, when services are available. These individuals are more likely to fit the official psychiatric and Gamblers Anonymous conceptualisation of pathological gambling as a chronic or chronically relapsing disorder or illness. Whilst abstinence may well be the optimal approach for people with serious gambling problems, this belief has yet to be empirically validated.

- Based on general population surveys, there are indications that some ethnic minority and recent migrant groups frequently contain disproportionately large numbers of problem gamblers. These same groups are also frequently under-represented as clients in mainstream services, highlighting the importance of recruiting staff from those communities and providing culturally appropriate services.

- In periods when electronic gaming machines are being introduced or made much more accessible, substantial changes can occur over relatively short periods of time in the population sectors at highest risk for problem gambling. In that situation, existing services may need to change to be able to engage and work effectively with large numbers of different types of problem gambler.

Relevant industry practice

- Gambling participation is a necessary condition for the development of problem gambling. Based on the research reviewed, it appears that increasing the availability of particular forms of gambling has a significant impact on the prevalence of problem gambling. It appears that this is not, however, inevitable. Other factors, currently only partially understood, may in some circumstances contain or even reverse this effect.

- Given that access to gambling is necessary for the development of problem gambling, reducing access is one approach that could reduce problems. However, even if this were accomplished, in today's world there would remain at-risk and problem gamblers who would seek out or initiate informal and illegal gambling opportunities and access jurisdictions (including the Internet) where gambling activities are readily available.

- The gambling industry has typically viewed pathological gambling as a rare mental disorder that is predominantly physically and/or psychologically determined. Research funding from the gambling industry has generally been directed to investigations that focus on risk factors in the host rather than the agent or environment. The gambling industry also tends to argue that the problems of a small minority do not justify curtailing the pleasure of the great majority of the population who do not experience problems with their gambling.

- Recent findings indicating that many problem gamblers have transient problems that often self-correct have generally been favourably received by industry spokespersons. However, acceptance challenges the notion that gambling problems are confined to a small, constitutionally distinct group and shifts the focus for preventing harm to structural aspects of gambling as well as to contextual features that pose risks to many, perhaps most, regular gamblers.

- While the gambling industry has long conducted and funded research designed to make their products more attractive to consumers and increase revenue, most of this research is commercially sensitive and not available outside industry circles. In some jurisdictions, the industry has also provided significant funding for problem gambling research.

- In recent years industry leaders have taken problem gambling and the findings of problem gambling research more seriously and have supported research in various ways. While there are probably many reasons for this change, this shift has been associated with an increase in industry initiatives to provide information about problem gambling and sources of professional help as well as more proactive host responsibility programmes.

- Research on risk factors and problem gambling development has potential to inform the design of industry programmes of this type. While there is a measure of mutual goodwill that has hitherto been rare, it remains to be seen how far independent researchers and the industry can go together in this direction.

Intervention options for treatment of problem gambling and their effectiveness

As in our review of risk factors for problem gambling, we adopted a public health approach in our consideration of research on intervention options for the treatment of problem gambling. We did not limit our review to formal treatment interventions; rather we considered all of the

obtainable evidence available on harm reduction strategies that have been adopted internationally in relation to problem gambling.

The overall goal of harm reduction is the prevention of harm rather than the prevention of use or involvement *per se*. In relation to treatment for problem gambling, harm reduction includes a range of interventions, including but not limited to abstinence, with the goal of controlling or setting limits on people's gambling. Internationally, there is little help available to problem gamblers or their families outside specialised services that have developed in different jurisdictions. There has also been very little rigorous formal evaluation of problem gambling treatment services and approaches internationally. As a consequence, there are large gaps in our understanding of the most effective treatment(s) for problem gambling that remain to be filled.

Role of research and contribution to policy

- Funding for the evaluation of problem gambling interventions has been so scarce that little can be said with confidence about the effectiveness or efficacy of such efforts. Significant contributions of research to problem gambling policy decisions in the area of intervention options for treatment must await the provision of funding and the conduct of substantial, well-designed research agendas across a range of international jurisdictions.

- Research on problem gambling has emerged primarily from the discipline of psychology and much of this research is based on the assumption that there is a clear distinction between 'normal' and 'problematic' gambling and, furthermore, that problem gamblers are a homogeneous group for whom a single set of interventions will be effective.

- Most research on problem gambling has been based on self-selected samples of treatment-seeking problem gamblers or problem gamblers in the community recruited via advertisements. There is little knowledge about what kinds of treatment might be effective with different subgroups of problem gamblers or with groups in the population that are unlikely to seek any assistance for a gambling problem.

- In the U.K., the upcoming likely expansion in gambling opportunities can be expected to disproportionately affect youth, women and ethnic and new migrant minorities. While these individuals may be expected to have quite specific requirements in terms of formal treatment, it is unclear what these needs might be and how they might be best served by the various treatment approaches presently in place.

- As noted previously, the lack of a sound theoretical understanding of the development of gambling problems significantly hinders our present ability to design effective interventions.

- A public health approach to problem gambling increases the likelihood that treatment modalities based on 'controlled' gambling outcomes, as well as those based on abstinence, may be trialled and also increases the likelihood that families will be included in any consideration of the population in need of services. Furthermore, this approach focuses attention beyond formal treatment to consider the likely benefits of public policy and regulation in minimising the negative impacts of gambling legalisation.

- Review of the funding and organisation of problem gambling services internationally highlights the need for cooperation and collaboration between governments at the international, national, regional and local levels. Continuous and reliable streams of funding for problem gambling services are needed, as are rational systems of resource allocation and research on appropriate and flexible models of problem gambling service provision.

- Essential questions about treatment effectiveness and efficacy cannot yet be answered. Comprehensive screening and assessment tools as well as placement criteria are needed. The effectiveness of outreach programmes to underserved populations, of family interventions, and approaches for enhancing treatment engagement, retention and outcomes remain to be assessed. Research is also needed to identify clinician variables that have an impact on treatment efficacy as well as the most relevant variables in making decisions regarding treatment intensity.

- While certification and credentialing of problem gambling counsellors is increasing, little is known about the most appropriate education and training for professionals who treat problem gamblers and their families. There is also a need to evaluate the best mechanisms for reimbursing service providers who treat problem gamblers and their families.

- Additional priorities for research include monitoring the impact and effectiveness of intervention strategies that are implemented as well as broadening the focus to examine promising new interventions such as motivational interviewing, self-help workbooks, brief courses of therapy, online mutual aid and online support groups. There is also a need for empirical studies of the role of financial counselling and money management in problem gambling treatment.

Practitioner contact with problem gamblers

- Formal problem gambling treatment consists largely of self-help and individual and group counselling in outpatient settings. Internationally, problem gambling treatment services tend to be provided by individual addiction and/or mental health professionals who have received some specialised training and are based within larger addiction or mental health treatment programmes. Beyond programmes that provide specialised problem gambling services, few counselling professionals screen for gambling problems among their clients. Even when a gambling problem is identified, non-specialist professionals are often uncertain about the appropriate referrals to make or what treatments to recommend.

- Screening for gambling problems among substance abusers is needed, as is education and training in the diagnosis, appropriate referral and effective treatment of gambling problems. Unfortunately, while specialised training, certification and credentialing are increasingly available, there is little uniformity in standards and requirements and little reciprocity with other counselling professions.

- Therapists working with problem gamblers employ a wide range of techniques although cognitive-behavioural therapy (CBT) is the only approach that has received sustained evaluative attention. CBT has been judged scientifically defensible and has demonstrated positive and consistent outcomes.

- Whilst most of the cognitive-behavioural techniques used in the treatment of problem gambling are shared with other addiction treatment approaches, treatment of problem

gambling does include some unique elements. One aspect of problem gambling treatment that has received inadequate attention is the importance of providing help for family members of problem gamblers.

- A growing number of pharmacotherapeutic approaches are being taken in the treatment of gambling problems. Two of these approaches (naltrexone and selective serotonin re-uptake inhibitors) have been deemed promising although there is, as yet, no single, widely-accepted pharmacotherapeutic protocol.

- Emerging research suggests that much larger numbers of individuals may be helped through brief interventions and public awareness campaigns than through formal, clinically-based treatment programmes. Public awareness campaigns are likely to increase people's knowledge of the availability of treatment and their willingness to acknowledge a problem as well as reduce the stigma of seeking help. Brief interventions are less costly than formal treatment and appeal to a much broader range of problem gamblers and, in the case of online approaches, offer additional benefits in overcoming stigma and inconvenience.

Relevant industry practice

- Internationally, funding for problem gambling services comes largely through voluntary or mandatory levies on revenues derived from legalised gambling operations and generally flows through major academic institutions and/or quasi-governmental bodies. It is unclear whether voluntary or mandated levies are preferable; what is clear is that levies should come from *all* sectors of the gambling industry.

- The focus of formal treatment services on the most severely affected individuals has meant that prevention efforts, which can be expected to affect the behaviour of much larger proportions of the population, are not nearly as well-developed. Another critical concern is that although formal treatment services receive the majority of available funding, evaluation and monitoring of those services has been limited.

- The focus on formal treatment has meant that few resources have been allocated for research on problem gambling. This has limited the development of theoretical understanding of gambling problems and hindered the ability to design effective interventions. Long-term strategic plans for research and evaluation are needed along with provision for multi-year funding streams to encourage and support substantial research programmes. Another need is for multidisciplinary research incorporating perspectives beyond psychology.

- While the gambling industry has been understandably reluctant to engage directly in interventions, there is merit in gambling industry staff having an understanding of problem gambling as well as information to provide to patrons, if asked for. This issue is addressed in more detail in the section of the report on alternative approaches to public education and awareness raising.

Impact of alternative approaches to public education and awareness raising

From a public health perspective, individuals who experience gambling-related difficulties but would not meet a psychiatric diagnosis for pathological gambling are of as much concern as pathological gamblers because they represent much larger proportions of the population. There is a possibility that their gambling-related difficulties may become more severe over time and

there is also the likelihood that their gambling can be more easily influenced by changes in social attitudes and public awareness.

The public health approach has been used to develop effective responses to many physical health problems and, more recently, to non-infectious diseases and mental disorders. While it is not yet possible to identify the most effective public health methods to prevent the onset and progression of gambling problems in the general population, efforts are going forward internationally and there is value in reviewing the range of activities that are being implemented to identify promising future directions of research.

Effective harm minimisation measures may have a substantial impact on gambling revenues, particularly from electronic gaming machines.

Role of research and contribution to policy

- There is a basic need for strategic planning with regard to problem gambling prevention, along with commitment from the full range of stakeholders to work together in the process. Once there is consensus on a strategic plan, there is a need for scientific research to inform public policy and industry policies along with monitoring and evaluation to ensure the effectiveness of the plan. As with any plan, there must be room for flexibility to respond to changing conditions as well as attention to the possibility of unforeseen negative consequences.

- Research is central to strategic planning, both in the development of appropriate interventions and in the evaluation of their effectiveness. There are two distinct directions for prevention-relevant research on problem gambling. The first direction is basic research that identifies suitable targets for prevention. The second direction is evaluative research that assesses the effectiveness of problem gambling prevention programmes as these are developed and implemented. A key challenge is ensuring the independence of evaluations while simultaneously including such efforts as an integral element of programme design.

- Internationally it has been easiest to achieve stakeholder agreement with regard to problem gambling prevention for youth. Strategies which stretch across the domains of family, school and community, which include a range of activities (e.g. education, information, skills training, alternative activities, problem identification and referral) and which target multiple risk behaviours, are most likely to be effective. While support for 'social inoculation' and 'reasoned action' models of youth problem behaviour prevention delivered within schools is high, there is growing promise in the development and delivery of alternative telephone- and Internet-based materials.

- Evidence suggests that effective problem gambling awareness campaigns targeting adults can lead to measurable increases in awareness of community services, in the number of calls to help lines and in the number of first-time clients seeking help. Systematic reviews of mass media campaigns for tobacco and alcohol support the effectiveness of such approaches, particularly in combination with other strategies at the national and local levels.

- In developing mass media campaigns, it is essential to conduct formative research to identify targeted and effective messages, use television as a broadcast medium and plan for extended campaigns. Additional considerations include balancing the tension between creativity and budget, the need for involvement and communication among partners in the campaign and the importance of timing in launching such campaigns.

- Even effective public awareness campaigns face considerable competition from far more heavily financed industry advertising campaigns to increase gambling consumption.

- The problem gambling prevention measure that has received the greatest evaluative attention internationally is exclusion, either mandated or voluntary. Challenges in implementing such programmes include difficulties in identification and detection as well as in enforcement and monitoring. It is also important to expand our view of such measures and to see them as a gateway to formal treatment rather than as an isolated activity. Research is needed on how to improve treatment seeking and access to services once an individual has chosen exclusion.

- Employee training programmes have been implemented primarily in the casino and video lottery terminal sectors of the gambling industry. An important first step in the U.K. would be to expand such efforts to additional sectors of the gambling industry, such as on- and off-track betting facilities and charitable bingo operations.

- Difficulties encountered in the implementation of employee training programmes emphasise the importance of establishing centralised tracking systems and mandatory site compliance to ensure consistent and effective delivery of training. Another challenge is in the identification of 'signs' of problem gambling; this is an area where venue-based sociological research could be valuable. Secondary analysis of prevalence data to identify 'moderate gambling' guidelines specific to the U.K. could also be valuable.

- Despite the intuitive appeal of Responsible Gaming Features (RGFs) and their rapid implementation in some jurisdictions, little research has been conducted on their effectiveness in preventing gambling problems. Research on implementing RGFs on gaming machines as well as online gaming and wagering sites would be valuable. However, it would be advisable to fund small-scale research on RGFs, initially in the laboratory followed by field studies and to investigate the effectiveness of targeted RGFs before mandating jurisdiction-wide implementation of 'universal' programmes.

- Another potentially fruitful area of investigation would be the effectiveness of pre-commitment betting limits and the links between pre-commitment limits and RGFs or exclusion programmes.

Practitioner contact with problem gamblers

- Internationally, problem gambling prevention is most often carried out by specialist non-governmental organisations whilst treatment practitioner contact with problem gamblers in this regard is limited. Commonly, counselling staff establish relationships with gaming venue staff to ensure that information about problem gambling services is available within the venues and to assist, if desired, in managing difficult patron situations.

- One recent innovation, problem gambling information kiosks inside gaming venues, represents a significant partnership between practitioners and gaming operators and dramatically increases the likelihood of practitioner contact with individuals experiencing gambling problems *in situ*. Implementation and evaluation of such efforts in U.K. gaming venues of different kinds certainly seems warranted.

- Gambling employee training is sometimes, but not always, carried out by treatment practitioners. Staff training generally focuses on increasing understanding of problem gambling, identifying behaviours suggestive of patrons' gambling problems, increasing knowledge of resources for problem gamblers in the community and providing strategies for assisting patrons with problems. Increasingly, training in problem gambling prevention is being built into broader training and certification programmes for gaming management.

- Future directions for prevention research in relation to practitioner contact with problem gamblers are suggested by the growing involvement of counsellors in voluntary exclusion programmes as well as the promise of brief interventions in formal problem gambling treatment.

- There does appear to be value in involving problem gambling counsellors in interviews with individuals seeking exclusion and research is needed to assess the effectiveness of such involvement in improving treatment seeking and access after exclusion. Another direction for research would be the effectiveness of single session information sessions in conjunction with time-limited exclusion in assisting in natural recovery.

Relevant industry practice

- Different facets of the gambling industry have been involved in problem gambling prevention for some years. However, these efforts must compete with heavily financed gambling industry advertising campaigns that may work directly to counteract their effectiveness. A possible way forward could be the adoption of industry-wide 'responsible gambling marketing and advertising' codes, along with research to monitor compliance and assess their effectiveness.

- Secondary prevention efforts by the gambling industry have included the development and implementation of employee training programmes, mandatory and voluntary exclusion programmes and gambling venue partnerships with practitioners and government agencies to provide information and improved access to formal treatment services.

- Implementation of secondary prevention efforts by the gambling industry, such as employee training programmes and exclusion programmes, has not always been of the highest quality and compliance has often been uneven.

- Research indicates that exclusion programmes are most effective when staff roles are clearly delineated, managers are appropriately trained to conduct or call for interventions, and there are close working relationships with treatment providers in the community. Research further suggests the importance of mandatory promotion of exclusion programmes across all sectors of the gambling industry and the likely value of computerised identification checks with clearly defined penalties both for operator and patron to improve enforcement. Other promising approaches include involvement of practitioners in interviews with patrons seeking exclusion and mandatory education for excluders.

- If 'host responsibility' training is developed in the gambling industry in the U.K., management support will be critical to its success. Another critical element will be basic research, most likely within gaming venues, to identify the most salient 'signs' of problems among different types of gamblers. There is also a need for further evaluation of the effectiveness of gambling industry employee training programmes as

well as voluntary exclusion programmes and research on the most appropriate methods to implement such measures.

- Partnerships with gambling equipment suppliers, to implement problem gambling prevention measures on the products they supply to the gambling industry, have promise for preventing gambling problems. Placement of 'problem gambling information' kiosks in gaming venues, programmes to permit patrons to establish 'pre-commitment' betting levels and implementation of RGFs on gaming machines are promising future areas for industry-practitioner-researcher collaboration. Key challenges in the evolution of these partnerships include the importance of funding for research as well as ensuring both the *actual* and *perceived* independence of the investigators.

What are our conclusions?

The Reviewing Team has developed 37 recommendations for specific research activities, all focused in support of the Responsibility in Gambling Trust mission "to make it less likely that people will become problem gamblers and more likely that those who do will be able to seek and to secure effective help". Within each of the four areas of monitoring, risk factors, intervention and prevention, we have identified the most important short-term (12 to 18 month), intermediate (13 to 36 month) and long-term (37 to 60 month) goals and recommended projects intended to provide critical information to attain these goals. Estimated costs are provided in the body of the report but it should be noted that these estimates are based on our knowledge of the costs of similar research undertaken internationally and translated into British currency rather than on detailed knowledge of the costs of social science and health research in the U.K.

Monitoring and measurement

Short term

1. Commission a review of problem gambling assessment and screening instruments in use internationally and identify the most appropriate set of instruments for use in the U.K. in the clinical screening of problem gamblers as well as in other settings, including self-administration and prevalence research.

2. Organise an international conference of problem gambling research funding agencies to begin the process of developing international collaborations.

3. Encourage the public dissemination of data from the upcoming prevalence study.

4. Provide funding for the development of postgraduate research and scholarship in the area of gambling and problem gambling.

Intermediate

5. Establish a web-based library and clearinghouse to monitor numbers of helpline calls, first time treatment seeking, problem gambling prevalence rates, gambling participation rates, gambling industry revenues, gambling tax revenues and other measures of the impacts of gambling on U.K. society.

6. Commission an evaluation of the effectiveness of problem gambling services in the U.K. to assess changes in help-seeking in response to prevention and outreach efforts as well as satisfaction with available services.

Long term

7. Develop a researcher-initiated grant application system similar to systems established in Australia, Canada and the U.S.

Development of, and risk factors for, problem gambling

Short term

8. Fund analysis of gambling data from an existing longitudinal study in the U.K. and development of a publishable manuscript.

9. Fund addition of gambling and problem gambling module to an existing longitudinal study in the U.K. and development of one or more publishable manuscripts.

10. Solicit applications for sector-specific studies of normative and problematic gambling among regular on-course and off-course bettors, Fixed Odds Betting Terminal players, casino gamblers and bingo players.

Intermediate

11. Fund and commission a separate, follow-on study to the upcoming problem gambling prevalence survey in the U.K., scheduled to begin in 2005.

12. Fund and commission a study of Internet, wireless and remote gambling, problem gambling and help-seeking for gambling problems.

Long term

13. Continue to monitor longitudinal panel study derived from 2005 U.K. prevalence survey.

14. Continue funding addition of gambling and problem gambling module to an existing longitudinal study in the U.K. and development of publishable manuscripts.

Intervention options for treatment of problem gambling and their effectiveness

Short term

15. Fund and commission a retrospective investigation of ‘natural recovery’.

16. Fund and commission a systematic review of problem gambling treatment and development of a treatment guide for the U.K. context.

17. Fund and commission assessment of clinical education, training and certification needs in the U.K.

18. Fund focus group study of youth and women problem gamblers to serve as basis for developing targeted services.

Intermediate

19. Fund a study of the use of brief interventions and evaluate the effectiveness of this approach in the U.K.

20. Fund and commission long-term treatment outcome study.

21. Fund development and evaluation of online or telephone capabilities for problem gambling support groups.

22. Fund development and evaluation of culturally appropriate services.

Long term

23. Support development of problem gambling credentialing examination and collaboration with other counselling professions

24. Support development and evaluation of targeted services for youth, women and family members.

25. Fund collaboration with international agencies to develop international criteria for counselling services for problem gamblers.

Alternative approaches to public education and awareness raising

Short term

26. Fund and commission qualitative research on targeted messages to youth, women, machine players and track bettors.

27. Fund and commission evaluation of voluntary exclusion policies across gambling sectors in the U.K.

28. Fund and commission systematic review of 'responsible gambling advertising codes' internationally.

29. Fund and commission evaluation of effectiveness of involving counsellors in exclusion interviews.

30. Fund and commission evaluation of effects of pre-commitment betting levels on gambling behaviour in casino and track betting facilities.

Intermediate

31. Fund and commission evaluation of targeted message public awareness campaign to youth and women in selected markets to assess increased general recognition of problem gambling as a disorder and improved knowledge about the availability of help.

32. Fund and commission an evaluation of the role of gambling employee training programmes in increasing understanding of problem gambling and improving staff willingness to intervene when gambling problems are recognised.

33. Fund and commission trial of 'gambling information' kiosk in one or more casinos and evaluation of effectiveness.

34. Fund and commission laboratory studies of responsible gambling features of gaming machines.

35. Fund and commission evaluation of the effectiveness of online self-help forms of assistance for problem gamblers in the U.K.

Long term

36. Fund and commission evaluation of targeted message public awareness campaign nationwide.

37. Fund and commission field studies of responsible gambling features on gaming machines and online gaming sites.

1 BACKGROUND

1.1 Introduction

Walker (1992) comments in the opening paragraph of his widely cited book 'The Psychology of Gambling':

> Gambling behaviour…is a challenge to our best theories of human nature. Nearly all gambling is so structured that the gambler should expect to lose, all things being equal. So why does as much as 80% of the population in industrialised Western societies gamble? Again, some gamblers give up every thing they value in their lives in order to gamble: the family, the properties, the assets, their friends, their self-esteem. Why should anyone give up so much in such a futile cause? This is really the most important issue of all. Ordinary gambling is an interesting part of every human society, but it matters little if we fail to understand why it is so attractive to many. But some small fraction of all those who gamble will destroy most of the things they value in order to continue gambling. It is of utmost consequence to each such individual that we understand how it happened, what processes were operating, and how best lives can be restored (p.1).

The present report focuses on Walker's "most important issue of all". The main body of this report reviews international and United Kingdom studies that examine various aspects of problem gambling. The first section provides an overview of research on risk factors for problem gambling and the development of problem gambling. This is followed by an examination of interventions intended to assist problem gamblers to overcome their problems, including consideration of their effectiveness. The next section outlines and reviews research assessing the impact of public education, public health and other approaches designed to raise awareness and prevent the development of gambling problems.

Some consideration is given to the findings of research on related problems including alcohol and substance misuse/dependence, where this informs or has the potential to inform understanding of the foregoing aspects of problem gambling. Given the focus on problem gambling, the report does not review research that considers why people generally commence, and participate in, various gambling activities. However, while most studies of this type are not directly relevant to understanding problem gambling, there may be some features of non-problem gamblers' gambling that warrant examination. For example, investigation of how and why non-problem gamblers stop or modify their gambling within sessions may have relevance to preventing and treating problem gambling.

The report indicates those areas where extant research provides a secure knowledge base and where it is sufficient to usefully inform policy and professional practice. It also specifies where understanding is thin or absent and recommends priorities for future research.

1.2 Terms of reference

The overall aim of this report is to enable the Responsibility in Gambling Trust (the Trust) to clarify its understanding of problem gamblers in order to establish priorities for future research. Therefore, the Trust commissioned the Gambling Research Centre, Auckland University of Technology (AUT) to review research on aspects of gambling, with particular emphasis being given to problem gamblers.

The three key elements of the commissioned research review were:

- The development of, and risk factors for, problem gambling
- The intervention options for the treatment of problem gambling (including, but not limited to, counselling, therapy, advisory services, support, residential care, but excluding treatment which requires the prescription of drugs or the involvement of persons with medical qualifications) and the effectiveness of these options
- The impact of alternative approaches to public education and awareness raising about the risks of gambling and assessment of these approaches

Following consultation with the Trust, it was subsequently agreed to include consideration of recent pharmacological treatments.

1.3 Reviewing Team

Professor Max Abbott is Pro-Vice Chancellor for Community Engagement, Dean of the Faculty of Health, Director of the Gambling Research Centre and Co-Director of the National Institute for Public Health and Mental Health Research at Auckland University of Technology. He is also Deputy Chair of Waitemata District Health Board. He is a past chairman of the Compulsive Gambling Society and past President of the World Federation for Mental Health. His early research was on assessing alcohol-related cognitive impairment and its impact on treatment participation and outcome. In 1991 he completed, with Dr Volberg, the first New Zealand national problem gambling prevalence survey. Since then he has retained an involvement in problem gambling research, alongside research on migrant adaptation and health and other areas within public health and mental health. Most of his research is applied and related to other professional and community involvement.

Dr Rachel Volberg is an adjunct professor at the Gambling Research Centre, Auckland University of Technology. She has been involved in research on gambling and problem gambling since 1985. She has directed or consulted on numerous studies throughout the world, including four national prevalence studies in the United States, New Zealand and Sweden. Dr Volberg was the first investigator to receive funding from the (U.S.) National Institutes of Health (NIH) to study the prevalence of problem gambling and she presently directs an NIH study of problem gambling among women as well as serving as a consultant on two other NIH studies of pathological gambling among twins. Dr Volberg was recently elected president of the (U.S.) National Council on Problem Gambling.

Dr Maria Bellringer is a Senior Research Fellow and is Coordinator of both the Gambling Research Centre and the National Institute for Public Health and Mental Health Research at Auckland University of Technology. She has worked in the gambling field for the past two and a half years, initially as a project manager/research fellow at the Centre for Gambling Studies, University of Auckland. She has recently become a peer reviewer for *eCOMMUNITY: International Journal of Mental Health and Addiction*. Previously, Dr Bellringer lived in England and was an experienced toxicologist as well as a counsellor for young people.

Dr Gerda Reith is a lecturer in the Department of Sociology at the University of Glasgow, Scotland. Her research interests are concerned with risky and addictive behaviour, with a particular focus on gambling as a form of consumption. She has conducted research into substance abuse and risk-taking behaviour amongst young people and is at present involved in a

study of the cultural and risk factors involved in various forms of problematic consumer behaviour. Dr Reith is a member of GamCare and the U.K Society for the Study of Gambling.

1.4 Review methodology

The methodology utilised for review of available literature is discussed in detail in Section 2. The literature accessed included that which is available (electronically and/or in hard copy) through the AUT library electronic databases, through specialist electronic libraries and through personal collections. The latter included grey literature, including unpublished works written by colleagues around the world.

United Kingdom (U.K.) literature was reviewed in depth by Dr Reith. Accessed international literature was reviewed in depth by Professor Abbott and Dr Volberg, both of whom also reviewed U.K. literature to a lesser extent. The organisation and management of the project including preparation of the report was the main responsibility of Dr Bellringer.

1.5 Review meetings

Throughout the project, the review team communicated regularly via Email. In addition, Professor Abbott and Dr Bellringer met on at least a fortnightly basis during the data gathering and reporting phases to ensure that the project was on track.

In the week commencing 10 May 2004, Dr Volberg visited New Zealand to attend an International Think Tank and associated conference, co-hosted by the Gambling Research Centre. This was taken as an opportunity to have a face-to-face review meeting between Drs Volberg and Bellringer and Professor Abbott.

1.6 Stakeholder consultation meetings

A variety of stakeholders in the U.K. were consulted during May and June 2004, with regard to this project. Details of these consultation meetings and their outcomes are discussed in detail in Section 5.

2 LITERATURE REVIEWS

2.1 Methodology

The literature reviews were conducted in four concurrent phases, which consisted of:

a) Electronic bibliographic indexes accessed via on-line database searches
b) Specialist libraries accessed via web-based searches and searches through personal collections
c) Grey literature accessed via personal collections and through professional and informal networks
d) Professional and informal networks contacted via personal communications and discussion groups

2.1.1 Electronic bibliographic indexes

A search of the following on-line databases accessible through the AUT and University of Glasgow library systems was conducted to locate potentially relevant literature:

- Academic Search Premier
- ASSIA
- Bath Information and Data Services (BIDS)
- Blackwell-Synergy
- Cochrane Library
- CSA Social Services Abstracts
- EBSCO MegaFile Premier
- ProQuest 5000 International
- PsycARTICLES
- PsycINFO
- ScienceDirect

Academic Search Premier is the world's largest academic multi-disciplinary database, providing full text for nearly 4,000 scholarly publications, including full text for more than 3,100 peer-reviewed journals. Coverage spans virtually every area of academic study and offers information dating as far back as 1975. Subject areas include: social sciences, humanities, education, computer sciences, engineering, physics, chemistry, language and linguistics, arts and literature, medical sciences, ethnic studies and more.

ASSIA: Applied Social Sciences Index and Abstracts is an indexing and abstracting tool covering health, social services, psychology, sociology, economics, politics, race relations and education which is updated monthly. It currently contains over 312,000 records from 650 journals in 16 different countries, including the U.K. and U.S.

Bath Information and Data Services (BIDS) is the one of the best known bibliographic services available to the academic community in the U.K., providing access to over 5,000 full text electronic journals across a range of disciplines. BIDS also provides access to the Ingenta Journals full text service, both directly and also through links from database search results.

Blackwell-Synergy delivers the full text of over 620 prestigious journals within physical sciences, life sciences, medicine, social sciences and humanities.

Cochrane Library consists of a regularly updated collection of evidence-based medicine databases, including The Cochrane Database of Systematic Reviews: evidence-based systematic reviews prepared by the Cochrane Collaboration which provide high quality information to people providing and receiving care and those responsible for research, teaching, funding and administration at all levels.

CSA Social Services Abstracts provides bibliographic coverage of current research focused on social work, human services, and related areas including social welfare, social policy and community development. The database abstracts and indexes over 1,406 serials publications and includes abstracts of journal articles and dissertations, and citations to book reviews.

EBSCO MegaFile Premier is a suite of 24 databases covering a wide variety of subjects. It includes MEDLINE which is the world's most comprehensive source of life sciences and biomedical bibliographic information. More than 7,000 of the 11,000 titles in the suite are available in full text including 3,200 peer-reviewed journals.

ProQuest 5000 International indexes over 5,500 journals across several disciplines and with full text for over 3,000. It is one of the world's most comprehensive collections of digital information. Millions of complete articles are available online in various formats.

PsycARTICLES is a collection of 42 highly regarded full text journals from the American Psychological Association.

PsycINFO is an electronic bibliographic database that provides abstracts and citations to the scholarly literature in the behavioural sciences and mental health. The database includes material of relevance to psychologists and professionals in related fields such as psychiatry, management, business, education, social science, neuroscience, law, medicine and social work. The PsycINFO database contains almost two million references to psychological literature from the 1800s–present, from journal articles, books, book chapters, technical reports and dissertations.

ScienceDirect is a collection of over 1,700 journals from Elsevier Science, Academic Press and Harcourt Health Sciences covering a wide range of disciplines.

The searches were performed in May and June 2004 utilising the following keywords. Truncated words are indicated either by an asterisk (*) or a question mark (?), which means that all words starting with the truncation (the letters before the asterisk/question mark) were automatically searched for within each database.

- (Gambling or gaming) and (United Kingdom or England) and (intervention or treatment or counsel*)
- (Gambling or gaming) and (United Kingdom or England) and (educat* or community or health)
- (Gambling or gaming) and (United Kingdom or England)
- (Gambling or gaming) and (risk factor or predictor or indicator) (2002 onwards)
- (Addict?) and (treatment or intervention)
- (Gambling or gaming) and (treatment or prevention or public health or services) (1990 onwards)

Each literature search on each database accessed varying numbers of articles, sometimes numbering several hundred. There were varying degrees of overlap between the databases. A full list of titles and/or abstracts was obtained from each search. For titles or abstracts that appeared to be relevant to this project, full text publications were accessed electronically and viewed.

2.1.2 Specialist libraries

Various gambling-related organisations and government departments have websites which include searchable databases and/or libraries, or which detail gambling-related publications and reports. During May and June 2004, the following websites were searched for literature relevant to the project. Any material that appeared to be relevant was downloaded and reviewed. Not all the websites detailed below yielded relevant information.

- Alberta Alcohol and Drug Abuse Commission: www.aadac.com
- Alberta Gaming Research Institute: http://gaming.uleth.ca
- Australian Gaming Council: www.austgamingcouncil.org.au
- Canadian Centre on Substance Abuse: www.ccsa.ca
- eCOMMUNITY: International Journal of Mental Health and Addictions: www.pasinfo.net
- eGambling: The Electronic Journal of Gambling Issues: www.camh.net/egambling/
- Game Planit: www.gameplanit.com
- Gemini Research: www.geminiresearch.com
- Institute for Problem Gambling: www.gamblingproblem.net
- Institute for Research on Pathological Gambling and Related Disorders: www.hms.harvard.edu/doa/institute/
- McGill University International Centre for Youth Gambling Problems and High Risk Behaviors: www.youthgambling.com
- New Zealand Department of Internal Affairs: www.dia.govt.nz
- New Zealand Ministry of Health: www.moh.govt.nz
- North American Association of State and Provincial Lotteries, Gambling Studies: www.naspl.org/studies.html
- Ontario Problem Gambling Research Centre: www.gamblingresearch.org
- Oregon Department of Human Services: www.dhs.state.or.us/index.html
- Oregon Gambling Addiction Treatment Foundation: www.gamblingaddiction.org
- Queensland Government, Responsible Gambling: www.responsiblegambling.qld.gov.au
- Responsible Gambling Council: www.responsiblegambling.org
- Responsibility in Gambling Trust: www.gict.org.uk
- The WAGER (Weekly Addiction Gambling Education Report): www.thewager.org
- United Kingdom Department for Culture, Media and Sport: www.culture.gov.uk
- University of Calgary Addictive Behaviours Laboratory: www.addiction.ucalgary.ca/
- University of Nevada Las Vegas, Gaming Studies Research Center: http://gaming.unlv.edu/
- Victoria Gambling Research Panel: www.grp.vic.gov.au
- Victorian Casino and Gaming Authority: www.gambling.vcga.vic.gov.au
- Victorian Local Governance Association: www.vlga.org.au

The Reviewing Team also had access to substantial personal libraries on gambling and related subjects. These collections contain many reports that have not been published in mainstream literature plus publications that are difficult to obtain. They also include pre-publication reports and articles from a variety of sources. Where relevant, these materials were utilised for this project.

2.1.3 Grey literature

Grey literature, being unpublished works not widely available to the general public, was accessed by two means. Firstly, through the personal library collections detailed previously in

Section 2.1.2 and secondly, via professional and informal networks, detailed in Section 2.1.4 below.

In particular, the area of alternative approaches with respect to gambling was where grey literature was called upon to a greater extent than the other areas, especially with relevance to public health/health promotion/population health approaches.

2.1.4 Professional and informal networks

Each member of the Reviewing Team has a wide network of professional colleagues within the gambling field. This includes researchers, treatment/service providers, public health specialists, government officials and gambling industry personnel. Where appropriate, the Reviewing Team contacted (generally by telephone or Email) specific people who were considered possibly to have information that would be useful to the project. Some grey literature and information regarding newly published material was obtained in this manner.

Dr Volberg is personally acquainted with many clinicians and researchers investigating the effectiveness of different treatment and prevention approaches with problem gamblers in the U.S. and Canada. Thus, queries to some of those people were made in relation to this project.

Additionally, a 'request for help' was posted to the international Email discussion group for problem gambling professionals *GamblingIssuesInternational*. This forum has nearly 400 members from 17 countries, represented by researchers, clinicians, educators, policy makers and others. It is moderated by CAMH, the Centre for Addiction and Mental Health, Ontario, Canada. The posting to the discussion group resulted in several responses leading to published and unpublished literature.

3 EVALUATION OF LITERATURE

3.1 Monitoring and measurement

Over the last four decades, the value of regularly monitoring the prevalence of alcohol and substance use and abuse as well as rates of other psychiatric disorders in the general population has been widely demonstrated. In monitoring the impacts of legalised gambling, it is important to begin by noting that gambling and problem gambling are, in several senses, moving targets. For example, when the research team carrying out the U.S. national gambling impact study in 1998 first met, it quickly became apparent that direct comparisons with the only other national survey of gambling behaviour in the United States, carried out nearly a quarter of a century earlier, would be difficult because the types of gambling available to adults in the general population had changed so dramatically between 1975 and 1998 (Gerstein et al, 1999). Similarly, accepted criteria for classifying individuals with gambling problems had not yet been published in 1975 when the first U.S. national survey was carried out. The research team that performed that study had to develop their own screen for gambling problems (Kallick et al, 1976). Since the survey carried out in 1998 was required to use a screen based on the DSM-IV criteria for pathological gambling, no comparisons were possible between the prevalence of problem gambling in 1975 and the prevalence of problem gambling in 1998 (Gerstein et al, 1999).

These difficulties emphasise the importance of regular monitoring of gambling participation and problem gambling prevalence. Ideally, a *gambling monitoring system* would serve both policy analysis and research needs. A good monitoring system would include the capacity for follow-up and evaluation studies as well as for generating early warning of changes in the impacts of existing and new gambling activities. Such systems would be based on the establishment and maintenance of an integrated database, the development and refinement of monitoring tools and additional basic research into specific gambling topics. When fully developed, such systems would offer policymakers, the gambling industry, health and social service agencies and other stakeholders a neutral database for strategic analysis and decision-making to promote responsible gambling and to implement services that meet the needs of individuals with gambling problems.

A model gambling monitoring system must include three basic elements. The first is an *integrated database* that includes information about gambling participation, gambling problems, gambling expenditures and attitudes toward gambling as well as other related data such as helpline calls and availability and effectiveness of services. It is essential that this integrated database be kept up-to-date, theoretically and methodologically, both to reflect changing conceptions of gambling and gambling problems and to incorporate new research data from other studies. The second element is a *basic research effort* that would include a variety of projects generating information to inform both policy analysis and service development. There are several particularly critical basic research needs in the gambling field including longitudinal research on groups of people over time to improve our understanding of how gambling problems develop, studies of help-seeking by problem gamblers and studies of the effectiveness of problem gambling services. There is also a need for studies of the impacts of specific gambling introductions on communities and studies of gambling among vulnerable groups in the population. The third critical element in any such system is a process for *dissemination* so that responses to new developments or information can be made quickly.

Defining the terms

Gambling is a broad concept that includes diverse activities, undertaken in a wide variety of settings, appealing to different sorts of people and perceived in various ways by participants and observers. Failure to appreciate this diversity can limit scientific understanding and investigation of gambling and gambling problems. Another reason to note the differences between various forms of gambling arises from accumulating evidence that some types of gambling are more strongly associated with gambling-related problems than others (Abbott & Volberg, 1999).

People take part in gambling activities because they enjoy them and obtain benefits from their participation. For most people, gambling is generally a positive experience. However, for a minority, gambling is associated with difficulties of varying severity and duration. Some regular gamblers develop significant, debilitating problems that also typically result in harm to people close to them and to the wider community (Abbott & Volberg, 1999).

There is a confusing array of terms used to refer to individuals who experience difficulties related to their gambling. These include 'problem', 'pathological', 'addictive', 'excessive', 'compulsive', 'disordered', 'Level 2' and 'Level 3', 'at-risk', 'in transition', 'degenerate', 'probable pathological', 'probable compulsive', 'potential pathological' and so on. These terms reflect differences in emphasis among scholars studying the phenomenon as well as among stakeholders concerned with making claims and affecting public policy in relation to gambling legalisation. In this report, we have relied on the following definitions.

Pathological gambling was first recognised as a mental disorder with its inclusion in the third edition of the Diagnostic and Statistical Manual (DSM-III) of the American Psychiatric Association (1980). Each subsequent revision of this manual has seen changes in the diagnostic criteria for pathological gambling. The essential features of pathological gambling are widely viewed as: (1) a continuous or periodic loss of control over gambling, (2) a progression, in gambling frequency and amounts wagered, in the preoccupation with gambling and in obtaining monies with which to gamble, and (3) a continuation of gambling involvement despite adverse consequences (Rosenthal & Lesieur, 1992).

The term *problem gambling* is used in a variety of ways. In some situations (primarily in population research), its use is limited to those whose gambling-related difficulties are less serious than those of pathological gamblers. In most situations, this term is used to indicate *all* of the patterns of gambling behaviour that compromise, disrupt or damage personal, family or vocational pursuits (Cox et al, 1997; Lesieur, 1998). In the Canadian context, problem gambling has been defined as "gambling behaviour that creates negative consequences for the gambler, others in his or her social network, or for the community" (Ferris & Wynne, 2001). Patton et al (2002) note that this definition is comprehensive in that it applies to others affected as well as to the individual gambler and includes a range of harmful consequences that extend beyond an individual's own difficulties with gambling. An Australian definition of problem gambling as "a chronic failure to resist gambling impulses that results in disruption or damage to several areas of a person's social, vocational, familial or financial functioning" incorporates both the notion of an underlying condition as well as its consequences (Blaszczynski, Steel & McConaghy, 1997). However, from all of these perspectives, pathological gambling can be regarded as one end of a continuum of gambling-related problems.

In the U.K., both the Budd Commission and the British Prevalence Survey research team defined problem gambling as "gambling to a degree that compromises, disrupts or damages family, personal or recreational pursuits" (Chapter 17, Annex H; Sproston et al, 2000). Given international acceptance of these broadly similar definitions, it seems reasonable to adhere to this definition in the present report as well. In this report, 'problem gambling' is used to refer to

the broad spectrum of gambling problems, including pathological gambling. However, there are occasions when terms, including pathological gambling and probable pathological gambling, are employed to refer more precisely to the way problem gambling is assessed in a particular study or studies. Sometimes, it is also necessary to make distinctions between problem gambling severities by using qualifications such as at-risk, moderate or serious problem gambling.

In considering the public health risks of problem gambling, it is important to note that not all of the clinical features of pathological gambling need be present at one point in time (Abbott & Volberg, 1999). Despite ongoing debate among gambling researchers, the psychiatric definition of this disorder is silent regarding the concurrence of symptoms (Toce-Gerstein & Gerstein, 2004). Some of the impacts that problem gamblers may experience include psychological difficulties such as anxiety, depression, guilt, exacerbation of alcohol and drug problems and attempts at suicide as well as stress-related physical illnesses such as hypertension and heart disease. Interpersonal problems include arguments with family, friends and co-workers and breakdown of relationships, often culminating in separation or divorce. Job and school problems include poor work performance, abuse of leave time and loss of job. Financial effects loom large and include reliance on family and friends, substantial credit card debt, unpaid creditors and bankruptcy. Finally, there may be legal problems as a result of criminal behaviour undertaken to obtain money to gamble or pay gambling debts (Lesieur, 1998; Volberg, 2001a). From a public health perspective, it is also worth noting that family members of problem gamblers experience substantial physical and psychological difficulties.

3.1.1 Measuring gambling problems

The tools that professionals use reflect both the state of their research fields and larger social, political and economic contexts (Alonso & Starr, 1987). Historically, standardised measures and indices have often emerged in situations where there is intense distrust among stakeholders of the motives of other interested parties and a perceived need for public action. Examples include the emergence of measures of 'public utility' in France in the mid-1800s, intelligence testing in Britain and the U.S. in the early 1900s and the development of cost-benefit analysis in the U.S. in the 1950s (Porter, 1995; Zenderland, Ash & Woodward, 2001). In addition to reflecting specific socio-historical contexts, measurement tools reflect theories, either implicit or explicit, about the phenomena which they purport to measure.

In the first critical review of problem gambling instrumentation, published 14 years ago, only two screens for problem gambling could be identified (Volberg & Banks, 1990). There are now over 20 problem gambling instruments that have been developed for a variety of purposes including screening, assessment, diagnosis, treatment planning and treatment outcome monitoring as well as epidemiological surveys and other types of population-based research. Instruments intended for use with adults are listed below. These are organised chronologically and by country of origin.

United States

- Gamblers Anonymous 20 Questions (GA-20)
- Inventory of Gambling Behavior (IGB)
- Cumulative Clinical Signs Method (CCSM)
- South Oaks Gambling Screen (SOGS) and the subsequently revised version (SOGS-R)
- Minnesota Modified South Oaks Gambling Screen (MOGS)
- Massachusetts Gambling Screen (MAGS)
- Addiction Severity Index for Gambling (ASI-G)
- Diagnostic Interview for Gambling Severity (DIGS)
- National Opinion Research Center DSM-IV Screen for Gambling Problems (NODS)

- Lie/Bet Scale
- Yale-Brown Obsessive Compulsive Scale for Pathological Gambling (YBOCS-PG)
- Diagnostic Interview Schedule Pathological Gambling Module (GAM-IV)
- Gambling Behavior Interview (GBI)
- Gambling Attitudes Scale
- (U.S.) National Comorbidity Survey - Replication, Gambling
- Gambling Treatment Outcome Monitoring System (GAMTOMS)
- Structured Clinical Interview for Pathological Gambling (SCI-PG)

Australia

- Scale of Gambling Choices
- Victorian Gambling Screen (VGS)
- HARM Measure
- G-Map
- Gambling Urge Scale
- Problem Gambling Counsellor Task Analysis (CTA-PG)

Canada

- Canadian Problem Gambling Index (CPGI)
- Information Biases Scale
- Gambling Passion Scale

New Zealand

- EIGHT Screen

United Kingdom

- DSM-IV-MR (MR=Multiple Response)

There are also several instruments developed specifically for use with youth. The two most frequently used youth problem gambling screens are the South Oaks Gambling Screen Revised for Adolescents (SOGS-RA) from the U.S. and the DSM-IV-J and DSM-IV-J-MR (J=Juvenile, MR=Multiple Response) from the U.K. Although many of these instruments are employed on a daily basis in making clinical, scientific and public policy decisions, very few of these new tools have been rigorously evaluated beyond their original development studies (Govoni, Frisch & Stinchfield, 2001).

Early conceptualisations of problem gambling were based primarily on clinical experience and expert group consensus (Govoni et al, 2001). The few tools that were developed during this period to identify problem gamblers reflect the strong psychological perspective that has largely informed problem gambling research. Recent emergence of a public health approach to gambling problems, particularly evident in Australia and Canada, has led to a focus on 'harm' as the foundation of several new measures of problem gambling (Battersby et al, 2002). Researchers in these countries have argued that a focus on harm is more appropriate for determining the socioeconomic impacts of gambling in the community. They argue that this perspective is also useful in screening for individuals who have, or may be, at risk for developing into problem gamblers (Thomas, Jackson & Blaszczynski, 2003). However, the problem gambling measures developed in these countries continue to include many items used in earlier screens and reflect a continued emphasis on the psychological aspects of problem gambling.

Population-based measures of problem gambling

Governments began funding services for individuals with gambling problems in the 1980s. As a first step toward establishing these services, policy makers sought information about the number of people who might seek help for their gambling problems and what they looked like. In responding to these questions, researchers adopted methods from the field of psychiatric epidemiology to investigate the prevalence of gambling problems in the general population.

In the 1980s, few tools existed to measure gambling problems and only one, the South Oaks Gambling Screen (SOGS) had been rigorously developed and tested for performance (Lesieur & Blume, 1987). The SOGS, closely based on the psychiatric criteria for pathological gambling, was developed to screen for gambling problems in clinical populations. The 20 scored items on the SOGS include hiding evidence of gambling, spending more time or money gambling than intended, arguing with family members over gambling and borrowing money from a variety of sources to gamble or to pay gambling debts. In developing the SOGS, specific items as well as the entire screen were tested for reliability and validity with a variety of groups including hospital workers, university students, prison inmates and inpatients in alcohol and substance abuse treatment programmes (Lesieur & Blume, 1987).

Like other tools in psychiatric research, the SOGS was quickly adopted in clinical settings as well as in epidemiological research. The SOGS was first used in a prevalence survey in New York State, U.S. (Volberg & Steadman, 1988). Since then, the SOGS and subsequent modifications of the original screen have been used in population-based research in more than 45 jurisdictions in Asia, Canada, Europe, Oceania and the U.S. (Abbott & Volberg, 1996, 2000; Bondolfi, Osiek & Ferrero, 2000; Orford et al, 2003a; Productivity Commission, 1999; Shaffer, Hall & Vander Bilt, 1999; Sproston, Erens & Orford, 2000; Volberg, 2001a; Volberg et al, 2001; Welte et al, 2001). Most of these studies have used the SOGS-R, or variants thereof, developed by Abbott and Volberg (1991, 1996) to provide both current and lifetime measures. The original SOGS only yields a lifetime measure, reflecting the Gamblers Anonymous and subsequent DSM conceptualisation of pathological gambling as a chronic or chronically relapsing mental disorder. This widespread use of the SOGS has been due, at least partly, to the great advantage of comparability within and across jurisdictions that came with use of a standard tool (Walker & Dickerson, 1996). Although there were increasingly well-focused grounds for concern about the performance of the SOGS in non-clinical environments, this tool remained the *de facto* standard in the field until well into the 1990s (Volberg, 2001a).

Contemporary developments in population-based measures

Beginning in the early 1990s, dissatisfaction with the SOGS grew, particularly among Australian and Canadian researchers. The main criticism of the SOGS was that this screen was developed and tested in a clinical setting and the characteristics of its performance in community samples were unknown (Walker & Dickerson, 1996; Wiebe, Single & Falkowski-Ham, 2001). However, this view ignores studies that did assess the SOGS and SOGS-R in general population contexts (Abbott & Volberg, 1991, 1992, 1996). There were additional criticisms of the SOGS (Abbott & Volberg, 1996; Battersby et al, 2002; Thomas et al, 2003). Different researchers argued that:

- the screen did not clearly reflect the conceptualisation of pathological gambling included in the DSM
- the screen might not specifically target pathological gamblers since some of the items would be equally endorsed by regular gamblers
- the original lifetime frame of reference of the screen overestimated the current prevalence of gambling problems
- the screen was insensitive to culturally diverse contexts

Another criticism of both the SOGS and the new DSM-IV criteria that were published in 1994 (American Psychiatric Association, 1994) was that whilst these tools are useful in clinical settings, they were developed prior to the introduction and widespread distribution of electronic gaming machines and did not take into account unique aspects of this new gambling activity (Focal Research Consultants, 2001).

In 1998, the (U.S.) National Gambling Impact Study Commission contracted with the National Opinion Research Center (NORC) and its partners to collect data from a nationally representative sample of households about gambling behaviour and gambling-related problems (Gerstein et al, 1999)[1]. The guidelines of the National Gambling Impact Study Commission specified that the DSM-IV criteria be used to identify respondents with gambling-related difficulties in the general population. This meant that the researchers could not use the SOGS since this screen is based on the DSM-III criteria. After reviewing other DSM-IV screens that were available, the study team elected to develop a new screen based closely on the DSM-IV criteria for diagnosing pathological gambling and designed specifically for administration in large survey samples. This screen is referred to as the NODS (the NORC DSM Screen for Gambling Problems). The screen is made up of 17 lifetime items and 17 past year items; several of the items are only administered if a preliminary screening question is endorsed and past year items are only administered if the corresponding lifetime item is endorsed.

One important step in developing the NODS was a field test with a national clinical sample of 40 individuals enrolled in outpatient problem gambling treatment programmes and an additional random telephone sample of 45 respondents in the Chicago metropolitan area. Ninety-five percent of the clinical sample scored five or more points on the lifetime NODS; the remaining two cases scored four points. These results are very similar to those reported by Stinchfield (2003) using a different DSM-IV-based screen. The test-retest reliability of the NODS was examined in a half-sample of 44 cases drawn equally from the clinical and telephone pilot samples. The lifetime and past-year scores were found to be highly reliable (r=0.99 and 0.98, respectively) (Gerstein et al, 1999). Based on the field test, the research team concluded that the NODS had strong internal consistency, retest reliability and good validity.

In addition to the U.S. national survey, the NODS has now been used in several state level prevalence surveys in the U.S. including Arizona, Florida, Nevada, North Dakota and Oregon and in a separate survey of older adults in Florida (Shapira et al., 2002; Volberg, 2001b, 2001c, 2002, 2003; Volberg & McNeilly, 2003)[2]. All of these state level surveys have included both the SOGS and the NODS and work is underway by Volberg and her colleagues at NORC to assess the relationship between these two problem gambling screens. Results of these analyses are expected in 2005. The NODS has also been used as an outcome measure in at least one study of formal treatment for gambling problems (Hodgins, 2002).

In 1997, an inter-provincial group of Canadian government agencies with responsibility for addressing problem gambling, commissioned the Canadian Centre on Substance Abuse to conduct a three-year study to clarify the concept of problem gambling in the general population, develop an operational definition to guide research, treatment and prevention, and design and test a new instrument for measuring problem gambling in non-clinical settings. The goal was to develop a more meaningful measure of problem gambling specifically for use in

[1] In addition to the general population survey of 2,417 adults, research initiatives undertaken by the NORC study team included a national survey of 534 youths aged 16 and 17 years, intercept interviews with 530 adult patrons of gaming facilities, a longitudinal data base (1980 to 1996) of social and economic indicators and estimated gambling revenues in a random national sample of 100 communities and case studies in ten communities regarding the effects of large-scale casinos opening in close proximity.

[2] Most recently, the NODS was employed in a prevalence survey in Galicia, Spain (Becoña, 2004).

general population surveys that placed this disorder in a wider social and environmental context.

The research team developed an instrument called the Canadian Problem Gambling Index (CPGI) which was tested for its performance in a Canadian-wide survey that included a large general population sample, re-testing of a sub-sample of respondents from the larger survey, and clinical validation interviews with a separate sub-sample (Ferris & Wynne, 2001). The research team examined the reliability, validity and classification accuracy of the CPGI and concluded that the screen measured non-pathological gambling problems better than the SOGS. The full CPGI includes over 30 items assessing gambling involvement, gambling problems, correlates and demographics. A subscale of nine scored items, the Problem Gambling Severity Index (PGSI), assesses problem gambling directly. These items include chasing losses, escalating gambling to maintain excitement (analogous to tolerance in other addictions), borrowing or selling to obtain money to gamble, betting more than one can afford, feeling guilty, being criticised by others, harm to health, financial difficulties to one's household and feeling that one might have a problem with gambling. With two exceptions (harm to health and financial difficulties to one's household) all of these items are drawn directly from the SOGS or from the DSM-IV criteria for pathological gambling. As the developers of the CPGI point out, this screen represents an evolution of older measures rather than something entirely new (Ferris & Wynne, 2001).

The full CPGI has been used in general population surveys in seven Canadian provinces including Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, Ontario and Saskatchewan as well as in Denmark and Iceland (British Columbia Ministry of Public Safety, 2003; Focal Research Consultants, 2001; Patton et al, 2002; Schrans & Schellinck, 2004; Smith & Wynne, 2002; Wiebe, Single & Falkowski-Ham, 2001; Wynne, 2002; Wynne, personal communication). The smaller subset of nine problem gambling items (PGSI) has been used in a national community mental health survey in Canada as well as in general population surveys in Queensland and Victoria, Australia (Marshall & Wynne, 2004; Queensland Policy Directorate, 2001; Wenzel et al, 2004). Finally, the PGSI is now a required screen for all clients entering drug, alcohol and problem gambling treatment in Ontario (Goering, 2003).

Earlier this year, Wenzel et al (2004) compared the performance of the SOGS, the CPGI and the recently developed Victorian Gambling Screen (VGS) in a general population survey in Victoria, Australia. After screening for gambling involvement, 435 regular weekly gamblers on non-lottery games were divided into three groups and administered one of the three problem gambling screens. The research team conducted analyses of content and face validity, examined the distribution of responses, internal consistency and underlying dimensionality of each of the three screens as well as carrying out a range of other tests of reliability and validity. They concluded that the CPGI outperformed both the SOGS and the VGS and recommended that this screen be adopted throughout Australia as an alternative to the SOGS. They further noted that the CPGI is undergoing refinement to accommodate findings from several of the recent Canadian surveys and argued that it was essential "to establish close collaboration with Canadian researchers to keep up to date with this process and participate in further modifications to the screen" (Wenzel et al, 2004, p.63).

There are some limitations to the validation work carried out in Victoria. Although the overall sample for the Victoria survey included nearly 8,500 respondents, only five percent of the respondents were identified as regular weekly gamblers on non-lottery games. This strategy was most probably adopted to increase the likelihood of identifying relatively large numbers of problem gamblers but the low rate of weekly non-lottery gambling is somewhat surprising in the Australian context. Despite this strategy, the actual number of problem gamblers captured in the sample was quite small (n=28 for the SOGS, n=22 for the CPGI and n=40 for the VGS) and this may have affected the results of the study. Finally, the inclusion of only regular

gamblers in the validation study excluded several important subgroups in the population, such as individuals who gamble less than weekly but for whom gambling is nevertheless problematic.

As the Victoria validation study illustrates, a critical challenge in population-based studies of problem gambling is the relative infrequency of the disorder in the general population. The rarity of the disorder means that problem gambling surveys must either screen enormous numbers of respondents to identify adequate numbers of problem gamblers for analysis or employ one or more strategies to efficiently capture large numbers of problem gamblers relative to their prevalence in the population, such as the 'dual frame' sampling approach used in the U.S. or the multiple interviews per household used in the U.K. (Gerstein et al, 1999; Orford et al, 2003).

While measures of problem gambling should ideally rest on theoretical principles, constraints in resources often lead clinicians and researchers to seek out the most practical assessment tools - those that are short, easy and which require little or no training to administer and score. Brevity and ease of administration has certainly been an important factor in the widespread adoption of the SOGS. These factors are also important in the rapid adoption of the CPGI for prevalence research in a number of jurisdictions. As brief screens for problem gambling continue to be developed, it is likely that these will be rapidly adopted for use even in the absence of good information about their performance in a range of different settings.

To illustrate, Toce-Gerstein and Volberg (2003) recently developed a brief screen that would minimise respondent burden and reduce the expense of community studies of problem gambling. These researchers used data from the U.S. national and patron surveys and from all of the state level surveys that included the NODS, representing nearly 9,000 adult Americans, to identify a subset of three lifetime NODS questions to which 99% of the NODS-classified pathological gamblers (NODS=5+) and 94% of NODS-classified problem gamblers (NODS=3 or 4) answered at least one in the affirmative. This new screen was dubbed the NODS-CLiP to remind users of the three criteria assessed using this screen (Control, Lying and Preoccupation). Toce-Gerstein and Volberg were unprepared for the tremendous interest in the NODS-CLiP among clinicians working in alcohol and drug programmes. In retrospect, it seems obvious that a three-item screen, even if it must be followed by an additional three-minute battery of questions to confirm or disconfirm a potential diagnosis of pathological gambling, would be just as attractive to clinical professionals as to population researchers.

Assessing problem gambling in the future

The assumption underlying all of the existing research is that gambling-related difficulties are a robust phenomenon that exist in the community and can be measured. Despite agreement among researchers and clinicians at this fundamental level, there is disagreement about the concepts and measurement of gambling-related difficulties. The presence of competing concepts and methods is not uncommon among emerging and even mature scientific fields. Nevertheless disputes among experts have led to a significant degree of public confusion and uncertainty about the prevalence of problem gambling and the impacts of legal gambling on society.

Like much of science, measurement is a negotiable process. Instrumentation is always a reflection of the work that researchers are doing to identify, describe and manipulate the phenomena in which they are interested. Each of the methods used to classify problem gamblers represents a culturally and historically situated consensus about the nature of problem gambling. As research continues and as the definitions of problem gambling change, new instruments and new methods for assessing gambling problems and for testing models of gambling behaviour will continue to emerge.

Moving forward, we concur with Thomas et al (2003) who argue that important policy considerations including the design and delivery of services targeted at problem gamblers as well as the development of more effective prevention strategies and an improved capacity to evaluate these measures, flow from the development and use of *credible* measures of problem gambling. By 'credible', Thomas et al appear to mean measurement tools with demonstrated reliability and validity but also widespread applicability and practicability. In their view, credibility also derives from a clear conceptual or theoretical account of problem gambling and its components. As they note, as long as "there is imprecision in the basic structure of this framework, we are doomed to ongoing pointless debate about whether one tool is 'better' than another or whether it over- or under-estimates the 'true' rates of the problem" (Thomas et al, 2003, p.20).

Despite continued lack of conceptual clarity, the pragmatic demands imposed by the rapid expansion of legalised gambling have led researchers and clinicians to develop or seek out relatively brief, easily administered screens to measure the extent and degree of problem gambling in a range of settings. Perhaps due to the lack of funding for basic psychometric research as well as the importance of establishing and maintaining comparability over time and across jurisdictions, problem gambling researchers and clinicians have continued to use only a few tools to serve most or all of these sometimes disparate purposes (Thomas et al, 2003).

The gambling studies field will continue to grapple with fundamental questions about the nature of problem gambling. Debate continues about whether gambling disorders comprise a single, sharply distinguished pathological entity or lie on a continuum, with no symptoms and florid pathological gambling as its respective endpoints (Blaszczynski, 2000; Blaszczynski & McConaghy, 1989; Productivity Commission, 1999; Shaffer & Hall, 1996; Slutske et al, 2000; Toce-Gerstein, Gerstein & Volberg, 2003a). Another topic of debate is the question of what cut score within the diagnostic criteria yields the most accurate classification. Yet another topic is whether sub-clinical 'problem gambling' should be recognised and, if so, with what criteria and cut score (Orford, 2003; Petry, 2003; Rosenthal, 2003; Toce-Gerstein, Gerstein & Volberg, 2003b). While it is clear that work is needed to examine the underlying conceptualisation of problem gambling, it is equally clear that efforts to prevent and treat gambling problems will not wait on the resolution of these fundamental questions.

3.1.2 Types of monitoring

Regular prevalence surveys of gambling participation and problem gambling prevalence rates are an important first step in monitoring the impacts of legal gambling. It is essential that these surveys include samples large enough to examine changes in gambling participation and problem gambling prevalence among subgroups in the population. It is also important to assess changes in attitudes toward gambling over time. Regular surveys of problem gambling services including helplines and formal treatment providers, are also needed as are evaluations of the effectiveness and efficacy of these services. Finally, it is important to monitor gambling revenues over time as well as the proportion of these revenues derived from problem gamblers. Another key initiative is to establish and maintain a database on the impacts of gambling including health, family, workplace, financial and legal impacts.

There are other questions about gambling and its impacts that cannot be answered on the basis of epidemiological research. Some of these questions relate to the causes of problem gambling, for example, how people get involved with gambling, get into trouble with gambling and how some of them get themselves out of trouble. As we will argue in Section 3.2, the need for longitudinal research in the gambling studies field is particularly acute. Other questions are comparative in nature, for example, what are the impacts of widespread electronic gambling

devices at betting shops on lottery and bingo expenditures? These kinds of questions require basic social science research and multi-year commitments of funding.

We envision a two-pronged approach to implementing basic research studies of gambling and problem gambling in the U.K. The first effort involves adding modules to assess gambling involvement and problem gambling to longitudinal studies that are already underway and to large cross-sectional surveys assessing a range of health and mental health issues[3]. The second effort involves conducting regular surveys at the national level of gambling involvement, gambling expenditures and problem gambling prevalence to obtain time-series data on these behaviours and permit assessments of the impacts of changes in the availability of legal gambling over time. To ensure the success of this effort, it would be helpful to establish an advisory group of international gambling researchers, British gambling researchers and British scientists with expertise in non-gambling issues to oversee the effort and ensure both the comparability of results between studies and the incorporation of new measures and designs as these become available. In implementing these efforts, it will be important to build capacity in the U.K. gambling research community by encouraging students and young researchers to investigate gambling-related issues from a variety of intellectual perspectives.

Finally, what is needed is a clearinghouse to gather information from U.K. and international studies of gambling behaviour and impacts, synthesise this information, and provide stakeholders with reliable and valid information about the impacts of gambling in different regions of the country and in relation to different types of gambling. A clearinghouse would also be a critical source of information on the best practices in conducting gambling impact studies and evaluations of problem gambling services. While this clearinghouse could be established through contracts with an academic institution or non-profit organisation anywhere in the U.K., care is needed to ensure that this database remains relevant to the needs of all of the stakeholders. It would be advisable for the agency or organisation responsible for maintaining this database to also have responsibilities for disseminating information about gambling and problem gambling to stakeholders concerned with these issues including legislators, regulators, gambling operators, researchers, treatment professionals, gamblers and their families.

3.1.3 Evidence of effectiveness

Internationally, a growing number of national governments including Australia, Canada, New Zealand and South Africa, have begun to establish systems to monitor the impacts of legal gambling on citizens and communities over extended periods of time (Volberg, 2004a). However, these efforts are only a few years old and little is known about 'best practices' in this regard.

In our opinion, the best existing approach is found in New Zealand. In that country, accounts of expenditures on major forms of legal gambling are published annually and surveys of gambling participation and attitudes have been conducted every five years since 1985. Much larger studies of gambling participation and problem gambling prevalence have been carried out twice in New Zealand, in 1991 and 1999 (Abbott & Volberg, 1991, 2000). Specialised studies of problem gambling among male and female prisoners as well as the first longitudinal

[3] Both of these approaches have been taken in the U.S. For example, a brief gambling module was added to the 2001 wave of a longitudinal study of the health and life experiences of women (Volberg, Friderici & Wilsnack, 2004). A different gambling module was added to the 2001-2002 National Comorbidity Survey - Replication (for more information, see http://www.hcp.med.harvard.edu/ncs/index.htm).
In New Zealand, gambling and problem gambling measures have been included in a prospective child and family health and development cohort study of approximately 1,400 Pacific Island families (Paterson et al, 2002).

study of problem gamblers in the community were integral parts of the later New Zealand Gaming Survey (Abbott, 2001a). Finally, information about the number of calls to the national problem gambling helpline and the utilisation of counselling services by new clients has been collected for over a decade in New Zealand along with information about the characteristics of individuals who access these services (Paton-Simpson et al, 2004). However, as yet, there is no single entity in New Zealand that collects these different streams of information and distils them into forms useful to a wide range of stakeholders. There is also no provision as yet in New Zealand for soliciting and funding basic research on problem gambling.

3.1.4 Whose responsibility?

To establish and maintain an effective monitoring system of the impacts of legal gambling, all of the stakeholders concerned must take some responsibility for feeding information into the system and helping to ensure that the outcomes are useful. However, since Government and the gambling industry have the greatest resources and other stakeholders are dependent on them for the funding of all kinds of services, it should be the joint responsibility of Government and industry to ensure that a suitable system is established and maintained.

3.1.5 Should monitoring be conducted by service providers or by an independent agency?

While there are some types of information that are most appropriately gathered by service providers, we have indicated above that there is a need for an independent agency, situated at an academic institution or managed by a non-profit organisation, to ensure that monitoring of the impacts of legal gambling in the U.K. is relevant, reliable and of use to all of the stakeholders involved.

3.2 Development of, and risk factors for, problem gambling

3.2.1 Commentary

This section reviews international and U.K. research on the development of, and risk factors for, problem gambling. Risk factors are those features of the environment and individual gambler that have been demonstrated to have an association with problem gambling. The identification of such factors is important as they may contribute to the development and/or maintenance of problem gambling. Identifying risk factors and determining the nature of their influence is required to advance understanding of problem gambling and develop interventions to assist problem gamblers and prevent problem onset.

Most physical health problems and almost all mental disorders and significant social problems have multiple risk factors. This is also the case for problem gambling. Some risk factors are common to many different disorders; others are specific to, or particularly strongly linked with, a single disorder. In addition to identifying risk factors, it is necessary to ascertain how powerful their effect is, both in absolute terms and relative to other factors.

The traditional public health approach distinguishes between the agent, host and environment and seeks to identify aspects of each that are implicated in the onset and progression of particular illnesses. It includes examination of inter-relationships between relevant factors within and between these three categories. This approach has been successful in developing effective public health responses to various physical health problems. Two general approaches have been taken, namely: (1) reducing exposure to the agent, and (2) increasing host resistance to exposure.

The traditional public health model has been extended to non-infectious diseases and mental disorders including alcohol misuse/dependence and, more recently, problem gambling. In the case of problem gambling, the 'agent' is exposure to gambling activities. The 'host' is the problem gambler, in particular those attributes and experiences that increase susceptibility and resistance to problem development. The 'environment' refers to the wider physical, social and cultural setting in which gambling occurs.

Prior to commencing the review, the relevance of this body of research to policy and practice is briefly considered. Practitioner and industry perspectives are included. While the literature is predominantly examined under the public health headings of agent, environment and host, there is overlap between sections. In part, this is because some factors belong to more than one domain. Additionally, a number of studies examine multiple factors from two or all three domains. Following a review of relevant international studies, research is considered that explores interactions between risk factors and assesses their relative importance. Next, theoretical models that seek to explain the development of problem gambling are considered along with prospective studies that address these models and further inform understanding of problem development.

Following consideration of the international literature, relevant U.K. research is examined, again using the three major headings to structure the review. More detailed consideration is given to youth problem gambling. Relative to other countries, this topic has received significant attention in the U.K. over a number of years. This is probably a consequence of the ready accessibility of fruit machines to children and young adolescents, and public and official concerns about possible adverse effects. This section of the report ends with consideration of the implications of the international and local research for the U.K.

3.2.1.1 Role of research and contribution to policy

Among other things, research is driven by curiosity. Humans are compelled to make sense of the world around them. Many investigators engage in research because they have an interest in a particular matter and desire to answer questions arising from various sources including previous theory and research. There is much about gambling and problem gambling to engage scholars from different academic and professional disciplines. As indicated in the quote from Walker (1992) at the outset of the report (p.8) some aspects are paradoxical and appear to challenge major theories of human behaviour.

The question underlying studies examined in this section of the review is 'why do people become problem gamblers?' Many studies addressing this and related questions are driven by curiosity and a wish to understand how various aspects of gambling, individual gamblers and broader context within which gambling and gamblers are located, contribute to the development of problem gambling.

Stakeholders with particular interests in gambling and problem gambling also drive gambling research. Stakeholders other than academics and academic institutions include people affected by problem gambling, the gaming industry, providers of helping services, and governments and government agencies. Each has different perspectives and questions. They also differ in the extent to which they influence the direction and conduct of research. Stakeholders have strong interest in questions and answers that can assist them in practical ways. Such interests include seeking information to help overcome personal problems, to strengthen a case to expand or curtail gambling activities, justify expansion of services for problem gamblers, enhance the effectiveness of services, and inform public policy and legislative change. Research has generated a great deal of information relevant to these interests. However, not infrequently it is drawn on and interpreted selectively to support prior policy positions or organisational imperatives. For example, gambling industry groups typically seek to minimise prevalence rates whilst problem gambling service providers and advocates tend to emphasise higher estimates. Perhaps more often research is ignored, not only in policy development but also in service planning and delivery.

Gambling research takes place in a contested and politically charged environment. Researchers may be accused of bias, typically of being either pro- or anti-gambling. This situation is far from unique to gambling research. It is common when particular products or activities generate substantial financial benefits to politically strong sectors of society while at the same time producing significant real and/or perceived financial, social, health or environmental costs. Tobacco, alcohol and high fat/refined carbohydrate fast foods come to mind in this regard.

Researchers are probably driven at least as much by essentially tribal imperatives as other people and consequently may not be devoid of partiality in the conduct and interpretation of research. Scientific conventions, professional ethics and peer review do, however, provide some protection against overt and extreme bias. Separating funding decisions from funding sources also helps avoid bias and the appearance of bias. These are matters that need to be borne in mind, along with conceptual rigor and methodological quality, when reviewing and weighing the relative importance of particular studies.

From the review that follows, it is evident that many risk factors have been identified for problem gambling. Some emerge consistently in different studies. Others vary over time and across populations. There is overlap between risk factors for problem gambling and related disorders such as substance misuse/dependence. The international and U.K. literature on risk factors has contributed to understanding problem gambling and highlighted topics that warrant further investigation. However, it is apparent that this understanding is limited because there has been little examination of how the various risk factors influence the development of

problem gambling in individuals or their relative strength. Furthermore, while statistically significant associations have been demonstrated, for the most part the extent to which these relationships are causal is uncertain.

The foregoing shortcomings could be significantly addressed by focusing research on the evaluation and refinement of multi-factorial theories of problem gambling that have been introduced in recent years. More of these evaluations and other studies will need to incorporate risk factors from across the three domains and employ multivariate analyses to examine their independent and interactive impacts on problem development. It is imperative that increasing use is made of prospective studies where large, representative samples of non-problem and problem gamblers are followed over a number of years, including some that commence during childhood. The small numbers of prospective studies undertaken so far have consistently shown that problem gambling, especially when problems are less severe and not compounded by additional mental health problems, is more mutable than was previously thought on the basis of clinical research and retrospective accounts. For many, probably most, problem gamblers it appears that problems are relatively short-lived and self-correcting. However, during problem phases, considerable damage can result for affected individuals and others in their family, work and wider social contexts. For a significant minority, problems are more chronic or chronically relapsing. The potential of studies of this type to identify more precisely which factors are most responsible for problem onset, as well as for subsequent problem escalation, maintenance, reduction, relapse and resolution, is to date largely unfulfilled.

In addition to risk factors, it is important to identify protective factors, those individual and environmental attributes and experiences that moderate or mediate the effects of exposure to risk factors. Specification of factors in this category could help with the design of interventions to prevent progression from non-problem recreational gambling to problem gambling. They might also have relevance to the treatment of people who have developed problems including helping sustain therapeutic gains and reduce relapse. Although protective factors are not simply the converse of risk factors, the distinction between the two is not clearly differentiated. There is little research that explicitly examines protective factors related to problem gambling. More is known about factors that are protective against the development of problems with alcohol, tobacco and other substances. It is likely that many of them will also be relevant to problem gambling. However, the extent to which this is so and which additional factors are specific to problem gambling remain questions that are only partially answered.

With the notable exceptions of research on the prevalence of, and risk factors for, problem gambling among youth and research on aspects of gambling activities and settings, gambling research is rudimentary in the U.K., both in absolute terms and relative to some other countries. This is surprising considering the early lead given to gambling research by U.K. academics and the country's reputation in other areas of developmental psychopathology, psychiatric epidemiology, substance misuse/dependence and public health more generally. In large part it appears to be a consequence of problem gambling not being considered part of mainstream health services and health research agendas. Given the lack of secure funding from health and other official research funding bodies, it is not surprising that the U.K. lacks sustained research streams addressing theoretically and practically important aspects of gambling and problem gambling.

While there are significant gaps in knowledge about problem gambling, including the relative importance of major risk factors and the way they impact on problem development, what is known has some relevance to gambling policy and the development of interventions to prevent problems and assist problem gamblers. For example, it can be anticipated that legislation and policies that significantly enhance access to electronic gaming machines, casino table games and other continuous gambling forms will generate increases in problem gambling and related flow-on costs to families and communities. Risk profiles are also likely to change, with

disproportionate increases among women and some other population sectors including ethnic and new migrant minorities. Problem gambling may also move 'up market', becoming somewhat more evenly distributed throughout socioeconomic strata and age groups.

Whilst prevalence is highly likely to rise, research suggests it will eventually level out, even when gambling accessibility continues to increase. However, rates may rise three- or four-fold before this occurs and even then, active measures may be required to achieve stabilisation. It appears that raising public awareness of the risks of excessive gambling, expanding services for problem gamblers and strengthening regulatory, industry and public health harm reduction measures can counteract some adverse effects from increased availability. What is not known is how quickly such endeavours can have a significant impact and whether or not they can prevent problem escalation entirely if introduced concurrently with increased access to 'hard' gambling. Research reviewed in this section has some relevance to the development of policy and design of interventions. However, in most areas research is at a rudimentary stage of development and it would be prudent to pilot and evaluate new policies and interventions and use that information for ongoing refinement and enhancement.

3.2.1.2 Practitioner contact with problem gamblers

Research on risk factors and the development of problem gambling has potential to significantly enhance the practice of health professionals, counsellors and others who work with problem gamblers in a variety of capacities. Research of this type has relevance to assessment and the design of education, prevention and therapeutic interventions.

The majority of health and related professionals who have contact with problem gamblers are probably unaware that they do. This is because practitioners who have most frequent contact with members of the community, including problem gamblers, are medical doctors, nurses and other professionals working in primary health and community settings. General population surveys indicate that the great majority of people identified as having problems with gambling do not report them to, or receive assistance from, professionals of any kind. While this changes somewhat when public and professional awareness of problem gambling is raised and more services are provided, the statement remains valid.

Even in settings where moderate to large percentages of clients have gambling problems, it appears that screening for problem gambling and specialist referral or treatment is very much the exception rather than the rule. Alcohol and drug treatment facilities, mental health centres and outpatient clinics, probation services and prisons are all in this category. Research indicates that the foregoing are all situations where education, early intervention, assessment, treatment and referral could usefully occur. Child and family, relationships and other counselling services including financial advice can also be expected to be appropriate locations for some of these activities.

In the case of specialist gambling helpline and counselling services, high levels of substance misuse and some other mental disorders among problem gamblers point to the importance of practitioners understanding these conditions. In counselling situations this includes competence in their assessment and ongoing management or referral. In addition to differing with respect to the presence, nature and extent of psychiatric comorbidity, problem gamblers vary in other ways. This includes the particular combination of factors that played a major role in the development of each person's gambling and related problems. Therapies may be more effective if they address a wider range of factors including those that have greater significance to individual problem gamblers.

Whilst each problem gambler is unique, there appear to be particular subtypes of problem gambler with some distinct characteristic and treatment needs. Further research is required to specify these differences more clearly so that therapeutic interventions can be developed or refined to address them. This may include pharmacological as well as psychological and social approaches.

As previously indicated, prospective general population studies have found that most problem gamblers have fairly transient problems, albeit that some go on to develop serious problems and others cycle in and out of problem phases. This is at variance both with official psychiatric and Gamblers Anonymous conceptualisations of pathological gambling as a chronic or chronically relapsing disorder or illness. There is, however, a minority of problem gamblers who do more often fit that description. This includes problem gamblers with particularly serious problems, especially those that present for treatment. Prospective studies have also found most people overcome their problems without professional help and that those people usually return to non-problematic gambling. The latter finding is at variance with the long-held clinical view that abstinence is the only legitimate or sustainable treatment goal. Whilst abstinence may well be the optimal approach for people with serious problems, this belief has yet to be empirically validated. However, it may not be so for the majority. These findings are a further indication that treatment and other interventions need to be flexible and responsive to the needs of particular groups. They also need to be formally evaluated. This is a topic that is picked up in the next major section of this review.

General population prevalence surveys identify which sectors of the population contain the highest concentrations of problem gamblers. In addition to providing information about risk factors that can assist with the development of prevention programmes, these studies are important in the design and location of counselling and related specialist services. By comparing problem gambling profiles from community surveys with client records it is possible to ascertain how well services are reaching those most in need of them. Measures can then be introduced to enhance outreach. There are indications that some ethnic minority and recent migrant groups frequently contain disproportionately large numbers of problem gamblers. These same groups are also frequently under-represented as clients in mainstream services, highlighting the importance of recruiting staff from those communities and providing culturally appropriate services.

While population sectors have been identified that are generally at high risk for problem gambling, in particular situations substantial changes can occur over relatively short periods of time. This includes periods when gambling forms such as electronic gaming machines are being introduced or made much more accessible than previously. In that situation, existing services may need to change to be able to engage and work effectively with large numbers of different types of problem gambler. From the foregoing it is evident that general population surveys need to be repeated at regular intervals and that it cannot be assumed that past findings remain current. This may be especially so during times of significant policy change.

3.2.1.3 Relevant industry practice

Gambling participation is a necessary condition for the development of problem gambling. If there were no gambling in a totally isolated society, there would be no problem gambling. In that situation, however, some people who would otherwise be prone to developing gambling problems might well develop other addictive, mental health or social problems. From research reviewed in this section, it is apparent that increasing the availability of particular forms of gambling generally has a significant impact on the prevalence of problem gambling. It appears that this is not, however, inevitable. Other factors, currently only partially understood, may in some circumstances contain or even reverse this effect.

Increasingly problem gambling is being recognised by governments as a significant public health and social problem. This recognition has occurred in conjunction with the expansion of legalised gambling including lotteries, casinos, betting on the outcomes of sporting and other events and, most significantly, electronic gaming machines. Gambling research, particularly prevalence studies, has played a part in increasing awareness and contributing to recognition of the need to provide the public with information about problem gambling and establish services to assist problem gamblers. Rapid uptake of such services has added to concerns about the scale and social costs of problem gambling. In some jurisdictions, these concerns have contributed to measures being introduced to reduce access to or limit further expansion. Increasingly, interest is also growing in public health and other measures that might mitigate adverse impacts.

Given that access to gambling, especially electronic gaming machines and other forms of continuous gambling, is necessary for the development of problem gambling, reducing access is one approach that could reduce problems. Taken to the extreme, this would entail elimination of all commercial, state-run or -sponsored and charitable gambling. However, even if this were accomplished, in today's world there would remain at-risk and problem gamblers who would seek out or initiate informal and illegal gambling opportunities and access jurisdictions where gambling activities are readily available. Surveys were conducted in some U.S. states when there were few legal gambling opportunities. While generally significantly lower than in recent U.S. studies, problem gambling rates in those jurisdictions appear to be similar to that of the more recent U.K. survey.

Historically, gambling industry reactions to problem gambling prevalence research appear to have been typically dismissive. Efforts have been made to publicly discredit studies and argue that methodological deficiencies artificially inflate prevalence estimates. The usual stance is that pathological gambling is a rare mental disorder that is predominantly physically and/or psychologically determined. Whilst acknowledging that gambling plays some part, it is maintained that if those people did not become pathological gamblers they would manifest some other, possibly more disabling, mental disorder. Emphasis has been placed on research that investigates risk factors in the host rather than in the agent or environment. It is also maintained that the problems of a small minority do not justify curtailing the pleasure of the great majority who do not experience problems.

More recent findings indicating that many problem gamblers have transient problems that often self-correct have generally been more favourably received by industry spokespersons than by treatment providers (Abbott, Williams & Volberg, 2004). However, acceptance brings with it the reality of a much larger spectrum of problem gamblers with difficulties of variable severity. This challenges the notion that problems are confined to a small, constitutionally distinct group, and shifts the focus to structural aspects of gambling as well as to contextual features that pose risks to many, perhaps most, regular gamblers. Research also shows, in the case of some forms of gambling, that problem gamblers account for a quarter to over a half of total gambling expenditure.

The gambling industry has long conducted and funded research designed to make their products more attractive to consumers and increase revenue. Much of this research is commercially sensitive and not available outside industry circles. It may well be of considerable value in advancing understanding of features of gambling activities and settings that contribute to high-risk gambling involvement and problem development. In some jurisdictions, sectors of the industry have also provided significant funding for problem gambling research by independent and other investigators.

In recent years industry leaders have taken problem gambling and the findings of problem gambling research more seriously and have supported research in various ways. There are probably many reasons for this change including the risk that growing numbers of problem gamblers, including customers and staff, pose to their business operations and reputation. New legislational pressure from governments has been significant in some instances. There is also a concern to be, and/or be seen to be, a good corporate citizen. Additionally, there has been an increase in initiatives to provide information about problem gambling and sources of professional help at gambling sites. In some cases, more proactive host responsibility programmes have been introduced. Research on risk factors and problem gambling development has potential to inform the design of programmes of this type, perhaps especially those that go beyond education and problem intervention and seek to prevent problem development. While there is a measure of mutual goodwill, it remains to be seen how far independent researchers, the industry and service providers can work together in this direction.

3.2.2 International perspective

3.2.2.1 Risk factors

(a) The agent: gambling exposure

Introduction

During the last 15 to 20 years, in many parts of the world there has been an unprecedented increase in gambling availability, participation and expenditure. This growth has been particularly strong in jurisdictions where electronic gaming machines and large urban casinos have been widely introduced, for example, Canada, the United States, Australia, New Zealand and South Africa. Typically the introduction of state lotteries and increased availability of other types of lottery including instant formats preceded these developments. Relative to these countries, growth in the U.K. has to date been more modest and primarily due to the introduction of a National Lottery and instant lotteries (scratch cards).

A number of broad inter-related trends have accompanied the expansion of gambling and continue to influence the evolution of commercial gambling internationally. These include the growing legitimacy and acceptance of legal gambling, the intersection of gambling and financial technologies, impacts of the Internet on all forms of gambling, accelerated globalisation and continued spread of gambling to traditionally non-gambling settings (Abbott & Volberg, 1999).

Participation in gambling activities is a necessary condition for the development of gambling problems, just as alcohol consumption is required for the development of alcohol problems. Consequently, it would seem reasonable to expect that increased gambling availability and access would lead to increases in gambling involvement and problems. Is this the case? A variety of studies have relevance to this question. This is a particularly important issue for a variety of reasons, not the least being that demonstration of a link has implications for government policy concerning future access to gambling and the locus of responsibility for attendant adverse health, personal and social impacts.

Different forms of gambling

At this juncture it is important to note that ‘gambling’ embraces a diversity of activities with distinct characteristics that appeal to different sorts of people who engage them in disparate ways (Abbott & Volberg, 1999; Walker, 1992). Some forms have a strong association with

problem gambling, most notably those that are continuous in nature and involve an element of skill or perceived skill, for example, electronic gaming machines and casino table games. General population prevalence studies in a number of countries have found that people with preferences for frequent involvement in, and substantial expenditures on, these forms of gambling have a high probability of being a problem gambler. For example, while it is generally estimated that between two and five percent of the adult population in jurisdictions with 'mature' gambling markets are lifetime problem gamblers, prevalence rates among regular gaming machine players and track bettors can be as high as 25% (Abbott & Volberg, 2000; Schrans, Schellinck & Walsh, 2000; Productivity Commission, 1999).

The association between participation in particular forms of gambling and problem gambling assessed in prevalence surveys is also apparent in clinical presentations. The great majority of individuals calling gambling telephone helplines and presenting for treatment in those jurisdictions referred to in the previous paragraph report that their problems are primarily with electronic gaming machines, track betting and casino table games. Furthermore, in Australia, New Zealand and a number of other countries during the past decade, increases in the proportion of total per capita gambling expenditure on non-casino gaming machines was mirrored by increases in the proportion of people contacting helplines who cited this as their major form of gambling (Paton-Simpson, Gruys & Hannifin, 2004; Productivity Commission, 1999).

When the New Zealand national problem gambling helpline commenced in 1993, similar numbers of callers reported having problems with electronic gaming machines and track betting (Sullivan et al, 1994). Few other forms of gambling were mentioned. In 1999, 64% of new clients contacting the helpline indicated that non-casino gaming machines were their primary gambling mode. This increased to 84% in 2003. Casinos were introduced to New Zealand from the mid-1990s. In 1999, a further 13% of callers reported casino gaming machines as their primary mode. This dropped to eight percent in 2003. Track betting accounted for 14% in 1999, a marked reduction from 1993. It fell further to four percent in 2003. The only other form of gambling mentioned by significant numbers of new callers was casino table games (two percent), a reduction from four percent in 1999. Similar proportions and changes over time were evident for new clients receiving face-to-face specialist counselling for problem gambling. Currently, approximately 90% of new helpline and counselling clients report problems associated with electronic gaming machines. Similar findings from other jurisdictions where electronic gaming machines are widely available indicate that they typically displace most other forms of gambling in terms of percentage of gambling expenditure. Parallel 'displacement' occurs with respect to problem gambling; the great majority of problem gamblers from community surveys and treatment settings report having problems exclusively or primarily with gaming machines (Abbott, 2001a; Productivity Commission, 1999).

Given the association between high levels of involvement with particular forms of gambling and problem gambling it could be expected that the substantial increases in gambling availability and expenditure that occurred in many parts of the world since the mid-1980s will have generated significant increases in problem gambling prevalence. This has been examined in a number of ways.

General population prevalence surveys

The first national survey of problem gambling was undertaken in the United States in the mid-1970s (Kallick et al, 1976), prior to the recognition of pathological gambling as a psychiatric disorder with explicit diagnostic criteria. Although the procedure used to measure 'probable compulsive gambling' has been challenged (e.g. Nadler, 1985) this study provided the first prevalence estimates internationally. At that time there was limited access to legalised

gambling in most parts of the United States. Nevada, with wide availability of casinos, was the major exception. In the present context, comparison between the estimate for the country as a whole (0.8%) and Nevada (2.5%) is of particular interest. Based largely on this prevalence difference and the finding of strong relationships between exposure to gambling and gambling participation the authors concluded "the data tend to support the contention that the widespread legalisation of gambling in the nation may result in a significant increase in the incidence of compulsive gambling" (p.xiii).

The majority of subsequent problem gambling prevalence surveys have been conducted in the United States and Canada. Volberg (1994) compared prevalence rates among five U.S. states with varying gambling histories and gambling accessibility. Those with a longer history of legally available gambling had higher rates.

Shaffer, Hall and Vander Bilt (1997, 1999) conducted a systematic review of North American state and provincial level studies carried out between 1975 and 1996, a period during which gambling availability increased markedly. Using a variety of analytic procedures, the researchers concluded that the prevalence of problem gambling had increased significantly over time among adults in the general population. Past year prevalence rates for surveys conducted prior to 1993 averaged 0.8%; rates for post 1993 surveys averaged 1.3%. Although statistically significant, Shaffer, Hall and Vander Bilt (1997) noted that the total variability in prevalence explained by time was relatively modest and that it has yet to be determined what other factors explain changing rates over time. Changes were not evident for youth, tertiary students and institutional populations. Despite considerable variations in availability and expenditure between states and provinces, significant regional variation was not demonstrated for problem gambling.

Recently, a state-wide survey has been completed in Nevada (Volberg, 2002). Different measures of problem gambling were used from that employed in the first (mid-1970s) national survey. For this reason, it could not be determined whether the prevalence of problem gambling in Nevada had increased or decreased over time. However, as in the first U.S. national survey, the prevalence of problem gambling in Nevada was substantially higher than in the United States as a whole. Based on the past-year SOGS, the prevalence of pathological gambling in Nevada was 3.5% compared with a national rate of 1.9% (Welte et al, 2001). Based on the lifetime National Opinion Research Center DSM-IV Screen for Gambling Problems (NODS), the prevalence of pathological gambling in Nevada was 2.1% compared with a national rate of 1.2% (Gerstein et al, 1999). Based on a third measure, the past-year NODS, the prevalence of pathological gambling in Nevada was half the rate found for the United States as a whole (0.3% compared with 0.6%). However, this difference was not statistically significant.

More recently, Shaffer, LaBrie and LaPlante (2004) examined county level prevalence estimates from the survey in Nevada in relation to casino availability ('exposure'). Consistent with the 'exposure' hypothesis, they found the four counties with the greatest access to casinos had the highest problem gambling rates and the four with the least availability had the lowest rates.

As noted above, a second U.S. national survey of gambling behaviour was completed in 1998 for the National Gambling Impact Study Commission (Gerstein et al, 1999). Differences in the way problem gambling was assessed in this and the original national survey prevented meaningful comparison of their overall prevalence estimates and the sample size was too small to enable individual states to be compared. However, prevalence rates were higher in the West than in other regions. With respect to links between gambling availability and problems, it is of interest that the researchers found that location of a casino within 50 miles (versus 50 to 250 miles) was associated with approximately double the rate of pathological gambling (2.1%

compared to 0.9%). In a forthcoming article, Welte et al (in press) used census data and geographic information to determine that location of a casino within ten miles of an individual's home is independently associated with a 90% increase in the odds of being a problem or pathological gambler.

A relationship between casino proximity and gambling problems was also found in the 1999 New Zealand national survey (Abbott & Volberg, 2000). In that study, higher prevalence rates were found in the two New Zealand cities with casinos than in other cities. In some analyses this relationship remained when other factors associated with problem gambling were controlled for statistically, suggesting the differences were a consequence of the presence of casinos.

A more recent, third, U.S. national survey also found higher prevalence rates in the West (Welte et al, 2002). However, this region did not have higher gambling expenditure than other parts of the country. Contrary to expectation the region with the highest expenditure and percentage of regular gamblers, New England, had the lowest prevalence.

Since 1990 a number of state and territory prevalence studies have also been undertaken in Australia. The studies conducted prior to 1998 were of variable quality and used different methodologies. This precluded meaningful comparison of rates over time or in relation to gambling availability (Abbott & Volberg, 1999; Productivity Commission, 1999). In 1998, the Australian Productivity Commission commissioned a national survey of gambling in association with its National Inquiry into Australia's Gambling Industries (Productivity Commission, 1999). In contrast to the U.S. national survey, the sample was sufficiently large to enable differences between individual states and territories to be examined. From their analyses the Productivity Commission concluded that prevalence rates are generally higher in states and territories with greater accessibility and expenditure. This relationship was apparent when each of the following measures was used: gaming machines per 1000 adults, gaming machine expenditure per adult and total non-lottery (continuous) gambling expenditure per adult. Significant relationships were also found between gambling expenditure and both the number of Gamblers Anonymous groups per million adults and new clients receiving specialist help for gambling problems.

Although the Productivity Commission survey data indicate significant relationships between some measures of gambling exposure and both problem gambling prevalence and help seeking, careful examination of the data suggests the relationship is not linear. The two states with the lowest expenditures and numbers of machines per capita (Western Australia and Tasmania) had current rates of 'probable pathological gambling' of 0.7% and 0.4% respectively. At that time, New Zealand had similar numbers of machines and expenditure to these states and a similar prevalence rate (0.5%). The remaining Australian states and territories had much higher, although varying, machine 'densities' and expenditures. Although they also had substantially higher rates of probable pathological gambling (ranging from 1.9% to 2.6%), *within* this group increased gambling exposure was not associated with increases in prevalence (Abbott, 2001a).

The Australian and New Zealand findings outlined in the previous paragraph are consistent with Abbott, Williams and Volberg's (1999) proposal that:

> It is conceivable that as people and society generally obtain increased experience with new forms of gambling, adaptations will be made that enable problems to be more readily countered or contained. Increased public awareness of problem gambling and its early warning signs, the development of informal social controls and the expansion optimistic scenario, the proposed relationship between rising gambling participation and increasing problems may be attenuated, or possibly, reversed (p.68).

In the case of Australia, it appears that this relationship starts to break down when there is approximately one electronic gaming machine per 100 adults and average annual expenditure (losses) on continuous (non-lottery) gambling of about $500 (AUD) per adult. While the data suggest attenuation, they do not indicate a reversal whereby increased exposure is accompanied by lower problem levels.

Shaffer, Hall and Vander Bilt (1997) proposed that societies might be expected to adjust to gambling exposure and evolve formal and informal controls that will provide some protection against gambling problems. This is analogous to the process of host resistance or immunity that frequently occurs in individuals and populations following exposure to biological infectious agents. It was suggested that, as with tobacco and alcohol, this adjustment would be slow "perhaps only after decades and generations of social learning" (p.58).

While the Australasian data are suggestive, they come from cross-sectional surveys in different jurisdictions rather than studies that examine changes in gambling participation and problem gambling prevalence in the *same* jurisdictions over time. Studies of the latter type provide a more direct assessment of this proposed adjustment.

Replication surveys

As indicated, three national level problem gambling prevalence surveys have been conducted in the United States. However, as each used different measures of problem gambling, it is not possible to ascertain whether overall prevalence rates changed significantly over time.

New Zealand is the only jurisdiction where nationally representative repeat ('replication') surveys have been undertaken using the same measurement instrument, the revised version of the SOGS (SOGS-R). The first (baseline) survey was conducted in 1991. During the preceding three years, per capita gambling expenditure had more than doubled, following the introduction of Lotto (a national lottery), Instant Kiwi (a scratch lottery) and the licensing of electronic gaming machines in clubs and hotels. That survey found 48% of people aged 18 years and over reported participating in at least one form of gambling weekly or more often. The lifetime 'probable pathological gambling' prevalence estimate was 2.7%; the current (past six months) estimate 1.2%. Prior to that study, only lifetime measures of problem gambling had been used in problem gambling research. The 1991 New Zealand lifetime estimate was higher than those from previous North American surveys.

A second New Zealand survey was conducted in 1996 (North Health, 1996). Current 'probable pathological gambling' prevalence was 0.4%, a third that of the 1991 estimate. Although comparable in terms of methodological quality to most previous gambling surveys the report's authors did not consider it to be sufficiently robust to generate reliable findings. One concern was the low response rate for Maori and Pacific Islanders, groups at particularly high risk for problem gambling in the previous survey.

A third survey was completed in 1999 (Abbott & Volberg, 2000). During the eight years since the initial survey, overall gambling expenditure had almost doubled. Racing and lotteries changed very little. Gaming machine expenditure increased three-fold. Casinos, introduced to Christchurch in 1996 and Auckland in 1998, also had an impact. During the year immediately prior to the survey, each of these four categories accounted for approximately one quarter of the total expenditure on major forms of gambling. Contrary to expectation given increased availability and expenditure on high-risk forms of gambling, prevalence rates were significantly lower than in 1991. The lifetime 'probable pathological gambling' estimate was one percent; the current estimate 0.5%. Weekly gambling participation also decreased (1991, 48%; 1999, 40%). This reduction was a consequence of fewer people participating weekly or more often in

continuous forms including electronic gaming machines, track betting and instant lottery tickets. There was no change in the percentage that regularly engaged in non-continuous forms such as Lotto and charitable raffles.

The New Zealand surveys are discussed more fully elsewhere (Abbott, 2001a; Abbott & Volberg, 1991, 1992, 1996, 2000; Abbott, Volberg & Rönnberg, 2004). Although the SOGS-R was used to assess problem gambling in all three studies, methodological and other differences may, at least in part, have accounted for the different findings. While concluding that they failed to corroborate the hypothesis that prevalence rates would be higher in 1999, Abbott and Volberg (2000) cautioned that two or three data points are insufficient to indicate a trend. They stated that ongoing monitoring was required to assess the alternative possibility that problem gambling prevalence had levelled out or declined.

A survey of four major Australian cities was also completed in 1991 (Dickerson et al, 1996). That study used the same problem gambling measure that was developed for the 1991 New Zealand survey (the SOGS-R). Consistent with the much higher per capita gambling expenditure in Australia than in New Zealand and other parts of the world where surveys had been conducted, the Australian estimate was also higher. The current 'probable pathological gambling' estimate, using the same SOGS-R cut-point as in New Zealand, was 6.6%. This is higher than prevalence rates obtained from all subsequent sub-national Australian surveys. It is also substantially higher than the current estimate (2.1%) from the 1998 Australian national survey (Productivity Commission, 1999). Although already having high gambling expenditure in 1991, Australia experienced considerable growth subsequently, primarily as a consequence of increased availability of high intensity electronic gaming machines in various settings including clubs, pubs and casinos. As with New Zealand, the Australian findings are not consistent with the expectation of increased prevalence following expansion of gambling availability and expenditure. However, methodological deficiencies and other considerations necessitate even greater caution when comparing outcomes from the two Australian studies (Productivity Commission, 1999).

In addition to the New Zealand and Australian national studies, a substantial number of repeat surveys have now been completed at state and provincial levels in Canada and the United States.

Early North American replication studies in Iowa, New York and Québec used lifetime measures only to examine change in prevalence. Although it might be expected that lifetime measures would be less sensitive to change than current measures, in all three cases there were substantial and statistically significant increases in prevalence (Volberg, 1995, 1996; Jacques et al, 1997). The time between baseline and replication ranged from six to ten years.

Subsequent North American replication studies included current (generally past 12 months) measures. A review of those studies in 2001 found that seven obtained higher prevalence estimates at replication than at baseline. Eight, however, obtained lower estimates (Abbott, 2001a). In most cases, particularly where the interval between surveys was three years or less, changes were small and generally not statistically significant. In four of the six studies where the gap was more than three years, increases were apparent. In three of these the increase was substantial. For the remaining two studies, moderate decreases were found. Similar variation in findings is evident for the small number of Australian state-level 'replications' although again methodological problems compromise straightforward interpretation of these studies (Productivity Commission, 1999).

The extent to which gambling availability and expenditure have increased in jurisdictions where replication surveys have been conducted varies markedly. Do these differences explain the variation in findings? Earlier, decreases in prevalence were noted in New Zealand and

Australia, despite greater gambling exposure. Examination of the sub-national studies reveals similar instances as well as cases of increased prevalence when there was little or no increase in exposure.

What can be concluded from the replication studies? The National Research Council (1999) examined the U.S. series and stated "the nature of changes observed in these studies…was consistent with the view that increased opportunity to gamble results in more pathological and problem gambling" (p.84). The Australian Productivity Commission (1999), considering the U.S. and Canadian studies, acknowledged the variability in findings and decided that they "are inconclusive about the links between access and problems" (p.8.27).

While acknowledging the various methodological problems and potential for confounding factors to complicate interpretation, in our view the replication studies do not support the proposal that gambling problems invariably increase with rising levels of gambling exposure. This does not mean there is no relationship. Rather it is probable that other factors, such as greater awareness of problem gambling, availability of problem gambling services, and changing participation patterns, have potential to counteract the problem generating effects of increased availability. This may be a highly dynamic process, with the relative balance between risk and protective factors shifting over time.

Some support for the foregoing conceptualisation comes from the New Zealand and five most recent North American replication studies. In all six studies, gambling availability and expenditure increased between surveys. While the proportion of adults who gambled infrequently also increased, the proportion reporting weekly or more frequent participation reduced significantly (Abbott, 2001a; Volberg, 2001a). As indicated previously, in New Zealand it was the frequent continuous group that reduced substantially in size. If the percentage of the population that gambles frequently on high-risk forms decreases with rising per capita gambling expenditure, it could be expected that problem gambling prevalence would level out or reduce.

In this context more detailed examination of the recent U.S. replications is instructive. Four states are considered: Montana, North Dakota, Oregon and Washington State. In all instances there were already substantial legal gambling opportunities at the time of the baseline survey and gambling availability increased further between baseline and replication. Additional casinos were opened in all states (two each in Montana and Oregon, five in North Dakota and ten in Washington State). In addition to opening ten new casinos in Washington State, commercial 'card rooms' were allowed to greatly increase the maximum number of tables per establishment. Two states (Montana and Oregon) permitted electronic gaming machines to operate. The density of machines was much greater in Montana (2.6 machines per 100 adults) than in Oregon (0.3 per 100). North Dakota was the only state without a lottery but had over 300 small charitable gambling operations in bars and restaurants.

Despite increases in gambling availability and expenditure in the four states, as indicated previously, weekly participation dropped in all instances. With respect to 'probable pathological gambling', significant increases in prevalence were found in Montana and North Dakota. Significant decreases were found in Oregon and Washington State. While severe problem gambling increased in North Dakota, the proportion with less severe problems dropped markedly. When the serious and less serious problem groups were combined at baseline and replication there was no change over time.

From the foregoing, it appears that change in the proportion of regular gambling participants is not sufficient to explain increases or decreases in problem gambling prevalence. The main difference identified between states with increased and decreased problems was the availability of services for problem gamblers. Prevalence declined in states with services and increased in

states without services. Lower prevalence was particularly evident in the case of past year electronic gaming machine participants. Increased availability of electronic gaming machines in the absence of specialised services was strongly associated with increases in gambling problems among people who reported machine participation during the past 12 months. In contrast, problem gambling prevalence declined among past year casino players regardless of the availability of services. However, this may have been influenced by growing 'responsible gaming' initiatives by casino operators in recent years.

The New Zealand findings are consistent with those of the recent U.S. replications. Between the 1991 and 1999 surveys, a national gambling problem helpline and extensive network of specialist counselling and treatment services was established. There was also a high level of publicity about risks associated with excessive gambling and problem gambling. Furthermore, most problem gambling was associated with electronic gaming machine participation. Most Australian states and territories also developed problem gambling services between the 1991 'four cities' study and 1998 national survey. While there are some consistencies across recent studies, it should be cautioned that further research is required to determine the impact of service provision and other factors on problem gambling prevalence.

Other exposure studies

From the early days of public and occupational health research there has been interest in occupational groups with high exposure to particular risk factors. The reason for this is that if an agent causes an illness or problem in the wider community, people whose work brings them into regular contact with it should experience greater problems. In the case of gambling, it could be expected that industry employees would have elevated rates of problem gambling. This has been demonstrated among casino employees in the United States (Shaffer, Vander Bilt & Hall, 1999b).

Families provide another social context where some exposures, for example, to tobacco or alcohol, can be concentrated. A number of studies have found that problem gamblers, relative to non-problem gamblers, report higher levels of gambling participation within the family settings they grew up in and higher rates of gambling problems among parents and siblings. Problem gamblers also more often report first commencing gambling at an earlier age and being introduced to gambling by family members (Abbott, 2001b; Raylu & Oei, 2002). These findings are consistent with the view that early exposure to gambling is implicated in subsequent problem development. However, they may also reflect social learning, genetic and other familial influences.

A small number of studies have examined changes in problem gambling following the introduction of a new form of gambling to a particular community. For example, Room, Turner and Ialomiteanu (1999) studied social impacts from the introduction of a casino to Niagara Falls in Canada. Local residents' casino gambling participation increased markedly a year after the new casino opened; substantially more than it did for people living elsewhere in the province. Over that period, a survey found significantly more Niagara adults experienced gambling problems and reported problems among family members and friends.

Abbott, Williams and Volberg (1999) re-assessed frequent non-problem and problem gamblers seven years after they had been assessed in the 1991 national prevalence survey. Since casinos had been introduced to two of New Zealand's three major metropolitan centres during that period, this provided a natural experiment whereby participants living in those centres could be compared with their counterparts in the centre without a casino. It was also possible to control statistically for other factors that differed between the casino and non-casino centres, including

those known to be associated with problem gambling. The study did not find any significant impact on participants' problem gambling.

While the New Zealand study did not find a relationship between the introduction of casinos and problem gambling, participants were not fully representative of the adult population living in centres studied. All either had gambling problems or gambled frequently without problems prior to the introduction of casinos. By the time they were re-assessed, many had reduced their interest and involvement in gambling and all were in their mid-twenties or older. While it cannot be concluded from that study that casino introduction had no effect on gambling prevalence in the general population, the findings do suggest casinos did not create more severe problems for people with existing problems. As mentioned earlier, the 1999 national survey (Abbott & Volberg, 2000) was representative of the adult population. In that survey, higher prevalence rates were found in the two major cities with casinos, suggesting that there may have been an increase in gambling problems in sectors of the population not included in the longitudinal study.

If there is a causal relationship between gambling exposure and problem gambling, not only should problems increase with increased availability, problems should also diminish with reduced exposure. The latter has rarely been examined because in recent times there have been few instances where communities have experienced substantial reductions in gambling availability. One exception was South Dakota, U.S. in 1994 when all of the state's electronic gaming machines were shut down by court order for a period of three months, then subsequently reactivated. Other forms of gambling were not affected. During that period, the state's gambling problem treatment centres received only ten inquiries per month, a marked drop from 68 per month for the preceding year. After the machines recommenced, inquiries increased again somewhat, to 24 per month during the following three months. While help seeking is only partially driven by the number of people with problems, these findings are consistent with the view that machine availability had an impact on problem gambling development in South Dakota.

Prevalence changes in particular population sectors

Early prevalence studies, conducted in a number of countries, consistently found men had much higher rates of problem gambling than women (Abbott & Volberg, 1991, 1999; Dickerson et al, 1996; Volberg, 2001a). Men also greatly outnumbered women in treatment settings and mutual help groups including Gamblers Anonymous. While male prevalence continues to be higher in some jurisdictions including the U.K. and Sweden, in others gender differences are diminished or no longer present. This feminisation of problem gambling is particularly evident in Australia, New Zealand and some parts of Canada and the United States. In all instances the change is associated with the widespread availability of electronic gaming machines (Abbott, 2001a; Abbott, Volberg & Rönnberg, 2004; Productivity Commission, 1999; Volberg, 2003).

Increased female problem gambling prevalence is also reflected in formal help seeking. Data from gambling helpline and counselling services where there are electronic gaming machines typically report that about half their clients are women. These clients predominantly have problems with gaming machines (Ladd & Petry, 2002; Paton-Simpson, Gruys & Hannifin, 2004; Potenza, 2001; Tavares et al, 2001). For example, 95% of new female clients receiving face-to-face counselling in New Zealand during 2003 reported gaming machines (casino 11%; non-casino 84%) as their primary mode of problematic gambling. For males, 80% reported gaming machines (casino 9%; non-casino 71%) as their primary mode.

An earlier report on service utilisation in Las Vegas found similar gender differences (Hunter, 1990). Ninety-five percent of females and 74% of males reported that they exclusively or predominantly played electronic gaming machines.

In considering the emergence of female problem gambling in Australia, the Productivity Commission concluded:

> …liberalisation of gaming machines led to a whole new group of female problem gamblers. It is hard to think of any other process which could explain the formation of this group, other than the availability of machines. The Commission considers this the most powerful evidence in favour of a connection between problem gambling and the availability of gaming machines (p.8.22).

The finding of high rates of problem gambling in some other sectors of the population, for example, recent migrants from countries lacking widespread availability of legal gambling, is also consistent with the view that exposure contributes to the development of new gambling problems (Abbott, 2001a; Abbott & Volberg, 2000). The Australian national survey found higher rates of problem gambling among people who did not speak English at home (Productivity Commission, 1999). Volberg (2002) found adults living in Nevada, U.S. for less than ten years had more problems than longer-term residents. These findings are consistent with the notion that exposure leads to problems. They are also in keeping with the possibility that this effect is time-limited, such that exposure is particularly potent at first encounter but over time exposed populations or sub-groups adapt and potency diminishes.

Measurement of exposure

Scientific investigation of relationships between proposed risk factors and outcomes requires accurate and reliable measurement coupled with methodologically robust studies in which exposure levels are varied while other factors that may affect outcomes are held constant or controlled for statistically. If the foregoing is not achieved, findings and conclusions may be invalid or misleading.

Quantification of exposures is generally more straightforward when the agent is physical or organic, for example, a chemical toxin or parasitic organism. In these situations it is also easier to investigate relationships between different exposures and outcomes in real-life settings and often possible to conduct controlled experiments to determine cause and effect. Typically different parameters of exposure are examined including dose, potency and duration. It is much more difficult to quantify social and behavioural exposures, especially those as diverse as gambling. Furthermore, practical and ethical considerations place constraints on experimental investigation.

Gambling research is at a relatively early stage of development and it is only recently that public health approaches have been incorporated. For these and other reasons the studies considered vary markedly with respect to the aspects of exposure chosen and the way they have been measured. This variability means findings have to be interpreted with caution. Failure to find a predicted relationship, for example, may simply be a consequence of selecting one aspect of exposure rather than another. For example, in Australia, the Productivity Commission (1999) found a very strong linear relationship between the number of electronic gaming machines per capita at state/territory level and per capita gaming machine expenditure. As machine numbers increased so too did expenditure.

From the foregoing it appears that in this particular situation it would not matter which of the two, availability or expenditure, was selected as a measure of exposure. However, while this

relationship was strong overall, there was a notable exception. In Victoria, average expenditure per machine was approximately double that of other jurisdictions. In contrast to other states and territories, in Victoria a binding cap had been placed on the number of machines that could be introduced. This did not, however, hold expenditure at the level expected. This 'deviation' appears to have been a consequence of machines being moved to locations that would maximise revenue. These locations were also those with demographic profiles suggesting their populations would be at high risk for problem gambling. This finding has implications for public policy approaches to harm minimisation. In the present context it illustrates how taking the number of machines per capita to index exposure would be misleading in Victoria. Per capita machine expenditure would enable more valid cross-jurisdictional analyses.

Before leaving the Australian study, it is worth noting that Western Australia is also anomalous. In that state, electronic gaming machines are confined to one casino on the outskirts of Perth, the state's major city. In other parts of Australia they are located in casinos as well as widely distributed in various other locations. This means that machines are much less readily accessible in Western Australia. This difference, which could be important in terms of exposure and problem development, is not captured by a simple measure such as number of machines per capita or average expenditure per machine. Thus, even in a single national jurisdiction such as Australia, a given index of gambling exposure can mean different things in different settings. Apples are not being compared with apples.

Variability in the aspects of exposure selected and the way these aspects are measured has potential to compromise meaningful integration of information about the contribution of exposure to problem gambling development. On the other hand, 'exposure' is undoubtedly multifaceted and it is only by examining various aspects in relation to gambling behaviour that this complexity will be understood.

Ideally more complex measures of gambling exposure will be used in future. This could include the availability of, and expenditure on, different forms of gambling, the dispersal of and degree of accessibility to these forms, the time they have been available and extent to which harm minimisation strategies have been prescribed and implemented. Shaffer, LaBrie and LaPlante (2004) have proposed a quantitative procedure to assess gambling exposures within a particular region that takes some account of this complexity and generates a 'standardised exposure gradient'. Measures contributing to this index include number of casinos/casino hotels and people working in the gambling industry ('dose'), number of different major gambling modalities ('potency') and time casinos have been legalised ('duration'). The authors note that their procedure has limitations and could be enhanced by incorporating further information, for example, the extent of illegal gambling, access to gambling in adjoining jurisdictions, casino attendance and advertising.

The Australian Productivity Commission (1999) also developed a multidimensional framework to assess exposure. It incorporates nine dimensions. Number of opportunities to gamble and number and location of venues have been mentioned. The other dimensions are opportunities to gamble per venue, opening hours, conditions of entry, ease of use of gambling form, initial outlay required and social accessibility. Whether or not exposure indexed by these or other measures has an impact is strongly influenced by the form of gambling involved. For example, using the Productivity Commission criteria, in New Zealand and Australia there is very high exposure to lotteries and electronic gaming machines. However, whereas most problem gamblers report problems with electronic gaming machines, very few report problems with lotteries. Casinos and track betting, while widespread, have lower exposure. This may explain why, despite being strongly linked to problem gambling, a smaller proportion of problem gamblers have problems with track betting, casino table games and casino gaming machines.

Potency differences between gambling forms underline the importance of identifying the particular attributes of each that are implicated in the development and maintenance of problem gambling.

From some of the studies referred to earlier it is evident that gambling exposure to sub-sectors of populations and individuals is also influenced by factors additional to those referred to in the previous paragraph. Examples include gender, occupational setting and family characteristics. These factors, while having potential to modify exposure levels may also affect the development of problem gambling in other ways.

Research limitations

Most of the research considered to this point has been cross-sectional or retrospective. It is not possible to establish causation from cross-sectional studies, among other reasons because it cannot be demonstrated that the exposure or other presumed cause preceded the presumed effect. For example, while problem gambling prevalence is often higher in jurisdictions with higher per capita expenditure on continuous forms of gambling, problem gamblers account for a disproportionate amount of this expenditure. It has been estimated that problem gamblers in Australia are responsible for almost half of total spending on electronic gaming machines and track betting (Productivity Commission, 1999). In the United States, estimates of the proportion of spending derived from problem gamblers for specific gambling activities range from 14% for state lotteries to 27% for casino table games (Volberg et al, 2001). Consequently, while increased expenditure on these forms could generate an increase in problem gambling prevalence, an increase in the number of problem gamblers (for this or some other reason) could also result in increased expenditure.

In retrospective studies, participants are asked about past events and experiences that are examined in relation to subsequent, including current, outcomes. However, problems with recall and reinterpretation of the past may affect the accuracy of these accounts. For example, while problem gamblers often report starting gambling at an earlier age and having parents with gambling problems, this has not been verified by assessment during childhood and subsequent follow-up. While plausible and consistent with alcohol research findings, there may be other explanations such as adult problem gamblers being better able to recognise similar problems in family members and recalling childhood gambling behaviour differently from people who do not have problems.

With cross-sectional and retrospective studies it is exceedingly difficult to rule out the possibility that other factors accounted for the presumed effects of increased or decreased gambling exposure. This is also the case in replication studies where different samples from the same population are assessed at different points in time. These and other studies involving assessment before and after the introduction of a new form of gambling or change in gambling availability rarely include control or comparison groups that are not similarly exposed. Thus, even when it can be demonstrated that changed exposure preceded the presumed effect, other explanations cannot be ruled out.

Until recently there have been no prospective (longitudinal) studies where general population samples have been followed and the same individuals re-assessed over time. Studies of this type that have now been completed involve relatively small samples that are not representative of the total population from which they are drawn. Among other things this means that although there are many problem gambling *prevalence* studies, there are no general population *incidence* studies. Prevalence refers to the percentage or number of people who have a gambling problem currently or had a problem in the past. Incidence refers to the percentage or number of people who develop a problem for the first time during a given time interval, for

example, the past 12 months. Lack of prospective and incidence research greatly limits understanding of how risk and other factors influence the development of problem gambling in individuals and communities.

While some findings from the small number of prospective studies have relevance in the present context they are mainly discussed in the section of this review that examines the development of gambling problems.

Conclusion

Commissions and official government reviews in a number of countries including the United States, United Kingdom, Australia and New Zealand have all concluded that increased gambling availability has led to an increase in problem gambling and that future increases will generate additional problems. For example, the Australian Productivity Commission (1999) stated:

> While causation is hard to prove beyond all doubt, the Commission considers that there is sufficient evidence from many different sources to suggest a significant connection between greater accessibility - particularly of gaming machines - and the greater prevalence of problem gambling (p.8.1).

The Commission estimated that if electronic gaming machines were made accessible in Western Australia to the extent that they are in Eastern states, the number of problem gamblers would more than double.

The Gambling Review Body (2001) concluded:

> It is clear that some forms of gambling are more addictive than others. The more addictive forms involve a short interval between stake and payout, near misses, a combination of very high top prizes and frequent winning of small prizes, and the suspension of judgement.
>
> A central question for us has been whether increasing the availability of gambling will lead to an increase in the prevalence of problem gambling. The weight of evidence suggests that it will do so (p.85).

While there has been unanimity concerning these matters, our examination of relevant research has led us to a different conclusion.

Historically it appears that the introduction and expansion of new forms of gambling, especially continuous forms including electronic gaming machines, track betting and casino table games, has resulted in substantially increased rates of problem gambling. This has been documented across whole populations as well as within sub-populations that previously had low levels of gambling participation. More recently, in some jurisdictions that have experienced prolonged and increased exposure to those forms of gambling, prevalence rates have remained constant or declined. The reasons for this have not been clearly delineated but appear to involve social adaptation and the provision of specialist problem gambling services.

Understanding of problem-generating exposure and adaptation/resistance processes and the interplay between them is rudimentary. For this reason, in any particular situation, the consequences of increased availability cannot be predicted with certainty. However we consider it likely that European nations such as the U.K. with relatively low exposure to high risk forms will experience prevalence increases, possibly substantial, if they raise exposure to

levels current in most Australian and some North American jurisdictions. It has yet to be determined whether prevalence can be held steady or reversed when gambling expansion is accompanied by the introduction of comprehensive education, prevention and problem gambling services. The findings of the recent replication surveys indicate that this might be possible.

(b) The environment

Introduction

Environmental factors additional to gambling exposure have an impact on problem gambling. Some are part of, or closely associated with, the physical and social contexts in which gambling occurs and play a role in increasing or decreasing exposure. Others, while more peripheral, include a number of major risk factors for problem gambling. A variety of financial, social and cultural factors are in this category. Some, for example, gender and availability of problem gambling services, were mentioned in the previous section because of their association with gambling exposure or role in moderating adverse exposure impacts.

Broad contextual influences and trends

While the particular mix of environmental risk and protective factors varies across social settings and over time, a number of broad, inter-related, contextual influences and trends have been identified. It has been argued that they have played and will continue to play a significant role in shaping the evolution of commercial gambling internationally (Abbott & Volberg, 1999). These include changing attitudes towards gambling, the spread of gambling to non-gambling settings, the intersection of gambling and financial technologies, Internet gambling and accelerating globalisation. They are mentioned here to provide a backdrop to examination of more specific environmental risk and protective factors.

Changing attitudes

During most of the past century, commercial gambling was tightly regulated and constrained in Western societies. In large part this was a consequence of widely held views, promulgated by churches and civic leaders, that gambling was morally wrong and carried with it a variety of personal and social ills. While long condoned in the upper classes and generally tolerated among lower classes, until the latter part of the Twentieth Century gambling was disapproved of by the middle classes in most societies (Rosecrance, 1988). Given the size and influence of the middle classes, growing acceptance of gambling by this sector has probably played an important part in the legitimisation of gambling worldwide.

Many factors have contributed to greater social acceptability of gambling including increased secularisation of society and more liberal stances adopted by most churches. It has been suggested that medicine and the helping professions have played a part by fostering the belief that mental health practitioners can address the casualties of increased gambling availability (Abbott & Volberg, 1999). Academic social scientists have also been implicated by "celebrating gambling as a practice at a time when it was actually stigmatised by government policies" (Austrin, 1998, p.168), and economists by focusing on financial and social benefits.

The increased availability of legal gambling results in gambling activities reaching into societies and cultures in ways that further contribute to their legitimacy and acceptance. For example, their operation and oversight become part of routine processes of government.

Commissions are established, revenues distributed, and industry, worker and customer constituencies develop. National and local governments may become dependent on gambling revenues to fund essential services. So too, to varying degrees, may other sectors including voluntary organisations, churches, the mass media and, more recently, universities and specialist problem gambling agencies. Non-gambling occupations and businesses (accountants, lawyers, architects, public relations and advertising, security services) expand their activities to provide for the gambling industry. Retail operators of various kinds, such as restaurants, hotels and social clubs, come to depend on revenue from gambling to operate profitably.

Growing public acceptance of gambling has contributed to and in turn been further enhanced by increased gambling availability. Both availability of and positive attitudes toward gambling have been instrumental in increasing gambling participation across major sectors of society. As indicated previously, regular participation in forms of gambling that have expanded most is a significant risk factor for problem gambling.

Although there has been growing public acceptance of gambling, during the past decade there has also been an increase in awareness of, and concern about, problem gambling and associated personal, health, social and economic costs (Abbott & Volberg, 1999). Research, including prevalence surveys and social impact studies, has probably contributed to this concern (Abbott, 1992, 1994; Volberg et al, 1996). Surveys in a number of countries have found that while attitudes towards gambling have generally become more accepting, there is growing opposition to electronic gaming machines and casinos. In a number of jurisdictions, lobby groups and local communities have been instrumental in initiating measures to reduce, or limit further expansion of, particular gambling activities.

Research on, and growing public concern about, problems associated with gambling have also contributed to decisions to initiate government commissions and inquiries. These have called for further research to increase understanding of various aspects of gambling and problem gambling and the introduction or expansion of measures to reduce gambling-related harm. Since the mid-1990s, a number of jurisdictions have made significant progress in establishing information, helpline and counselling services for problem gamblers. More recently, this has extended to more wide-ranging measures intended to prevent problem development.

Attitudes towards gambling are important because they can, in aggregate, have a significant impact on laws and policies that govern public exposure to gambling and mandate measures designed to moderate negative consequences. Attitudes are also important because they more directly influence the gambling behaviour of individuals who hold them as well as others within their families and wider social networks. Earlier, reductions both in problem gambling prevalence and regular gambling participation were reported in some jurisdictions, despite increased gambling availability and expenditure. It is possible that increased awareness of problem gambling and changing attitudes towards gambling played some part. Research on this topic could be helpful in refining strategies to prevent problem development.

Gambling in non-gambling settings

Historically, legal gambling has been largely confined to a limited range of settings. In the case of the U.K., major settings included bingo halls, betting shops, casinos and amusement arcades - each with a particular clientele. One of the more notable changes internationally during the past decade has been the shift of gambling from gambling-specific venues to a diversity of social settings not previously associated with gambling. Prior to this, many gambling venues were not readily accessible or attractive to particular groups including women. This extension to traditionally non-gambling settings is an aspect of gambling's integration with major social institutions, communities and everyday life.

In many countries, multiple gambling forms are now available in venues such as pubs that previously did not allow legal gambling or offered a more limited range of activities. Some became, in effect, mini-casinos and are not infrequently promoted as such. While the intention of placing some forms of gambling in locations licensed to sell alcohol may be to impose restrictions on access, this is not necessarily achieved. For example, electronic gaming machines were widely introduced to pubs and other licensed premises in New Zealand, in part to exclude minors. Following their introduction, the drinking age was lowered and licenses were liberalised, further extending locations and times when gambling is available.

The increase in number, variety and distribution of gambling venues, including the extension of gambling to non-gambling settings, has been referred to as "convenience gambling" or "McGambling" (Goodman, 1995). Apart from contributing to physical accessibility, this extension reduces social and psychological barriers to access. Gambling becomes a pervasive backdrop to diverse environmental and social settings. This ambience probably both reflects and enhances widespread acceptance or normalisation of gambling. However, as indicated in the preceding section, there is also increased opposition to this trend, particularly with respect to electronic gaming machines.

Relatively little is known about the short- and long-term consequences of the increased permeation or ambience of gambling throughout society. Some aspects were examined earlier in relation to changing prevalence rates. Co-location of gambling and alcohol will be considered later.

Internet gambling

The Internet is a pervasive feature of Twenty First Century life. A vast array of casino gaming, sports betting and lottery games are available on a large and rapidly growing number of Internet sites. There are estimated to be over 1,500 Internet gambling sites currently available online (Eadington, 2004). The trend is likely to continue and may be regarded as a further example of the extension of gambling to previously non-gambling settings as well as taking 'convenience' gambling to a new height - directly to homes and workplaces throughout the world.

Whilst a number of governments, including that of the United States, have attempted to control access, others have passed legislation permitting Internet-based gambling. Eadington (2004) has outlined reasons why it is unlikely that gambling in cyberspace will be constrained in the medium- to long-term. As encryption technology and the security of financial transactions improve, Internet gambling will probably increase rapidly. Prevalence surveys in a number of countries have found that regular participation is presently confined to a small percentage of the population and does not appear to be a significant risk factor for problem gambling (Welte et al, 2004). However, this may well change in the future.

While base rates are still low, gambling on the Internet is increasing. A recent survey in Oregon, U.S. found lifetime Internet gambling had increased from 0.3% in 1997 to 1.1% in 2000; an increase that corresponds to an estimated annual growth rate of about 54% (Volberg, 2001). Some groups in the population are far more likely to have Internet access than others. For example, college students are particularly likely to have access to the Internet; a recent survey found that 98% of tertiary students use the Internet compared to about 50% of the general population (Harris Interactive, 2002). Given such high rates of Internet access, it is hardly surprising that a recent survey of university students seeking health services found much higher rates of Internet gambling than in the general population. Ladd and Petry (2002) report that 8.1% of their 389 respondents had ever gambled on the Internet, with participation significantly higher among younger and non-Caucasian students. In contrast to the relatively

high rate of Internet gambling among the students, a separate survey found that only 1.2% of the employees at the same university health centre had ever gambled on the Internet.

Whilst it has been argued that online gambling has a number of features that suggest it will contribute significantly to problem development (Griffiths & Wood, 2000) there is, to date, insufficient information to assess this assertion. Further research is required to monitor usage and identify links between usage and problem gambling in different sectors of the population.

The intersection of financial and gambling technologies

Rapidly evolving electronic technologies and their intersection with financial institutions have had a significant influence on gambling. As with the Internet, to which they in part relate, this impact is likely to become more profound. Examples include 'cashless' gambling, where the purchase of lottery tickets and wagering on casino games is conducted via debit or credit cards.

Gambling industries are developing and enhancing management systems that enable player tracking and speed financial systems (Bivins & Hahnke, 1998). These technological developments have facilitated new gambling modes such as 'point spread' where wagers can be placed on events over the telephone, even while they take place, using pre-arranged credit lines or debit accounts. Technologies are available to bring satellite wagering into the home via cable/satellite television and enable sports action to be stopped and wagers placed in real time.

There are some interesting recent and contradictory developments at the intersection of financial and gambling technologies. For example, the (U.S.) Department of Justice recently attempted to force credit card companies to refuse to honour charges made at gambling establishments (Faust, 2003) and has also successfully pressured major media companies including Infinity Broadcasting and Discovery Channel, as well as major Internet Service Providers such as Google and Yahoo, to refuse to accept advertising from Internet gambling operators (Richtel, 2004; Smith, 2004). At the same time, major providers of financial services in casinos, such as Global Cash Access, are installing multifunction Automated Cash Machines (described as 'like an ATM on steroids') and are exploring the feasibility of installing debit card transaction technology directly on slot machines (Parets, 2004).

Globalisation

The developments mentioned above could be viewed as elements of inter-related globalisation processes that are major drivers of economic and social change worldwide. Other elements include international financial markets, transnational corporations, non-governmental organisations and technology, international travel, sojourning and migration, and cultural homogenisation. McMillen (1996) commented on some implications of globalisation for gambling:

> The shift in gambling development from local-national to international levels has resulted in a shift in power to the global or supranational level. It has also shifted policy emphasis from social to economic imperatives. Gambling is no longer a social activity shaped primarily by community needs and values. Gambling has become big business, reclassified as part of the entertainment sector and integrated into mainstream economic development. What was once a cultural and social expression characterised by diversity and localised control is now a highly competitive global industry (p.11).

Globalisation has contributed to rapid changes in legal gambling, including technological change and heightened competition. This has had significant impact at national and sub-

national levels, for example by undermining traditional and charitable gambling. Governments have frequently responded by providing tax relief and/or allowing less successful sectors of the industry to expand and diversify into other gambling forms (Rose, 1999). For example, on-course track betting organisations have been permitted to include off-track telephone betting, other forms of sports betting and establish gaming machines and card games at race tracks. Lotteries have been allowed to operate on-line and add new gambling products including video poker and keno. In the United States, in response to rapid expansion of casinos on Native American reservations, charitable gambling operators in many states have introduced linked, progressive bingo games and licensed card rooms have been permitted to conduct 'house banked' games (Abbott & Volberg, 1999). Developments such as these have contributed to the reorganisation of the gambling industries. In this process, traditional lines between different gambling activities have become blurred.

Rapid evolution of legal gambling globally including technological change, intense competitive pressures within and between jurisdictions, and convergence of previously clearly differentiated activities, have all made it more difficult to regulate gambling. Another consequence of this rapidly moving 'target' is that it is difficult for research to keep up. Particular findings relating to gambling and problem gambling, as well as policy and other decisions influenced by them, may have a short shelf life.

Gambling contexts

As discussed, preferences for regular participation in, and high expenditure on, some types of gambling activity are significant risk factors for problem gambling. Increased availability and accessibility of these forms have in some situations been associated with higher rates of problem gambling. Various attributes or structural features of gambling have been shown, or claimed, to influence the development and/or maintenance of problem gambling. Features in this category include event frequency and pay-out intervals, probability of winning, stake size, presence and size of jackpot, 'near miss' opportunities, cash or credit basis, knowledge needed to participate, degree of skill involved, extent of player participation and social or asocial nature of the activity.

Apart from structural attributes inherent in particular forms of gambling, the venues and social settings in which they take place are also variable and attract different clientele. Contextual differences include availability (e.g. number of outlets, opening/access times, entry requirements), location, legality, type of establishment, perceived safety of the setting, purpose (e.g. church function, fundraising event), association with other attractions, alcohol availability, and light, colour and sound effects. Background odours also appear to influence gambling behaviour (Hirsch, 1995).

Contextual variability has been increased by the movement of gambling activities to physical and social settings not previously associated with gambling. As mentioned previously, this latter trend coupled with the development of more positive attitudes towards gambling has contributed to enhancing access and widespread participation. Gambling advertising, designed to present gambling activities in an appealing and benign manner, has no doubt been an additional contributing factor.

While a number of the contextual factors outlined have been shown to influence aspects of gambling behaviour and, in a few instances, to be associated with problem gambling, for the most part it is not known to what extent they contribute to the development and maintenance of problem gambling. Although particular forms of gambling have been shown to have strong links with problem gambling and these relationships are probably at least partly causal in nature, little is known about the particular structural and contextual components that account

for these associations. Identification and understanding of the way in which these various components influence problem gambling is important in developing policy and designing effective host responsibility, public education, prevention and treatment programmes.

Sociodemographic and cultural factors

Although gambling activities and prevalence rates vary across jurisdictions, several sociodemographic factors have been consistently linked to elevated risk for problem gambling. Others, while emerging in a number of studies, are less consistent across jurisdictions and over time in the same jurisdiction.

Early adult general population surveys conducted in the United States (Shaffer, Hall and Vander Bilt, 1997; Volberg, 1994, 1996), Canada (Ladouceur, 1996), Australia (Dickerson et al, 1996, 1997), Spain (Becoña, 1996) and New Zealand (Abbott & Volberg, 1991, 1992, 1996; Volberg & Abbott, 1994) found that male gender, age under 30 years, low income and single marital status were almost universally risk factors for problem gambling. Low occupational status, less formal education and non-Caucasian ethnicity were additional risk factors in a number of studies. Residence in large cities was a factor in some. In most studies where they were asked, problem gamblers reported starting gambling at a younger age than non-problem gamblers. Youth surveys in North America (Ladouceur, 1996; Shaffer & Hall, 1996) found people in their mid to late teenage years had higher prevalence rates than adults.

More recent prevalence surveys include a number that are national in scope. Some are methodologically superior to the earlier studies and used large samples, enabling more fine-grained examination of risk factors. Since most risk factors are inter-related, for example, young people are more often single and generally have lower incomes than middle-aged adults, it is difficult to understand the nature of their relationship to problem gambling by considering them separately. Increasingly, multivariate analysis has been used to tease out the most important factors from those that are spurious or secondary. While findings from many surveys conducted during the past five years are similar to those of the earlier studies, some differ markedly.

Both recent U.S. national surveys (Gerstein et al, 1999; Welte et al, 2001, 2002, 2004), like earlier state-level surveys in that country, found higher rates of problem gambling among men, non-Caucasians and people on low incomes. Gerstein et al (1999) found young people continued to have a higher rate. Welte et al (2001), however, did not find significant age differences and, although males had a higher rate of problem gambling, they did not differ from females with respect to more serious ‘probable pathological gambling’. While it is not clear why those two studies differed, some sub-national studies, for example, Oregon and Montana, have also found male and female rates no longer differ significantly (Volberg, 2003). Both states have widespread access to electronic gaming machines. Earlier, mention was made of similar findings from the Australian (Productivity Commission, 1999) and New Zealand (Abbott & Volberg, 2000) national surveys as well as from client presentation data in those countries. This is a substantial change. Less than a decade before, typically 70% or more of problem gamblers were men.

While it appears that electronic gaming machines have played an important part in eroding the long-standing prevalence difference between men and women, there are previous instances where high male rates co-existed with widespread gaming machine access, for example, in Spain (Becoña, 1996). It is probable that contextual factors such as attractiveness of venues to women and more accepting attitudes towards women’s gambling also played a role in women’s increased gambling participation and level of gambling problems.

While in some jurisdictions there has been a marked increase in the proportion of women problem gamblers, in others for example Washington State and North Dakota, the male proportion has expanded. Washington State experienced a substantial increase in the availability of commercial card room gambling, which is favoured by men. In these two states, as well as in Montana, proportions of non-Caucasian problem gamblers have also increased significantly. Many are Native Americans. These are jurisdictions that have had substantial growth in the number of tribal casinos and 'casino-style' charitable gambling operations. It appears from these various studies that change in the availability of particular forms of gambling is instrumental in altering the sociodemographic characteristics of problem gamblers.

Further light is cast on changing risk factors by comparing results from the Swedish and two published New Zealand surveys. These studies used similar research methods, involved large samples and obtained high response rates (Abbott, Volberg & Rönnberg, 2004).

The 1991 New Zealand survey (Abbott & Volberg, 1991, 1996; Volberg & Abbott, 1994) found Maori and Pacific Islanders, males, young adults (18 to 24 years) and unemployed people were at very high risk for lifetime problem gambling. Non-married status, living in a large household, lower occupational and educational status and Auckland residence were additional but less important risk factors.

Maori and Pacific Islanders remained at very high risk in the 1999 New Zealand survey (Abbott & Volberg, 2000; Abbott, 2001a, 2001b). However, as in Welte et al's U.S. survey, while males continued to outnumber females, the difference was greatly diminished and confined to less serious problem gambling. People aged 25 to 34 years were most at risk, whereas those aged 18 to 24 years had the second *lowest* risk after people aged 65 years and older. Unemployment, non-married status and lower occupational and educational status were no longer significant risk factors. Apart from Maori and Pacific Island ethnicity, living in large households and Auckland residence were the only factors common to the 1991 and 1999 surveys. Some additional risk factors emerged from multivariate analyses, namely Christchurch residence, household income of $40,001-$50,000 (NZD), Catholic religion and being born outside New Zealand, Australia, Europe and North America. Household income of $30,001-$40,000 was associated with low prevalence.

These findings are of particular interest. The 1991 risk factors are congruent with those found in earlier studies throughout the world. As mentioned, higher prevalence in Auckland and Christchurch when other factors associated with problem gambling were controlled for statistically is consistent with these being the only cities with casinos. Many of the 1999 findings point to problem gambling becoming more widely distributed throughout society, with proportionately more women, adults aged 25 years and over, people in the paid workforce, middle classes and some migrant groups having problems. In part, this change was a consequence of problem gambling increasing in some of those groups relative to 1991. However, this was not the only reason. It will be recalled that the overall New Zealand problem gambling prevalence rate was lower in 1999 than 1991. Reductions in problem gambling in a number of previously high risk groups, including men, young adults and unemployed people, probably contributed substantially to the *proportional* increases in other groups.

At the time the second New Zealand national prevalence study was undertaken, Sweden and New Zealand had similar per capita gambling expenditure. Both had experienced rapid expansion of legalised gambling since the late 1980s. The mix of gambling activities differed somewhat with New Zealand having casinos in its two major cities and greater availability of electronic gaming machines. The two countries also shared a history as well-developed welfare states that had opened their economies to international market forces and reduced welfare provision. New Zealand was more ethnically diverse and had a substantially larger migrant

population. It also had more extensive services for problem gamblers. It was anticipated that New Zealand would have higher levels of problem gambling than Sweden.

The overall 1998 Swedish and 1999 New Zealand rates of serious problem gambling prevalence were similar. Less serious problems, however, were more common in Sweden. The strongest risk factors in Sweden were male gender, aged under 25 years, non-married status, born outside Sweden, living in major cities and receiving welfare payments. Unemployment and education levels were not significant factors. These characteristics more closely resemble those of problem gamblers identified in the 1991 New Zealand survey than those identified in 1999. It will be interesting to see whether Sweden follows the New Zealand trend now that casinos have been introduced and electronic gaming machines have become more readily available.

This spread of problem gambling throughout society is also evident in Australia, although people aged 18 to 24 years remain at somewhat greater risk in that country with twice the likelihood of having a problem than other adults (Productivity Commission, 1999). Unemployed and single people also had elevated rates, as did people living in cities and people who did not speak English at home. Gender, education and income differences were minimal.

From information presented to this point, it appears that problem gambling prevalence is elevated in some sociodemographic groups because they experience greater exposure to high risk gambling activities. This explanation is supported by examination of gambling participation data from the various national surveys mentioned. Groups with more problems generally report higher levels of participation and expenditure. However some of these groups have interesting 'bimodal' gambling patterns. In comparison to other groups they contain large proportions of people who do not gamble or gamble infrequently, as well as moderate to large proportions of frequent, high spending gamblers. In other words, overall they are less likely to gamble, but those who do, gamble more heavily. Groups in this category include some recent immigrant and ethnic minorities, for example, African Americans in the U.S., Pacific Islanders in New Zealand and recent immigrants in Sweden. These appear to be sectors of the population in the early stages of introduction to high risk forms of gambling. Some of these groups have exceedingly high levels of problem gambling (Abbott, 2001; Abbott, Volberg & Rönnberg, 2004).

While differential gambling exposure appears to be a major factor in explaining prevalence differences between and within sociodemographic groups over time, additional factors are involved. For example, in the preceding paragraph immigrant and ethnic minority groups were identified that are particularly susceptible to develop problems when exposed to certain forms of gambling. While New Zealand groups in this category (Pacific Islanders and migrants from countries other than Europe, Australia and North America) have much higher rates of problem gambling than European New Zealanders, they do not have higher levels of frequent participation in continuous forms of gambling. This suggests that vulnerability factors are operating that increase the probability of developing problems in these groups.

There are also instances where high levels of frequent participation occur in association with low levels of problem gambling. New Zealand examples include people aged 35 to 44 years and some high status occupational groups (Abbott & Volberg, 2000). Furthermore, a number of groups with lower rates of problem gambling in 1999 than in 1991, including men and people aged 18 to 24 years, appear not to have appreciably reduced their levels of participation. These findings imply that protective factors are involved, additional to any effects from somewhat reduced or changed participation patterns. While young adults may be in this situation in New Zealand, it should be noted that in the great majority of studies of youth and young adult problem gambling they appear to be a vulnerable rather than resilient group. It is not clear why this is, apparently, not also the case in New Zealand. Given the anomalous

nature of the finding and lack of an obvious explanation for it, it should be treated with caution until investigated further or replicated in future studies.

Another consistent finding across prevalence studies, including the national surveys, is that older adults have very low rates of problem gambling and relatively low levels of regular participation in continuous forms of gambling. Older people also have low consultation rates at specialist problem gambling services (Paton-Simpson, Gruys & Hannifin, 2004; Productivity Commission, 1999). It has been suggested that this group is vulnerable to develop problems when they take up forms of gambling not previously engaged in (McNeilly & Burke, 2000, 2001). There are also indications that their problems may escalate more rapidly, perhaps because many older people are on set incomes and even moderate losses can have substantial adverse financial and other consequences (Stewart & Oslin, 2001).

Although there are anecdotal and clinical reports consistent with the notion of vulnerability, prevalence rates for older people are not only generally low, *per se*, they also appear to be low when participation and expenditure are taken into consideration. While their low prevalence may in part result from lower exposure, if anything, the data suggest resilience rather than vulnerability. Further support for this comes from examination of national prevalence and clinical data in New Zealand. In that country, at a time when electronic gaming machine availability was increasing and casinos were introduced, there was no evidence of an increase in gambling problems among older people. Indeed, prevalence rates appear to have significantly declined, being two percent in 1991 and 0.2% in 1999 (Abbott & Volberg, 2000).

Additional support comes from a recent survey of older adults in Florida (Volberg & McNeilly, 2003). In that study, the prevalence of problem gambling was similar across the general population. In a separate sample of adults aged 55 years and over the prevalence of pathological gambling was only about half as high. However, among these older adults, minority males (whose resilience is often much lower than among other groups in the population) experienced significantly higher prevalence rates as did older adults who were still working, compared with those who had retired.

From the foregoing it is evident that older people have had, and apparently continue to have, low levels of gambling problems. It remains unclear, however, whether they are vulnerable or resistant to problems in the face of higher levels of gambling exposure. In contrast to the situation with youth where research has increased markedly in recent years, little is known about the gambling and problem gambling behaviour of older people.

Some work has been done to identify the relative importance of, and relationships between, gambling participation and sociodemographic risk factors. The Australian Productivity Commission's approach involved incorporating variables from both groups of factors in the same analysis (Productivity Commission, 1999). The Commission focused on regular gamblers rather than all adults in an attempt to specify the factors that differentiate people in this situation who develop problems from those who do not. Other than frequency of playing electronic gaming machines, betting on racing and casino gambling, only younger age and city residence were significantly associated with a higher likelihood of regular gamblers experiencing gambling problems.

The Commission findings suggest that exposure and participation factors *per se* are most important in the transition from regular to problem gambling. They also suggest younger age and living in a city contribute to problem gambling in ways other than via increasing exposure to high risk gambling activities. While other sociodemographic variables do not appear to directly influence progression from regular non-problem to problem gambling in that study, some could well be among the factors that lead people to participate regularly in high risk forms of gambling in the first place. These and many previous statements concerning the part

risk factors play in problem development are phrased cautiously because they derive from cross-sectional studies. Stronger research designs, including longitudinal studies, are required to reach more definitive conclusions.

Welte et al (2004) also conducted multivariate analyses to examine the extent to which relationships between sociodemographic factors and problem gambling are mediated by gambling behaviour. They did this by holding constant aspects of gambling behaviour likely to influence problem gambling, namely frequency of gambling, average size of wins or losses and number of different types of gambling engaged in. These variables were all found to be strong predictors of problem gambling and they remained so after other categories of risk factor were incorporated into the analysis. These findings are consistent with the Australian Productivity Commission view that gambling exposure/participation is fundamentally important in problem development.

Welte et al (2004) also found that when the gambling participation measures were taken into account, African American, Hispanic and Asian ethnicity and low socioeconomic status continued to have a significant relationship with problem gambling. Gender and age were not significant when considered alongside these and other risk factors. This indicates that membership of these minority ethnic groups and lower socioeconomic status influence problem gambling in ways additional to contributing to exposure to high risk forms of gambling and independently of the other sociodemographic variables considered. The authors suggest people of lower socioeconomic status might experience more gambling problems than their higher socioeconomic counterparts who gamble the same amount because they have greater financial resources to buffer the adverse effects of gambling losses. They were less certain about why the ethnic minority groups were at greater risk for problem gambling after controlling for gambling behaviour and socioeconomic status.

As mentioned earlier, a number of ethnic minority groups, including recent migrants and refugees, have been found to be at high risk for problem gambling (Abbott & Volberg, 1999; Productivity Commission, 1999; Raylu & Oei, 2002; Volberg, Abbott, Rönnberg & Munck, 2001). Their problems are sometimes associated with particular forms of gambling. For example, in New Zealand the majority of Asians (predominantly Chinese) contacting specialist services report problems with casino table games. People of other ethnicities predominantly mention gaming machines in this regard (Paton-Simpson, Gruys & Hannifin, 2004). High prevalence rates have been reported in an Australian Chinese sample (Blaszczynski et al, 1998). Like some of the ethnic minority groups mentioned previously, a large proportion did not gamble. The minority that did, gambled a great deal and many had problems. Most said they did not gamble until they came to Australia.

Some indigenous populations, including New Zealand Maori and Native Americans, have been found to have particularly high rates of problem gambling (Abbott & Volberg, 1991, 2000; Volberg & Abbott, 1997; Zitzow, 1996a, 1996b). These groups have histories of colonisation and associated exploitation and oppression. They continue to be economically and socially disadvantaged in various ways and are at high risk for many health and social problems including alcohol and other drug problems. In addition, their populations are demographically young.

Given that indigenous, ethnic minority and some migrant groups are characterised by multiple risk factors, it is possible that some or all of these factors rather than ethnicity, account for their elevated problem gambling rates. Earlier, reference was made to Welte et al's (2004) study where ethnicity remained significant when many of these other factors were controlled for. Abbott and Volberg (1991, 1996, 2000) conducted similar multivariate analyses and found Maori and Pacific Island ethnicity remained dominant risk factors. This implies that in the case

of the groups examined in those studies, ethnicity *per se* is important, rather than being an artifact of other variables linked both to ethnicity and problem gambling.

Welte et al (2004) suggested ethnic minority status might remain a risk factor when other factors including income are controlled for because minorities in the United States have much lower net worth than whites, even at the same income levels. This means they have fewer assets and other financial resources to draw on to buffer the effects of gambling losses. They also suggest gambling may be more likely to be regarded as a form of investment and means of escaping poverty. While these economic explanations may be valid, it also seems likely that cultural values and beliefs, as well as social factors within minority subcultures, play an important role. Recent Canadian research with six different ethnic groups concluded that cultural beliefs, practices and family socialisation influence gambling participation and that these factors are durable across generations (Tepperman & Korn, 2004). A recent review concluded that there is a major gap in the literature on what part cultural factors play in the development and maintenance of problem gambling (Raylu & Oei, 2002).

In most general population studies, ethnic minority samples are too small to allow meaningful analysis. Response rates are also typically much lower than for the sample as a whole, further limiting what can be concluded from them. Some general population studies for example, Abbott and Volberg (1991) and Volberg et al (2001), have attempted to address these problems by over-sampling selected groups. While this can help, studies of other mental disorders have found that there can be very substantial differences within specific groups (Abbott et al, 2003). More detailed studies of particular minority groups, especially those that are or appear to be at high risk, are required to extend understanding in this area.

Consideration of cultural and sociological factors is also potentially important in enhancing understanding of the role that other variables such as age, gender and socioeconomic status play in fostering the development of problem gambling. While the intrinsic nature of gambling activities vary considerably, they also vary with respect to the social and cultural context within which they are embedded and the sorts of people who engage in them. Furthermore, most gambling involves social interaction and people frequently go to gambling venues with other people, usually with family members and friends. Problem gamblers, on the other hand, more often gamble alone (Abbott, 2001b).

While it is probable that social interaction, or lack of it, has an influence on both the development and maintenance of problem gambling, there appears to be little research on this topic. There is a body of sociological and anthropological literature on gambling, mainly involving observation and interviewing of gamblers in gambling settings, however its relevance to problem gambling is unclear (Abbott & Volberg, 1999; Raylu & Oei, 2002).

Religion has been found to be associated with problem gambling in some studies. For example, Catholicism emerged as a significant risk factor in the 1999 New Zealand national survey (Abbott & Volberg, 2000). In that survey, Catholics also reported higher average weekly gambling expenditure than other religious groups and were over-represented among track bettors and people who participated weekly or more in continuous gambling activities. High Catholic involvement in gambling has been noted in other studies (Brenner & Brenner, 1987; Grichting, 1986; Kallick-Kaufmann, 1979; Walker, 1992). In the 1999 New Zealand survey, 'other Christians' were at low risk. That group, predominantly Methodists and a variety of Fundamentalist Protestant denominations, also reported low average weekly gambling expenditure, were under-represented among regular continuous gamblers and greatly over-represented among those who never or infrequently gambled. Catholics and other Christians retained their respective high and low risk statuses when other social, demographic and cultural risk factors were controlled for in multivariate analyses. This suggests that aspects of religious affiliation *per se* play an important role in both gambling participation and problem gambling.

An earlier survey in Texas found that Catholics, as well as people who were not Protestant or Jewish and people who did not consider religion very important, had elevated problem gambling rates (Wallisch, 1993).

The 1999 New Zealand and Texas findings are consistent with the positions that Protestant and Catholic Churches have adopted historically. Abbott and Volberg (2000, p.215) note:

> Traditionally…the Protestant churches opposed gambling and lobbied for legislative and other restrictions on gambling throughout the mid-19th and early 20th centuries. The Catholic Church, on the other hand, has long adopted a more permissive attitude towards gambling within society generally and on the part of its members. In recent times, most Protestant churches in New Zealand have also become more permissive and have come to rely on income from gambling activities to support parish and other charitable activities.

Given that New Zealand is a predominantly secular society with amongst the lowest levels of religious affiliation and observance internationally, it is of interest that religion remains linked to gambling participation and is a significant predictor of problem gambling. Whilst social historians and theologians have considered religion in relation to gambling (Costello & Millar, 2000; Grant, 1994) scant attention has been paid to religion in relation to the development of problem gambling. This is surprising given the positions taken by the major world religions and various Christian denominations with regard to gambling and the strong role of religion in community and family life in many parts of the world including North America where most gambling research has been conducted. It is also surprising given that the major mutual help approach to problem gambling, Gamblers Anonymous, is based on a quasi-religious programme that has a spiritual dimension requiring belief in a higher power.

High rates of problem gambling among some indigenous, ethnic minority and migrant groups further highlight the importance of undertaking research to determine what aspects of religious affiliation and involvement are implicated in the development of problem gambling in different cultural settings. Religion is often of particular importance in those communities. This includes religions other than Christianity. Historically most major world religions have been opposed to gambling. This is particularly so in the case of Islam.

In New Zealand, people with non-Christian religious affiliations resemble other Christians in that many are non or infrequent gamblers and relatively few are regular gamblers. They differ in that they have high average gambling expenditure and a similar prevalence of problem gambling to Anglicans, Presbyterians and people with no religious affiliation. This means that while most have little or no involvement in gambling, the minority that do gamble do so a great deal and are at high risk for problem gambling. New Zealanders with religious affiliations other than Christianity are frequently recent migrants. Many are Asians. During the past few decades, similar populations have increased in many countries. It would be timely to examine the role that religion and other factors play in fostering and protecting against the development of problems in communities of this type.

Familial factors

In the field of epidemiology, parents and relatives of people with disorders or illnesses are often examined to see whether or not they have experienced the same or related disorders. Apart from assisting with the identification of a particular class of risk factors, research of this type has enabled causes to be determined and more effective treatments and preventative measures to be developed. Reference has been made to families and their potential role in contributing to the development of problem gambling by increasing exposure to gambling activities, social learning and heredity. General population prevalence studies frequently include questions

about problem gambling among family members. Studies of this type typically find problem gamblers report elevated levels of problem gambling on the part of their parents, especially fathers. Problem gamblers in treatment settings report even higher levels. General population and clinical studies have also found high rates of gambling problems among other family members including siblings, grandparents and cousins (Abbott & Volberg, 2000; Daghestani, Elenz & Crayton, 1996; Gambino et al, 1993; Gupta & Derevensky, 1998; Lesieur et al, 1991; Raylu & Oei, 2002; Winters et al, 1998).

A shortcoming of most research on problem gambling among family members is that it relies on respondent assessment. It is not known how people decide that someone they know has, or has had, a gambling problem, or how this determination compares with identification based on clinical interviews or screening tests. Among other things, this leaves open the possibility that other factors account for reported differences such as problem gamblers being better able to identify problems in other people. Research is required that involves independent assessment of gambling and related problems among problem gamblers and family members.

Relative to non-problem gamblers, problem gamblers report much higher levels of moderate to heavy gambling in the families they grew up in. They also report starting gambling at an earlier age. In the New Zealand national survey (Abbott, 2001b), respondents were asked who or what first introduced them to gambling. Family members were mentioned most often, followed by friends. Similar findings have been reported by Jacobs (1989) and Gupta and Derevensky (1998). In the New Zealand study, problem gamblers almost twice as often said they were first introduced to gambling by their families. In addition, from the outset, they more often had a preference for, and engaged in, continuous gambling activities, including card games, betting on horse and dog racing and housie (bingo). They also reported more frequent participation, longer sessions and higher expenditure. These findings are consistent with exposure and socialisation hypotheses. Again, this type of research has limitations stemming from its reliance on recall of events distant in time.

The New Zealand study (Abbott, 2001b) found gender and ethnic differences, substantial in the case of ethnicity. For example, people of 'other' ethnicity (primarily Pacific Islanders and Asians), reported much lower levels of gambling activity within their family of origin. Most reported first gambling in their early 20s rather than during childhood and few, relative to European New Zealanders and Maori, reported being introduced to gambling by family members. They much more often mentioned advertising and a desire to win in this regard. While caution is required owing to small sample size, this suggests that for members of this group, socialising factors external to their family of origin were more important in their introduction to gambling.

Problem gamblers more often report that their spouse or partner, work colleagues and other significant people in their lives have gambling problems (Abbott, 2001b). While problem gamblers more frequently gamble alone and less often gamble with their spouse/partner, they do not appear to differ from non-problem gamblers with respect to frequency of gambling participation with friends and work colleagues. Further research is needed to determine the nature of interactions between problem gamblers and significant people in their lives and what role such interactions play in the development and maintenance of problem gambling.

Research with spouses and children of problem gamblers shows that they have elevated levels of distress and a variety of mental health, substance misuse and psychosomatic problems (Jacobs et al, 1989; Lesieur & Rothschild, 1989; Lorenz & Yaffe, 1988). Darbyshire et al (2001) found that the children of problem gamblers experience a sense of pervasive emotional and physical loss. Multiple aspects of family dynamics and functioning have been found to be disrupted in families that include a problem gambler (Ciarrocchi & Reinert, 1993; Epstein, 1993). Marital separation and divorce are common among problem gamblers. While probable

that the foregoing are primarily consequences of the behaviour of the problem gambler in the family, they may also precede and contribute to problem gambling development. They not infrequently also play a part in problem gamblers' decisions to attempt to change their problematic gambling, either through their own efforts or by seeking professional help (Abbott, Williams & Volberg, 1999; Abbott, 2001).

Recently research has considered the genetics of problem gambling. Frequent reports of elevated rates of problem gambling among various categories of family member suggest that there may be underlying genetic factors that increase the risk of problem development. Eisen et al (1998) examined this matter using a large sample of male twin pairs. They found a genetic influence both on heavy non-problematic gambling and problem gambling. The influence was stronger as problem severity increased. In a smaller scale twin study, Winters and Rich (1998) failed to find a genetic influence on overall gambling involvement. However, for males, they found a strong association with 'high-action' games and for females, with gaming machines.

Molecular genetic research has also found that problem gamblers have a significantly higher frequency of a particular variant (allele) on the dopamine 2 receptor gene, a variant already known to be associated with drug and alcohol misuse/dependence. Frequency of this allele was also found to be higher among people with more severe gambling problems and problem gamblers with comorbid (co-occurring) alcohol or drug problems. Comorbid depression, on the other hand, was associated with lower frequency of the allele, especially for women (Comings et al, 1996; Zuckerman, 1999). A variety of other genes also appear to be implicated as risk factors for problem gambling (Comings, 1998), particularly genes that influence neurotransmitters in the brain that control moods and temperament. Some of these genes appear to be common to other addictions and impulse control disorders including Tourette's syndrome and attention deficit disorder (Blum et al, 1996; Comings et al, 1996). Others appear to be unique to problem gambling (Slutske et al, 2000).

Whilst it would be naive to expect that there is a 'gambling gene' that is responsible or largely responsible for problem gambling, it seems likely that a number of different genes and gene variants indirectly influence problem gambling development via their effects on various biochemical, physiological, personality, mood and behavioural mechanisms.

Little is known about the development of gambling behaviour during childhood and adolescence and how this relates to subsequent problem gambling. Yet to be determined are the relative contributions of, and interactions between, genetics, social learning and exposure to particular forms of gambling. The optimal research strategy would include twin and adoption studies as well as family prevalence studies and prospective child development studies where children are followed from birth and gambling is examined in relation to a wide range of individual and familial factors.

(c) The host: individual factors

Introduction

Exposure to, and involvement in, particular gambling activities is necessary for the development of problem gambling. A variety of environmental factors has been considered that alone, and in various combinations, significantly increase the probability that gambling involvement will lead to gambling problems. However, not all individuals who engage in high-risk gambling activities and are exposed to environmental risk factors become problem gamblers. Some appear to be particularly susceptible to developing problems when they are in this situation whereas others are resistant to problem development. Efforts to understand why this is the case and advance understanding of the determinants of problem gambling has led to

the examination of a range of individual factors. While there is some overlap, for convenience these can be grouped into biological factors, physical health, temperament and personality factors, psychological states and disorders and cognitions.

The genetics of problem gambling was considered in the previous section on familial factors. While appropriate to consider genetic factors in that context, they are also fundamentally important at the individual level, playing a role in all major facets of individual development.

Biological factors

Although research examining the role of biological factors in the development and maintenance of problem gambling is at an early stage of development, a wide variety of factors have been considered. These include brain biochemistry and functioning, as well as physiological and other indicators of arousal and stimulation. While some of these factors appear to be linked with problem gambling, there are some inconsistencies across studies and further research is required.

Neurotransmitters

In the previous section, reference was made to an emerging body of research that has identified differences between problem and non-problem gamblers with respect to genes known to influence neurotransmitter levels. Consistent with these findings, a number of studies strongly suggest that many problem gamblers have deficits in one or more of the major neurotransmitter systems (Blanco et al, 2002).

Several studies of biological markers including the enzyme monoamine oxidase indicate that problem gamblers have deficits in the serotonin system (Blanco et al, 1996; DeCaria et al, 1998). This enzyme is also a marker for impulsivity and sensation-seeking traits (Weyler, Hsu & Breakefield, 1990). Findings from a variety of other biochemical and pharmacological studies are consistent with the view that problem gamblers are significantly more likely than non-problem gamblers to have impaired serotonergic function (Blanco et al, 2002). Dysfunction in this system has been implicated in other mental disorders that involve impaired impulse control (Mehlman et al, 1994). Further support for it having a role in problem gambling comes from the finding that the treatment of pathological gamblers with serotonin re-uptake inhibitors such as fluvoxamine reduces problem gambling symptoms (Hollander et al, 1998).

Research also suggests many problem gamblers have deficits in their noradrenergic system (Bergh et al, 1997; DeCaria et al, 1998). Noradrenaline is associated with arousal and impulse control (Siever, 1987). It has been suggested that these deficits may contribute to heightened arousal, sensation seeking and risk taking among problem gamblers.

A third system, the dopaminergic system, has also been implicated. Reference has already been made to various genetic factors that appear to be linked with problem gambling. This includes variants to two dopamine receptor genes. One, the Taq A1 variant on the D2 receptor gene has, in addition to problem gambling, been associated with a number of impulsive, compulsive and addictive disorders including alcohol and drug misuse/dependence, smoking and conduct disorder (Blum et al, 1995). The other, an allele variant on the dopamine D4 receptor, has been shown in other studies to be associated with novelty seeking behaviours (Ebstein et al, 1996). The dopamine system is involved in brain reward mechanisms. People with low levels of dopamine in this system are prone to anxiety and cravings and may engage in various impulsive and other behaviours to compensate and stimulate dopamine release (Bergh et al, 1997).

Further research is required to examine how variations in this and other neurotransmitter systems are involved in the development and maintenance of problem gambling and related disorders.

Brain structure and functioning

Neuropsychological, electro-encephalogram and brain imaging studies have found that problem gamblers show less differential activation of their cerebral hemispheres, frontal lobe impairments, distractibility, attention deficits and problems with aspects of perceptual organisation (Carlton & Goldstein, 1987; Goldstein et al, 1985; Rugle & Melamed, 1993). These are similar to deficits commonly found in children with attention deficit hyperactivity disorders and adults with antisocial personality disorder and serious alcohol problems. While these impairments may often precede the onset of problem gambling, they might also arise or be accentuated subsequently as a consequence of heavy alcohol intake. Many serious problem gamblers have preceding or concurrent alcohol problems and alcohol is a potent neurotoxin with a particular affinity to frontal tissue. This topic warrants further investigation as, among other things, it has potentially important implications for prevention and treatment.

Brain imaging studies have recently found problem gamblers typically respond to descriptions of gambling situations by reporting an urge to gamble and experiencing brain activation in regions previously found to be involved in drug craving responses (Potenza, 2001). Changes in brain blood flow patterns while people are gambling have also been found to resemble changes associated with low doses of morphine or cocaine infusion (Breiter et al, 2001). While requiring replication and further study, these findings suggest some aspects of problem gambling and substance dependency share common neural substrates.

Physical health problems

Relative to non-problem gamblers, problem gamblers are more likely to experience a wide variety of physical health problems including cardiovascular and gastrointestinal illnesses, chronic pain and dental problems (Gerstein et al, 1999). A recent survey of older adults in Florida also found that problem gamblers were significantly more likely than non-problem gamblers to rate their physical health as poor (Volberg & McNeilly, 2003). While physical health problems may sometimes stem from or be aggravated by problem gambling, it is also possible that they could play a role in the development of problem gambling. This has not been examined rigorously, although there are reports of gambling problems developing in response to life-threatening illnesses (Whitman-Raymond, 1988) and anecdotal accounts of people with chronic pain disorders reporting reduced or absent pain while gambling. Among the Florida seniors, problem gamblers appeared to be coping with a range of personal losses which left them more depressed than non-problem gamblers and may have led them to self-medicate, not only with gambling but also with alcohol and non-prescription drugs (Volberg & McNeilly, 2003).

Temperament and personality

Attempts to find a ‘problem gambling personality’ have proven to be as elusive as have efforts over many decades to identify an ‘alcoholic personality’. A very wide variety of aspects of personality and temperament have been examined in this regard. As research findings have accumulated, it has become clear that both are heterogeneous groups. However, a number of personality characteristics or traits have been identified that are common among problem gamblers. Some, including impulsivity and sensation seeking, appear to be significant risk

factors for problem gambling. The remainder of this section is confined to these and other factors that have been most strongly associated with problem gambling.

Impulsivity

Impulsivity refers to an inclination or drive to engage in risky behaviours without thought or self control and is widely regarded as a fundamental aspect of human personality (Eysenck & Eysenck, 1978; McElroy et al, 1993). High levels of impulsivity are considered to play a part in a number of mental disorders (American Psychiatric Association, 1994). When serious problem gambling was first classified as a mental disorder in 1980 it was included among the disorders of impulse control (American Psychiatric Association, 1980). Given this placement, it is reasonable to assume that high impulsivity could predispose people to problem gambling.

Since the early 1970s, a number of studies have examined impulsivity in problem gamblers. Clinical studies reported that difficulties in delaying gratification and concentrating on longer-term consequences of behaviour were frequent issues in therapy with problem gamblers (Livingston, 1974; McCormick et al, 1987). However, those studies did not include validated measures of impulsivity and typically lacked appropriate controls. Contrary to expectation, the first well designed study that used validated psychometric assessments found no differences between problem gamblers and non-problem gamblers with respect to either impulsivity or sensation seeking (Allcock & Grace, 1988). However, in recent years a substantial body of research has established impulsivity as a risk factor for problem gambling and a number of related disorders.

Adult studies now consistently demonstrate that community and clinical samples of problem gamblers have higher levels of impulsivity than non-gamblers and gamblers who are free of problems. Some found strong correlation between impulsivity and problem gambling severity (Alessi & Petry, 2003; Petry, 2001, 2002; Steel & Blaszczynski, 1998). Youth studies have obtained similar results (Nower, Derevensky & Gupta, 2004; Vitaro, Arseneault & Tremblay, 1977, 1999). Derevensky & Gupta (2004) recently found that impulsivity remains a significant risk factor when the effects of a number of other predictors of problem gambling are controlled for in multivariate analyses. Another youth study (Vitaro et al, 1998) found that participants with gambling and substance use problems were more impulsive than those who had problems with only gambling or substance use. From this and other considerations, they suggested that substance use and gambling problems develop at the same time during adolescence and are related to an impulse control deficit.

In addition to alcohol and other substance use problems/dependencies, problem gamblers also have very high rates of other mental disorders in which impulsivity is implicated, namely attention deficit hyperactivity disorder, antisocial personality disorder and other disorders of impulse control (Rugel & Melamed, 1993). These findings, as well as those reported earlier regarding genetic and other biological factors associated with problem gambling, all point to impulsivity playing a role in the development of problem gambling.

Sensation seeking

Sensation seeking, like impulsivity, is a fundamental aspect of personality that involves risk taking. It differs in that it is primarily driven by a desire for novel and diverse feelings and experiences rather than a consequence of weak impulse control (Coventry & Brown, 1993). Sensation seeking is related to the arousal hypothesis - the notion that it is the excitement of playing, rather than money, that acts as a reward for problem gamblers (Anderson & Brown, 1984). There are many studies demonstrating that regular gamblers become more aroused than

other gamblers during participation in a variety of gambling activities (Anderson & Brown, 1984; Coulombe et al, 1992). However, it is less certain that this is the case for high frequency and problem gamblers (Coventry & Norman, 1997). In part, this might be because they are more likely to develop tolerance requiring higher intensities of gambling engagement to achieve the same levels of excitement (Griffiths, 1993c).

The levels of arousal that people seek and prefer may be related to the type of gambling activity in which they choose to participate. For example, a small-scale study of problem gamblers found differences between horse race gamblers and electronic gaming machine gamblers (Cocco, Sharpe & Blaszczynski, 1995). The former favoured high levels of arousal and appeared to gamble to attain these levels; the latter had higher levels of anxiety and tended to avoid arousal while gambling.

Some community studies have found that male problem gamblers have higher levels of sensation seeking than appropriate control groups (Breen & Zuckerman, 1999; Kuley & Jacobs, 1988). A few youth studies have also found elevated rates (Gupta & Derevensky, 1998; Powel et al, 1999). However, others have obtained contradictory results. For example Blaszczynski, Wilson and McConaghy (1986) found that male problem gamblers in their study did not differ from controls in this regard. They proposed that rather than seeking sensation, those problem gamblers were gambling to reduce negative emotional states including anxiety, loneliness and boredom. Other research has supported this as a motivation for frequent and problem gambling, both in youth and adult samples (Blaszczynski, McConaghy & Frankova, 1990; Coman, Burrows & Evans, 1997; Gupta & Derevensky, 1998, 2000). While most studies involving community samples have found higher levels of sensation seeking among problem gamblers, studies of problem gamblers seeking or receiving treatment have found either no difference or lower scores than controls (Allcock & Grace, 1988; Blanco et al, 1996).

It is unclear why there are a number of discrepancies in findings from the studies reviewed. In the case of the difference between community and clinical studies, it has been suggested it could be due either to relatively more low sensation seeking problem gamblers seeking treatment or to treatment resulting in lower sensation seeking proclivities (Zuckerman, 1999). It appears that the relationship between sensation seeking and problem gambling is complex. Raylu and Oei (2002) have suggested that although sensation seeking may predispose an individual to gamble, some consequences of problem gambling may subsequently modify this personality characteristic. It also seems likely that sensation seeking varies in its relevance to particular gambling activities. For example, Coventry and Brown (1984) found elevated sensation seeking among casino gamblers and people who bet on several forms of gambling. Off-course track gamblers, on the other hand, had lower levels of sensation seeking. While having lower levels overall, within this group those with higher sensation seeking scores were more aroused, made larger bets, spent more and experienced more loss of control over their gambling. This suggests sensation seeking plays some role in loss of control, an important aspect of problem gambling development.

Compulsivity

Compulsivity is an inclination to engage in repetitive behaviours that is driven by a desire to avoid harm and reduce feelings of anxiety and doubt (McElroy et al, 1993). It is typically linked with an obsessional tendency - a tendency to experience re-occurring and persistent thoughts that provoke anxiety that is temporarily reduced by compulsive behaviours. Like impulsivity, compulsivity is regarded as an enduring personality dimension that influences the expression of symptoms in mental disorders. Obsessive compulsive disorder and anorexia nervosa are examples of disorders characterised by compulsive behaviour and obsessive thinking.

While diagnosed as an impulse control disorder, some of the diagnostic criteria for pathological gambling are more related to obsessional thinking and compulsivity than impulsivity. A number of studies have found that pathological gamblers have significantly higher levels of obsessive-compulsive symptoms than controls (Black, Moyer & Schlosser, 2003; Blaszczynski, 1999; Frost, Meagher & Riskind, 2001), suggesting that pathological gambling might be more closely aligned with obsessive-compulsive disorders than with disorders of impulse control. Consistent with this view, high rates of obsessive-compulsive disorder have been found to co-occur with pathological gambling (Black & Moyer, 1998).

Obsessive-compulsive disorder and other mental disorders with significant obsessive-compulsive features are currently classified as being fundamentally distinct from problem gambling and other disorders of impulse control (American Psychiatric Association, 1994). While regarded as distinct, some researchers have proposed that these disorders and the underlying personality dimensions relating to them may be closely intertwined and interact in producing psychopathology. It has been further argued that the present major psychiatric diagnostic systems should be revised to include a grouping of impulsivity-compulsivity spectrum disorders (Skodol & Olham, 1996).

Given that pathological gambling includes elements of impulsivity and compulsivity, it may well be that pathological gambling should be included in this grouping alongside substance use disorders, bulimia nervosa, body-dysmorphia and obsessive-compulsive disorder. From studies to date, while elevated impulsivity and compulsivity have been demonstrated in problem gambling samples, it has not been determined whether they are precipitants or consequences of the disorder. Further studies are required to examine ways in which these personality attributes are related, which other personality dimensions are linked with them, and how they relate to the development and maintenance of problem gambling.

Psychoticism and neuroticism

Psychoticism and neuroticism are fundamental personality dimensions found to be elevated among problem gamblers compared with the general population (Raylu & Oei, 2002). However, not all studies have demonstrated significant neuroticism differences and one found a marked decrease following treatment in people who stopped gambling following treatment (Blaszczynski, McConaghy & Frankova, 1991). The latter finding suggests elevated neuroticism may at least partly arise from problem gambling and related stress rather than precede it. Heightened psychoticism among problem gamblers is not surprising given that impulsivity and sensation seeking are closely related to psychoticism in other populations.

Impulsivity, sensation seeking and psychoticism have all been linked to antisocial personality disorder which is also more common among problem gamblers than in the general population (Graham & Lowenfield, 1986; Roy et al, 1989). Antisocial personality may also contribute to the very high criminal offending rates of serious problem gamblers, although most problem gambler offenders do not have antisocial personality disorders (Abbott & McKenna, 2000; Abbott, McKenna & Giles, 2000; Blaszczynski & McConaghy, 1994). Blaszczynski, Steel and McConaghy (1997) have proposed that antisocial characteristics are usually a consequence of problem gambling. While that may be so for the majority, there is clearly a significant subgroup of problem gamblers who meet the diagnostic criteria for antisocial personality disorder prior to the development of problem gambling. Most of these people also engage in criminal offending prior to developing problem gambling, although it may subsequently be aggravated by gambling and gambling debts (Abbott & McKenna, 2000).

Personality disorders

Personality disorders often represent the extreme end of personality characteristics such as those previously discussed. They are deep-seated, enduring patterns of behaviour that are resistant to change through therapeutic intervention. In addition to obsessive-compulsive and antisocial personality disorders, quite high rates of avoidant, schizotypal and paranoid disorders have been found in treatment samples of pathological gamblers (Black & Moyer, 1998). Moderate to high rates of histrionic, narcissistic and borderline disorders have also been reported (Blaszczynski & Steel, 1998). However, not all studies have found such high rates for this latter group (Specker et al, 1996). Further research is required to determine the extent to which these various disorders are implicated in the development and progression of problem gambling, rather than co-occurring but largely running parallel courses.

Psychological states and mental disorders

Mood states, particularly anxiety and depression, have been found to be associated with aspects of gambling behaviour and problem gambling. Less attention has been given to the role of positive emotions in developing and sustaining gambling participation and problem gambling. Problem gambling, especially severe problem gambling, is often accompanied by other mental disorders.

From general population surveys it is evident that most people who gamble, including problem gamblers, consider that gambling is a satisfying and enjoyable activity (Abbott, 2001a). For example, most adult New Zealanders say they gamble to win money or to think/dream about winning and many report that gambling gives them pleasure and fun, is a hobby or interest, is part of socialising with family or friends and is exciting and relaxing (Abbott, 2001b). From this and similar studies in other parts of the world, it is apparent that gambling participation frequently generates or is accompanied by positive emotional states. While little investigated, this is no doubt a reason many people continue to gamble despite being aware that they are likely to lose. Gambling participation may also contribute to a more general sense of personal wellbeing or life satisfaction, although most gamblers do not consider gambling has either a positive or negative effect on their overall quality of life (Abbott, 2001a). In this regard, it is of interest that the Productivity Commission (1999), in assessing the net financial contribution of gambling to Australia, gave a high weighting to consumer satisfaction. This was judged to be more important than the benefit to the economy by way of direct and indirect employment generated by the gambling industries.

In the New Zealand national survey referred to in the preceding paragraph, problem gamblers mentioned experiencing excitement and relaxation while gambling much more often than did non-problem gamblers. They also more often reported gambling to escape when feeling depressed. These findings are consistent with the view that using gambling to relieve negative emotional states such as depressed mood and anxiety may be a significant risk factor for problem development (Abbott, 2001b; Blaszczynski & McConaghy, 1989). Research by Dickerson et al (1991) indicated that prior negative mood states contributed to high-frequency gamblers continuing to gamble despite repeated losses. Other research has shown mood affects gambling decision-making. For example, Raghunathan and Pham (1999) demonstrated that depressed mood influenced gamblers to make high-risk/high-reward choices. Anxious gamblers, on the other hand, more often made low-risk/low reward choices. Other research suggests different moods influence gamblers' gambling choices, for example, anxious gamblers favouring gaming machines and depressed gamblers favouring forms involving greater skill and/or social interaction (Coman, Evans & Burrows, 1996).

Anxiety and depressed mood also appear to play a role in maintaining problem gambling and contributing to relapse (Coman, Burrows & Evans, 1997; McCartney, 1995). Whilst gambling may act as a distraction from or antidote to negative emotional states, problem gamblers also frequently report feeling depressed after losing heavily at gambling and feeling guilty when they finish a gambling session (Abbott, 2001b). This suggests a number of at-risk and problem gamblers get caught in a circular process where they gamble to reduce depressed or other negative states that, over time, increasingly result from their gambling behaviour, losses and associated adverse consequences. Whilst research and clinical experience strongly suggest mood states are implicated in problem development and maintenance, prospective studies commencing prior to the development of problem gambling are required to confirm this and elucidate the mechanisms involved.

Adult and youth studies have found elevated rates of mood disorders, particularly depression and depressive symptoms, among problem gamblers. In addition to finding elevated rates of depression among young problem gamblers (Nower et al, 2004), depressive symptoms have been found to be strongly related to level of gambling involvement and higher among female problem gamblers (Gupta & Derevensky, 1998). Whilst many studies have found a relationship between problem gambling and depression, there are some exceptions (Becoña, Del-Carmen-Lorenz & Fuentes, 1996).

Depression and psychological distress are risk factors for suicide attempts and completed suicides (Schneidman, 1996). Many of the common consequences of problem gambling, for example, financial and legal problems, disrupted family and personal relationships, deteriorating school and work performance, and criminal behaviours to finance gambling, contribute to distress and depression and are risk factors for suicide (Blaszczynski & Farrell, 1998; Ladouceur et al, 1994). Consistent with the foregoing, high rates of suicidal ideation and suicide attempts have been found among problem gamblers in treatment, helpline and general population settings (Petry & Kulik, 2002; Sullivan et al, 1994). A recent series of adolescent studies in school settings found that problem gamblers, relative to non-gamblers and non-problem gamblers, had significantly higher rates of depression, suicidal ideation and suicidal attempts (Nower et al, 2004). In those studies, higher levels of depression and higher levels of problem gambling were both predictive of suicidal ideation and attempts. The relationship between problem gambling severity and suicidal ideation remained significant when level of depression was controlled for statistically, suggesting problem gambling influences suicidal ideation in ways additional to contributing to depression.

Earlier, mention has been made of high rates of personality disorder in clinical samples of pathological gamblers, particularly conduct and antisocial personality disorders, and related ‘acting out’ disorders. High comorbidity with antisocial personality disorder was also evident in a community study of 7,000 U.S. male veteran twin pairs (Slutske et al, 2001). Just under a quarter of pathological gamblers met diagnostic criteria for antisocial personality disorder compared with two percent for non-pathological gamblers. Reference was also made previously to clinical studies that found elevated prevalence of attention deficit hyperactivity disorder, other disorders of impulse control and obsessive compulsive disorder. Alexithymia, a disorder involving particular concrete ways of thinking and affective deficits, has also been found to have a high prevalence among youth problem gamblers (Lumley & Roby, 1995). Alexithymia is also linked with compulsive and addictive disorders.

Many studies have found significant relationships between problem gambling and substance misuse. Adult and youth problem gamblers in community and clinical settings drink alcohol and consume other licit and illicit substances at several times average general population rates (Abbott, 2001a; Fisher, 1993; Frank, 1992; Gupta & Derevensky, 2000). Moderate to high percentages (typically 30 to 50%) of adults seeking treatment for pathological gambling have comorbid alcohol and/or other substance misuse disorders (Crockford & el-Guebaly, 1998;

Lesieur, Blume & Zoppa, 1986; Petry, 2002a). Elevated rates of pathological gambling (typically 10 to 20%) are also evident among adults seeking professional help for alcohol and other substance misuse/dependence disorders (Feigelman, Wallisch & Lesieur, 1998; Hall et al, 2000; Lesieur, Blume & Zoppa, 1986; Petry, 2002b).

Potenza et al (2003) compared problem gambler helpline callers with and without comorbid alcohol use problems. Fifteen percent of callers to the helpline, based in Connecticut, U.S., seeking help for gambling problems reported a past or current problem with alcohol. Problem gamblers with alcohol problems differed from their counterparts without problems in that more were males, they experienced difficulties with more forms of gambling, had gambling problems of greater severity and reported more gambling-related suicides and arrests. They indicated experiencing higher rates of other drug problems and daily tobacco use personally and also reported higher rates of alcohol and other drug problems on the part of parents and other family members.

The Potenza et al (2003) findings of greater severity of gambling and related problems among callers with comorbid alcohol problems suggest alcohol use might exacerbate gambling problems. It appears that this group has more impaired impulse control. Whether this is the case and, if so, the extent to which it is secondary to excessive alcohol consumption as opposed to a consequence of pre-existing genetic vulnerabilities, personality and/or other factors remain questions to be addressed by future research.

A prospective study by Abbott, Williams & Volberg (1999, 2004) is of interest here. This involved reassessing 77 problem gamblers and 66 non-problem gamblers seven years after they were initially assessed, as part of a general population prevalence survey. At the time of the initial assessment, 54% of serious and 29% of less serious problem gamblers were classified as engaging in hazardous or problematic alcohol use. Initial problem gambling severity, hazardous/problematic alcohol use and a preference for track betting predicted a continuation of gambling problems. Alcohol misuse remained a significant predictor when the effects of initial problem gambling severity were controlled for statistically. Whilst not addressing the role of alcohol in the development of problem gambling, these findings implicate alcohol misuse in the continuation of gambling problems and relapse. This study also found that whereas the majority of problem gamblers no longer had gambling problems seven years later, there was no significant reduction in the percentage engaging in hazardous/problematic drinking.

Experimental studies where alcohol is provided to participants before or during gambling and their behaviour is compared with non-drinking participants, further suggest that alcohol can contribute to the development and exacerbation of gambling problems in a variety of ways. For example, Ellery et al (2003) found that even moderate quantities of alcohol consumption resulted in increased risk-taking during video poker play. The effect was stronger in the case of problem gamblers who not only made increasingly risky bets but also persisted longer with their play. Another study found most problem gamblers said they were more likely to drink alcohol when they won than when they lost (Zack et al, 2003). For that category of problem gambler, it appears from further investigation that gambling wins and/or thinking about gambling wins automatically activate thoughts of drinking. This, in turn, could be expected to lead to further alcohol consumption. Apart from suggesting ways in which alcohol might contribute to problem gambling, findings from these and related studies have relevance to understanding reasons for the high comorbidity between problem gambling and problem drinking.

Whilst there are many clinical and convenience sample studies, as well as some community studies that examine the co-occurrence of alcohol use and other mental disorders with pathological gambling, sophisticated understanding of those relationships is lacking. In part this is because, to date, there have been few representative general population studies that

simultaneously assess pathological gambling and other mental disorders. Additional studies of this type are required to determine more definitively the extent to which various other mental disorders are comorbid with pathological gambling.

Some general population problem gambling prevalence studies have included screens for depression, non-psychotic mental disorder and hazardous alcohol use. Studies of that type have generally found that, relative to non-problem gamblers, significantly more problem gamblers fall within the clinical range on those measures (Abbott, 2001a; Abbott & Volberg, 1992; 1996).

The two U.S. national problem gambling surveys (Gerstein et al, 1999; Welte et al, 2001) examined alcohol use disorders but not other mental disorders. The first survey found 10% of lifetime pathological gamblers were alcohol dependent relative to 1.1% of non-gamblers. Corresponding figures for the second survey were 25% and 1.4%. Another U.S. survey, localised in the St. Louis area, obtained somewhat elevated rates of substance use disorders among problem gamblers (Cunningham-Williams et al, 1998). However, the sample largely comprised substance abusers at high risk for HIV/AIDS. A more representative and larger survey undertaken in Edmonton, Canada obtained significantly higher rates of illicit substance use disorders among pathological gamblers (23%) than non-problem gamblers (6%) (Bland et al, 1993).

The two latter surveys (Bland et al, 1993; Cunningham-Williams et al, 1998) appear to be the only general population surveys to assess the comorbidity rates of pathological gambling and affective and anxiety disorders. Both studies found some affective disorders were significantly more prevalent in problem gamblers. Neither found that pathological gamblers were more prone to manic episodes. Bland et al (1993) found pathological gamblers were more likely than non-gamblers to have any anxiety disorder (27% versus 9%) and agoraphobia (13% versus 2%). Cunningham-Williams et al (1998) found problem gamblers (pathological and less severe problem gamblers) had a higher rate of phobias (15% versus 10%) but not other anxiety disorders. These two surveys also found higher rates of antisocial personality among problem gamblers. They did not examine other personality disorders.

In summary, it appears that some mental disorders are highly comorbid with pathological gambling. There is a large body of research, including methodologically sound general population studies, indicating particularly high comorbidity with alcohol and other substance use disorders. A somewhat smaller literature indicates that this is also the case for affective disorders, particularly depression. Anxiety disorder rates may also be elevated among problem gamblers in the general population, although the methodological quality and findings of relevant studies are variable. It is also fairly well established that there are high rates of personality disorder and some other specific mental disorders in clinical samples of pathological gamblers. However, there is insufficient research to determine whether this is also the case for problem gamblers in the general population. There are also indications that comorbidity rates generally increase with problem gambling severity. There appear to be gender differences with respect to comorbidity, for example, higher rates of affective and anxiety disorders among women. However, most studies have used male samples and further research is required before definitive statements can be made in this regard.

Given the wide range of disorders generally considered, it is surprising that pathological gambling has rarely been included in general population psychiatric epidemiological surveys. Many of these surveys have been conducted throughout the world during the past 20 years. Two studies of this type that did include pathological gambling have been mentioned, namely the St. Louis site of the Epidemiological Catchment Area Study (Cunningham-Williams et al, 1998) and the Edmonton study (Bland et al, 1993). The only other study found during this review was undertaken in Christchurch, New Zealand, during the mid 1980s (Wells et al, 1989,

1992). Unfortunately, the relatively small sample sizes of these studies place severe constraints on meaningful examination of comorbidity rates or consideration of gender, ethnic, age and other differences. However, pathological gambling was included in the recent U.S. National Institute on Alcohol Abuse and Alcoholism National Epidemiological Survey on Alcohol and Related Conditions (Grant, Kushner & Kim, 2002). This study has a nationally representative sample of 43,093 adults and appears to be the largest psychiatric comorbidity survey ever undertaken. When the pathological gambling data are published it is anticipated that they will significantly advance understanding of the epidemiology of pathological gambling and commonly co-occurring disorders.

There are indications from different types of study that psychological states and disorders make people more susceptible to gamble regularly and, in some instances, develop gambling problems. The great majority of research examined in this section however, including the epidemiological studies, has been cross-sectional. In other words, problem gambling and other mental disorders and mood states have been assessed at the same point in time. Among other things this means it is not apparent whether associated psychological states or comorbid disorders precede, develop in conjunction with, or occur subsequent to the development of problem gambling. This also means there is uncertainty regarding causal relationships.

Problem gambling could be related to a mental disorder in a variety of ways. Problem gambling could cause or contribute to the development of another disorder. For example problem gamblers might become depressed in response to broken relationships and other major stress associated with their problem gambling. Alternatively, or additionally, they might self-medicate with alcohol and develop an alcohol use disorder. Problem gambling could also be caused by another disorder, for example excessive alcohol intake while gambling on the part of people with an alcohol use disorder might lead them to gamble longer and take greater risks. Problem gambling and another disorder could also be related if a common additional factor or factors played a role in the development of both. For example, the two disorders might involve a common genetic, physiological or personality vulnerability. From research discussed at various places in this report, it appears highly likely that all three of these types of relationship occur.

Mood states and substance use such as alcohol could also contribute to the development of problem gambling without being reflected in psychiatric comorbidity. For example, while pathological gambling and alcohol misuse disorders have a moderate to high degree of comorbidity, most problem gamblers, especially those with less severe problems, do not have comorbid alcohol problems. However, a number of studies indicate that very high percentages of regular gamblers consume alcohol while gambling (Stewart & Kushner, 2003). This may be especially the case during electronic gaming machine play (Focal Research, 1998; Stewart et al, 2002). Whilst gamblers with alcohol misuse disorders may well be at greater risk in this situation, alcohol consumption on the part of other gamblers while gambling might also contribute to the development of problem gambling. Longitudinal studies are required to clarify temporal and other relationships between problem gambling and other mental disorders, including their onset and life course. Research of this type is also critically important to advance understanding of the role of alcohol, mood states and other factors on the development, maintenance and cessation of problem gambling.

Comorbidity between mental disorders could also, at least in part, be an artefact of the way they are currently diagnosed and measured. Some of the diagnostic criteria for pathological gambling appear to overlap with those of some other disorders such as antisocial personality disorder and obsessive compulsive disorder. Further research is required to assess this possibility.

There are considerable differences between gambling activities and some indications that different mood states and mental disorders may lead people to engage in one form rather than another. Research is required to examine this possibility in greater detail and identify how mood states influence participation in particular forms of gambling, as well as how engagement in them, in turn, influences psychological states and gambling behaviour.

Cognitions

A fairly substantial body of research indicates that problem gamblers differ from non-problem gamblers in the way they think about gambling. Research further suggests that these cognitive differences, or distortions, play an important part in the development and maintenance of problem gambling (Griffiths, 1995a; Ladouceur & Walker, 1996). This appears to be mainly through helping at-risk and problem gamblers sustain gambling at high levels despite continued or escalating losses.

Toneatto (1999) provides a comprehensive overview of the many gambling-related cognitive distortions that commonly characterise the thinking of problem gamblers. Most of these distortions lead problem gamblers to believe they can predict the outcome of chance events or directly or indirectly influence outcomes that are entirely or predominantly determined by chance.

A common method used to identify cognitive distortions involves asking gamblers to speak out thoughts, images and intentions that come to mind while they are engaged in gambling activities. This 'thinking aloud' method has been used with a wide variety of gambling forms and conditions, for example, limited or unlimited stakes and frequent or infrequent wins. Studies of this type are included in Toneatto's (1999) review. Typically, the majority of gamblers' verbalisations while gambling are incorrect.

Cognitive therapy programmes that focus on correcting erroneous beliefs have been shown to reduce urges to gamble, gambling frequency and monetary risk taking while gambling (Coulombe et al, 1992; Sylvain, Ladouceur & Boisvert, 1997). These findings are consistent with the view that cognitive distortions play a part in problem gambling development and maintenance.

The characteristics of particular forms of gambling appear to influence the type and frequency of cognitive distortions. For example, Toneatto et al (1996) found heavy and problem gamblers more often held erroneous beliefs about gambling activities involving a degree of skill, for example, sports betting and cards, than those driven entirely by chance such as lotteries. Regular electronic gaming machine players also appear to have particularly high levels of irrational thinking about control and outcomes, even though their knowledge and experience have minimal or no effect on outcomes (Griffiths, 1995a; Walker, 1992). Griffiths (1993a) describes various structural characteristics of gaming machines that are designed to foster irrational beliefs of winning and control. He claims that these structural features of machines can induce excessive and problematic gambling regardless of players' psychological or biological characteristics.

While it seems likely that cognitive distortions are instrumental in the development and maintenance of problem gambling, further research is required to elucidate precisely how this occurs. This needs to include identification of which cognitions are most commonly associated with particular forms of gambling and how they influence behaviour. Research in this area could also be extended to include consideration of potential age, gender and ethnic differences, and inter-relationships between erroneous cognitions and other risk factors including alcohol consumption while gambling, and mood states.

(d) The relative importance of risk factors

It is evident from the research reviewed in sections (a) to (c) that a wide variety of risk factors within each of the general categories considered (agent, environment and host) have been identified that appear to influence the development and maintenance of problem gambling. Studies have been discussed where relationships between risk factors have been examined to increase understanding of their connection to problem gambling. In some cases this has included assessment of the relative strength of the relationship between each factor and problem gambling, while controlling for the effects of other factors. This type of investigation, using various forms of multivariate analysis, has often been confined to factors within a single category, for example, gambling participation or sociodemographic variables. A few studies have included factors from more than one category. This section considers research of this type.

A study of youth problem gambling in the United States by Langhinrichsen-Rohling et al (2004) referred to previously, simultaneously considered individual, family and peer group correlates of adolescent gambling and problem gambling. The sample size was sufficiently large to allow multivariate analyses to be conducted to assess the relative contributions of a fairly large number of factors to problem gambling. That study is of further interest because it looked at correlates of different levels of gambling involvement and problem gambling (non-gamblers, non-problem gamblers, at-risk gamblers, problem gamblers and probable pathological gamblers).

Participants in the Langhinrichsen-Rohling et al study who had never gambled, differed from non-problem gamblers in that more were female, they reported less peer gambling, parental gambling, susceptibility to peer pressure, risk-taking and suicide proneness, fewer sex partners, lower levels of impulsivity, and less recent binge drinking and drug use. Those factors all appear to independently and significantly contribute to young people taking part in gambling activities. At-risk and less serious problem gamblers also differed from non-problem gamblers on most of those measures that have a linear relationship with degree of gambling involvement and problem gambling. In other words, average scores on each of those measures increased in a step-wise fashion with non-gamblers reporting the lowest levels, probable pathological gamblers the highest levels and the three in-between groups having intermediate levels.

One of the variables examined in that youth study, susceptibility to peer influence, is of particular interest. While increasing in a linear manner, it was especially useful in differentiating those who gambled without problems from those who had never gambled. The study's authors propose that peer susceptibility might be a general risk factor for experimentation with a variety of risk-taking activities, including gambling. That factor also differentiated the three at-risk/problem gambling groups from non-problem gamblers, suggesting that peer pressure may be important not only in the initiation of gambling but also in leading youth towards problematic patterns of gambling engagement.

Although most of the significant factors that emerged from multivariate analyses had a linear relationship with level of gambling involvement/problems, there were exceptions. Two of the three variables in that category, namely depression and self-rated immaturity, differentiated the probable pathological gamblers from participants in all of the other groups. This suggests that these are important features of serious problem gambling among young people. The third variable, impulsivity, differentiated non-gamblers from non-problem gamblers, and non-problem gamblers from participants in the three at-risk/problem gambling groups. The three latter groups did not differ on that measure. This suggests that impulsivity influences the development of problem gambling by fostering gambling experimentation and participation, rather than more directly influencing the trajectory of frequent and at-risk gamblers towards

problem and serious problem gambling. Given the cross-sectional nature of the study, this and other suggestions about the way in which particular factors protect against, or contribute to, the development of problem gambling are highly conjectural.

Research by Welte et al (2004) has also been previously mentioned. This adult general population study examined the relative importance of selected risk factors from three categories, gambling involvement, sociodemographic and substance use/misuse, and other problem behaviours. High gambling frequency, expenditure and participation in a greater number of forms of gambling were all strongly and independently associated with problem gambling. This means that each of those three factors remained a significant predictor even when the effects of the other two were taken into account. Alcohol misuse or dependence also had a very strong relationship with problem gambling, a relationship that remained when gambling behaviours were held constant and current alcohol and other drug use, drug misuse/ dependence and criminal offending were incorporated into the analysis. Finally, membership of particular ethnic minority groups and low socioeconomic status were strong predictors after all of the proceeding factors were taken into account. The study authors concluded:

> These findings show that diagnoses of pathological and problem gambling may have complex causes beyond mere frequent gambling or making large bets. Risk for pathological gambling is related to gambling versatility, alcohol pathology, and membership in at-risk sociodemographic groups (p.334).

Apart from helping identify the most significant predictors of problem gambling within different domains and the relative importance of these predictors across domains, Welte et al's study advances understanding of the nature of the relationship of some of these factors to problem gambling. For example, engaging in a large number of different types of gambling activity remained significant when gambling frequency and expenditure were held constant. The authors suggest this could represent an "attachment to the essence of the gambling experience" over and above heavy engagement in particular forms of gambling. Previous studies have suggested alcohol can contribute to gambling problems by impairing judgement while gambling. Common underlying constitutional factors may also lead some people to develop both gambling and drinking problems. The finding that alcohol misuse/dependence remain an important predictor of problem gambling when current alcohol use and gambling behaviours are included in the analysis suggest that alcohol is linked to problem gambling in additional ways. It appears that there are chronic effects of alcohol related to the diagnosis of alcohol misuse/dependence that contribute directly to problem gambling severity other than by way of increasing gambling behaviour. Possibilities include reduced income and/or increased expenditure related to alcohol pathology or alcohol induced chronic brain damage escalating problem gambling symptoms.

Turner et al (2003) used qualitative (focus groups and semi-structured interviews) procedures to identify experiential factors that might be involved in the development of problem gambling. This was followed by quantitative analysis of mailed questionnaire returns completed by a self-selected sample of adults recruited via newspaper advertisements. The second phase of the study was designed to check the phase one findings with a larger sample and determine the relative importance of, and inter-relationships between, the factors identified. That study did not include non-gamblers as the focus was on determining why, once people are involved in gambling, some develop problems while others do not.

Relative to non-problem gamblers, Turner et al found problem gamblers significantly more often reported that they had experienced a win the first time they gambled and that losses made them want to gamble more. They much more often said their first wins were large. These and related findings suggest wins influenced participants to believe they could beat the odds and that losses followed by wins encouraged subsequent chasing of losses. Most study participants,

including problem and non-problem gamblers, indicated that winning led them to feel happy and excited. Problem gamblers, however, more often indicated that wins increased their self-esteem.

Problem gamblers also differed from non-problem gamblers in that they significantly more often reported experiencing lack of direction in their lives, high levels of stress and little social support during the year before they started gambling. Stressors most often mentioned included alcohol or drug abuse, difficulty in school and lack of a romantic relationship. Those experiences, along with having a new opportunity to gamble and experiencing gambling wins, were those most often reported in association with the development of gambling problems.

Problem gamblers were found to currently experience higher rates of boredom susceptibility, impulsivity, interpersonal anxiety and depression. They also had a poor understanding of random events including distorted beliefs about their chances of wining and high expectations about winning.

Turner et al conducted regression analyses within each group of related variables across the study to identify the most important predictors to include in final overall analyses. Seven were included: log size of first win, net life stress (stress minus support) when started gambling, and scores from instruments measuring ways of coping-escape, thrill seeking, boredom susceptibility, knowledge of chance, and random events knowledge. Each of those factors when considered together in multivariate analyses had a significant relationship with problem gambling independent of the effects of the other factors. The authors concluded that while early and big wins are probably most important and may sometimes, by themselves, give rise to problem gambling, usually a combination of factors is required. From their analyses, this combination was not specific. The more of any of the factors, the more likely an individual had a gambling problem.

While Turner et al found that the major risk factors had a high degree of independence with respect to their relationships to problem gambling, they also considered it likely that some work in combination and that the effects of these combinations are not simply additive. The sample size was not large enough to examine these potential interactions between factors or fully assess their relative contribution to problem gambling.

The three studies considered in this section illustrate the value of considering multiple risk factors in multivariate designs. However, while assisting in teasing out the relative importance of risk factors and the nature of their inter-relationships, they have a number of limitations. They can only address factors that are included in the particular study and the number of factors that can be considered is constrained by sample size. No single study can include, simultaneously, all of the factors that have been found to be associated with problem gambling. Furthermore, even the most inclusive studies to date generally explain only a minority of the variance in problem gambling outcome measures. This means that most of the variation is not explained by the factors under consideration and that other non-included or unknown, factors are responsible. Additionally, the relationships identified in studies of this type may be strongly influenced by the particular set of variables included. This can be partly addressed by examining variables of interest in multiple studies using different samples and combinations of measures.

The preceding studies and most other research considered in this review rely on cross-sectional information and retrospective accounts of past events. As mentioned previously, it is difficult or impossible to establish the temporal chain of events (the chicken or egg problem) from cross-sectional studies. They also predominantly involve the examination of correlations between presumed risk factors and between these factors and problem gambling. From this type of study it is not possible to conclude with confidence that a given relationship is causal in

nature. While asking people about past events and experiences can provide useful information and help clarify sequences of events, for example, whether a presumed causal factor preceded the onset of problem gambling, such accounts are usually unverifiable and thus of uncertain validity. These are serious limitations when the focus of investigation is explanation of the development, maintenance and cessation of problem gambling. This situation is far from unique to gambling studies; it typifies research in many areas of health, social and other sciences (Abbott & Volberg, 1999).

(e) Development of problem gambling

Introduction

Up to this point, a wide variety of factors has been identified that are associated with the development of problem gambling, either by way of increasing (risk factors) or decreasing (protective factors) the likelihood that people will develop problems. For some factors the body of evidence indicating a significant role in problem development is strong. In other cases it is less compelling or lacking, and researchers continue to propose and examine additional factors that may be implicated. As mentioned in section (d), the relative importance of the various factors and how precisely, individually and interactively, they influence the trajectory from non-problem to problem gambling is, for the most part, yet to be established.

This section considers theoretical frameworks that attempt to integrate information from different domains in explaining problem gambling development. The section also reviews recent prospective studies that have relevance to the evaluation of these frameworks and previous cross-sectional and retrospective studies.

Theoretical frameworks

A number of theoretical models from the social, psychological, health and biological sciences have been applied to problem gambling in an attempt to explain its nature and development. They include sociological, psychodynamic, behavioural, cognitive, cognitive-behavioural, personality, addictions and biological/physiological frameworks. Raylu and Oei (2002) critically examine these theories. Research influenced by and/or relevant to most of them was considered earlier in the present review.

Raylu and Oei (2002) and previous reviewers, for example, Walker (1992), Ferris, Wynne and Single (1998) and Wildman (1998) conclude from their examination of different theoretical approaches that all have some merit, as well as deficiencies, with respect to providing insights into problem gambling and its development. Most are in agreement that problem gambling, to at least some degree, is influenced by psychological and/or physiological predispositions and that stressful experiences and negative emotional states play a role. They differ in the emphasis placed on particular factors and explanations for how they operate in problem development and maintenance. Clinicians tend to focus on internal biological, emotional and cognitive factors. Public health and social science researchers place greater emphasis on broader social and environmental factors.

We agree with Raylu and Oei (2002) that theoretical models predominantly focus on problem gambling in its most severe forms, rather than address the wide spectrum of problems that are present in the general population. Largely this is because the majority of theories are based on experience and research with problem gamblers in clinical and mutual help settings. They typically attempt to explain problem gambling by focusing on one or a limited range of factors and associated mechanisms. They do not adequately account for individual variation and the

multi-determined nature of problem gambling. No single theoretical framework is sufficiently complex and inclusive to take account of the wide array of agent, environmental and host factors that contribute to problem development, maintenance and cessation. Blaszczynski and Nower (2002) provide the closest approximation to a comprehensive framework. Their pathways model incorporates elements from some of the other models and integrates findings from a number of the studies referred to previously in this review.

The pathways model accepts that problem gambling is multi-determined and that it is invalid to assume any one framework can apply to all problem gamblers. It proposes that there are three major subgroups that are influenced by different factors yet display many common features. These groups are: (a) behaviourally conditioned problem gamblers, (b) emotionally vulnerable problem gamblers, and (c) antisocial, impulsivist problem gamblers.

Availability of and accessibility to gambling, especially those forms shown to have strong associations with problem gambling, is a necessary condition for the development of gambling problems. This includes legal and social frameworks that contribute to environments where gambling is socially accepted and promoted. Societies without gambling, for example, pre-European contact Maori and some other Pacific Island populations, did not have a word for gambling or people with gambling problems (Abbott & Volberg, 1999). Blaszczynski and Nower (2002) propose that a further process common to all problem gamblers is behavioural conditioning, contributing to higher levels of gambling involvement and cognitive distortions related to the probability of winning and personal skill or control. Given the way gambling and gambling odds are structured, losses and more significant losing streaks subsequently occur and some regular gamblers chase losses. This typically contributes to further losses, debt and chasing and other behaviours and consequences that define problem gambling and more serious pathological gambling.

Blaszczynski and Nower (2002) maintain that the foregoing pathway to problem gambling occurs in many people who lack major predisposing psychopathology or other individual risk factors. Gamblers may enter this problem subgroup at any age, having been introduced to gambling by family members, friends, work colleagues or personal choice. Whilst they often experience high levels of anxiety, depression and alcohol misuse, for that group these characteristics are a consequence of problem gambling rather than significant contributing factors. Relative to the other two groups, Blaszczynski and Nower (2002) claim that they have less severe gambling problems, fluctuate over time between heavy and problem gambling, readily seek and comply with treatment, display low levels of psychological disorder following treatment and more often return to non-problematic gambling.

The same environmental, conditioning and cognitive factors described for ‘behaviourally conditioned problem gamblers’ apply to ‘emotionally vulnerable’ and ‘antisocial impulsivist’ problem gamblers. The ‘emotionally vulnerable’ group differs in that members have significant pre-existing vulnerabilities including “pre-morbid anxiety and/or depression, a history of poor coping and problem-solving skills, and negative family background experiences, developmental variables and life events” (Blaszczynski & Nower, 2002, p.492). Gambling is considered to have a particular attraction for that group because it can temporarily reduce negative emotional states and meet specific psychological needs. Relative to the first group, Blaszczynski and Nower (2002) argue that ‘emotionally vulnerable’ problem gamblers have higher levels of psychopathology, especially depression, anxiety and alcohol dependence. They also claim that these individuals are more resistant to changing their problematic gambling behaviour and less able to return to non-problematic gambling.

‘Antisocial impulsivist’ problem gamblers are considered to be similar to the emotionally vulnerable group in that both experience a variety of psychosocial and biological vulnerabilities. Blaszczynski and Nower (2002) claim that they differ by having signs

suggestive of neurological or neurochemical dysfunction, as well as features of impulsivity, attention deficit disorder and antisocial personality. Additionally, independent of their problem gambling, this group experiences a variety of behavioural problems including irritability, substance misuse/dependence, suicidality and criminal offending. These problems may interact with and be exacerbated by emotional, interpersonal and gambling problems. Family histories of alcohol misuse and antisocial problems are typical and gambling and gambling problems generally commence at an early age. Blaszczynski and Nower (2002) also believe that this group is particularly reluctant to seek treatment and has poor compliance and outcomes.

Whilst there is some empirical support for the distinctiveness of the three subgroups of problem gamblers, the authors of the pathways model present it as preliminary and subject to refinement or rejection in light of subsequent investigation.

Prospective studies

Throughout this review, reference has been made to the importance of prospective research in clarifying the role and relative importance of risk factors in the development of problem gambling. Of particular relevance are studies where representative general population samples are followed and the same individuals re-assessed over time, commencing before the onset of problem gambling and examining subsequent transitions between phases of non-problem and problem gambling. Research of this type is necessary to assess the validity of theoretical frameworks that propose developmental pathways for sub-types of problem gamblers. During the last few years a small number of prospective studies have been conducted.

Reference has been made to Abbott, Williams and Volberg's (1999, 2004) study involving re-assessment seven years later of 77 problem gamblers and 66 non-problem regular gamblers identified in the 1991 New Zealand national prevalence survey. A major finding was that although none of the problem gambling participants received specialist counselling or treatment, the majority no longer reported problems seven years later. Initial problem gambling severity, preference for track betting and comorbid excessive alcohol use predicted future problems. Whilst advancing understanding of the development of problem gambling, too few non-problem gamblers subsequently developed problems to be able to assess the incidence of problem gambling or identify predictors of initial problem onset.

A recent Canadian study also followed up non-problem and problem gamblers who had participated in a general population prevalence survey (Wiebe, Cox & Falkowski-Ham, 2003; Wiebe, Single & Falkowski-Ham, 2001). Although re-assessment took place only one year later, the majority of people with problems at baseline reported that they either no longer experienced problems or had less severe problems. As in the New Zealand study, problem cessation and reduction were more common among people with less serious problems. While there was a strong trend towards problem reduction, approximately ten percent of non-problem gamblers moved into the at-risk category, ten percent of at-risk gamblers moved into the moderate problem group and ten percent of moderate problem gamblers became severe problem gamblers. Emotional distress was an additional predictor of problem gambling. Loneliness and low social support were also associated with problem gambling when considered on their own but were not significant when included in multivariate analyses with initial problem gambling severity. Emotional distress, loneliness and social support were unfortunately only measured at follow-up. As they were not assessed prospectively it is possible that they were consequences of problem gambling rather than implicated in its onset or persistence.

Schrans, Schellinck and Walsh (2000) re-assessed 181 non-problem and problem gamblers from an earlier Nova Scotia survey of adults who participated regularly in video lottery

gambling. The follow-up interval was two years. High rates of transition into and out of regular non-problem and problem gambling were reported. Although providing useful information relevant to problem development, as in the preceding study, all of the variables considered were assessed at follow-up and were retrospective and cross-sectional rather than prospective.

Two further adult studies have followed participants prospectively. In contrast to the preceding studies, both involved highly specialised populations.

Cottler and Cunningham-Williams (1998) re-interviewed 162 adult illicit drug users 11 years after they were assessed in the St. Louis Epidemiologic Catchment Area study. This was one of the very few general population psychiatric epidemiological prevalence surveys internationally in the 1980s that included pathological gambling. Of the eight diagnosed pathological gamblers at baseline, five retained that diagnosis 11 years later. Although a further 18 drug users developed gambling problems during the 11-year study period, the sample was not sufficiently large to meaningfully examine factors implicated in problem onset.

Shaffer and Hall (2002) assessed 1,176 casino employees on three occasions during a two-year period. Consistent with previous longitudinal studies, most participants with gambling problems experienced improvements and a smaller number developed more serious problems. However, while showing improvement, a substantial number of initially serious problem gamblers continued to experience problems of less severity. Abbott, Williams and Volberg (1999, 2004) obtained similar results. Shaffer and Hall (2002) proposed that relative to problem drinkers, problem gamblers may remain at sub-clinical levels for longer periods of time, both prior to and following the development of serious problems. They found that disabling depression and dissatisfaction with personal life predicted transition from problem to less problematic gambling patterns. However, while statistically significant, the effects were not strong. In contrast to Abbott, Williams and Volberg's (1999, 2004) findings, excessive or problematic alcohol consumption did not appear to compromise subsequent reductions in problem gambling. Frequently, gambling and alcohol problems changed together over time.

Given the large sample size relative to previous prospective studies, Shaffer and Hall were able to compare participants who developed gambling problems during the two years of the study with their counterparts who did not, on a variety of measures assessed prior to problem development. Although they examined a fairly wide range of social, demographic, health and psychological variables in this regard, they did not identify any factors that differentiated the two groups and predicted subsequent problem gambling. This finding is of particular interest given that a number of factors were included that frequently differentiate problem and non-problem gamblers in cross-sectional studies. Measures in this category included age, gender, physical health, work absenteeism, depression, subjective stress, ability to cope with stress, satisfaction with personal and work life, tobacco use and alcohol consumption.

The failure to prospectively identify factors that differentiate future problem gamblers from non-problem gamblers has potentially important implications for previous theory and research addressing the development of problem gambling. It raises the possibility that at least some of the proposed risk factors arise in conjunction with, or subsequent to, the development of problem gambling. This cannot be determined by cross-sectional research. In the case of alcohol and other substance use disorders there is evidence that some commonly associated personality and other psychological attributes are predominantly consequences rather than causes of disorder (Abbott & Gregson, 1981; Vaillant, 1983; Zinberg, 1984). Whilst this highlights the need for further prospective research to clarify the role of proposed risk factors in problem gambling development, it should be noted that Shaffer and Hall's study did not include a number of the most strongly implicated risk factors including gambling behaviour and cognitions. The authors note that their finding of "comorbid patterns of change in alcohol and

gambling" suggests the presence of an unidentified underlying factor responsible both for gambling and alcohol problems.

A small number of studies have prospectively examined gambling and problem gambling from childhood or adolescence. The first published study of this type evaluated the stability of gambling and problem gambling in a general population sample of 532 Minnesota adolescents (Winters, Stinchfield & Kim, 1995). Participants, aged 15 to 18 years when first assessed, were re-assessed 18 months later. Overall rates of gambling participation did not change over that period. However there was an increase in preferences for legal gambling activities including gaming machines and lotteries and a decrease in preferences for informal and unregulated forms such as cards and games of personal skill. Overall, past year problem gambling prevalence rates did not change either. The study did not examine changes at the individual level to determine gambling or problem gambling stability including problem onset (incidence), recovery, persistence and relapse.

Winters et al (2002) subsequently followed up 305 participants from the preceding study five years after their second assessment. Again they found no significant change in the proportions engaging in infrequent and regular gambling. They also found further substitution of legal activities for other forms of gambling. While there was no rise in the prevalence of past year problem gambling, the proportion reporting sub-clinical problems (at-risk gamblers) did increase. Males and females both reported similar high levels of infrequent (past year) gambling across the three assessments. On all other gambling measures (involvement in specific forms, at-risk and problem gambling) males had consistently higher rates across measurement points. As in their initial study, the authors only presented aggregate data rather than examining individual transitions into and out of at-risk and problem gambling.

While not considering individual pathways, Winters et al (2002) did examine the impact of adolescent gambling on subsequent problem gambling. Early onset of gambling (prior to school grade 7) was found to have a modest association with adult at-risk gambling but no association with problem gambling. Early at-risk and problem gambling, measured at the first two assessment points, were moderate to strong predictors of adult at-risk and problem gambling. Prior substance misuse (regular use of tobacco, alcohol or other drugs) and male gender were additional predictors of future at-risk and problem gambling. Prior delinquency (theft, property damage and assault) was a further predictor of at-risk but not problem gambling. Respondent-assessed parental problem gambling, on the other hand, was a strong predictor of problem but not at-risk gambling. Prior poor school performance also predicted problem but not at-risk gambling. Of the predictor variables considered, only prior psychological distress (anxiety and depression items) failed to predict either at-risk or problem gambling.

These findings confirm that a number of psychosocial factors associated with problem gambling in cross-sectional studies predict future gambling escalation and problems. They also largely confirm the predictive relevance of early gambling experiences and problems when assessed prospectively rather than from retrospective accounts. The authors observed that many of those factors are also implicated in the development of drug abuse and other 'externalising' disorders, consistent with the view that they share at least some underlying causes. Since early gambling onset and delinquency were risk factors for sub-clinical gambling problems but not problem gambling, they suggested that these factors reflect a general deviant lifestyle of which heavy and at-risk gambling is a part. As previously mentioned, two of the other factors, namely parental problem gambling and poorer school performance, predicted problem gambling but not the less severe at-risk gambling. Winters et al suggested these latter factors might have a stronger role in the development of gambling-specific problems rather than more general acting out behaviours.

Although not discussed by Winters et al (2002), their findings have particular relevance to the question of whether or not problem gambling is more or less prevalent among adolescents than adults. As mentioned earlier, higher youth rates are typically evident in cross-sectional prevalence surveys. However, it is not clear whether this is a consequence of recent generations having more problems than earlier generations (a cohort effect) or gambling problems reaching a peak during the adolescent years and then reducing during the transition to adulthood (a developmental effect). In contrast to the findings from cross-sectional surveys, Winters et al did not obtain higher prevalence rates during adolescence. Indeed, in the case of at-risk gambling, rates were higher when the cohort moved into early adulthood.

Since Winters et al's (2002) analyses were confined to aggregate level data, it could not be determined how often gambling problems resolved rather than persisted into adulthood or how many participants developed problems for the first time when they entered adulthood. A more recent prospective study by Slutske, Jackson and Sher (2003) examined this issue in a sample of 393 first year university students that were assessed four times during an 11-year period. Participants were 18 or 19 years old at the start of the study. As with the previous study, past year problem gambling prevalence did not change at the aggregate level as the cohort aged. This suggests higher youth than adult rates in cross-sectional surveys are a consequence of cohort rather than developmental effects. It further suggests that problem gambling resembles some other problem behaviours that occur more often in people born more recently.

Slutske, Jackson and Sher (2003) found that while overall prevalence did not change, for the most part different people had problems at any given time. In other words, problem gambling was highly transitory during late adolescence and early adulthood, although perhaps no more so than among older adults (Abbott, Williams & Volberg, 1999, 2004). The reason the overall prevalence rate did not change significantly over time was a consequence of new cases balancing recoveries.

As with previous youth studies, few females experienced problems relative to males and none did so during the first phase of the study when they were aged 18 or 19 years. This prevalence difference reduced as the cohort aged. From the present study and other research it is evident that this gender difference is associated with higher levels of male engagement with unregulated and illegal forms of gambling. Where legal forms of gambling are not available, through age and/or more general restrictions, male rates are substantially higher. As indicated earlier in this report, when legal forms of gambling such as electronic gaming machines become widely accessible, adult gender differences typically diminish or disappear. The finding of later problem gambling onset among females and unchanging rates of new problem onset (incidence) throughout the 11 years of the study suggest problem gambling may be less developmentally confined to adolescence than alcohol and substance misuse and some other problem behaviours.

Family history of alcohol misuse/dependence was the only risk factor examined in relation to problem gambling in the Slutske, Jackson and Sher (2003) study. Whilst trending in the expected direction, the association was not statistically significant. This could have been a consequence of there being very few study participants with serious gambling problems; most of those with problems were at the sub-clinical level.

The most recent prospective youth study (Vitaro et al, 2004) followed 903 Montreal boys from the age of 11 to 17 years. As they were recruited from an ongoing study that commenced when participants were at kindergarten, a number of relevant measures were available from earlier childhood. Three distinct groups were identified on the basis of their developmental trajectories of gambling involvement. 'Low gamblers' (62% of sample) had minimal gambling involvement from age 11 to 17 years. 'Chronic high gamblers' (22%) started gambling by

age 11 and maintained or increased their involvement. 'Late onset gamblers' (16%) did not gamble before age 13 but rapidly increased their involvement to match 'chronic high gamblers'. At age 17, four percent of the low gambler group was assessed as having some degree of problem gambling. In contrast to that low risk trajectory, corresponding problem levels were much higher for the chronic high gamblers (20%) and late onset gamblers (15%).

The three groups differed on a number of measures that were self- or teacher-assessed during childhood or early adolescence. The chronic high gamblers were significantly more impulsive, uninhibited and prone to risk taking than the low gamblers and more impulsive on a self-report measure at age 13-14 years than the late onset gamblers. The late onset gamblers scored higher than the low gamblers on self-rated risk taking at age 13 to 14 years. On other measures the late onset gamblers were between the chronic high gamblers and low gamblers. These findings are consistent with those of cross-sectional studies that found many problem gamblers experience impulse control deficits, low inhibition and high levels of risk taking. Demonstration that some of these characteristics were present prior to adolescence strengthens theoretical arguments that they are causally implicated in problem development.

Vitaro et al (2004) state that their findings suggest different theoretical models are required to account for varied adolescent trajectories of gambling involvement and problem gambling. Although they do not refer to Blaszczynski and Nower's (2002) pathways model, the personal attributes discussed in the preceding paragraph were most evident in high chronic gamblers, suggesting that trajectory may involve significant numbers of 'antisocial impulsivist' problem gamblers. Vitaro et al propose that personal predispositions may be sufficient to drive high chronic gamblers towards risky gambling and perhaps other risk taking behaviours. They suggest, on the other hand, that family or peer-related factors might be more strongly implicated in the development of problem gambling among late onset gamblers. They did not, however, include measures of this type in their study to assess this possibility. They further suggest, again consistent with Blaszczynski and Nower (2002), that the former trajectory will result in more persistent and complex problems and that the two problem gambling trajectories will require different preventative and treatment interventions.

To this point, prospective studies have been considered that examine change in gambling status over relatively long periods of time and seek to identify predictors of future problem development. Dickerson, Haw and Shepherd (2003) have recently investigated more proximal predictors of impaired control over gambling during shorter time periods. The final study in a series of studies of this type involved an initial and five subsequent assessments of 212 regular electronic gaming machine participants during a 25-week period. The focus was on increasing understanding of factors that precipitate the transition from regular non-problem gambling to problem gambling.

Reference has been made to regular (weekly or more frequent) electronic gaming machine players being at very high risk for problem gambling. In Australia, where Dickerson, Haw and Shepherd (2003) carried out their study, approximately one-in-five regular players have gambling problems (Productivity Commission, 1999). Similar findings were obtained in the New Zealand national prevalence survey (Abbott & Volberg, 2000). Given the high risk associated with regular gaming machine participation and the large proportion of problem gamblers in treatment who report that their problems are associated with gaming machines, it is particularly important to understand why some regular participants develop problems when others do not.

Dickerson, Haw and Shepherd (2003) examined a variety of factors considered likely, on the basis of prior research and theory, to contribute to impaired control of gambling indexed by subjective feelings of loss of control, inability to limit expenditure and chasing losses. Impaired control of gambling is considered to be a major factor in the escalation of gambling-

related problems and harm in various spheres of life. They found that, rather than being atypical, most regular gaming machine players lose control during sessions of play on at least some occasions.

As expected, depression at the initial assessment was a significant predictor of impaired control at subsequent assessments. Contrary to expectation, high social support did not predict lower levels of impaired control. However, other studies have shown that social support can play a role in alleviating personal problems including gambling-related problems. Impaired control was also predicted by the use of non-productive coping methods such as self-blame and avoidance of problems. Use of more productive coping strategies that involve facing up to problems and developing and implementing plans to deal with them, such as setting strict time and expenditure limits and staying away from venues, predicted greater control over gambling.

When depression, social support and non-productive coping were examined together with other psychological variables (impulsivity, excitement seeking, depression and alcohol use) in multivariate analyses, only depression, non-productive coping and impulsivity emerged as significant predictors of impaired control. These three factors together accounted for a quarter of the variance between study participants in impaired control. This means that while important independent predictors were identified, most of the variance was not accounted for by factors included in the study. From these analyses the study's authors concluded:

> Whichever regression models are preferred the results show that it is very common for regular EGM [electronic gaming machine] players to experience impairment of their ability to control session spend and how often they visit the venue to play. Unsurprisingly this impairment of control over gaming is the main cause of harmful impacts arising from gambling. The erosion of self-control arises from the player's current number of hours spent gambling per week, the strength of emotion they experience during play, made worse by any mild depressed or negative mood they 'bring' with them to the venue and by a more impulsive personality (p. 22).

In other words, impaired control and subsequent problem development is viewed as an understandable and 'natural' consequence of regular high intensity gaming machine involvement rather than something confined to a small minority of constitutionally predisposed or mentally disordered pathological gamblers. The majority of regular participants appear to need to use active and planned strategies to remain within their preferred time involvement and budget; even then approximately half lose control on at least some occasions.

The study authors consider that their findings have important implications for gambling policy, the treatment of problem gamblers and future research. These considerations will be discussed in subsequent sections of the report.

Overall, while the recent prospective studies have added an important dimension that has previously been lacking from problem gambling research, to date they have generally been narrow in scope, often involved highly selected samples, experienced high attrition and been limited by various conceptual and methodological deficiencies. They have highlighted the transient nature of problem gambling, especially when in at-risk and less severe phases. They have also corroborated the role of a number of factors identified in cross-sectional and retrospective studies in problem gambling development. They have suggested that some of these factors may be consequences rather than predictors of problem onset. Some of the findings have been consistent with Blaszczynski and Nower's (2002) pathways model of problem development. Prospective studies have yet to consider the full range of probable risk factors identified by previous research and determine how they individually and interactively contribute to the onset and development of problem gambling.

3.2.3 United Kingdom perspective

Introduction

It is estimated that between 0.6 and 0.8% of the British population aged over 16 years of age suffers from a gambling problem, which translates into between 275,000 and 370,000 people (Orford et al, 2003; Sproston, Erens & Orford, 2000). These figures emerged out of the U.K.'s first nationally representative prevalence study. This was a large scale random sample of 7,680 over-16 year olds conducted by the National Centre for Social Research and published in 2000, which provided baseline data on adult gambling in Britain. Beyond this study, however, and compared with the international scene, relatively little research has been conducted into the development of, and risk factors for, problem gambling within the United Kingdom.

In the review that follows, after providing a brief profile of the British problem gambler based on the results of the prevalence study, research relating to risk factors for problem gambling has been grouped as in the preceding section on international literature. These are not discrete and frequently overlap.

Following this, research relating to problem gambling among adolescents, as a particularly vulnerable sub-group is reviewed and discussed. Due to the frequent lack of relevant literature, at times throughout this section, material relating to non-problematic gambling activity has been drawn on in order to illustrate patterns of participation and prevalence in a more general sense and also to highlight areas of particular interest from which lessons about more problematic gambling behaviour may be learned.

The profile of problem gamblers in the U.K.

The U.K. prevalence study used two screening instruments: the South Oaks Gambling Screen and a version of the DSM-IV that was slightly modified by Fisher in her study of casino patrons (1996, 2000) to provide a best estimate of the number of problem gamblers in the U.K. The results of the study provided a profile of a problem gambler who was male, had parents with gambling problems and was on a low income. Additionally, one of the screens (SOGS) also found a significant association with being separated or divorced. Prevalence amongst men was found to be two to three times higher than amongst women: 1.3% compared to 0.5% (SOGS) and 0.9% compared to 0.3% (DSM-IV). Problem gambling was also inversely correlated with age, decreasing as age increased, although this relationship was clearer for men than for women. Young men, defined as those less than 35 years in the case of the SOGS and less than 25 years in the case of DSM-IV were, therefore, the group with the highest prevalence of problem gambling (Orford et al, 2003). Single people were more likely to be problem gamblers than married people, although as the authors point out, this is likely to be a function of age (single people tend to be younger) than marital status *per se*.

Overall, the survey found that men were 1.73 times more likely than average to be classified as problem gamblers; those who reported parental problem gambling were 2.44 times more likely; people in the lowest income bracket were 2.96 times more likely; and separated/divorced people 2.14 times more likely.

3.2.3.1 Risk factors in the development of problem gambling

(a) The agent: gambling exposure

As opposed to psychological or medical explanations of problem gambling, which tend to posit internal, individual reasons for problem gambling, those concerned with broadly structural factors look to more large scale external and social conditions that influence gambling behaviour in a more general way. In the section that follows, this is taken to refer to the conditions that influence the participation of populations in gambling activities as a whole, as well as the structural features of games that influence individual patterns of play.

Availability and accessibility

Perhaps the most compelling of the structural factors is the availability of gambling. Cornish (1978) termed this 'ecologic opportunity' and argued that, as with other public health issues, the more exposed individuals are to gambling, then the more problems with it there will be. In other words, the greater the accessibility of a product or activity, the higher the prevalence of the problems associated with it. As indicated earlier, there is considerable international research addressing this issue. Relatively little research has been conducted on this topic in the U.K.

Numerous studies have found that the availability of fruit machines is directly correlated with higher rates of gambling and problem gambling among adolescents (Fisher, 1991, 1993, 1999; Ide Smith & Lea, 1988). This will be discussed more fully in the next section but for the moment it can be noted that the easy accessibility of fruit machines in amusement arcades in British coastal towns is associated with higher than average rates of problem gambling amongst the local population.

The launch of the National Lottery in the U.K. in 1994 provided an opportunity to examine the impact of the introduction of a major form of gambling on gambling problems. A survey by a market research group found a 17% increase in calls to Gamblers Anonymous in the year following the introduction of the Lottery (Mintel, 1995). Two further studies set out specifically to assess the impact of the Lottery on problem gambling. Shepherd et al (1998) surveyed a random sample of 2000 Cambridgeshire residents just before the introduction of the Lottery and then again six and 12 months after it had started. Although the response rate, at just over 10%, was very low, results showed a significant increase in DSM-IV scores for pathological gambling both six and 12 months after the introduction of the Lottery. These results also showed a significant positive correlation between mean DSM-IV score and the average number of Lottery and scratch card tickets purchased.

Another study examined the Family Expenditure Survey data a year before and a year after the introduction of the Lottery for evidence of increased problem gambling (Grun & McKeigue, 2000). The survey involved 10,000 households across the U.K. and although it did not involve a problem gambling screen, the authors established criteria of spending more than 10% of household income and spending more than £20 a week on gambling as evidence of 'excessive' behaviour. Results showed significant increases in expenditure on gambling after the introduction of the Lottery: in the year before it appeared, 40% of households gambled, spending £1.45 per week (0.5% of income), while in the year after, this had risen to 75%, spending £3.81 or 1.5% of household income per week. Within this general increase, the proportion of households spending more than 10% of their income went from 0.4 to 1.7%, while those spending £20 per week or more rose from 0.8% to 2.8%. The authors argued that these results were consistent with the 'single distribution theory' which has also been applied to other areas of public health, such as alcohol consumption. The single distribution theory states

that the extent of an activity like gambling is distributed amongst the population in a curve, characterised in the main by moderate consumption, but by a minority of excessive behaviour in the tail. The curve responds as a single entity to changes in overall distribution so, for example, when general gambling activity increases, then the proportion of excessive gambling will increase too.

These findings are significant, as they suggest that factors that lead to increased availability and opportunities to gamble throughout the general population will also contribute to a corresponding increase in the prevalence of problem gambling amongst vulnerable sub-groups in the population. While this may be the case in the U.K., recent replication surveys and other research was referred to earlier from North America, Australia and New Zealand that appears to contradict this notion. It appears that this relationship generally applies at early stages of gambling expansion but subsequently breaks down in some situations.

Structural features of games

Types of game

The structural characteristics of various types of games themselves have also been found to influence gambling behaviour, as well as the prevalence of problem gambling. The U.K. prevalence study found that rates of problem gambling varied by type of gambling activity and by the number of gambling activities engaged in during the past 12 months. For example, people who participated in table games in a casino had the highest prevalence of problem gambling, as measured by SOGS (8.7%), followed by those who bet on events with a bookmaker (8.1%), then those who bet on dog races (7.2%). Problem rates were lowest (1.2%) for the National Lottery draw, followed by scratchcards (1.7%). These patterns were similar for DSM-IV, although the figures were lower and all figures were higher for both screens when past week playing was examined. Prevalence among those who had only ever played the Lottery in the past year was low: 0.1% as recorded by both screens (Sproston, Erens & Orford, 2000).

Analysis of calls to the GamCare problem gambling helpline reinforce these findings, showing that the majority of callers experience problems with fruit machines and horse race betting, at 33% and 43% in 2003, respectively (GamCare, 2003).

Such findings raise the question of whether there exist features of certain games that make them particularly prone to result in problems, although the issue is complicated by the fact that individuals who play these types of games are also more likely to engage in multiple gambling games; a factor which is itself associated with high rates of problem gambling. For example, the prevalence study classified respondents as minimal, moderate or high interest gamblers, depending on whether they engaged in between one to six or more types of gambling. Problem gambling was found to increase according to how many different forms of gambling respondents were engaged in. So, while only one or two individuals per thousand of the low interest players were classed as problem gamblers, rates of between 5.5% (SOGS) and 2.6% (DSM-IV) were measured for multiple interest players. The authors noted that such findings raise the question of whether certain games are inherently more risky, or whether the risk lies in engaging in multiple activities. However, the numbers of respondents whose gambling was focused upon games other than the Lottery was too small to reach any definite conclusions (Orford et al, 2003).

A sector specific prevalence study of over 1000 casino patrons conducted by Fisher (1996, 2000) found particularly high rates of problem gambling associated with casino gambling, with 2.2% of respondents classed as ‘severe’ problem gamblers and 5.2% as problem gamblers.

Furthermore, as Orford et al (2003) point out, if anything, these figures could be an underestimate, as Fisher adjusted the figures downwards to take into account the frequency which respondents reported they visited casinos[4]. Not taking this into account, the figures would be 7.7% for severe problem gamblers and 8.6% for problem gamblers. As noted earlier, more comprehensive studies in other countries have found that participation in particular forms of gambling, including casino games and electronic gaming machines, as well as participation in multiple forms, are strongly associated with problem gambling.

Features of games

It has been argued that the ways in which certain forms of gambling are designed, and particularly the way in which players interact with them, are correlated with the incidence of problem gambling (Cornish, 1978; Fisher & Griffiths, 1995). U.K. research has focused on the interface between the structural characteristics of certain types of games, particularly fruit machines, and the psychological-cognitive features of players.

Features that have been found to be particularly associated with problem gambling include games that have a 'high event frequency', with rounds that are completed quickly, creating high levels of arousal and 'short payout intervals' providing rapid feedback of results and creating opportunities for rapid and continued cycles of play. These features have been associated with the distinction between 'hard' and 'soft' gambling (see for example Griffiths, 1995a; Bellringer, 1999). Fruit machines, for example, have been termed a 'hard' form and possess a variety of characteristics that encourage players to start gambling and to continue doing so when they might otherwise have stopped. These machines have been developed to provide regular rewards by paying out frequently to ensure that periods of loss are short and that action is constant, allowing little time to reflect on losses and providing frequent opportunities to reinvest winnings (Griffiths, 1991, 1995a, 1999a). At the same time, it has been argued that characteristics such as the 'near miss' (Reid, 1986), which occurs when a win is felt to have almost occurred by, for example, matching two out of three numbers, provide secondary reinforcement by creating the illusion that "the player is not constantly losing, but constantly nearly winning" (Griffiths, 1999a). Such features were described by Moran (1979) as 'heartstoppers' and occur frequently in random number games such as lotteries, scratch cards and fruit machines.

Environmental features and the design of gambling locations such as casinos and amusement arcades have also been argued to possess structural features that encourage excessive gambling. The colours, sounds, lights and music of fruit machines, for example, can create an 'aura' which makes them extremely attractive to players, while even the names of some machines create associations with winning and so encourage repetitive play and a loss of self control (Griffiths, 1995b).

According to the British Gambling Prevalence Survey, the rate of problem gambling among past year fruit machine players was 3.4%, which was higher than lotteries, football pools and bingo and almost on a level with horse racing betting. This form of gambling was also more likely than most others to be engaged in on a weekly basis. Orford et al (2003) argue that the prevalence rate among past week players, much higher at 6.3%, might be a more accurate estimate. Furthermore, a considerable body of research, which will be discussed later, has found that adolescents experience more problems with fruit machines than with any other form of gambling, raising the concern that the characteristics of these types of games are particularly damaging to youth.

[4] i.e: the heaviest gamblers would be more likely to be regular attendees and so more likely to be available for interview, possibly skewing the overall results

Given these studies, it might be expected that scratch cards, with their opportunity for rapid play and reinvestment, and frequent 'near miss' situations, would prove to be a particularly problematic form of gambling. However, the results from the prevalence study did not support this hypothesis. Although rates among players who gambled on scratch cards as well as the Lottery were 'somewhat raised' compared to those who only played the Lottery, the authors concluded that they did not emerge as a particularly risky form of gambling. However, it should be noted that the prevalence study did not include under-16 year olds in its sample, a group which research (again, which will be discussed later) has shown may be particularly vulnerable to developing problems with scratch cards.

Similarly, it has been suggested that particular types of technology, such as the Internet, may have the potential to exacerbate features that contribute to excessive gambling. Little direct evidence of such an effect exists, however, and one British study (Griffiths, 2001) which interpreted the results of a market research agency questionnaire, found no association between Internet use and problem gambling. It should be noted, however, that a problem gambling screen was not administered in that survey and that relatively few respondents (24% of the sample of 2098) reported using the Internet at all.

(b) The environment

Socioeconomic status and income

There has been little research on the relationship of socioeconomic status with problem gambling in the U.K., with existing work concentrating mainly on gambling on the National Lottery. In general, results have shown that those with lower incomes tend to spend a higher proportion of their income on gambling activities than those with higher incomes, although they may not spend the most in absolute terms. The results of the Prevalence Survey showed a significant correlation of problem gambling with household income, with the former increasing as income declined, from 0.2% or 0.3% as calculated by SOGS and DSM-IV respectively, for households earning more than £32,000 per year, to 1.5% and 1.0% for those earning less than £15,000 per year. Furthermore, SOGS defined problem gambling was also associated with social class, finding it higher (1.1%) in respondents from manual than non-manual (0.5%) backgrounds (Sproston, Erens & Orford, 2000).

Grun and McKeigue's (2000) study of expenditure on the National Lottery also found a correlation between excessive expenditure and income. Although the highest income households spent most in absolute terms, it was the lowest earning households who spent the most relative to income. Taking weekly expenditure of more than 10% of household income as a measure of 'excessive' spending, the authors calculated that the introduction of the Lottery had seen a four-fold increase in such expenditure, from 0.4% to 1.7% of households. Furthermore, such spending was concentrated in the lowest income groups, with the proportion of households earning less than £200 per week increasing spending from 0.6% to 3.2%, compared with a high of only 0.3% for those with incomes of £400 or more per week.

Other studies have found similar patterns, although without relating their findings specifically to problem gambling. For example, Shepherd et al (1998) found a significant correlation between household income and weekly purchases of National Lottery scratch cards, with those with incomes under £20,000 per year spending more on lottery products than those on higher incomes. An opportunity sample of 780 adults in the London area found that increased spending on the National Lottery was associated with manual social class as well as poorer social functioning and lower social support (Reid et al, 1999). Fitzherbert et al (1996) reported that Lottery participation was highest (75%) among skilled manual workers and lowest (50%)

among managers and professionals. Furthermore, they found that when looked at as a proportion of total leisure spending, the differences were much larger.

Overall, it seems likely that it is expenditure relative to total income, rather than absolute expenditure, that is associated with problem gambling. Those in a manual occupation, not in paid work and on low income are factors associated with high rates of problem gambling within the U.K.

Education

Several studies have found that gambling participation is significantly related to educational level, with playing tending to decline with increasing level of qualification. For example, a study by Coups et al (1998) found that Lottery play was negatively correlated with educational level and positively correlated with misunderstanding of probability. This finding was replicated in a study by Rogers and Webley (2001), where it was found that Lottery participation was associated with lower levels of general education and a range of cognitive biases and misunderstanding of randomness. In a survey on National Lottery participation, Shepherd et al (1998) reported that respondents with 'ordinary' level exam passes or lower, bought more Lottery tickets and scratch cards than those with 'advanced' level exam passes or higher. Fitzherbert et al (1996) found that Lottery participation was highest among those who had left school at 15 or 16 years of age and lowest among those who left education aged 19 years or over. The prevalence study found only slight correlations between participation in gambling activities and educational level, with casino table games and private betting showing a slight positive relationship with educational attainment, and football pools and bingo a relationship with non-attainment (Sproston, Erens & Orford 2000). Overall, however, the relationship of education to problem gambling has not been adequately investigated.

Gender

Other than the prevalence study, which found the rates of problem gambling to be higher amongst males than females, there has been little research in the U.K. on the effects of gender on problem gambling. Analyses of calls to the problem gambling helpline organised by the charity GamCare have found that callers are overwhelmingly male; in 2003, the figure was 89% (GamCare, 2004).

In terms of non-problematic gambling, the prevalence study noted that bingo (played by 10% of women, 5% of men) was the only form of gambling women were more likely to participate in than men. Both sexes participated equally in lotteries and scratch cards. Elsewhere, Dixey (1987, 1996) has written on bingo as a female leisure pursuit, providing insight into the role of gambling in the lives of women in general, which may be of use for developing an understanding for how this might develop in problematic directions for some people.

Parental gambling

Parental gambling has been found to be significantly associated with the development of problem gambling, with the results of the British Gambling Prevalence Survey showing that 5.6% of problem gamblers reported that they had a parent who gambled too much, as calculated by both screens used (Sproston, Erens & Orford, 2000). Other British research has found strong correlations in this area (Fisher, 1993, 1996, 1999; Huxley & Carroll 1992; Wood & Griffiths, 1998), although most of this research has been concerned with adolescent gambling, which will shortly be discussed further.

Co-dependence

Although there is significant evidence for the co-occurrence of problem gambling with a range of other problematic behaviours such as drinking alcohol, smoking and drug taking among adolescents, little research in the U.K. has focused specifically on this in relation to non-adolescent groups. One recent study, however, examined the prevalence of problem gambling amongst clients of a drug and alcohol treatment service that is part of GamCare's Breakeven project and that offers counselling for problem gamblers in the English Midlands (Orford et al, 2003b). That study found that a large proportion of the clients of the drug and alcohol service scored highly on a version of the SOGS screen for problem gambling and that a large proportion were also multiple interest gamblers who engaged in the types of gambling most often associated with problem playing, namely casino table games, betting with a bookmaker and betting on dog racing. An earlier study by Orford et al (1988) found that a significant minority of men who drank large amounts of alcohol reported spending more money on gambling after drinking than they would otherwise have done, while Reid et al (1999) found that increased spending on the National Lottery was associated with higher alcohol and cigarette consumption.

These patterns of problematic behaviour also appear to be associated with crime. A study of criminal offences among a group of Gamblers Anonymous attendees (Brown, 1987b) found that the types of crime associated with compulsive gambling were income generating and property-related, covering fraud, forgery, embezzlement and petty theft, at rates that were considerably higher than those amongst the general population. A more recent study of offenders on probation found that 4.5% were classed as problem gamblers (Ricketts, Bliss, McDonald & Rayer, 2000) although it is not clear from any of this research exactly what the patterns of associations are, or what the relationships between offending, gambling and other deviant behaviours might be.

(c) The host: individual factors

It is assumed that the structural features of games interact with certain biological, psychological and cognitive features of players themselves, to create the propensity to gamble to excess. Although there is much disagreement in this field, research evidence points to several features which may be implicated in this kind of interaction.

It has been argued that a range of personality factors or 'traits' are involved in problem gambling, including sensation seeking, impulsivity and locus of control, although this is a contested field and the U.K. research is generally inconclusive and patchy. Brown (1986b) has put forward the view that gamblers have a need for high degrees of novel or risky sensations and gamble to excess to satisfy this need. However, while some studies support the theory, others do not and overall some researchers have argued that insufficient data exist to support the hypothesis (Coventry & Brown, 1993; Coventry & Norman, 1998). Research into the supposed impulsivity of problem gamblers is lacking in the U.K. Similarly, the argument that problem gamblers possess an 'external locus of control' (i.e. believe the result of games to be dependent on factors outside their control) has not been confirmed by U.K. research. In fact, a study of fruit machine players actually found the opposite to be the case in that problem gamblers believed that the outcomes of games were within their control (Carroll and Huxley 1994).

There appears to be more support for behavioural theories, which regard the development of problem gambling as a learning process based on experience and conditioning (Cornish, 1978; Griffiths, 1995a; Orford, 2001). As part of the general idea of operant conditioning, the notion

that behaviour is reinforced by certain rewards seems to support the hypothesis that an early gambling win provides an extremely influential reward that creates positive associations with the gambling behaviour and encourages repeated play. Such processes may also lie behind cycles of behaviour such as chasing losses and attempting to repeat early wins, which result in a spiral of increasingly problematic behaviour. While there is anecdotal evidence and a reasonable degree of support for the idea that gambling behaviour is shaped in this way (Bellringer, 1999; Cornish, 1978; Moran, 1970), there is a lack of research to establish its validity (Orford et al, 2003).

The idea that the rewards of gambling may be experiential and based on the high levels of excitement or arousal that are derived from games has been the focus of several U.K. studies that have attempted to gauge levels of arousal by measuring increases in heart rate and cardio-vascular activity. Such psychophysiological research by Brown (1986a), Huxley (1993), Carroll and Huxley (1994), Griffiths (1993c, 1995b), Coventry and Norman (1997), Coventry and Constable (1999) and Coventry and Hudson (2001) has found a correlation between arousal levels and gambling activity. Although heightened arousal would appear to be implicated in the development and maintenance of problem gambling, the relationships involved in these processes is not well understood.

There is empirical support for the view that cognitive factors, including a range of heuristics and biases based on a misapplication of the idea of randomness, play some part in the belief systems of problem gamblers. Studies by Griffiths (1994), Coventry and Norman (1998) and reviews by Rogers (1998) have found that the perception that skill is involved in a game encourages repeated play in the belief that results can be influenced by the player. Such an 'illusion of control' has implications for problem gambling. Studies by Carroll and Huxley (1994) and Griffiths (1995a) found that young problem gamblers persistently overestimated the degree of skill and the amounts of money they thought they were likely to win in fruit machine gambling. Studies that measure irrational verbalisations (i.e. those that indicate a misunderstanding of the workings of games of chance and probability) have consistently noted a greater preponderance of such statements among regular than among occasional gamblers (Coventry & Norman 1998; Griffiths, 1994). Meanwhile, two separate studies of National Lottery players found that a range of cognitive biases and a general misperception of the role of probability in games of chance was associated with increased participation. Coups et al (1998) reported high levels of misunderstanding of randomness and odds among regular players, while Rogers and Webley (1998) found a greater incidence of such beliefs among regular as opposed to occasional players.

The likelihood that certain cycles of behaviour play a role in the development of problem gambling has been noted by several researchers with, for example, McCormick and Brown (1988) naming four phases: induction, adoption, promotion and addiction, through which the gambler moves before the behaviour becomes problematic. Orford (2001) has identified the stages of 'attachment' and 'strong attachment' to gambling, before a stage of 'costs and conflicts' is reached, although he points out that the interaction between social and cultural factors, behavioural patterns of reinforcement, cognitive biases and emotional or experiential factors in the process of moving through these phases is likely to be complex and is not well understood. This focus on the developmental aspect of problem gambling raises questions about the possibility of similar developmental processes being at work behind the recovery from problem gambling and points to the need for longitudinal research to uncover the factors that might be involved.

(d) Gambling among adolescents

Gambling and problem gambling prevalence

There is evidence to support the view that young people in the U.K. are particularly vulnerable to developing problems with gambling. It has been estimated that one in four of all new members of Gamblers Anonymous U.K. are children and young people (Moody, 1990) and research has indicated several factors that are associated with this early development of problem gambling.

In the U.K., the gambling form of choice among young people is fruit (or slot) machines, a feature that stems from legislation that allows the situation of such machines in a range of locations (such as arcades in seaside towns) that are easily accessible to young people. Correspondingly, fruit machines are overwhelmingly the type of gambling most frequently associated with problems. In 2003, almost 90% of the under-18 year olds who called the national problem gambling helpline run by GamCare reported experiencing problems with fruit machines (GamCare, 2004. See also GamCare, 2002; Griffiths, Scarfe & Bellringer, 1999).

Throughout the 1980's and 1990's, several large scale studies were carried out by local councils, voluntary organisations and, less frequently, researchers in the U.K. into the prevalence of gambling amongst adolescents, although none of these investigated the specific issue of problem gambling. These included surveys by the U.K. National Housing and Town Planning Council (1988), the Spectrum Children's Trust (1988), Leeds City Centre Youth Work Project (Lee, 1989), West Sussex Institute of Higher Education (Barnham & Cormell, 1987), Parents of Young Gamblers in Conjunction with Somerset Youth Association (Rands & Hooper, 1990), a Home Office Report on amusement machines (Graham, 1988), and surveys of children in the Birmingham (Huxley & Carroll, 1992; Waterman & Atkin, 1985) and Liverpool areas (Bentall et al, 1989)[5].

The largest of these studies, by the National Housing and Town Planning Council (1988), was the most nationally representative, involving almost 10,000 children from 17 schools in six local education authority areas. It found that 64% of respondents had gambled at some point in the past 12 months and 14% gambled weekly. Involvement in gambling was associated with a range of delinquent and illegal activity; 17% had used lunch money to pay for gambling, seven percent had stolen to finance it and six percent had truanted to gamble.

Later research by Fisher (1992, 1993) specifically investigated the prevalence of problem gambling in a survey of 467 adolescents aged 11 to 16 years in one school in a seaside area of England. In that study, Fisher refined the criteria for measuring pathological gambling in adults (the DSM-IV scale) for use with pre-adult gamblers, naming it the DSM-IV-J, so establishing a test for measuring problem gambling in that group (Fisher, 1993). She found that gambling on fruit machines was the most common form of regular gambling with 62% of the sample having done so, 17% at least weekly and 5.7% pathologically (Fisher, 1992).

In 1999, results of the first national prevalence study of adolescent gambling (Fisher, 1999) were published. Involving almost 10,000 pupils aged 12 to 15 years in 114 schools throughout England and Wales, the study found that participation in commercial gambling activities among adolescents was widespread, with 19% and 13% spending their own money on fruit machines and the National Lottery in the past week, respectively. The study estimated that 5.6% of respondents experienced a problem with gambling on fruit machines and/or National Lottery scratch cards. Of these, 62% had problems with machines, 17% with scratch cards and 21% with both forms.

[5] Fisher (1991) provides a review of these.

Additionally, a few studies have focused specifically on adolescent expenditure and participation in National Lottery games. Fisher and Balding (1996) reported that 15% of over 7000 adolescents aged 12 to 15 years had used their own money on the games in the past week, while Pugh and Webley (2000) found that 56% of their sample of 256 adolescents aged 13 to 15 years had participated in the Lottery draw and 54% had bought scratch cards. A study of 4,516 adolescents aged between 11 and 16 years reported that 24% of respondents reported gambling on the Lottery or buying scratch cards once a week or more (Griffiths & Sutherland, 1998). A study into the psychosocial effects of the Lottery that surveyed over 1,000 adolescents aged 11 to 15 years in nine schools found that six percent of respondents met the DSM-IV-J criteria for problem gambling (Wood & Griffiths, 1998), while another small scale study of 204 boys aged 11 to 16 years found five percent who met the criteria (Griffiths 2000).

Risk factors in the development of adolescent problem gambling

Introduction

A number of factors that predispose young people to gambling problems, as well as factors that are associated with problem gambling behaviour, have emerged out of the previously mentioned studies as well as from some other research. Some factors appear to be strongly linked with problem gambling including gender, age of onset and parental gambling, while others are less strongly associated. There is disagreement, however, over the interpretation of evidence and the role of specific factors.

Fisher's (1999) large scale survey identified a range of risk factors including: gambling on fruit machines, being male, having a relatively high disposable income, living in an area where fruit machines are easily accessible, having parents who gambled, coming from a single parent family, and presence of a range of other problematic behaviours, such as smoking, consuming alcohol and/or illegal drugs, truanting, stealing (comorbidity), and watching the National Lottery show on television alone (Fisher, 1999). Other studies have corroborated these findings, to various degrees, and these are discussed in more detail below.

Availability

U.K. research suggests gambling availability is associated with greater participation and greater problems among adolescents. As well as being located in bars, fish and chip shops and cafes, coin or token AWP ('Amusement-With-Prizes') fruit machines tend to be concentrated in amusement arcades, which in turn are heavily concentrated in seaside towns. There are no age limitations to restrict access to these types of machine. Restrictions are placed on all-cash AWP machines, however, which are also located in adult-only (i.e. over 18 years) areas of seaside arcades and other age-limited premises. While they provide an occasional leisure distraction for holidaymakers, they constitute a year-round fixture for the resident population, which research suggests contributes to the prevalence of problem gambling among local youth (Ashdown, 1987; Barnham & Cormell, 1987; Fisher, 1991, 1993, 1999; Spectrum Children's Trust, 1988).

Fisher's 1993 study was carried out in a seaside town dominated by three amusement arcades, two of which allowed children unrestricted entry at all times. Sixty nine percent of respondents in the sample had gambled on the machines there. In her 1999 study, Fisher reported that the prevalence of problem gambling was significantly higher among seaside residents (7.1%) than among those who lived inland (5.1%). The odds of becoming a problem gambler were 40%

higher for adolescents living in a seaside location than for those living in areas where amusement arcades and, therefore, fruit machines were less accessible. Similarly, Ide Smith and Lea (1988) reported a participation rate of 81% for playing fruit machines in their study of adolescent gambling, a finding they attribute at least in part to the location of the study, in a town in which there was easy access to seaside towns that host a high number of amusement arcades.

It should be noted that all instances of under-16 year olds gambling on National Lottery products demonstrate issues of availability as these activities are technically illegal for that age group. However, numerous studies have found that most children report no problems in obtaining such products, whether through shopkeepers' willingness to sell them, or through having parents or other family members purchase them on their behalf (Fisher, 1999; Wood & Griffiths, 1998, 2004).

Parental gambling

Parental gambling can influence the acquisition of adolescent gambling behaviour and is also implicated in the development of problematic gambling behaviour later on. Through their own participation in gambling, adults may initiate their offspring into the activity (whether intentionally or not), inculcate attitudes that condone or encourage gambling and, through such activities as buying tickets or providing money to play on fruit machines, may provide the material and emotional support for involvement in gambling (see Bellringer, 1999).

Fisher (1993, 1999) found that adolescent pathological gambling was positively correlated with parental attitudes to gambling, as well as frequency of parental gambling on fruit machines, horse and dog racing, and games of skill. Those who were identified as problem gamblers on the DSM-IV-J scale were more than three times as likely to report that their parents gambled 'too much' compared to others in the sample. Those who (illegally) bought their own tickets were more likely to report that their parents 'didn't mind' them spending money on the Lottery, as were those who registered as problem gamblers generally. In conclusion, Fisher reported "having a parent who gambles 'too much', having a parent who has gambled on fruit machines in the past week and having a parent who has gambled on National Lottery scratch cards during the past week, all more than double the odds of their child becoming a problem gambler…Having a parent who approves or does not mind if his/her child gambles increases the odds of child problem gambling by 50%" (Fisher, 1999, p.529).

One third of the severe problem gamblers in Fisher's casino study (1996) reported a significantly higher rate of parental problem gambling compared to less severe problem gamblers and social gamblers who reported four percent and seven percent, respectively.

Studies which have focused on adolescent participation, rather than problem gambling *per se*, have found similar correlations for involvement with parental gambling. Wood and Griffiths' (1998) study of adolescent gambling found significant correlations between adolescent participation in the National Lottery and scratch cards, and parental gambling. Seventy one percent of those who participated in the Lottery and 57% of those who bought scratch cards, had tickets purchased for them by their parents. Huxley and Carroll (1992) reported a significant relationship between frequency of playing fruit machines and receiving money from their family specifically to finance the activity. Only 13% of fruit machine players had never been given money to spend on gambling by adults in their family, while 48% and 39% reported being given money 'occasionally' and 'often', respectively. Twenty three percent of high frequency players compared with 11% of less regular players, claimed to often receive money from their parents. The authors point out that high spending may not in itself be a measure of dependence, since those who spend the most may simply have larger incomes at their disposal.

Given that high frequency players are also those most likely to receive money from their families this could be a valid argument up to a point. However, it is also the case that a minority of adolescents borrowed or stole to finance their playing, although unfortunately the possibility of any relationship between these factors was not investigated. As income appears to have a substantial effect on reported gambling behaviour, the relationship between parental giving and adolescent gambling merits further research.

The role of television advertising has also been investigated in the U.K. and a few studies have found positive correlations between watching the televised National Lottery draw and under-age participation (Fisher, 1999; Pugh & Webley, 2000; Wood & Griffiths, 1998, 2004). However, such associations should be interpreted with caution, for while television viewing demonstrates awareness of the Lottery, it may be better interpreted as a feature of wider familial gambling patterns, with many adolescents watching the show with their parents, as part of communal family activities.

The large scale survey and the in-depth qualitative survey conducted by the National Centre for Social Research both found evidence to support the claims for the role of parental influence (Sproston, Erens & Orford, 2000. Also reported in Orford et al, 2003). In particular, the qualitative interviews with problem gamblers generated insight into the role of families in the acquisition and development of gambling among members. Families established norms and standards within which the role of gambling was evaluated positively and they also provided an element of coaching for young people, whereby the techniques necessary for engaging in gambling were learned and refined. As Orford states "believing that one had a parent with a gambling problem was one of the main correlates of scoring above the threshold oneself on a problem gambling screening measure" with only lower income and male gender being factors that were as important (Orford et al, 2003, p.219).

Age of onset

Fisher (1993) found that problem gambling was correlated with early age of onset; those most at risk were adolescents who began gambling aged eight years or younger, with 21% scoring four or more on the DSM-IV-J scale, compared with eight percent of those who began gambling aged between 9 and 12 years, and four percent who began gambling aged between 13 and 16 years. Her later study of (adult) casino patrons also found a significant relationship between problem gambling and early onset of gambling, with 64% of severe problem gamblers, 50% of problem gamblers and 16% of social gamblers reporting starting gambling aged 16 years or younger (Fisher, 1996). A study by Griffiths (1990) found that adolescents who experienced problems with fruit machines reported starting gambling on them significantly earlier at 9.2 years of age, than those who did not experience problems who started gambling at 11.3 years of age. Ide Smith and Lea (1988) also found early age of onset, a mean of eight years for boys and girls amongst their sample, although the authors did not examine this in relation to later gambling problems.

Playing with friends

As with other potentially problematic youthful activities such as drinking, smoking and the consumption of illegal drugs, most adolescents' gambling corresponds with that of their peer group. Respondents in one study reported that gambling made them feel older and allowed them to 'show off' and display skill (Fisher, 1993b). The majority of respondents in Fisher's 1993 study reported playing fruit machines with friends (40%) with such play increasing significantly across the age groups as playing with parents decreased. The results from the 1999 prevalence survey were similar with 63% of problem gamblers reporting playing with

friends (Fisher, 1999). Huxley and Carroll (1992) found that the majority of respondents (62%) in their sample played with friends, while roughly a fifth played alone. However, the authors did not consider these results in relation to problem gambling.

Socioeconomic status and income

Fisher (1993) found a tendency for adolescent participation in gambling to increase from social class A to E, although the association just failed to achieve statistical significance. Other studies have reported little or no relationship between an adolescent's social class and their gambling activity, although Graham (1988) reported a slightly higher proportion of adolescents from social classes D and E playing fruit machines than those from higher categories. Fisher (1993) agrees that the finding that participation *does* increase as class declines should not be ignored and may have implications for the targeting of educational and counselling programmes.

Related research has found that income has a substantial effect on reported gambling behaviour. Studies by Ide Smith and Lea (1988) and Pugh and Webley (2000) found that high disposable income influenced participation in gambling games, with Pugh and Webley reporting that it was a significant predictor of illegal play on the National Lottery by under 16 year olds. It may well be that disposable income is a better measure of adolescent gambling participation than adult measures for (parental) socio-economic status and it should also be borne in mind that the two measures may not necessarily be directly related.

Gender

Many studies have suggested that, as with adult gambling, adolescent gambling is more common among males. Ide Smith and Lea (1988) found that males were more likely to participate in every form of gambling examined, including card and coin games, wagering and playing fruit machines. Greater male participation has also been reported in studies by Bentall et al (1989), Waterman and Atkin (1985) and Griffiths and Sutherland (1998). However, Fisher's 1993 survey of secondary school children failed to confirm this gender difference, instead finding participation, amounts spent and prevalence of pathological gambling to be quite similar. Although it is possible that this finding is a feature of the 'seaside culture' where the study was based, the author raises the possibility that such gender differences are less important than is often assumed and/or that they decrease over time. Huxley and Carroll (1992) also reported less marked gender differences in their survey. However, Fisher's 1999 prevalence study reaffirmed the gender bias, finding higher rates of problem gambling amongst males and demonstrating that demographically, the odds of being a problem gambler were twice as high for males than for females (Fisher, 1999).

Comborbidity

A variety of what can be termed antisocial, delinquent, deviant, addictive and illegal activities have been found to be associated with problem gambling including borrowing and stealing money, selling possessions and using lunch money to gamble, lying to family and friends, truanting, consuming alcohol, cigarettes and illegal drugs, and being involved in other criminal activity. Studies by Barnham and Cormell (1987), National Housing and Town Planning Council (1988), Huxley and Carroll (1992) and Fisher (1992, 1993, 1999) all found various degrees of truancy related to possible or actual problem fruit machine gambling.

Of Huxley and Carroll's (1992) survey of 539 fruit machine players, 14% reported having truanted from school, 40% borrowed money, 24% used school lunch money, 12% had stolen from their parents, five percent had stolen from outside the family, eight percent sold their possessions and six percent sold other people's possessions in order to play machines. The authors found these behaviours to be related to frequency of play and amounts of money spent, although they warned that no causal relationship between socially undesirable behaviour with gambling could be established in the absence of data relating to the prevalence of these activities amongst adolescents who did not gamble.

Fisher (1993) found problem gambling to be associated with a range of antisocial or delinquent behaviours, which interfered with schooling and relationships with family and friends. Ten percent of adolescents had argued with and 15% lied to family and friends over fruit machine gambling. Thirty seven percent had borrowed money, 11% had stolen from family and 21% had used lunch money to play machines. One in 12 of the 'probable pathological gamblers' in Fisher's 1992 study had truanted to gamble on fruit machines, whereas none of the social gamblers had done so. The results from the 1999 prevalence study showed that problem gamblers were statistically significantly more likely than other adolescents to have smoked (47% versus 22%), drunk alcohol (73% compared to 46%) and consumed illegal drugs (28% compared to 9%) in the previous week (Fisher, 1999).

A study of 4,516 adolescents' participation in National Lottery products found similar relationships, although problem gambling was not assessed (Griffiths & Sutherland, 1998). Twenty four percent of respondents reported gambling on the Lottery or buying scratch cards once a week or more. Those who gambled were more likely to smoke cigarettes than non-gamblers (23% compared to 18%), drink alcohol regularly (72% compared to 58%) and consume illegal drugs (21% compared to 13%). It was also found that gamblers' consumption of psychoactive substances increased with age; while 33% of 11 year old gamblers reported they took some form of such substance weekly, that figure rose to 53% of 12 year olds, 75% of 13 and 14 year olds and 86% of 15 year olds. However, the authors do not state how this compares with non-gamblers' consumption and so these figures should be interpreted with caution. Additionally, the study found that, on the evidence of self-report, gamblers were more likely than non-gamblers to have been involved with the police (33% compared to 20%), suspended from school (17% compared with 9%) and to believe they had failed at school (22% compared to 14%).

It appears that, as in the case of adult problem gamblers, criminality may also be part of this range of generally 'delinquent' behaviours among adolescent problem gamblers. One study found that 12% of young offenders could be classified as problem gamblers (Maden, Swinton & Gunn, 1992), while another estimated that approximately four percent of the crimes of a sample of young offenders were associated with fruit machines (Yeoman & Griffiths, 1996).

As discussed previously, the meaning of associations of the type outlined is uncertain and claims of causal relationships should be treated with caution. It could be the case that problem gambling contributes to other problem behaviours or it could be the opposite with the problem behaviours themselves being indicative of underlying factors that predispose the individual to gambling problems. What can be said with some certainty, however, is that problem gambling is significantly associated with a variety of other problematic behaviours, with which it has complex and incompletely understood relations.

Conclusion

Although a number of significant relationships have been demonstrated, nothing can be stated with confidence regarding causal links between risk factors and adolescent or adult problem

gambling in the U.K. What is evident is that availability and structural features of specific games appear to combine with psychosocial characteristics of players in various ways to create complex patterns of risk throughout the population. The variables of gender, parental gambling and income are strongly associated with problem gambling in adults; with gender and parental gambling, along with availability, strongly associated with fruit machine problem gambling in adolescents. Beyond this, little is known about what combinations of factors predispose some individuals' gambling to become problematic and what prevents the behaviour of others from becoming so. The present problem gambling screens are rather 'blunt tools' - they can provide a general overview of broad patterns but on their own provide little information about the details and significance of such patterns. Ultimately, longitudinal and sector-specific research is required in order to identify exactly where the fault lines of risk and resilience lie, both within individuals and wider social groups, as well as across their interactions with different types of gambling activity and throughout their life cycles.

3.2.4 Implications for the United Kingdom

The review of international and U.K. research indicates that there are multiple risk factors involved in the development of problem gambling. Recent research has utilised a traditional public health approach and distinguished between the agent, host and environment as factors that combine in complex ways to create patterns of vulnerability throughout the population. Although significant relationships can be established between some of these factors, on the whole, causation is difficult to determine and cannot be stated with certainty.

On balance, the international research shows that increased exposure to gambling (the agent) tends to generate increases in the prevalence of problem gambling throughout the population as well as within specific sub-groups with, for example, women, minority groups and young people appearing to be more vulnerable to high risk forms of gambling. A trend towards the proliferation of gambling throughout a variety of social settings not traditionally associated with gambling (known as 'convenience gambling') tends to increase participation and attract groups which have been previously less exposed to gambling, such as young people, recent migrants and women. There is also a clear association between certain features of games and problem gambling, as measured both in prevalence surveys and in clinical presentations. Games that allow for continuous staking and generate an illusion of skill, such as electronic gaming machines, track betting and casino table games, are associated with higher rates of problem gambling. Certain sociodemographic features, such as male gender, age under 30 years, low income and single marital status, have been found to intersect with those levels of exposure to heighten risk; while others, including low occupational status, less formal education and non-Caucasian ethnicity, have been found to be additional risk factors in a number of studies.

These features appear to interact with certain psychological and cognitive properties of the individual (the host), including the traits of impulsivity, compulsivity and sensation seeking, as well as the possession of irrational cognitions and psychological states and disorders, to predispose them towards the development of problematic behaviour.

In spite of the more limited knowledge base, research from the U.K. has identified similar patterns of risk within this country, with some studies suggesting that heightened rates of problem gambling may have accompanied increased availability. The research also shows that structural features associated with continuous play, speed and illusory control are implicated in the development of problems. In addition, gender, parental gambling and income are strongly associated with problem gambling in adults, whilst these first two factors, along with availability, are strongly associated with problem gambling with fruit machines in adolescents.

Similar psychocognitive characteristics in players have also been associated with heightened patterns of risk.

Although research shows that these interactions between the environment, agent and host appear to predispose some individuals to developing gambling problems, the exact relationships at work in this process are not fully understood. Nor is it known what factors might help to prevent behaviour from becoming problematic, although it has been noted that in some jurisdictions where exposure to high risk forms of gambling have increased, prevalence rates have remained constant or declined. The reasons for this are unclear, but appear to involve social adaptation and the provision of specialist problem gambling services.

As the U.K. prepares to introduce new gambling legislation, the implications of increased availability of high risk forms of commercial gambling and the permeation of gambling throughout traditionally non-gambling environments can be identified as areas of concern. As the relationship between problem generating exposure and protective processes of adaptation and resistance is not properly understood, the consequences of increased availability cannot be predicted with certainty. However, on the basis of a considerable body of research, it appears likely that the U.K., which has relatively low rates of exposure to high risk forms of gambling at present, will experience significant increases in problem gambling prevalence if availability is increased to levels similar to those in Australasia or North America. In these jurisdictions, problem gambling rates are around three to four times those in the U.K. Furthermore, as changes in the availability of particular forms of gambling appears to alter the sociodemographic characteristics of problem gamblers, it is likely that particular groups, such as women, young people and ethnic minorities, will experience significant increases in problematic behaviour. However, it is possible that such potential increases may, at least to some extent, be mitigated by the provision of public education concerning the potential risks of problem gambling, as well as the provision of specialist services to identify and treat those individuals who do develop problems. Given this, it would be prudent for the U.K. to implement a comprehensive range of primary intervention strategies at the earliest opportunity, in order to provide a counter to the development of any problems associated with increased gambling opportunities throughout the population. A range of such strategies are outlined in the Recommendations section of this Report.

3.3 Intervention options for treatment of problem gambling and their effectiveness

3.3.1 Commentary

This section reviews international and United Kingdom approaches to the treatment of problem gambling and what is known of the effectiveness of these approaches. Before reviewing what is known about the effectiveness of formal treatment for gambling problems, information about the organisation of problem gambling services internationally and about how these services are funded is presented.

3.3.1.1 Role of research and contribution to policy

Any review of research on treatment and intervention options for problem gamblers highlights a broad range of issues and challenges for the future. From a policy perspective, the clearest finding is that funding for the evaluation of problem gambling interventions has been so scarce that little can be said with confidence about the effectiveness or efficacy of such efforts. Significant contributions of research to problem gambling policy decisions in the area of intervention options for treatment must await the provision of funding and the conduct of substantial, well-designed research agendas across a range of international jurisdictions.

Research on problem gambling has emerged primarily from the discipline of psychology. There is a need to improve our understanding of gambling and problem gambling from other disciplinary perspectives. Much of the research on problem gambling is based, implicitly and explicitly, on the assumption that there is a clear distinction between 'normal' and 'problematic' gambling and, furthermore, that problem gamblers are a homogeneous group for whom a single set of interventions will be effective. This has significant consequences for the manner in which problem gambling studies are carried out as well as for understanding of the phenomenon itself.

Much research has been based on self-selected samples, either of treatment-seeking problem gamblers or problem gamblers in the community recruited via advertisements. There is little knowledge about what kinds of treatment might be effective with different 'types' of problem gamblers or with groups in the population that are unlikely to seek professional counselling or self-help. Finally, as noted in the previous section, the lack of a sound theoretical understanding of the causes of gambling problems significantly hinders the ability to design effective interventions for problem gambling.

The recent emergence of a public health approach significantly broadens the range of approaches that could be utilised to minimise and mitigate problem gambling. The public health approach incorporates a broader perspective on the full range of gamblers in the population, including those who may benefit from gambling participation as well as those who experience difficulties. This broader outlook increases the likelihood that treatment modalities based on 'controlled' gambling outcomes, as well as those based on abstinence, may be trialled. A public health approach also increases the likelihood that families will be included in any consideration of the population in need of services. Finally, a public health approach focuses attention beyond formal treatment to consider the likely benefits of public policy and regulation in minimising the negative impacts of gambling legalisation.

Review of how problem gambling services are funded and organised in different jurisdictions highlights some important lessons that governments, concerned individuals and organisations have had to learn time and again. For example, there is a great need for governmental

cooperation and collaboration, at all levels, to prevent duplication of effort and competition for scarce resources. There is a need to establish continuous and reliable streams of funding for problem gambling services, in order to avoid instability and uncertainty in service provision and to encourage the sustained research attention necessary to answer the many questions about the causes of problem gambling. There is a need for empirically-based, rational systems of resource allocation to provide for problem gambling services as well as a need for research on appropriate levels of funding and changing combinations of services over time. Finally, there is a need for research on models of service provision to determine whether it is best to provide problem gambling services in a stand-alone format or in concert with services for other disorders (e.g. mental health or addictions).

Review of the limited research that exists on problem gambling treatment suggests that there is not yet enough knowledge to answer essential questions about the effectiveness and efficacy of problem gambling services. There is a need to develop comprehensive screening and assessment tools, and placement criteria. Studies are needed to assess the effectiveness of outreach programmes to underserved populations, of family interventions, and approaches for enhancing treatment engagement, retention and outcomes. Research is needed to identify clinician variables that have an impact on treatment efficacy as well as to begin identifying the most relevant variables in making decisions regarding treatment intensity.

Additional research is needed to identify the most appropriate education, training and certification criteria for professionals who treat problem gamblers and their families. There is a need to determine what counselling knowledge and skills may readily transfer from substance abuse and mental health treatment and what knowledge and skills may need to be specifically developed for gambling treatment. There is also a need to evaluate the best mechanisms in different jurisdictions for reimbursing service providers who treat problem gamblers and their families.

Other priorities for research include monitoring the impact and effectiveness of the intervention strategies that are implemented as well as broadening the focus to examine promising new interventions such as motivational interviewing, self-help workbooks, brief courses of therapy, online mutual aid and online support groups. Finally, there is a need for empirical studies of the role of financial counselling and money management in problem gambling treatment.

3.3.1.2 Practitioner contact with problem gamblers

For the most part, treatment for individuals with gambling problems consists of self-help and individual and group counselling in outpatient settings. Internationally, problem gambling treatment services tend to be provided by addiction and/or mental health professionals who have received some specialised training. Also internationally, problem gambling treatment services tend to be provided by individual practitioners located within larger addiction or mental health treatment programmes. Beyond programmes that provide specialised problem gambling services, mental health and addictions treatment professionals rarely screen for gambling involvement or gambling problems among their clients. Even when a gambling problem is identified, non-specialist professionals are often uncertain about the appropriate referrals to make or what treatments to recommend. Screening for gambling problems among substance abusers is needed, as is education and training in the diagnosis, appropriate referral, and effective treatment of gambling problems. Unfortunately, while specialised training, certification and credentialing are increasingly available, there is little uniformity in standards and requirements and little reciprocity with other counselling professions.

Therapists working with problem gamblers employ a wide range of techniques although cognitive-behavioural therapy (CBT) is the only approach that has received sustained

evaluative attention. CBT has been judged scientifically defensible and has demonstrated positive outcomes. According to criteria established by the (U.S.) Substance Abuse and Mental Health Services Administration, CBT is a 'promising' (as opposed to 'effective' or 'model') evidence-based approach to treating problem gambling. Whilst most of the cognitive-behavioural techniques used in the treatment of problem gambling are shared with other addiction treatment approaches, treatment of problem gambling does include some unique elements with respect to the way in which procedures such as cognitive restructuring, in vivo exposure and imaginal desensitisation are employed. One aspect of problem gambling treatment that has received inadequate attention is the importance of providing help for family members of problem gamblers.

A growing number of pharmacotherapeutic approaches are being taken in the treatment of gambling problems. Two of these approaches (naltrexone and selective serotonin re-uptake inhibitors) have been deemed 'promising' although there is, as yet, no single, widely-accepted pharmacotherapeutic protocol and it is likely that different approaches will be effective with different types of problem gambler.

Emerging research on 'natural recovery' from gambling problems suggests that much larger numbers of individuals may be helped through the implementation of brief interventions and public awareness programmes than through formal, clinically-based treatment programmes. Factors that inhibit people from seeking help for a gambling problem include ignorance of the availability of treatment, stigma, embarrassment and the feeling that they do not have a problem. Public awareness campaigns are likely to increase people's knowledge of the availability of treatment and their willingness to acknowledge a problem as well as reduce the stigma of seeking help. Brief interventions are less costly than formal treatment and appeal to a much broader range of problem gamblers and, in the case of online approaches, offer additional benefits in overcoming stigma and inconvenience.

3.3.1.3 Relevant industry practice

Internationally, funding for problem gambling services comes largely through voluntary or mandatory levies on revenues derived from legalised gambling operations. In Australia, Canada, South Africa and the United States, funding for problem gambling services is largely derived from mandatory levies and administered by departments or ministries responsible for health and human services. New Zealand is an interesting case in which contributions were made on a voluntary basis for some years before government moved this year to mandate levies from all sectors of the gambling industry and gave the Ministry of Health responsibility for managing problem gambling services. It is unclear whether voluntary or mandated levies are preferable; what does seem clear is that levies should come from *all* sectors of the gambling industry rather than just one or two sectors. It is also clear that research funding, where it exists, generally flows through major academic institutions and/or quasi-governmental bodies.

Several features of the funding arrangements for problem gambling services raise concern. The most critical concern is that formal treatment services for the most severely affected individuals generally receive the highest priority for funding with the result that prevention efforts, which can be expected to affect the behaviour of much larger proportions of the population, are not nearly as well-developed. Another critical concern is that although formal treatment services receive the lion's share of available funding, evaluation and monitoring of those services has been limited.

The focus on treatment services has also led meant that few resources have been allocated for research on gambling behaviour and problem gambling. Restricted research funding has limited development of theoretical understanding of gambling problems and significantly

hindered the ability to design effective interventions. Long-term strategic plans for research and evaluation are needed along with provision for multi-year funding streams to encourage and support substantial research programmes. Another need is for multidisciplinary research incorporating perspectives beyond psychology.

Despite the challenges of conducting research on natural recovery, the results are promising, more in relation to the likely effectiveness of prevention efforts than in relation to formal treatment. Brief and alternative interventions are not only less costly to provide but are also likely to appeal to much broader swathes of the general population.

The gambling industry has historically and understandably been reluctant to engage in interventions or provide treatment for individuals with gambling problems. Nevertheless, it is worthwhile for gambling industry staff to have an understanding of problem gambling as well as information to provide to patrons, if asked for it. In a later section of this report (see section 3.3.2.2.), information is presented on training for gambling venue staff and emerging efforts to engage gambling venue staff in the identification of problem gamblers and in the process of referral for treatment. Information is also presented on new efforts to bring trained treatment professionals into gambling venues where they can provide immediate and appropriate assistance to patrons who are concerned about their gambling.

3.3.2 International perspective

Harm minimisation in relation to gambling refers to policies or programmes directed towards minimising or decreasing the adverse health, social and economic consequences of gambling behaviour for individuals, families, communities and society. Harm minimisation is a comprehensive approach of which harm reduction is one component.

Harm reduction strategies are designed to prevent or limit specific harms, involve encouraging people to modify their behaviour and are specifically targeted. While harm minimisation and harm reduction are both consistent with treatment goals of non-gambling or abstinence, the overall goal of harm minimisation is reducing problems to their lowest possible level, whilst the overall goal of harm reduction is the prevention of harm rather than the prevention of use or involvement *per se* (Hunt, 2003). In relation to treatment for pathological gambling, harm reduction includes interventions with the goal of controlling or setting limits on people's gambling. Harm reduction and minimisation are more familiar and acceptable concepts to treatment providers in Australasia, Canada and Europe than in the United States. Whilst harm reduction approaches are accepted and used in problem gambling treatment programmes outside the United States, most gambling treatment programmes in the U.S. primarily employ abstinence-based approaches.

Internationally, there is little help available to problem gamblers or their families outside the specialised services that have been developed in different jurisdictions. In this section of the report, approaches to the treatment of problem gambling from an international perspective are reviewed. The focus is on the few rigorous formal evaluations that have been completed of problem gambling treatment services and on gaps in the knowledge base that need to be filled.

Careful readers will note that nearly all of the materials reviewed in this and the next section of the report reflect a strong 'Eurocentric' bias. Despite concerted efforts by the Reviewing Team, little evidence could be found for more culturally diverse approaches to the treatment or prevention of gambling problems. Whilst evidence likely exists for the efficacy of culturally appropriate approaches taken in relation to other disorders, constraints on the resources of the Reviewing Team precluded our consideration of this much broader literature in the present context.

3.3.2.1 Funding for problem gambling services

Internationally, the allocation of funds to different types of problem gambling services varies substantially from one jurisdiction to another. However, across the board, the bulk of these revenues fund direct services including helplines and formal treatment. In Australia, Canada and New Zealand, substantial funds also go toward service development, including specialist training and research.

United States

The United States is unique in the number of governments that oversee legalised gambling in that country. Forty-eight state governments and 224 sovereign tribal governments in 28 states oversee and/or operate legal gambling enterprises. Rivalry and competition for revenues have largely prevented governments from working together to develop comprehensive and effective approaches to minimising gambling-related harms for their citizens (Volberg, 2004b). Whilst there is a growing willingness to fund problem gambling services in the United States, those funds have not kept pace with either increases in industry revenues or in the availability of gambling.

Decisions to fund services in the United States are generally made in the highly politicised context of decision making to expand legal gambling opportunities and are often seen as a 'sop' to the opponents of those initiatives. This has particularly dire consequences in the provision of problem gambling services because of the tendency of governments to reduce or rescind such funding after a number of years and/or in the face of fiscal difficulties. An additional complication is that health services in the United States are largely provided by private, for-profit organisations and paid for by private health care insurers. Despite the fact that pathological gambling is a recognised mental health disorder, most health insurers and managed care providers do not reimburse for problem gambling treatment (Svendsen, 1998).

A survey conducted by the (U.S.) National Council on Problem Gambling in 1998 found that problem gambling services were funded in 72% of the 47 states (n=34) that permitted legalised gambling, although not all of those funds came from state governments. Other sources of funding included gaming companies and foundations. The $22 million (USD) spent on problem gambling services in the United States in 1998 represented about one-tenth of one percent of the $18 billion in gaming taxes collected by state governments in 1998 and an even smaller proportion of the $54 billion in gross revenues received by all of the legal gambling industries in the United States that same year (Christiansen, 1999; National Council on Problem Gambling, 1999). That survey found that spending on problem gambling services was highly concentrated, with the top four states that funded such services (Delaware, Iowa, Oregon and Minnesota, representing nine percent of states that fund services) accounting for 41% of the total spending on problem gambling services in the entire country.

As previously noted, legislation permitting the expansion of legalised gambling has created opportunities for the establishment of funding for problem gambling services. In recent years, such opportunities have arisen when the decision has been made to issue one or more casino licenses in a state (e.g. Arizona, Michigan) or when state lotteries are permitted to expand their product lines to include linked systems of video keno and video poker machines (e.g. Massachusetts, New York, Oregon). Most recently, such opportunities have arisen when pari-mutuel facilities are permitted to expand their traditional product to include gaming machines (e.g. West Virginia, Pennsylvania).

In California, when 63 Native American tribes negotiated compacts to operate casinos on reservation lands throughout the state, the tribes were instrumental in ensuring that $3 million (USD) from those revenues would be spent annually on problem gambling services around the state. In contrast, funding for problem gambling services in Massachusetts (allocated as a portion of unclaimed lottery winnings since 1987) was reduced by half in 2002, further reduced by a third in 2003 and completely eliminated in 2004 and 2005. Although some funding was restored each year after write-in campaigns organised by the Massachusetts Council on Compulsive Gambling, the uncertainty of funding has caused disruptions in service as well as substantial staff turnover.

A recent survey of state problem gambling service administrators found that, whilst 34 states had some form of problem gambling services, only 16 state governments provided funding for such services (Arnold et al, 2003; Christensen, 2002). Many of those programmes have evolved independently and few efforts have been made to learn from mistakes and problems encountered in other jurisdictions. There are at least two factors responsible for this duplication of effort. The first is the scarcity of state agency staff, with less than two FTEs (full-time equivalent positions) per state dedicated to implementing the services. The second is the nearly complete lack of direction from Federal agencies including the National Institutes of Health (NIH) and the Substance Abuse and Mental Health Services Administration (SAMHSA).

For the most part, states that fund problem gambling services have placed responsibility for those programmes within existing substance abuse and/or mental health (SA/MH) departments. However, limited staffing within state governments has meant that service provision as well as research and evaluation have been largely contracted out to non-governmental organisations. Whilst these funds are spent on a range of services, the bulk of funding goes toward formal treatment (44%) and helplines (19%). Public awareness and prevention account for another 19% of the funds, training of counsellors with substance abuse and mental health experience to diagnose and refer problem gamblers accounts for nine percent of the funds, and administration within state government agencies accounts for seven percent of the funds. Only two percent of the funding provided for problem gambling services by state governments goes toward research and evaluation.

Whilst very little research has been funded within the states, there are two important sources of funding for problem gambling research at the national level in the United States. In the wake of the establishment of the National Gambling Impact Study Commission in 1996, the casino industry and the Federal Government made significant investments in research on problem gambling (Volberg, 2004b). Through its national trade organisation, the American Gaming Association, the casino industry established the National Center for Responsible Gaming (NCRG) to fund peer-reviewed research on underage and problem gambling. Between 1996 and 1999, the NCRG was the largest source of funding for research on problem gambling, committing $6.1 million (USD) in intramural and extramural grants in the areas of epidemiology (42%, all of which went in intramural grants to the Harvard Division on Addictions), neuroscience (31%) and behavioural science (27%). In 2000, NCRG awarded a further $2.4 million to the Harvard Division on Addictions to establish the Institute for Research on Pathological Gambling and Related Disorders and to take over the process of soliciting and awarding extramural grants as well as continuing to conduct a significant intramural programme of research.

Another direct result of the National Gambling Impact Study Commission's work was the issuance of a special programme announcement in 1999 to encourage research grant applications to the National Institutes of Health with a focus on problem gambling. Between 1999 and 2003, a total of 23 grants representing $9.1 million (USD) in committed funds were awarded in direct competition with all other applications in the Federal health-research peer-review system to investigate a range of topics related to problem gambling. Those research

projects include examinations of biological and genetic correlates of pathological gambling, measurement of problem and pathological gambling, studies of treatment effectiveness and studies of special populations including women and youth.

Canada

Funding for problem gambling services is far higher in Canada than in the United States. In the wake of widespread introduction of electronic gaming machines in the mid-1990s, Canadian provinces rapidly began funding problem gambling treatment and prevention programmes and some provinces also established funding for ongoing research programmes to investigate the social and economic effects of widespread legal gambling (Azmier & Smith, 1998; Campbell & Smith, 2003). Altogether, the Canadian provinces spent $28 million (CDN) on problem gambling services in 1999, an increase from $14.5 million in 1997. Funding increased again in 2001 when the provinces committed approximately $44 million for those services (Azmier, 2001).

Annual expenditures on problem gambling services vary tremendously from one province to another, with Ontario and Québec spending the largest absolute amounts but with Nova Scotia, Saskatchewan and Manitoba spending the largest amounts per capita. In spite of these relatively high levels of spending on problem gambling services, only one province (Prince Edward Island) spends more than one percent of gambling-derived revenues for problem gambling treatment, research, education and public awareness. British Columbia is the most recent Canadian province to set aside funds for problem gambling services. In 2003, British Columbia allocated approximately $4 million (CDN) to support awareness programmes, a helpline, counsellor training and positions at 35 counsellor agencies.

Responsibility for providing problem gambling services in Canada is generally assigned to the provincial agency that delivers substance abuse services. Examples include the Alberta Alcohol and Drug Abuse Commission, the Ontario Centre for Addiction and Mental Health, the Nova Scotia Department of Health and the Manitoba Addictions Foundation. Non-governmental organisations also provide problem gambling services in some Canadian provinces (e.g. Responsible Gambling Council of Ontario). The range of problem gambling services in Canada includes toll-free helplines, warnings posted in gambling venues, self-exclusion policies for problem gamblers, outpatient counselling, intensive day treatment, inpatient residential care and public education and awareness activities (Campbell & Smith, 1998).

In some Canadian provinces, most notably Alberta, Nova Scotia, Ontario and Québec, significant funds have been appropriated for problem gambling research. Research on problem gambling has been underway in Québec longer than in other Canadian provinces. Until 2001, funding for problem gambling research came directly from Loto-Québec, the Crown corporation that oversees lottery and casino gaming in that province. Between 1996 and 2001, Loto-Québec allocated $5.3 million (CDN) for research, primarily to establish and support two research centres, at Université Laval in Québec City and at McGill University in Montreal. In 2001, the Ministry for Health and Social Services took over primary responsibility for problem gambling services in Québec including research, prevention and treatment, and launched a new research initiative focused on the socioeconomic impacts of gambling. Overall, the Québec government spent $20 million (CDN), including $4 million from Loto-Québec, on problem gambling services in 2001-2002.

In Ontario, the provincial government set aside $4 million of the $17 million (CDN) appropriated for problem gambling services in 2000 to establish the Ontario Problem Gambling Research Centre (OPGRC). This appropriation has been renewed at about the same level in

each year since 2000. The OPGRC is an independent research agency that reports to the provincial Ministry of Health and Long Term Care. In addition to funding peer-reviewed, researcher-initiated grant proposals, OPGRC has established partnerships with the Ontario Centre for Addiction and Mental Health (CAMH), the Ontario Problem Gambling Helpline, the Ontario Lottery and Gaming Corporation, and racetracks and casino operators. OPGRC has also been active in developing Canada-wide and international collaborative efforts (Simpson, personal communication). Observers have noted that the OPGRC has experienced substantial difficulties soliciting high-quality proposals as well as challenges in developing capacity.

In Alberta, problem gambling treatment services are provided by the Alberta Alcohol and Drug Abuse Commission with funding from the Alberta Lottery Fund. With regard to research, three universities receive $1.5 million (CDN) annually from the provincial government to operate the Alberta Gaming Research Institute. The Institute is committed to building research capacity through a system of peer-reviewed grants.

In Nova Scotia, the Nova Scotia Gaming Foundation was established by the Nova Scotia Gaming Corporation, the Crown corporation that oversees lottery, video lottery and casinos in the province. The Foundation directly receives one percent of provincial video lottery terminal (VLT) retailer commissions and an equal amount matched by the Corporation to undertake research, education and treatment projects (Blaszczynski, 2001). Much of the research undertaken in Nova Scotia has focused on VLT players, in laboratory as well as in natural settings (Loba et al, 2001; Schellinck & Schrans, 2002; Schrans, Schellinck & Walsh, 2000; Stewart & Kushner, 2003).

Australia

In 1999, the Productivity Commission (1999) reported that all of the Australian states and territories had problem gambling 'strategies' in place along with funding for problem gambling counselling. Whilst most of the Australian jurisdictions impose compulsory levies to fund problem gambling services, Western Australia and South Australia rely on voluntary contributions. Furthermore, in most of those jurisdictions, funding comes from only one or two sectors of the legal gambling industry.

For example, in New South Wales, two percent of gross annual gaming revenue from the Sydney Casino is paid to the Casino Community Benefit Fund to pay for problem gambling services. In Victoria, funds are derived as a percentage of the revenues from gaming machines in hotels whilst, in Queensland, a percentage of the gaming machine and keno revenue collected by the Office of Gaming Regulation provides funding for problem gambling services. Additional sources of funding for problem gambling services in Australia come from individual gaming operators, universities and welfare groups.

The Productivity Commission (1999) recognised the difficulties that treatment providers and researchers experience with annual funding arrangements that contribute to uncertainty about the continuity of services. The Commission recommended that the triennial funding arrangement adopted in Victoria[6], be adopted by all of the Australian states, with the proviso that such arrangements be dependent on processes being in place to evaluate the effectiveness of those services. The Productivity Commission further recommended that problem gambling programmes, including research, education and treatment, be administered by an independent board established under the auspices of an independent gaming control authority.

[6] Multi-year funding arrangements are also common in the Canadian provinces.

Services for problem gambling in the Australian states and territories include community education programmes, telephone helplines, professional counselling and treatment services, and research into the social and economic impacts of gambling. The provision of those services is carried out by a range of organisations including welfare, religious and other community groups, private individuals, and public and private hospitals and clinics. The main providers of problem gambling services in Australia include counselling organisations, group support agencies, clinics and hospitals. There are strong similarities in the structure of problem gambling services across Australia as those states that have developed services more recently have borrowed heavily from the experiences and approaches taken earlier in other states and, to a lesser extent, in overseas countries. Problem gambling research in Australia has largely been funded by government and carried out by universities, including the Gambling Research Unit at the University of Sydney and the Australian Centre for Gambling Research at the Australia National University.

In 2000, the Victoria government mandated the establishment of the Victoria Gambling Research Panel whose purpose is to commission, monitor and publish research on the social and economic impacts of gambling, the causes of problem gambling and strategies to minimise harm from gambling. As with problem gambling services more generally, the Gambling Research Panel is funded by a portion of the revenues that the government derives from electronic gaming machine revenue from hotels. It publishes an annual research plan identifying priorities for the year as well as the status of various research projects underway. The Gambling Research Panel consults with a range of stakeholders in Victoria, including the gambling industry, community advocates, researchers and Government and then drafts an annual research plan that is submitted to the Minister of Gaming for approval. In its 2003-2004 research plan, the Gambling Research Panel proposed six projects maintaining three themes from previous years, including dimensions of gambling and problem gambling, community impact of gambling, and prevention, harm minimisation and early detection. The six projects require three different timeframes: two short (six months), three medium (12 months) and one long (more than 12 months) (Gambling Research Panel, 2003).

Following on the work of the Productivity Commission, the Australian Federal government established, in 2000, a Ministerial Council on Gambling aimed at achieving a national approach to the 'challenge of problem gambling'. The Ministerial Council includes all of the state and territorial ministers with responsibility for gambling and reports to the Council of Australian Governments. The Ministerial Council immediately recognised the need for a national gambling research programme and has recently released its 2004-2008 research plan (Ministerial Council on Gambling, 2004). Priorities for research for the next four years will be definitions and consistent data collection, feasibility and consequences of changes to gaming machines, best approaches to early intervention and prevention, monitoring the impact and effectiveness of prevention and treatment strategies, and patterns and impacts of gambling in rural and remote communities and among indigenous Australians.

New Zealand

Over the past seven years in New Zealand, funding of problem gambling services was via the Problem Gambling Committee (PGC). The PGC was funded solely by voluntary contributions from Funder Trustee Organisations, which included a levy on non-casino electronic gaming machines and grants from the Lottery Grants Board, the TAB (Totalisator Agency Board, similar to betting shops in the U.K.) and the casino operators. The services funded by the PGC included a national telephone helpline, a national network of face-to-face counselling services, and contributions to related research, workforce development, education and latterly, public health services aimed at the prevention of gambling problems (Paton-Simpson, Gruys &

Hannifin, 2004). In 2003/04, the total amount of money spent by the PGC was $12.6 million (NZD) with about 60% of that money going to intervention (helpline and counselling) services.

On 18 September 2003, New Zealand passed the Gambling Act (2003) which fully came into force on 1 July 2004. The Gambling Act brings changes to all forms of gambling including tough laws to control the growth of gambling (particularly electronic gaming machines) as well as strict policies to minimise the harm caused by gambling, and gives communities more involvement in decision-making about gambling. Under the new regime, responsibility for funding of problem gambling services is now with the Ministry of Health and not with the PGC, which will work with the Ministry to ensure a smooth transition of responsibilities. The funding that will be available for services will be determined via a statutory levy as opposed to the voluntary system which operated under the PGC. An independent statutory decision-making body, the Gambling Commission, has been established under the Gambling Act to advise the Government on various aspects including recommendations on the proposed problem gambling levy over the next two years and on the proposed rates for those subject to the levy. Those subject to the levy will include non-casino gaming machine owners, casinos, the New Zealand Racing Board and the Lotteries Commission. The current proposal for funding of problem gambling services by the Ministry of Health is $15.5 million (NZD) for the year 2004/05 rising to $20.5 million in the year 2006/07. Again, approximately 60% of the funding will be spent on intervention services (Ministry of Health, 2004). One important element of the Gambling Act (2003) is that pubs, clubs and casinos are now required to have policies in place for the identification and referral of problem gamblers as well as for identification of underage gamblers.

South Africa

In the wake of the legalisation of casino gambling in South Africa in 1998, a national 'Responsible Gambling Programme' was implemented which integrates research, prevention and treatment strategies and is funded by voluntary contributions from all sectors of the gaming industry except the national lottery. The Responsible Gambling Programme reports to the South African Responsible Gambling Trust which is composed of four industry professionals representing different sectors of the industry, four regulators and an independent chairman. In turn, the Trust is overseen by the South African Advisory Council on Responsible Gambling which is chaired by the National Gambling Board and serviced by the Board's staff. The budget for the Responsible Gambling Programme, estimated to be 10 million Rand[7] per year, is divided approximately equally between a treatment programme, an education programme and a research programme. However, there is agreement that the telephone helpline will always be adequately staffed and that funds for face-to-face counselling will be provided to meet demand. This three-way division is quite similar to the approach recommended by Arnold et al (2003) and adopted by the Trust in funding problem gambling services in the U.K.

Research activities in South Africa include two prevalence studies as well as literature reviews on such subjects as advertising, codes of conduct, voluntary exclusion and customer behaviour. This research component is overseen by the South African Centre for the Study of Gambling located at the University of Cape Town. The treatment programme includes a helpline, a free diagnostic consultation with one of 39 trained treatment professionals located at 13 centres around the country, a short, six-session programme of outpatient treatment if warranted by the diagnosis, and inpatient treatment at one of three addiction treatment clinics if the client is judged to be a danger to him/herself or others. The education and training programme provides

[7] According to Arnold et al (2003), South African currency should be converted to British currency using a 5:1 formula because of differences in overhead and employment costs. Based on this approach, 10 million Rand represents £2 million.

training for all levels of workers in the gambling industry. The programme also funds newspaper and radio advertising as well as a substantial programme of presentations to politicians, journalists, religious leaders and community groups (Arnold et al, 2003).

Although the South African Responsible Gambling Programme has been in operation since 2000, there is little information about the effectiveness of those efforts. Arnold et al (2003) report that the South African helpline received approximately 19,000 calls between 2000 and 2002, that 220 sessions of outpatient treatment were provided per month in that period and that approximately six individuals received inpatient treatment. Informational brochures were widely distributed in post offices, doctors' offices, schools and seniors' centres, an average of 200 media interviews are conducted per year and an average of 12 presentations per month are made to ministers, government departments, regulators, and commercial and religious groups.

In an unpublished manuscript, Bulwer and Niewoudt (2004) report on the effectiveness of the South African treatment approach with 100 clients. Sixty one percent of the clients attended all six sessions. One year after completing treatment, 47% of the 72 clients who attended four or more treatment sessions had not gambled at all in the past six months, 15% had experienced one relapse and 13% were gambling once or twice a month (deemed to be 'controlled' gambling). Whilst significant improvements in vocational functioning, marital and family relations, and financial problems were identified, clients with more severe gambling problems were found to have less positive outcomes.

European countries

With the exception of the Netherlands, efforts underway in several European countries to address problem gambling are all quite recent. Prevalence research has been undertaken in several countries (e.g. Norway, Sweden, Switzerland) as well as in several Spanish provinces, most notably Catalunya and Galicia (Becoña, 1993, 1996, 1997; Bondolfi, Osiek & Ferrero, 2000; Gotestam & Johansson, 2003; Volberg et al, 2001). Responsible gambling initiatives, including voluntary and imposed exclusion, have been introduced by regulators or by casino operators in several countries (e.g. France, the Netherlands, Switzerland). Finally, helplines and websites to provide problem gamblers and others with information and referrals to treatment have been established by non-governmental organisations in several countries (e.g. Denmark, France, Sweden). As yet very little research has been conducted to determine the effectiveness of those measures.

The Netherlands is the only country in Europe with a relatively lengthy history of addressing problem gambling. Casinos have been legal in the Netherlands since the mid-1970s and slot machines in casinos and in other venues (e.g. cafes, bars, amusement arcades) have operated since 1986. Legal changes made in 1986 led to a rapid proliferation of gaming machines throughout the country and noticeable growth in the number of individuals seeking help for gambling-related problems. In 1994, a government advisory committee recommended changes to gaming machines to interrupt automatic and/or prolonged play and to restrict the attractiveness of the machines and their locales. Those changes were not fully implemented until 2000. Furthermore, although the number of machines was reduced by prohibiting their placement in restaurants and snack bars, amusement arcades were permitted to link their machines and greatly increase the maximum win.

Self-help for problem gamblers and their relatives is available in the Netherlands through the AGOG Foundation. The core activities of the Foundation are funded by the Ministry of Health although the staff consists entirely of volunteers. The Foundation runs weekly self-help groups for gamblers and family members in approximately 30 locations around the country. Participants are expected to attend meetings for at least 12 months after which they can obtain

training to become a group leader. The AGOG groups are independent but work closely with their local governments and, increasingly, with professional treatment centres. In 2001, AGOG started a national helpline which now receives approximately 2,000 calls per year in spite of the fact that it is not a toll-free service.

In 1991, the national government allowed addiction treatment centres throughout the Netherlands to begin treating problem gamblers on an outpatient basis. The number of problem gamblers receiving treatment on a national basis increased rapidly between 1991 and 1994 and then began to decline. It has been suggested that the decline was due to the elimination of gaming machines in restaurants and snack bars and to the implementation of age restrictions in amusement arcades. However, it is equally possible that the decline was a result of individuals with gambling problems seeking assistance from financial counsellors rather than addiction treatment centres or other factors. No research has been carried out to determine the causes or correlates of that change in treatment-seeking for gambling problems in the Netherlands.

In 1996, the Jellinek Consultancy developed a protocol for problem gambling treatment based on a 'stepped care' approach that ranges from primary prevention for experimenters and non-problem gamblers to short interventions for those exhibiting risky behaviour, and specialised outpatient treatment for 'addicted gamblers' to inpatient treatment for 'chronic addicted gamblers'[8]. Again, there has been almost no research on the effectiveness of that approach. One study from the Amsterdam Institute for Addiction Research found that the short intervention of four to six sessions with a counsellor was 'effective' although the manner in which that was measured was not specified.

In conclusion, although there are a growing number of European countries that provide services to problem gamblers, very little research has been done to examine the extent and impacts of problem gambling in European countries or the effectiveness of prevention and treatment initiatives that have been implemented.

3.3.2.2 The development of problem gambling treatment

The understanding of problem gambling and hence ability to design effective treatment and prevention programmes for this disorder, has been hindered by a lack of theoretical understanding of the causes of gambling problems. In general, whilst the biomedical model has dominated in the United States, the cognitive-behavioural, or social learning, model is more widely accepted in other countries. In recent years, a broader public health approach to addressing problem gambling has emerged internationally. The public health approach offers several advantages over previous models, including recognition of the likely benefits of moderate gambling participation, such as sociability and cognitive stimulation, and a new focus on the possibilities of using public policy and regulation to minimise the negative impacts of gambling legalisation. Despite the rapid emergence of public health approaches to problem gambling, the fact remains that very few services exist for problem gamblers internationally and even fewer of those services have been evaluated for effectiveness or efficacy.

The earliest and for many, still the only, help for problem gamblers was Gamblers Anonymous (G.A.). G.A. was first established in California in the 1950s and has grown from a few chapters in the early 1960s to thousands of chapters throughout the United States and internationally (Browne, 1993). Like other twelve-step fellowships, G.A. has no formal membership process or dues requirements; the only requirement for membership is a desire to stop gambling. Long-

[8]A stepped care approach using multimodal strategies is common in the United States and has recently been adopted in the Spanish autonomous regions of Andalusia and Catalunya (Suárez Alcalde, personal communication).

time members of G.A. serve as sponsors to newcomers and anonymity is emphasised. Like other twelve-step programmes, G.A. is not allied with any sect, denomination, political organisation or institution, does not accept outside donations and does not engage in lobbying.

GamAnon, a fellowship for friends and families of gamblers, was first chartered as a non-profit organisation in 1960 and is now headquartered in New York. Although there are fewer GamAnon than Gamblers Anonymous meetings, there are still hundreds of GamAnon meetings worldwide. A friend or family member can attend GamAnon even if the problem gambler is not attending G.A. Like G.A., membership in GamAnon is voluntary and open to anyone affected by gambling problems. There are no fees for membership and anonymity is a tradition. Similar to G.A., GamAnon does not accept outside donations or grants.

Professional treatment for individuals with gambling problems has generally been limited to individuals who are formally diagnosed as 'pathological gamblers'. Until the 1980s, psychoanalytic and psychodynamic treatment approaches were the most common form of treatment for pathological gamblers. Those approaches are based on the notion that all human behaviour, even self-destructive behaviour, serves some function or purpose. From that perspective, pathological gambling was seen as a symptom of an underlying condition and therapists worked with problem gamblers to illuminate the underlying condition, help the client confront it and successfully resolve the conflict.

The psychoanalytic approach requires a long-term commitment to self-exploration and this approach to pathological gambling treatment was typically offered by private therapists or in residential or inpatient treatment programmes such as those established by the (U.S.) Veterans Administration in the early 1970s. There have been no controlled or randomised studies exploring the effectiveness of that approach for treating pathological gamblers. The changing organisation of medicine internationally, as well as major changes in health insurance coverage in the United States, has made it more difficult to offer psychoanalytic and psychotherapeutic treatment for all disorders including pathological gambling.

Although behavioural treatment methods have been used with pathological gamblers since the 1960s, that approach has attracted particular attention in Australia where gambling liberalisation first began to emerge in the 1980s. Behavioural treatment methods focus on modifying problem gambling behaviours using basic principles of classical conditioning or operant theory. Examples of behavioural methods include aversion treatment (such as the application of a small electric shock whilst the client reads about a gambling situation), imaginal desensitisation (a two-step procedure in which patients are first taught how to relax and then are asked to use those relaxation techniques when they are imagining scenes related to gambling that they find arousing) and behaviour counselling. Evaluation of behavioural treatment methods has been limited by small sample sizes and the lack of control groups. The most rigorous evaluations of behavioural treatments come from Australia where Blaszczynski and colleagues carried out a series of studies of behavioural techniques (Blaszczynski et al., 1991; McConaghy et al., 1983, 1988, 1991).

In the mid-1990s, cognitive and combined cognitive-behavioural treatment approaches emerged as promising treatments for pathological gambling. While cognitive treatments are increasingly being used to treat other addictive disorders, intuitively those approaches seem particularly appropriate in treating a disorder that is fundamentally characterised by cognitive distortions. Based on the social learning model of problem gambling, cognitive treatments attempt to re-educate problem and pathological gamblers to understand their irrational expectations about gambling as well as core beliefs about illusions of control (Ladouceur et al, 1994). Rugle and colleagues (2001) note that cognitive treatment is rarely offered alone and is usually supplemented with behavioural strategies including problem solving training, social skills training, self-monitoring and stimulus control.

Cognitive behavioural therapy (CBT) is a form of psychotherapy that emphasises the role of thinking in how people feel and act. CBT tends to be briefer than other types of psychotherapy with clients usually attending between eight and sixteen sessions. CBT often includes homework assignments that clients complete in between sessions with a counsellor. This form of psychotherapy tends to rely on an instructional approach with specific techniques and/or concepts forming the focus of each session. In the treatment of problem gambling, cognitive treatment strategies aim to counteract underlying irrational expectations about achieving success at gambling as well as core beliefs about illusions of control and the notion that gambling is a solution to financial problems. Clients are taught to correct erroneous thinking as well as supplemental behavioural strategies such as problem solving, social skills, self-monitoring and stimulus control (Rugle et al, 2001).

Among the strategies employed in the treatment of pathological gambling, cognitive-behavioural approaches have received the most evaluative attention. Major studies in Québec, Canada and in Spain demonstrated that cognitive-behavioural treatment yielded better outcomes than wait-list or behavioural-alone conditions (Echeburúa et al, 1996; Sylvain et al, 1997). A similar controlled study of cognitive-behavioural therapy funded by the (U.S.) National Institute for Mental Health is presently underway.

Internationally, there is an increasing range of treatment options available for problem gamblers, including hospital inpatient programmes for individuals who are seriously depressed or suicidal, and outpatient programmes in mental health and/or addiction settings that offer individual and group counselling. Treatment for pathological gambling is primarily delivered on an outpatient basis and therapists employ a wide range of approaches. Inpatient care is limited to patients with severe crises or comorbid disorders such as suicidality and major depression. Most treatment for pathological gambling is delivered as a specialised track within existing substance abuse programmes and is typically provided by a combination of specialised and non-specialised providers (Jackson, Thomas & Blaszczynski, 2003; Lesieur, 1998; Volberg et al, 1996). In the United States, although there is growing acceptance of harm reduction and controlled behaviour approaches for other addiction problems, most gambling treatment programmes continue to strongly favour abstinence. Referral to Gamblers Anonymous or GamAnon is a frequent adjunct to formal treatment and further fosters the strong abstinence approach that dominates problem gambling treatment in the United States.

Other than in specialised programmes, mental health and substance abuse treatment professionals rarely screen for gambling involvement or gambling problems among their clients. Even when a gambling problem or pathology is identified, non-specialist professionals are often uncertain about the appropriate referrals to make or treatments to recommend.

Pharmacotherapeutic approaches

The latest approach to treating severe gambling problems involves the use of pharmacological agents and rests heavily on clinical experience with treating other disorders that share a similar symptomatology or appear to have overlapping neurochemical mechanisms (Grant, Kim & Potenza, 2003). Although a variety of drug treatments are being tested for application to gambling-related problems, there is no pharmacotherapy protocol currently approved specifically for the treatment of gambling problems. Nevertheless, the role of pharmacotherapy in the treatment of pathological gambling does show significant promise (Korn & Shaffer, 2004; Rosenthal, personal communication).

The classes of drugs that appear to have the most promise in the treatment of pathological gambling include opioid antagonists, selective serotonin re-uptake inhibitors (SSRIs) and mood

stabilisers. Opioid antagonists (e.g. naltrexone) are used in the treatment of alcohol abuse and are effective in reducing cravings and the pleasurable effects of alcohol. Researchers at the University of Minnesota reported significantly reduced gambling urges among pathological gamblers treated with naltrexone (Kim et al, 2001). SSRIs (e.g. fluoxetine, fluvoxamine, paroxetine, sertraline, citalopram) are used in the treatment of obsessive-compulsive disorders, anxiety disorders and depression. The rationale for using those medications, which affect the serotonin, noradrenaline and dopamine systems, is their assumed effect on reducing obsessive preoccupation with gambling as well as the depression or anxiety that tends to accompany pathological gambling in individuals seeking treatment (Hollander et al, 2000; Rugle et al, 2001). Mood stabilisers (e.g. amitriptyline, divalproex, carbamazepine, lithium carbomate) are used in the treatment of bipolar disorder. It is theorised that those medications may be effective for pathological gamblers with concurrent mood disorders, such as mania and depression. Other drugs, including the anti-psychotic olanzapine, the selective serotonin receptor antagonist ondasetron, the norepinephrine dopamine modulator buproprion, and even methylphenidate (Ritalin), used in the treatment of attention deficit disorder, have been utilised in small studies or in single cases.

The evidence to date supports the development of specific pharmacotherapies for use with pathological gamblers and this is currently an area of active clinical research (Korn & Shaffer 2004). However, dosages for opioid antagonists and SSRIs that are effective with pathological gamblers are much higher than the dosage recommended for alcohol treatment or treatment for depression and may be contra-indicated in cases where there is any degree of liver disease. Finally, it is important to take account of a likely substantial placebo effect in considering the results of those pharmacological studies (Rugle et al, 2001).

Certification: A North American approach

A growing number of gambling counsellors in private practice, who provide individual and group therapy as well as marital and family counselling, are seeking continuing education and certification as 'problem gambling counsellors'. One important reason for certification in the U.S. is that insurance companies and other payers for health services require minimum standards for treatment providers to be eligible for reimbursement. Another important reason for certification is to assure that a minimum standard of care is met in providing treatment to problem gamblers and their families (Christensen, personal communication).

There are a growing number of certification credentials for problem gambling treatment. At the national level in the U.S., there is the Certified Addictions Specialist (CAS) credential from the American Academy of Health Care Providers in the Addictive Disorders and the National Certified Gambling Counselor (NCGC) credential from the National Gambling Counselor Certification Board, a division of the (U.S.) National Council on Problem Gambling. Within the United States, there are a growing number of state-level certifications available. Some examples include:

- California Compulsive Gambling Training Institute
- Nevada Board of Examiners for Alcohol, Drug and Gambling Counselors
- New York Council on Problem Gambling Certification Board
- Addiction Counselor Certification Board of Oregon
- Washington State Council on Problem Gambling Certification Program

In Canada, the Canadian Problem Gambling Counsellor (CPGC) certification is available from the Canadian Problem Gambling Certification Board. Another, more recent credential in Canada is the Problem Gambling Counsellor (PGC) certification available from Professional Advanced Services in Mental Health and Addiction. Requirements for all of those credentials

include obtaining education, completing a minimum number of hours of supervision, taking an examination, completing an application and paying a fee, and providing references.

Whilst problem gambling certification has largely evolved in North America, similar initiatives are beginning to emerge in other countries. For example, the Casino Community Benefit Fund in New South Wales, Australia now offers a 5-day 'practitioners programme in counselling the problem gambler' through a Sydney-based treatment programme and is working to develop an accredited training programme with nationally recognised competencies which is intended to serve as a baseline qualification in the field (Roberts, personal communication). Another recent programme is the Basic Certificate Course on Counselling of Pathological Gamblers in Hong Kong, designed to meet the needs of two newly establishing counselling centres in that city (Kwan, personal communication).

One interesting example is training provided to the NICOS Chinese Health Coalition in San Francisco, U.S. by the California Council on Problem Gambling. NICOS is a public-private-community partnership of more than 30 health and human service organisations and concerned individuals whose mission is to 'enhance the health and well-being of the San Francisco Chinese community'. In 1997, the coalition funded a survey and found that 70% of identified respondents believed that gambling was a problem in their community. After holding a community forum on the issue, a task force was established, funding was obtained from the San Francisco City Council and a plan of action was developed. In 1999, 31 community clinicians and counsellors completed a 40-hour problem gambling counsellor training provided by the California Council on Problem Gambling (NICOS, 2004).

Help for the families of problem gamblers

Discussions of problem gambling treatment tend to focus rather narrowly on the individual experiencing difficulties with his/her gambling. However, problem gamblers experience a range of difficulties that affect their families and communities. In particular, partners and children of problem gamblers often experience psychological problems as well as neglect, abuse and difficulties with creditors and financial institutions.

Financial issues are a critical component of problem gambling treatment as Gamblers Anonymous recognised early on with the development of 'pressure relief' meetings in which long time members assist newer members to develop a plan for debt payment, budgeting and money management. Along with G.A. and GamAnon, clinicians who treat problem gamblers often recommend that the gambler's access to money be significantly limited (Berman & Seigel, 1992; Heineman, 1992; National Endowment for Financial Education, 2000). However, other clinicians have noted that money and power represent complicated areas of negotiation in gambling treatment (Steinberg, 1993). Unfortunately, to date there have been no empirical studies of the role of financial counselling or money management in gambling treatment.

Whilst family treatment issues in working with pathological gamblers have been described, little work has been done to evaluate key components of family treatment or the effect of family intervention on treatment outcome. One small early study employing group marital therapy with male pathological gamblers and their wives found improved marital functioning and decreased levels of depression amongst those who remained in the study (Tepperman, 1985). More recently, Lee (2002) reported on the application of a humanistic, system-based therapeutic approach with eight couples from Ontario, Canada. Couples reported significant improvement on measures of wellbeing, life satisfaction and their relationship immediately following treatment and at one-month and four-month follow-up. The gamblers also reported reduced frequency and intensity of gambling urges.

Natural recovery

Natural recovery refers to the process by which individuals with maladaptive behaviours attain a state of recovery without the help of a formal treatment programme or self-help. In contrast to problem gambling, much more is known about the life course of alcohol problems. That research indicates that outcomes are variable. Whilst a substantial number of people with serious alcohol problems have persisting or relapsing problems, significant numbers partially or completely overcome their problems with or without treatment (Peele, 1985; Sobell, Sobell & Toneatto, 1992; Vaillant, 1995). Although many people who overcome their problems continue to consume alcohol, the matter of 'controlled drinking', especially as a treatment goal for people with severe alcohol problems, remains controversial (White, 1998).

In the case of problem gambling, the exact number of individuals who recover on their own is unknown but is likely to be much higher than the number of problem gamblers who access professional treatment (Abbott & Volberg, 1996; Abbott, Williams & Volberg, 2004; Smith, Volberg & Wynne, 1994). Research has begun to shed some light on natural recovery from pathological gambling.

Hodgins, Wynne and Makarchuk (1999) reported that four out of six adults reporting a gambling problem in Alberta, Canada in 1997 recovered without treatment. Hannien and Koski-Jannes (1999) analysed accounts of natural recovery from a range of addictions (including gambling-related problems) by 51 individuals and concluded that natural recovery is a common process. Thomas and Jackson (2000) reported on a small study of 12 Australians recruited from a larger telephone survey of gambling and other risky behaviours including smoking, drinking, dieting and illicit drug use. In that study, respondents mentioned crisis points in their lives, family interventions and changing social relationships as catalysts for change. Embarrassment and stigma were mentioned as reasons for not seeking formal treatment, as was lack of recognition of the issue.

Abbott, Williams and Volberg (1999, 2004) reported on a study of gambling involvement and problem gambling status in a group of 143 New Zealand problem and non-problem gamblers seven years after their initial assessment in a general population survey. Perhaps the most notable finding from the study was that the majority of people who were classified as 'probable pathological' or 'problem gamblers' in 1991 no longer reported significant problems during the six months prior to their re-assessment seven years later, with greater change evident for people with less serious problems. Whilst most of the problem gamblers in 1991 were non-problematic at follow-up, a significant minority had developed more serious problems. Problem gambling severity, the presence of comorbid hazardous or problem drinking and a preference for track betting (all assessed in 1991) were the key factors that predicted a continuation of gambling problems seven years later.

Hodgins and el-Guebaly (2000) conducted a large study of the factors that precipitated recovery in a group of 43 resolved and 63 non-resolved problem gamblers from Ontario, Canada recruited through radio and newspaper advertisements. The semi-structured questionnaire was based on Prochaska and Di Clemente's (1983) 'stages of change' model. The researchers found that gamblers who recovered on their own met fewer of the psychiatric diagnostic criteria than those who sought professional treatment, suggesting that those who recover on their own tend to have less severe difficulties than those who seek professional treatment. Recovered gamblers were most likely to report that 'negative emotions' and 'financial concerns' led them to resolve their gambling problems. Recovered gamblers were also most likely to cite 'financial status changes', 'recall of problems', 'gaining self-respect' and experiencing a 'sense of accomplishment' as factors that influenced maintenance of recovery. The major reason that those gamblers did not seek treatment was the desire to handle the problem themselves.

In addition to the Abbott, Williams and Volberg (1999, 2004) study, a number of studies referred to previously in the section on prospective research on problem development also examined natural or self recovery. For example, Shaffer and colleagues examined the 'natural history' of gambling problems in a group of casino employees in the U.S. (Shaffer & Hall, 2002; Shaffer, Vander Bilt & Hall, 1999). Casino employees represent a highly vulnerable segment of the population because of their greater access and exposure to gambling compared to the general public. Whilst casino employees were found to have a higher rate of gambling disorders compared with the general population, data from a group of casino employees assessed at three points approximately 12 months apart showed that, among the 639 employees for whom full data were available, 23% improved their gambling status over the course of the study whilst 12% became more 'disordered'. Amongst those employees, nine percent moved to a healthier state at some point during the course of the study and maintained the change, 10% moved to a more disordered state during the course of the study and 1.3% moved to a more disordered state and maintained the change. There were few meaningful predictors of gambling problems in that group, with only disabling depression and dissatisfaction with one's personal life predicting a lowered SOGS score one year later (Shaffer & Hall, 2002). The authors note that the study is limited, in particular because of considerable attrition from the original sample. Respondents who chose not to participate in the study, dropped out, left the employment of the casino in question, or were not involved in the follow-up assessments may have exhibited very different patterns of behaviour from the improving pattern noted amongst the participants. Nevertheless, as mentioned earlier, like the New Zealand and Canadian studies, those data challenge the notion of pathological gambling as a chronic and progressive disorder.

Adolescents and young adults are other subgroups in the population that appear to be particularly vulnerable to gambling problems. Slutske, Jackson and Sher (2003) report on aggregate- and individual-level developmental trajectories of problem gambling in a group of 192 young adults from the Midwestern U.S. aged between 18 and 29 years and assessed at four points in time. The results of that study present an apparent contradiction, with stable past-year prevalence rates of two to three percent in spite of significant incidence rates (experiencing a gambling problem for the first time) of one to two percent at each time point. However, the authors note that the aggregate statistics in that study mask considerable individual variation as well as substantial rates of 'negative incidence' where individuals classified as problem or more severe pathological gamblers at one point in time no longer met criteria at a later point in time. As with other more representative community samples, the results of that study suggest that natural recovery may be the rule rather than the exception, particularly amongst sub-clinical problem gamblers.

Research on natural recovery, amongst alcohol abusers as well as amongst problem gamblers, has been plagued by methodological challenges, including small sample sizes, failure to report detailed drinking (or gambling) histories and related consequences, short resolution periods, inclusion of subjects who have received prior treatment along with those who had no prior treatment, failure to separate abstinent from non-abstinent outcomes and failure to include a control group (Sobell, Sobell & Toneatto, 1992). Future research on natural recovery among problem gamblers should build on those lessons. Abbott, Williams and Volberg (2004) further recommend that a specified time frame be required for the presentation of signs and symptoms of problem gambling and that provision be made for 'in remission' diagnoses.

The likelihood that natural recovery is common among problem gamblers provides hope for effectively preventing (reducing the incidence of) gambling disorders in the community (Abbott, Williams & Volberg, 2004). If problem gamblers' behaviour is as susceptible to change as the preceding few studies indicate, prevention messages could be targeted to specific groups in the population most at-risk for progression to pathological gambling. It would also

be possible to target specific behaviours associated with progression towards more problematic gambling. Finally, given the relationship between problem gambling and hazardous drinking, treatment initiatives are needed to screen for gambling problems in alcohol treatment programmes and either refer for specialty gambling treatment or train providers in effective approaches to treating gambling problems among substance abusers.

Knowledge gaps

In a report to the (U.S.) Substance Abuse and Mental Health Services Administration, Rugle et al (2001) identify a range of gaps in our knowledge of problem gambling treatment. They note that the gambling treatment field lacks an adequate knowledge base to answer the essential question of the optimal, most cost-effective configuration of services for different groups of problem gamblers. Matching problem gamblers to the most cost-effective treatments requires comprehensive assessment tools to identify patient problems and needs, placement criteria to ensure placement in the appropriate setting and intensity of care and a means of facilitating movement through a continuum of treatment services. Another important research issue is the question of what benefits are obtained by providing treatment and whether those benefits are worth the cost of treatment. Finally, there is little known about the factors that influence treatment retention and success.

Since most problem gambling treatment in the U.S. is delivered in multimodal programmes, it is important that more is learned about which elements of those programmes are most helpful for clients. Furthermore, although group therapy is the predominant treatment method in most programmes internationally, little is known about how the process of group therapy works for problem gamblers. Finally, although many treatment programmes (particularly those in North America) incorporate elements of the Gamblers Anonymous approach or require clients to attend G.A. meetings, there is little known about the efficacy of G.A. as a stand-alone intervention or as an adjunct to formal treatment.

Whilst more and larger studies of treatment outcomes are needed, more evaluative studies to help define current best practices are also required. For example, studies of existing treatment programmes could assess the relative benefits or drawbacks of providing treatment exclusively for problem gamblers compared with combining problem gambling and substance abuse treatment approaches. Other areas where evaluative studies are needed are in identifying the most effective screening and assessment models, assessing the effectiveness of outreach programmes to underserved populations, family interventions and approaches for enhancing treatment engagement, retention and outcomes. As Jackson, Thomas and Blaszczynski (2003) suggest, further research is also needed to identify clinician variables that have an impact on treatment efficacy. Finally, evaluative studies would be useful to begin defining relevant variables to be considered in making decisions regarding treatment intensity.

It is important to recognise that some groups with high rates of problem gambling are under-represented in treatment study populations. Whilst our understanding of women problem gamblers is improving (Franklin & Rugle, 2004), there is no research on interventions that might be effective with problem gamblers in the criminal justice system[9]. Other groups requiring research attention in terms of treatment effectiveness include youth, older adults, members of different ethnic groups and the families of problem gamblers.

[9] At the annual conference of the National Council on Problem Gambling in June 2004, Marotta and Walsh (2004) reported on a pilot project in Oregon to provide a brief intervention to women prisoners just prior to their release into the community.

There have been no evaluations of the best approaches to providing problem gambling treatment. With problem gambling treatment programmes commonly located in substance abuse treatment programmes, problem gambling clients are generally combined with substance abuse clients in treatment groups. There has been no research to assess the relative benefits of such generalist approaches compared with specialised problem gambling treatment programmes. Clinical experience suggests that attempts to 'mainstream' problem gamblers into substance abuse programmes without providing training and supervision for staff on problem gambling specific issues and without providing specific content on problem gambling has not been effective (Rugle et al, 2001).

Finally, research is needed to identify the most appropriate education, training and certification criteria for professionals who treat problem gambling clients and their families. There is a need to determine what counselling knowledge and skills may readily transfer from substance abuse and mental health treatment and what knowledge and skills may need to be specifically developed for gambling treatment.

3.3.2.3 How effective are problem gambling services?

Many approaches have been used to help problem gamblers overcome their gambling and related problems. Reference has been made to the major forms of psychotherapy, counselling and mutual help involved. Blaszczynski and Silove (1995), Gambino and Cummings (1989), Lopez-Viets and Miller (1997), National Research Council (1999), Petry and Armentano (1999) and Walker (1992, 1993) provide detailed accounts of these interventions. Reference has also been made to recent pharmacological treatments and self help methods. This section examines what is known about the effectiveness of these various approaches.

From reading a selection of evaluative studies and reference to more comprehensive reviews it is evident that while there are many accounts of problem gambling interventions, little is known about their effectiveness. Even less is known about the *relative* effectiveness of different approaches. In large part, this is because most outcome studies have serious methodological shortcomings. This lack of knowledge about what works is somewhat surprising given that mutual help and professional interventions have been used with problem gamblers for many years.

All of the general approaches and most of the more specific interventions used with problem gamblers have been employed previously with other mental health problems including addictive disorders. Many have been more adequately evaluated in these other contexts. To some extent this wider outcome evaluation literature has assisted the selection of interventions to use with problem gamblers. More careful examination of this literature could further help with the adaptation and development of interventions that are likely to be efficacious. Petry (2002) has taken this approach with respect to effective treatments for substance use disorders, describing psychotherapeutic and pharmacological treatments that could be translated to problem gambling. Her article also highlights the overlap between substance use disorders, pathological gambling and some other mental disorders and the importance of evaluating combined interventions, including combinations of psychotherapy and pharmacotherapy.

With respect to the more general outcome evaluation literature, various reviews have concluded that people who receive counselling or psychotherapy for any of a wide variety of mental health problems and addictions generally do better than controls who do not receive treatment (Abbott, 1991; Carroll et al, 1994). From this literature it also appears that, irrespective of the particular type of therapy, most clients who show initial improvement maintain it, albeit that probability of relapse typically increases with time. It is also evident that clear cut demonstrations of the superiority of one type of intervention over another are relatively rare.

For most people and problems, this suggests that any of a variety of methods would do equally well. However, for some conditions, particular therapeutic interventions have been demonstrated to be more effective than others. The lack of differential effects between many therapies may be a consequence of common factors such as client motivation to change, therapist empathy and active listening and therapist and client expectations of success. A number of studies have demonstrated that personal qualities of therapists and clients and the nature of the interaction between them have more to do with success than the particular method or type of therapy used.

Given the foregoing, it could be expected that similar findings would pertain to the treatment of problem gambling. From earlier reviews of gambling treatment research, while noting that many outcome studies have serious deficiencies, it appears that problem gamblers generally respond well and that many, probably most, benefit from treatment. It is less clear how durable these benefits are and how treated clients compare, long-term, with comparable problem gamblers who do not receive professional help. It is important to recall that the few prospective general population studies conducted to date suggest that problem resolution or reduction is commonplace in the absence of treatment, especially among people with less severe problems and/or absence of comorbid disorders. This highlights the importance of including appropriate control groups in treatment evaluations, particularly no treatment or waiting list controls, adequately describing participants' problem severity and comorbidities, and incorporating long-term follow-up assessments.

While most forms of evaluation provide some information about therapeutic interventions and their possible efficacy, demonstration of effectiveness requires the completion of randomised controlled trials (RCTs). The minimum requirement for classification as a RCT is randomised allocation of participants to an experimental treatment group and at least one control group. While RCTs are important in the demonstration of effectiveness, they vary in terms of methodological quality and the confidence that can be accorded to their findings. The American Psychological Association advises that treatments should not be regarded as empirically validated until shown to be efficacious in at least two RCTs conducted by different independent investigators (Kazdin, 2001). Furthermore, the treatment in question should be detailed in a practice manual, enabling replication and facilitating clinical application. Ideally, outcome research will not only determine whether an intervention is effective, it will also ascertain how effective it is and how it compares in this regard with other interventions.

Oakley-Browne, Adams and Mobberley (2004) conducted an extensive international search of published and unpublished sources to locate RCT evaluations of interventions for pathological gambling. Psychological, pharmacological, social and systems approaches were eligible for inclusion. Only four studies, all psychological treatments, met RCT criteria (Echeburúa, Baez & Fernandez-Montalvo, 1996; McConaghy, Blaszczynski & Frankova, 1983; McConaghy et al, 1988; Sylvain, Ladouceur & Boisvert, 1997). All four enabled comparison of an active treatment with a placebo or waiting list control group. These studies had small samples, were of poor methodological quality, varied in terms of outcome measures and in three cases had relatively short follow-ups. The reviewers concluded that behavioural (imaginal desensitisation) or cognitive-behavioural interventions are of "modest to moderate benefit" and are "probably effective, in the short term".

Another review, using similar selection criteria, identified 11 RCTs (Toneatto & Ladouceur, 2003). Apart from the four studies cited in the preceding paragraph, pharmacological, minimal intervention and self-help trials were included, along with a few additional psychological (behavioural, cognitive-behavioural and cognitive) studies. As in the previous review, widespread design and methodological deficiencies were noted. While concluding that behavioural, cognitive and mixes of these approaches have the most empirical support and are more effective than no treatment, it was noted that it cannot be determined which specific type

is most effective or whether these treatment approaches are more effective than others. There were also indications that, for most problem gamblers, short-term and less intense interventions were as effective as longer, more intensive therapies. Evidence for pharmacological efficacy was suggestive but not convincing from the studies considered. On balance, while interventions from the cognitive-behavioural spectrum appear to be the most promising and cost-effective, it would be premature to foreclose on other options. For the most part, other approaches have not been rigorously examined. They may or may not be found to be effective.

From the foregoing, it is apparent that problem gambling outcome research is at an early stage of development. Most existing interventions have not been formally evaluated. While some appear to be effective, it is not clear how effective they are and how they compare in this regard with other interventions. Further refinement of cognitive, behavioural and pharmacological approaches is warranted, taking note of the need to increase study sample size to allow effects to be detected and the more effective components to be identified and further developed. Other approaches, especially those that are currently widely used, also require evaluation. Further work is needed to standardise promising and effective interventions in manual form, thereby enabling independent replication of previous evaluations and enhancing service delivery. The conceptual rigour and methodological quality of future studies require enhancement.

In light of research on the development of problem gambling, problem gambler subtypes and common comorbidities, it is clearly important to determine the efficacy of different interventions with subgroups that may have diverse treatment needs. Given this diversity, it is most unlikely that any one glove fits all. It is possible that some approaches will be highly effective with some problem gamblers but ineffective with others. Lumping heterogeneous groups together and failing to take the diversity into account when analysing outcome findings could inflate variance and obscure treatment effects. More work is also required to compare the effects of interventions directed towards reduced, controlled gambling with those directed towards abstinence and how sustainable these outcomes are for different types of problem gambler.

Recently, Tavares, Zilberman and el-Guebaly (2003) examined whether there were approaches specific to the treatment of pathological gambling apart from approaches modelled after existing addiction treatment models. A review of published literature revealed that most of the cognitive-behavioural techniques used in the treatment of pathological gambling, including relapse prevention, problem solving and social skill training, are shared by gambling and addictions treatment. Treatment for pathological gambling does include some unique elements with respect to the way specific interventions such as cognitive restructuring, in vivo exposure and imaginal desensitisation are implemented. The authors suggest that the blending of those new techniques into a multimodal addiction treatment programme could improve outcomes for pathological gamblers entering treatment.

There is very little research on barriers to treatment for problem gambling. A recent comparison of active and resolved gamblers by Hodgins and el-Guebaly (2000) found that both groups were most likely to indicate that a desire to handle the problem on their own was the greatest factor in not seeking formal treatment. Other factors included ignorance of the availability of treatment, stigma, embarrassment or pride, and not feeling that they had a problem.

Another, more recent study used a telephone survey to explore attitudes in the general population in Queensland, Australia that might prevent a person from seeking treatment for a gambling problem (Rockloff & Schofield, 2004). The authors used exploratory factor analysis to identify five potential barriers to treatment. These included availability, stigma, cost, uncertainty and avoidance. Relative to those with few problems, respondents who had numerous gambling problems, based on the SOGS, were more concerned about treatment costs,

and the availability and effectiveness of treatment. The authors recommend future research to address the question of whether these factors predict treatment seeking behaviour and how they interact with factors that indicate readiness to change as well as the cognitive distortions characteristic of problem gamblers.

In June 2004, the Reviewing Team learned of an evaluation that is presently underway in Québec, Canada (Chevalier, personal communication). The evaluation is being carried out by the Québec National Institute of Public Health and includes interviews at the beginning of implementation of the province's problem gambling treatment programme with representatives of the eight regional health boards, with the clinical directors of the 20-plus facilities involved in the programme, interviews at 18 to 24 months after implementation with representatives of the Ministry of Health and Social Services, with 24 randomly selected therapists, and with 22 randomly selected clients. The evaluation also includes an Email questionnaire distributed to all 100-plus therapists involved in the programme and review of records of all 4,630 clients seen in the programme. Finally, the evaluation includes review of all telephone helpline data as well as organisation and implementation of a forum of stakeholders to discuss the preliminary results of the evaluation. The final results of the evaluation are expected to be publicly released in 2005.

3.3.2.4 Innovative practice

There are a growing number of examples of innovative practice in problem gambling services. Whilst several of those interventions are described here, as yet none have undergone rigorous evaluation.

Brief interventions

Recent research suggests that problem gamblers at different levels of severity and/or with differing co-occurring psychiatric disorders may benefit from different types or levels of intervention. While natural recovery is most likely to be successful among at-risk and the least severe problem gamblers, another group of more severely affected problem gamblers or 'early stage' pathological gamblers may be able to limit or stop gambling with brief, or minimal, interventions. Self-help workbooks, telephone counselling and single face-to-face sessions with a counsellor are new, brief early (or secondary) interventions that are just beginning to be assessed in Canada and Australia. Whilst the results of the few studies that have been carried out are promising, further research in this area is sorely needed.

In Canada, Hodgins, Currie and el-Guebaly (2001) compared three treatment conditions: brief motivational enhancement plus a self-help work book, self-help workbook alone, and a waiting list control condition. Subjects were allowed to set their own goal in terms of either abstinence or level of controlled gambling. Eighty-four percent of participants reported a significant reduction in their gambling and 25% reported being abstinent in the six-month period prior to the 12-month follow-up. Subjects in the waiting list group reported less improvement than did subjects in the group that received motivational enhancement along with the workbook. Those receiving just the workbook did not differ significantly from either the waiting list group or the workbook plus motivational enhancement group. Participants receiving the workbook and the motivational interview but not those receiving only the workbook had better outcomes at three and six months. The advantage of the motivational interview and workbook condition was only maintained at 12 months by participants with less severe gambling problems. Nevertheless, the results suggest that a brief telephone and mail-based treatment for problem gambling can be effective. Unfortunately, the researchers do not report the percentage of participants who set an

initial goal of controlled gambling versus abstinence and whether a participant's initial goal had any effect on the outcome of the intervention.

Using a less satisfactory design without randomised assignment to conditions, Robson and colleagues (2002) describe a brief, six-week cognitive-behavioural treatment for individuals with less severe gambling problems in Canada. The goals of the programme were reductions in money and time spent gambling as well as in conflict at home, work and in the community. A one-year community trial of the 'Gambling Decisions' programme involving 223 individuals who responded to media advertisements and completed a screening interview was carried out. Individuals who endorsed five or more DSM-IV-based items were referred to an abstinence-based treatment programme. Additional exclusion criteria included suicidality, other serious mental health problems, criminal sentencing, excessive spending on gambling and alcoholism. Elements of the programme included self-guided therapy, minimal counselling or group-guided therapy and weekly counselling. Participants were permitted to select the elements of their programme themselves. Sixty participants completed four assessments at pre-treatment, post-treatment, six months and twelve months. The results suggest that individuals who completed the programme were able to reduce and maintain reductions in time and money spent gambling. While the results of this brief intervention are promising, further research is needed to determine if these changes were due to the programme, to changes in the natural course of problem gambling or to self-directed adjustments in a group of individuals motivated to change.

In a review of current practice in problem gambling services in Victoria, Australia, Jackson, Thomas and Blaszczynski (2003) reviewed several innovative approaches that are under development in that state. For example, single session consultations (SSCs) are interventions lasting approximately two hours with the problem gambler and his/her family and involving a counselling team of four, with two counsellors conducting the session and two observing. The approach was developed in an effort to maximise the impact of treatment in spite of the fact that many clients never attended more than one session of a planned series of counselling sessions. The approach is based on systemic family therapy and the 'stages of change' model. Families are followed up by telephone one month later to determine if the intervention has made a difference and whether the session should be supplemented with ongoing counselling. A small independent study of the intervention reviewed 15 SSCs with follow-up periods ranging from one to twelve months (Gavan & Slowo, 1997). Those followed up reported strong acceptance of the approach and high levels of satisfaction with the process and outcome.

Takushi et al (2004) provide a promising description of the development of a single session 'indicated prevention intervention' among college student gamblers in Washington State, U.S. 'Indicated prevention' approaches are designed to identify at-risk individuals displaying moderate problem behaviours and prevent progression to more severe disorder (Institute of Medicine, 1990). Based on current knowledge of alcohol use and abuse among college students, high rates of problem gambling among college students, and known similarities and likely common underlying factors for alcohol and gambling problems, Takushi et al (2004) modified their single session alcohol-focused 'BASICS' intervention for gambling and added additional cognitive correction skills training as well as some unique features (e.g. a focus on those who gamble and drink at the same time, exploration of personalised normative feedback and personal expectations of reward from gambling that can be modified). A pilot study was conducted with 21 students aged 18-21 years who were screened for gambling problems and randomly assigned to an experimental or assessment-only control group. Assessments were conducted at baseline and at three months. At follow-up, both groups showed reductions in problem gambling behaviour as well as in gambling participation (although this decline was greater for the experimental group). Participants in the experimental group were more likely than those in the control group to report a reduction in the number of episodes of drinking and gambling at the same time. While this study was too small to detect the small to moderate treatment effects common to prevention trials and was limited by the exclusive use of self-

report, the researchers conclude that the approach has promise and they plan future, larger-scale longitudinal research on this intervention.

Telephone counselling

Since its inception in England in the 1950s, telephone counselling has become an increasingly common method for individuals and groups who experience a wide range of physical and psychological difficulties to access help without ever physically meeting with a therapist. Telephone counselling services can be divided into generalist services that target the whole community and provide counselling for a wide range of difficulties, and specialist services that either target a particular segment of the community or address a particular issue. Specialist services can be further subdivided into those that provide crisis counselling and referral and those that offer continued support.

Advantages offered by telephone counselling include relative anonymity and lack of physical presence which are likely to equalise power relationships and prevent intimidation, a supportive net between face-to-face counselling sessions, ease of communication as well as easier termination of the therapeutic relationship, increased access for those with limited mobility, and time and travel savings. The major disadvantage of telephone counselling is the absence of nonverbal cues.

A very recent study comparing the usual primary care for depression with telephone care management alone and with telephone care management enhanced by telephone psychotherapy supports the promise of this cost-effective approach to the treatment of mental health and addictive disorders (Simon et al, 2004). In this study, 600 U.S. adults beginning antidepressant treatment were randomly assigned to one of three conditions: medication with primary care follow-ups, typical care plus at least three ‘care management’ telephone calls from clinicians who checked on medication use and provided feedback, and typical care plus care management plus eight sessions of cognitive-behavioural therapy delivered by telephone. Six months after treatment began, 80% of those who received telephone psychotherapy reported a decline in depression symptoms, compared with 66% of the care-management group and 55% of those in the typical care group. Participants who received telephone psychotherapy also reported the highest levels of satisfaction with their treatment.

Coman and Burrows (2002) have reported on the development, implementation and evaluation of a telephone approach to problem gambling group counselling in Australia. Thirty-four individuals with self-reported gambling difficulties who sought help from the Victoria Mental Health Foundation or one of the Break Even problem gambling counselling services in the state participated in the study which consisted of six weeks of telephone group counselling. A cognitive-behavioural approach was adopted because research evidence suggested the effectiveness of this approach with problem gambling and additional evidence suggested that this approach can be effectively delivered via telephone. Participants explored myths and misconceptions about gambling, considered rates of return for different gambling types, and explored harm minimisation strategies and alternative activities. Participants completed questionnaires that assessed gambling attitudes and behaviour and psychological state at three points in time (pre-programme, one week following completion and six months after completion). Analysis of those data showed that the telephone counselling programme had a positive effect on participants’ gambling attitudes and behaviours. There were significant reductions in overall life difficulties as well as in state and trait anxiety between the first and third time points. However, improvements in ‘illusion of control’ and ‘control over gambling’ at the second time point were not maintained at the third time point. The authors speculate that some dimensions of control are resistant to change or require more direct interventions. Limitations to this study include the small sample size and the self-selected nature of the

participants. Nevertheless, the study suggests that agencies that provide group counselling for problem gamblers should consider group telephone counselling as an alternative or adjunct mechanism for service delivery.

The Centre for Addiction and Mental Health (CAMH) in Ontario, Canada provides telephone counselling after initial in-person visits, particularly when there are barriers to physical attendance. There is an evaluation presently underway at CAMH with funding from the Ontario Problem Gambling Research Centre to assess this telephone counselling programme which involves use of a six-module cognitive-behavioural therapy manual to guide telephone contacts with clients. Clients are not required to go through the modules in any particular order or at a specified pace. Data are being collected at baseline, end-of-treatment and at six months after completion. The focus of this evaluation is on whether this approach is effective and on what is the best way to deliver the service (Toneatto, personal communication).

The Gambling Helpline in New Zealand offers telephone counselling to callers who live in rural or remote areas as well as to those who are unwilling to engage in face-to-face counselling. The approach of the Gambling Helpline involves a multi-session, structured intervention based on a self-help manual, similar to the approach being taken in Ontario. A more general approach based on motivational interviewing and involving a smaller number of counselling sessions is sometimes used with callers, particularly those who are already engaged in face-to-face counselling (Clifford, personal communication).

Online help for problem gamblers

Stigma and negative attitudes toward formal treatment have been identified as key reasons that people with addiction problems avoid seeking help (Sobell, Ellingstad & Sobell, 2000). Research on naturally recovered problem gamblers suggests that, as with other disorders, stigma and negative attitudes toward treatment are important reasons why individuals with gambling-related difficulties do not seek help (Hodgins & el-Guebaly, 2000).

People are increasingly seeking help for a variety of medical and personal problems through the Internet (Houston, Cooper & Ford, 2002). Dissatisfaction with traditional medical models, particularly for solving emotional disorders, and destigmatisation of seeking peer support has fuelled this growth. There are online 'mutual aid' groups for all types of problems, even those that have no face-to-face counterpart, such as survivors of traumatic car accidents or victims of stalkers (King & Moreggi, 1998). Madara (1997) notes that online mutual aid groups offer social support, practical information, shared experiences, positive role models, helper therapy, empowerment, professional support and advocacy efforts as well as '24-hour' availability, selective participation, anonymity and privacy, and the possibility of recording transmissions for later perusal.

Most people apparently use online support as an adjunct to more traditional efforts at recovery. A survey of 52 people using online mutual aid groups found that half of the respondents were currently in individual psychotherapy and 60% were attending traditional group therapy at the same time. The greatest benefits of online mutual aid cited by those respondents were the 'opportunity to share experiences with others', 'the convenience of the service', and 'the variety of the participants' (King & Moreggi, 1998).

Online support groups are distinct from online mutual aid groups in that they are organised and led by a trained mental health professional. One of the earliest online support groups was a four-week psycho-educational group run by Herman (1997) for people having trouble making career decisions. Another early effort evaluated a similar approach for people with HIV/AIDS and for women with breast cancer (Gustafson et al, 1994). Outcome data from those groups

found that using the approach helped improve quality of life and decreased use of health care resources among participants.

Online help for problem gambling can be difficult to find because of the many Internet gambling enterprises that are identified utilising search engines to find sites using the term 'problem gambling online'. A recent search using the terms 'problem gambling' and 'gambling problems' identified 28 groups on MSN Groups; however, three of those groups were for online casino or sports betting sites, three were general addiction recovery groups, and one was an anti-casino group. Similarly, Yahoo Groups lists 77 groups devoted to gambling problems in its Addiction and Recovery section although only about half of those groups appear to be focused on gambling problems and recovery. However, those two searches identified a substantial number of mutual aid groups for problem gamblers as well as for family members of problem gamblers.

The best-known U.S. online mutual aid group is probably CGHub which describes itself as 'an open cyber interactive recovery community' (http://cghub.homestead.com/). CGHub is not affiliated with G.A. but supports the efforts of that organisation and subscribes to much of the G.A. philosophy. The website features an extensive information and resource page with links to G.A., GamAnon, state and private treatment programmes, specialised websites such as Women Helping Women and Gamblinghelper.com, and publications. The website hosts asynchronous email exchanges and open chat rooms at scheduled times as well as a 'pressure relief' financial forum. There is a similar site for problem gamblers in South Africa which is sponsored and maintained by G.A. Gauteng Intergroup members (http://www.cghub.co.za/). While the efforts and activities of CGHub have not been formally evaluated, it is likely that the benefits and challenges common to all online mutual aid groups characterise that website too.

A recent review by McGowan (2003) focused on the specialised website for women problem gamblers, Women Helping Women (WHW, http://www.femalegamblers.org). That website, hosted by the Arizona Council on Compulsive Gambling, features a monthly newsletter designed to support women's recovery from gambling problems. WHW serves information and advocacy functions and all of its founding members belong to G.A. WHW is particularly responsive to the male-dominated dynamics of many G.A. groups and meets a need for gender-specific support expressed by many women in recovery.

Cooper (2004) reports on what is probably the first, and to date only, study of an online mutual aid group for problem gamblers. That study explored two issues: whether problem gamblers used an Internet website as their primary approach to recovery or to augment other, more traditional forms of help and whether there were benefits for problem gamblers in using the website. Fifty individuals with SOGS scores greater than five were recruited via broad notes of solicitation posted on a problem gambling recovery website (GAWeb) or via individual electronic invitation to individuals who had provided their correct Email address to the website. A 41-item questionnaire was sent electronically to all individuals who responded to the broad solicitation or the individual invitation and who met the inclusion criteria. Quantitative and qualitative analyses were employed.

The participants were generally well-educated and evenly divided by gender. The group's gambling problems were substantial and 80% of the respondents reported seeking more traditional forms of help at some point in their lives, with half of them attending specialist treatment in addition to Gamblers Anonymous. Twenty per cent of the sample had not attended either G.A. or formal treatment. That group tended to be younger, female, and had somewhat lower SOGS scores.

Despite a high rate of help-seeking, 78% of the sample indicated that they had avoided self-help or specialist treatment at some point with the majority citing stigma and reluctance to disclose

personal information as their main reasons. Women were significantly more likely than men to say that inconvenience was an important reason for avoiding G.A. or formal treatment. Participants reported that the opportunity to 'lurk' (anonymously reading the postings of others without detection) was one of the most beneficial aspects of that form of help-seeking. Seventy percent of the participants claimed that the website had positive impacts on their gambling behaviour, such as new personal relationships, peer support, help in times of crisis and maintenance of abstinence. Participants particularly appreciated the ease and immediacy of access to the website regardless of factors such as weather or geography and many also commented on the connection between their anonymity in that forum and their level of honesty. Whilst online assistance may not be appropriate for all problem gamblers, Cooper (2004) argues that the Internet can play a unique role in the process of moving treatment-resistant 'pre-contemplators' into the 'contemplation' and 'action' stages of the recovery process. Griffiths and Cooper (2003) also argue that it is time for policy makers, system planners and treatment providers to consider the potential of the Internet for extending cost-effective help to problem gamblers as well as to other groups that avoid seeking help because of stigma and inconvenience.

Finally, another promising innovation arose out of the recognition that youth were not presenting in conventional problem gambling treatment programmes in Victoria, Australia. The intervention was based on findings related to computer-mediated therapy, or the use of computers, to help build therapeutic relationships in remote areas and the use of Email as a particular vehicle for online counselling (Murphy & Mitchell, 1998; Sanders & Rosenfield, 1998). A six-month project to pilot an online support service for youth led to the development of the 'G-mail intervention'. The intervention is accessible, convenient and anonymous. A further benefit is that clients can regularly re-access their communications with counselling staff by saving copies of Emails. Perceived limitations include the unknown effectiveness of the approach, the lack of non-verbal information available to either counsellor or client, security and confidentiality, the need for ready access to computer and Internet facilities, and the lack of appropriateness of Email counselling for people with some complicating issues, such as suicidality, domestic violence or a psychiatric disorder which involves distortions of reality. Although that intervention was scheduled to commence operation in 2003, there does not yet appear to have been any evaluation of the service.

While online services are a promising avenue for providing help for problem gamblers and their families, there is as yet little information available to judge which of these approaches is most promising. As online services for problem gamblers develop, it will be important to assure that these services meet standards for ethical practice. Several organisations, including the British Association for Counselling and Psychotherapy as well as the (U.S.) American Counselling Association, have published guidelines for ethical practice in providing online counselling that may be of utility in this context.

3.3.3 United Kingdom perspective

There exists a shortage of treatment options for the estimated 275,000 to 370,000 problem gamblers in the U.K. and a paucity of research on the effectiveness of the facilities and services that do exist for them. Additionally, it would appear that few problem gamblers in the U.K. ever seek help. Less than one in five of the problem gamblers surveyed by the British prevalence study had ever sought help and whilst over half of the sample had heard of Gamblers Anonymous, other treatment providers including GamCare and GamAnon were virtually unknown (Sproston et al, 2000).

In general, the U.K. scene is dominated by three main problem gambling service providers: GamCare, the national organisation for education, treatment and prevention of problem

gambling; the self-help group Gamblers Anonymous, along with its sister organisation, GamAnon; and the residential facility of Gordon House. In addition, a range of what can be called 'secondary providers', voluntary counselling agencies, offer advice to individuals who present with other problems related to, for example, drug and alcohol consumption, and mental health and financial issues, and may 'catch' problem gamblers in their general net of advice. The recognition of problem gambling among these agencies is uneven, however, and as very few records are kept, it is difficult to estimate the numbers of gamblers who access these services or evaluate any benefit they might derive from them.

A more detailed analysis of U.K. treatment services, drawn from the publications and reports of the services themselves, is outlined below. Where relevant, academic studies regarding the effectiveness of those services, as well as literature produced by practitioners, are included in the review although it should be noted that the materials are very limited. The majority of the works cited are U.K. studies, although given the lack of research from this country, it has occasionally been necessary to mention the international evidence, in order to highlight an issue or draw attention to an area that is particularly significant.

3.3.3.1 Primary Services

Gamblers Anonymous

Gamblers Anonymous is a self-help organisation run by, and for, problem gamblers. It was founded in the U.K. in 1962 and now organises meetings in approximately 150 locations, making it the largest and longest running provider of treatment for problem gamblers in the country. Its sister organisation, GamAnon, provides a similar service for those affected by problem gamblers. Both operate a 24-hour telephone helpline service and a website and organise weekly meetings staffed by volunteers, which provide advice and information for problem gamblers and the public. Appointed members with responsibility for prison liaison and public relations also exist in most regions.

Unfortunately, however, very little in the way of reliable evidence exists on which to evaluate the effectiveness of either organisation. Both are relatively secretive and do not publicise their activities or keep formal records and they are reluctant to discuss their services with 'outsiders', such as researchers or the media. G.A. have reported an intention to gather statistics from their local groups and telephone helpline volunteers, which will be published in 2004 and which should provide some much-needed information on the service. In the meantime, publications by Bellringer (1999), Moody (1990) and online publications by G.A. itself do provide some insights into the working of the organisation, if not its effectiveness.

G.A. report that approximately a quarter of their membership suffers from problems with fruit machines and that this is frequently the only type of gambling with which they have any experience or problems. Membership is mainly male, with women identified overwhelmingly with GamAnon (www.gamblersanonymous.org.uk).

G.A. follows a 'twelve-step' approach, modelled on Alcoholics Anonymous, which consists of a quasi-spiritual philosophy based on the premise that problem gambling is an incurable disease that can only be controlled through total abstinence from all forms of gambling activity. The twelve steps provide statements as to how the individual should overcome their disorder, from *acceptance* (steps 1-3) of the gambling problem, through to *repair* (steps 4-9) of the harm it has caused, and *memory* (steps 10-12). Throughout, gamblers need to remember that the disease is always dormant and that they must be vigilant in order to prevent its recurrence. Each meeting is chaired by a member who invites other members to 'give a therapy' by describing their gambling problems as an opening to group discussion. Total honesty is encouraged and

promoted as a vital aspect of the therapeutic process. Longer established members offer advice and encouragement, although no single individual has an 'expert' role in the organisation and none are (necessarily) professional counsellors or therapists.

GamAnon

GamAnon provides mutual support and encouragement for the friends and families of problem gamblers, although membership tends to be mainly wives. The weekly meetings are held at the same time as those of G.A., although in separate rooms and the two fellowships do not share information about each other.

Evaluation

Anecdotal reports suggest that many individuals find the supportive fellowship of G.A. extremely helpful with, for example, Bellringer (1999) arguing that it can provide a powerful framework for addressing dependency, providing problem gamblers with "a purpose, a reason, a faith and a code of conduct all of its own" (Bellringer, 1999, p.132). However, he also cautions that its abstinence approach may not suit everyone suggesting, for example, that young people may benefit less than older members who have been heavy gamblers for many years. At the same time, its effectiveness for women is less clear, especially as Bellringer (1999) has reported that its gender bias may make the minority of female members feel uncomfortable in G.A. meetings.

There are others who question its overall effectiveness. Moody (2004), for example, admits that only a small number of problem gamblers succeed in rehabilitating themselves through G.A. The main reason cited is that many who attend meetings are not ready to stop gambling and have other problems (such as debt) whose resolution is prioritised and presumably separated from, gambling issues. Similarly, the few U.K. studies of the organisation found high dropout levels (Brown, 1985, 1986, 1987a,b,c; McCormick & Brown, 1988; Stewart & Brown, 1988; Turner & Saunders, 1990).

In a qualitative study of two Welsh G.A. groups, Turner and Saunders (1990) conducted participant observation, attending 32 meetings over a twelve-month period. The authors' observations revealed high drop out rates after the attendees' first meeting, which were attributed to a rejection of the disease model promoted by the organisation. However, they noted that an acceptance of the same model also provided motivation to continue with attendance for others and overall, they noted the generally positive effect of relatives' attendance at GamAnon on membership. Due to the subjective nature of the observations made in the study, few definite conclusions could be drawn, however, and overall effectiveness could not be judged.

In a series of papers, Brown (1985, 1986, 1987a,b,c) reported the results from an outcome evaluation study of the records of attendance, dropouts and successful abstentions of a total of 14 G.A. groups in Scotland. A retrospective part of the study looked at the records of 232 members, dating back over an average period of five years, while a prospective part followed the progress of 20 attendees over approximately three months. Results from the retrospective study showed high levels of dropping out: almost 50% left in the first three weeks, 59% had left within five weeks and almost 70% by the tenth week. Brown estimated that ultimately only 7.5% of the group achieved a 'successful' outcome, defined as one year free from gambling. In addition, many attendees were classed as 'non-achieving continuers' - individuals who continued to attend meetings but who also continued to gamble. In conclusion, using the criterion of continued, unbroken abstinence, G.A. did not appear particularly effective

for the majority of members. However, the author pointed to methodological difficulties which may have contributed to the low figures in his study, namely the problem that fluctuations in the membership of any single group in any one night could include irregular attendees, imminent relapsers and individuals with a variety of degrees of motivation, which could give an unrepresentative sample. Ultimately, although Brown notes that the failure rate is high, he also points to the positive effects the organisation has on the lives of its members and suggests that a more holistic approach should be taken when assessing the role of G.A. He reported that of the dropouts in the study, "the over-ridingly predominant picture of G.A. was of an organisation which makes considerable impact on them, is of lasting benefit to them, and continues to be highly regarded by them after they have left and/or resumed gambling" (Brown, 1985, p.274). He concluded that overall quality of life and the impact of the organisation on the gambler's relationships and career should be considered when evaluating effectiveness.

A later study (McCormick & Brown, 1988) made an attempt to interrogate the methods and judge the effectiveness of G.A. by comparing it with the 'stages of change' model of Prochaska and Di Clemente (1983). The study was based on qualitative interviews with a selection of 12 male G.A. members. A card sort was also administered to enable subjects to describe the processes involved in their recovery. Results suggested that G.A. was useful at the stages of pre-contemplation and contemplation, and became effective once the decision to stop gambling had been made, at the stages of action and maintenance. At the stage of action, the organisation provided advice and an environment in which change could be encouraged and it was a source of support and relapse avoidance in the stage of maintenance. The authors also concluded that the organisation was most effective in the recovery of severe gambling disorders. However, its small sample size and lack of longitudinal element cast doubt on the more general applicability of those findings.

GamCare

The organisation GamCare, which formed in 1997 out of the U.K. Forum on Young People and Social Change, has perhaps the highest profile of the U.K. treatment agencies and is actively involved in the provision of a range of services for problem gamblers as well as in raising public awareness of gambling and problem gambling in the U.K. through education, training and research. The organisation provides an annual breakdown of all its services in its Care Services Report and its Annual Report, which includes evaluations of counselling effectiveness.

Care services

Helpline

GamCare runs a confidential advice and counselling telephone helpline which provides crisis intervention, information delivery and referrals for anyone affected by problem gambling. The GamCare helpline serves both as a first point of contact and as a telephone counselling facility with trained counsellors who can respond to needs for repeated contact and ongoing support. 'Immediate' counselling, generally in response to crisis situations, offers the caller access to support without having to make further attempts to obtain help. First-time callers are given the opportunity to call back and speak to the same counsellor if they desire. 'Contracted' counselling is based on an agreement between the caller and the counsellor to work together on a regular basis, although such agreements range from quite flexible to those that are fixed in terms of date, length and number of sessions. A new telephone system that automatically routes callers to the first available counsellor has made it more difficult for callers to arrange fixed contracts unless they are given information about how to access a separate, dedicated line

(Scarfe, personal communication). There has been no effort to date to evaluate the effectiveness of extended telephone counselling for gambling problems in the U.K.

Arnold and colleagues (2003) note that while the approach taken by GamCare offers the advantage of moving individual callers rapidly to appropriate assistance, it results in an extremely long average call duration (17.8 minutes). Arnold et al (2003) recommend that the Trust fund a helpline separately from telephone counselling in order to reduce call duration and associated costs and clarify roles and responsibilities.

Evaluation

In 2003, 29,898 calls were made to the helpline; 73% by individuals calling for the first time. The use of a new virtual call centre facility meant that counsellors were able to respond to 97% of those calls. For the year 2002 (the latest for which data are available), GamCare carried out a pilot evaluation of the helpline service in which an independent counsellor administered a questionnaire to 42 individuals who had used the service. The majority of respondents (86%) reported a decrease in their gambling, with 14% saying it had remained the same and none reporting an increase. Callers were asked to assess improvement in four areas: motivational level, wellbeing, financial situation and relationships. Callers reported improvements in all areas, with 74% reporting improvements in motivation, 63% in wellbeing, 60% in financial situation and 52% in relationships. Satisfaction with the service was high, with 82% of callers reporting that they got what they wanted from the call and over 50% saying that their own understanding of problem gambling had improved as a result (GamCare, 2003). Although the sample size was small (42 out of an estimated caller population of nearly 22,000 in 2002), they point to a high quality service that meets the needs of problem gamblers and results in improvements in problem gambling behaviour and quality of life for the majority of callers. An overview of the service over a twelve-month period, 1997-8, is summarised by Griffiths et al (1999), although assessment of effectiveness is not provided.

Counselling

GamCare's free counselling service provides sessions for all those affected by gambling dependency. It is provided by experienced therapists and adopts an integrative approach, combining cognitive-behavioural therapy with psychodynamic therapy in order to address immediate behavioural problems as well as underlying emotional issues. Such approaches focus on attempting to modify destructive patterns of behaviour, by addressing underlying emotional problems and/or dysfunctional cognitions. During 2003, 1,351 counselling sessions were provided to 204 clients.

Evaluation

Evaluation of the counselling service is conducted using a specific outcome measure, the Christo Inventory for Gambling Services (CIGS) (Christo et al, 2000) alongside the DSM-IV and SOGS criteria for pathological gambling which allows measurement across the following areas: social functioning, general health, gambling behaviour, psychological health, occupational status, financial/legal involvement, drug/alcohol misuse, use of ongoing support and aftercare, treatment compliance and counsellor-client relationships. Clients were assessed at three, six and 12 months after treatment had ended.

At their initial assessment, 87% of clients were regularly gambling at severe levels, with 91% diagnosed as pathological gamblers according to the DSM-IV criteria. By the end of

treatment, 67% had stopped gambling and another 11% were able to reduce the severity of their gambling behaviour. After three months, 64% were gambling-free and only three percent had lapsed and resumed moderate levels of gambling. By six months, the relapse rate was seven percent and after a year, all the clients who were still on the follow-up programme were gambling free, although some had lost contact with the service by that point. Improvements were also recorded for social functioning, psychological and general health, for occupation, financial and legal affairs, drug and alcohol misuse and treatment compliance and counsellor-client relationships (GamCare, 2003). Although the analysis needs to be tested for significance, improvements were reported across all areas.

The Breakeven Project

As its London location limited access to the counselling service for many people, GamCare developed linkages with voluntary organisations in the field of drug and alcohol counselling in order to expand provision for problem gamblers throughout the country. To realise this, GamCare provided the resources to train existing counsellors in addictive behaviours, thus enabling established agencies to develop specific services for problem gamblers. There are currently seven of these Breakeven partners in the U.K. including:

- In England: The North East Council on Addiction, Aquarius, Options and Cumbria Drug and Alcohol Advisory Service
- In Wales: Islywyn Drug and Alcohol Project
- In Northern Ireland: The Parents Advice Centre
- In Scotland: The Renfrew Council on Alcohol

In addition, GamCare have attempted to provide specialised support for Chinese problem gamblers in conjunction with the Chinese Healthy Living Centre based in London.

Although not all the partners keep records, some information on the services they provide for problem gamblers is available and this is summarised below:

Cumbria Alcohol and Drug Advisory Service (CADAS) provides counselling for drug, alcohol and gambling problems throughout the Cumbria region. The organisation keeps detailed records of clients and provides an annual report. For the year 2003, around 40 problem gamblers accessed the service, approximately 75% of whom were male and whose main problem was with horse race betting, followed by fruit machine gambling. Females were regarded as a more 'hidden' group and when they did present for treatment, reported problems predominantly with scratch cards. Most clients' problems related only to gambling and were not associated with problematic drug or alcohol use. Although CADAS produce an evaluation of their service, it only refers to the categories of drugs, alcohol, health, personal and social wellbeing, and does not include gambling. In 2003, 54% of all clients showed improvements in general health but the outcomes for gamblers were not so positive. The Director of the service reported a high rate of relapse with individuals dropping in and out of treatment and experiencing ongoing and recurring problems with their gambling behaviour.

The Parents Advice Centre offers advice and support to parents and young people with family difficulties by providing a (charged) telephone helpline and a counselling service in their four regional centres. They report only a small percentage of their clients, around five percent, presenting with gambling problems and of those, most are males aged between 18 and 30 years, who experience most of their problems with horse race betting, followed by fruit machine gambling. These individuals are treated face-to-face by five specialist volunteer counsellors. Although formal records are not kept, the Centre reports a high failure rate with problem

gamblers following cycles of recovery and relapse, when they dip in and out of treatment and continue to experience ongoing, long-term problems.

Renfrew Council on Alcohol is the only agency in Scotland that provides a service for problem gamblers. It provides one-to-one counselling for gamblers, their partners and families as well as a telephone counselling helpline. Although it does not keep formal records, it was able to provide a profile of problem gamblers based on experience. Again, most clients were male, their predominant problem was with horse race betting, their problems related only to gambling and were not associated with problematic drug or alcohol use. Assessments of effectiveness were not made.

The Chinese Healthy Living Centre provides a counselling service for a range of general problems including mental health, abuse and debt as well as gambling, for the specialised needs of the Chinese community. Approximately 10% of clients suffer from gambling problems and associated problems with debt and loan sharks. Counselling is provided in two centres: in London, group counselling for up to five individuals is provided on a weekly basis, with up to a three-week wait for places, while in Birmingham, one-to-one appointments with a counsellor are organised on a need basis. A substantial amount of counselling is carried out with those asociated with the gambler, including family members, where advice is given and stress managed. However, records of this service are not kept and so evaluations of effectiveness cannot be made.

Evaluation

In summary, it appears that most of the Breakeven agencies do not keep detailed client records. Although all of these agencies report counselling a small number of problem gamblers, formal evaluations of numbers and effectiveness is not possible. Follow up surveys of clients who have stopped treatment are not undertaken by any of the service providers. However, GamCare itself provides a brief overview of the Breakeven service as part of its Care Services report and analyses client profile. For 2003, it reported that the Breakeven agencies received 261 referrals and provided 733 counselling sessions for problem gamblers. Of those, fruit machines and off- and on-course betting were the main modes of problem gambling (54% and 42%, respectively). Eighty percent of referrals were male and 37% were aged between 16 to 25 years.

The Gordon House Association

The Gordon House Association is the only dedicated residential facility for problem gamblers in the U.K. It was established in 1971 by Gordon Moody, whose association with G.A. demonstrated the need for provision for homeless problem gamblers, especially those whose gambling had led to criminal offences. Since then, it has maintained strong links with the judiciary, often providing treatment and accommodation for problem gamblers on release from prison (Bellringer, 1999).

For the year 2002-3, 101 individuals applied to the service, 91% of whom were male. The majority of entrants (44%) were between 26 and 35 years of age when they entered the House. The primary gambling mode was on- and off-course betting at 59%, followed by fruit machine gambling, at 35%.

The residential programme

The Association has 39 beds in residential programmes in two locations in Dudley and Beckenham, which are restricted to males only. In 2002, a four-bedroom house was established in Dudley for use by women.

The treatment programme is based on high levels of support and intensive counselling during a nine-month period of residency, split into four treatment phases: 'coping with today', 'coping with yesterday', 'coping with change and tomorrow' and 'coping on my own', which the gambler moves through with the aid of counselling sessions, group work and the ongoing support of other residents, until he/she is ready to move back into independent living in the wider community. The treatment programme is based on intensive specialist counselling utilising cognitive-behavioural therapy which attempts to uncover the roots of the individual's gambling problem and build the strategies and skills required to modify their behaviour and avoid the risk of relapse.

In addition to its residential programme, the Association operates a telephone counselling service, an outreach service and an internet counselling service.

Outreach service and telephone counselling

After a resident has left the Association, treatment is continued with professional outreach workers providing individual face-to-face contact, as well as group support sessions in the residential centres. Continued contact is also maintained through a generalised support network comprising individuals who have successfully completed the treatment. Additionally, a telephone helpline is provided and is operated by counselling staff during office hours; the provision of an emergency number ensures that it is available at all times.

Respite service

The Association also has three beds (two for males, one for females) which provide immediate short term access to intensive counselling and residency, for situations in which ex-residents experience difficulties in controlling their gambling and face the risk of relapse.

Internet counselling service

In 2004, the Association developed a confidential Internet counselling service which provides individual one-to-one counselling for residents and ex-residents in sessions that last up to half an hour and which are available at specified times each day. The procedure is activated when the individual logs on and begins typing their query. A trained counsellor responds and the ongoing dialogue is instant and continuous. It is entirely confidential. No record of any of the correspondence either from counsellor or gambler is kept. It is also anonymous. The gambler may log on under any name and is not required to disclose any identifying information. The website also hosts 'chat rooms' where residents and ex-residents can discuss issues and seek support.

Evaluation

The Gordon House Association keeps records of individuals' progress while resident in the facility and undertakes a formal analysis of that information at the end of each year.

The Association reports that as many as 75% of those who complete the residential programme do not return to problematic gambling, although up to one in four are only able to maintain this by returning to the Association at some point for a further period of residential support. They also state that their own recent research has shown that this figure can be reduced to one in 40 with the provision of structured outreach support.

Furthermore, the team records whether clients left in a planned or unplanned manner, for example, after consultation with staff and usually when a client feels able to control their gambling, or abruptly without notice and without finishing treatment. For the year 2002-3, 83% of departures were planned and 17% were unplanned. Of the total that left the House, six percent re-applied for admission. In addition, it was reported that 52% of total admissions for that year remained in treatment until at least stage three of the programme (Gordon House Association, 2003). The Director of the organisation has reported that the most highly rated features of Gordon House Association residency are: socialising with and receiving support from other residents, individual sessions and day-to-day support from key workers, group meetings and individual counselling sessions (Farrell-Roberts, 1997; in Griffiths et al, 2001). One paper (Griffiths et al, 2001) has been produced which summarises this information over a two year period, 1998-2000, although it does not attempt evaluation.

Assessments of effectiveness are difficult to make. In the case of the facility for female problem gamblers, numbers are too small and the service too new to enable evaluations to be made. The online counselling service presents a similar situation. Only time will tell whether this innovative new technique will be effective in helping those who utilise it and whether the uptake will be significant. Little academic literature exists in this area, although one review of existing knowledge (Griffiths & Cooper, 2003) outlines the advantages and disadvantages of online counselling in a general way. Advantages are listed as convenience, cost-effectiveness and the potential for overcoming barriers to access, while potential problems include legal and ethical considerations, confidentiality, lack of face-to-face contact and lack of knowledge of effectiveness, amongst others. As previously stated, however, the area of online counselling in general and the case of the service provided at Gordon House in particular, are in the early stages of development, making it impossible to say for certain how effective the service will be or what any problems it encounters might involve.

3.3.3.2 Secondary services

In addition to the agencies which specialise in the treatment of problem gambling, many individuals with gambling problems may present to organisations with primary problems in other areas such as those related to finance, debt and mental health, including drug and alcohol-related problems.

Contact was established with a variety of such secondary services to find out whether any of their clients did in fact experience gambling problems and to establish whether the organisations were able to offer advice and information.

Financial advice services

The National Association of Citizens' Advice Bureaux

The Citizens' Advice Bureau (C.A.B.) has a network of offices throughout the U.K. that provides free, confidential advice on a wide range of issues. The websites of both GamCare and the Gordon House Association provide links to the C.A.B. and the Association reports that

it does provide advice to individuals on the financial and legal problems related to gambling. However, records are not kept and the Association is unable to estimate how many individuals it advises in this way.

The Money Advice Trust and The National Debtline

The Money Advice Trust works jointly with The National Debtline, a national telephone helpline, to provide free, independent advice for individuals with debt problems across the U.K. The service has existed since 1987 and was set up in conjunction with Birmingham Settlement and the Money Advice Association. The service provides self-help advice to its callers and also produces supporting written information booklets and fact sheets. The National Debtline estimates that around one percent of their enquiries are specifically related to gambling debt, although they are aware that this could mask a far larger number of clients who may have credit and bank debts that are also related to gambling but which they are reluctant to admit. The organisation advises that it would refer those with specific gambling problems to Gamblers Anonymous or GamCare as they have noted that it is usually impossible to remedy a debt problem without first addressing the gambling that underlies it (National Debtline, 2004).

Mental Health and Substance Abuse Organisations

A 'snapshot' of the services provided by mental health organisations reveals little knowledge of the problems associated with gambling. One quarter of the population experience mental health problems at some point in their lives and a range of counselling and advice organisations exist to help them. These include for example, Crisis Call, Careline U.K., Lifeline, Saneline and Mind, which offer a range of telephone and face-to-face counselling services. The Mental Health Foundation is the leading U.K. charity working in the area and covers an extensive range of mental health problems including addictions to alcohol, drugs, nicotine, caffeine and food, as well as depression and dependent personality disorder; many of which are associated with problem gambling. However, gambling itself does not feature anywhere in the Foundation's list of problem areas and the organisation admits to being unable to provide advice or information on the problem. With the exception of the telephone helpline, Saneline, the majority of organisations mentioned above do not keep records and have no information on the problems experienced by the users of their service. Saneline does keep records and reports receiving few calls from gamblers, although it is aware that many callers may have gambling issues that are not recognised by counsellors and so are not recorded in their database.

The national charity Turning Point, which deals with drug, alcohol, homelessness and debt problems, reports a general lack of awareness of the issue of problem gambling and realises that they may not recognise individuals who suffer from such problems. A random telephone survey of the many local drug and alcohol agencies throughout the country revealed a similar lack of awareness of problem gambling and gambling-related problems.

In all, gambling seems to be a largely invisible problem in the U.K. It is not recognised as a specific problem, not even as one that is associated with other areas that these organisations are trained to recognise, such as those associated with mental health and substance abuse.

Youth organisations

Whilst organisations such as The National Youth Agency and U.K. Youth are aware of the issues relating to problem gambling amongst youth, they do not report receiving any enquiries from young people with gambling-related problems. The organisation Childline covers

problems related to alcohol, smoking and drugs and has a specialised service on Internet and technology issues, although they have no experience with, and offer no advice or information on, gambling and gambling-related problems.

Conclusion

In light of the lack of relevant research, the question of the efficacy of various forms of treatment intervention is almost impossible to address.

Apart from the few academic studies (Brown, 1985, 1986, 1987a,b,c; McCormick & Brown, 1988; Turner & Saunders, 1990) and the practitioner accounts (Bellringer, 1992, 1999; Moody, 1990) discussed as part of this review of services, the more general literature that exists is very limited and is mainly confined to reviews of existing international knowledge (e.g. Griffiths & Cooper, 2003; Griffiths & MacDonald, 1999) and overviews of the activities of particular agencies, such as the GamCare helpline (Griffiths et al, 1999) and the Gordon House Association (Griffiths et al, 2001). Apart from this, much of the documentation collected by treatment agencies is incomplete or collected in ways that makes comparisons and assessments of efficacy difficult to make. With such a weak knowledge base, little can be said for certain about which forms of treatment for problem gambling in the U.K. are most effective, how they might be improved or who might benefit from them.

Despite this, some general findings can be tentatively highlighted. From the review of the reports and internal documentation collated by the treatment agencies, it would appear that the individuals who seek help for gambling problems tend to be overwhelmingly male, aged between 18 to 45 years, whose problems are primarily with on- and off-course betting, followed by fruit machine use. In sharp contrast to other jurisdictions internationally, limited anecdotal reports from service providers in the U.K. do not find much evidence of dual addictions. With the exception of debt advice agencies, awareness of problem gambling among secondary service providers appears to be extremely limited. Finally, there is a substantial difference between the numbers of problem gamblers identified in general population surveys relative to numbers seeking help. This suggests that those individuals who present at agencies probably represent the tip of the iceberg and that the majority of problem gamblers in the U.K. do *not* in fact seek help.

Despite the limitations of this overview, certain areas of potential significance for future service provision can be tentatively noted. These mainly concern the needs of particular groups who are at present under-represented in service provision and/or who may have specific treatment requirements.

3.3.4 Implications for the United Kingdom

The literature reviewed in this section of our report reveals that considerable variation exists in the provision of treatment for problem gamblers with, for example, funding for problem gambling services including treatment, higher in Canada, Australia and New Zealand than in the U.S. In general, all these jurisdictions fund a range of services, from hospital inpatient programmes for individuals who are seriously depressed or suicidal, to treatment that is delivered within existing mental health and/or addiction programmes. Referral to organisations like Gamblers Anonymous or GamAnon frequently accompanies formal counselling. In addition, there are an increasing number of certified gambling counsellors in private practice offering individual and group therapy as well as marital and family counselling.

The research also points to the unavoidable conclusion that simply not enough is known to address the question of what the most successful and cost-effective configurations of services for various types of problem gamblers are. Little is known about which types of treatment suit which types of gamblers, which levels of treatment are most appropriate at which times and which factors influence treatment retention and success.

However, a review of the various approaches to treatment can at least generate some pointers, which may be useful for the formation of policy and delivery of treatment in the U.K.

Recently, a public health approach to problem gambling has emerged internationally, especially in Australasia, Canada and some parts of Europe, which favours the principle of harm reduction over abstinence and focuses on regulatory public policies as a means of minimising the risks of gambling. In terms of treatment, this approach emphasises interventions which aim to control or limit individuals' gambling behaviour. In the case of the U.K., this could involve, for example, the dissemination of information on the potential risks of gambling, signs of problematic behaviour and where to get help at 'point of contact' to patrons in gambling venues. Such efforts could be delivered through partnerships of gambling providers and treatment agencies and coordinated by local authorities.

In the last decade, cognitive and combined cognitive-behavioural treatment approaches have been increasingly utilised as treatments for pathological gambling and are currently practiced by counsellors at the Gordon House Association and GamCare in the U.K. These are founded on social learning models of problematic behaviour and attempt to re-educate problem gamblers and correct the faulty cognitions that underlie their behaviour. Such techniques focus on superstitious and irrational beliefs, misunderstandings of randomness and illusions of control. This type of cognitive therapy tends to be accompanied by a focus on behavioural strategies such as training in problem solving and social skills, self-monitoring and stimulus control. Although evaluations of cognitive-behavioural treatment are still ongoing, outcomes so far appear to be promising.

Processes of natural recovery, whereby individuals' problematic behaviour naturally comes to an end without the aid of formal treatment, have also been a focus of interest. The likelihood that such recovery is fairly common among problem gamblers has implications for the prevention of long term gambling disorders, in terms of the targeting of prevention messages and strategies towards specific groups and types of behaviour that are associated with the progression towards problem gambling.

While natural recovery may be most effective among the least severe problem gamblers, attention has been directed towards brief interventions that are targeted at those with more serious problems but who are still in the early stages of development. Single counselling sessions, brief telephone interventions and self-help workbooks are forms of minimal intervention that may be effective in curtailing problem behaviour. Although these types are in the early stages of assessment, initial results again appear to be promising.

Techniques involving computer-based treatment, such as online counselling, could be invoked here, as a form of brief intervention, or as a more intensive therapeutic form. Early trials of this technique have shown it to be convenient, anonymous, accessible and particularly attractive to youth, a group who tend to be under-represented in treatment. Although formal evaluations of online treatment are not available, this form of delivery could hold considerable potential. A programme of online treatment delivery is currently being offered to previous residents of Gordon House in the U.K.

Familial involvement also appears to have implications for the effective treatment of gambling problems. As families are often seriously affected by their loved ones' gambling, and as it is

widely recognised that emotional support is beneficial for vulnerable individuals in their process of recovery, treatment that involves family members is likely to be more effective than that which does not. Indeed, practitioners have often pointed to the importance of establishing networks of social support for problem gamblers. GamAnon exists solely to provide such support for those affected by an individual's gambling and the Gordon House Association emphasises increased effectiveness through its outreach service. Although little research on the efficacy of such networks exists, it seems that familial involvement could be an important factor in the delivery of successful treatment outcomes.

Finally, an awareness of the needs of certain groups who are currently under-represented in service provision and/or who may have specific treatment requirements has implications for the effective delivery of treatment for problem gamblers in the U.K.

Adolescents

There are indications that adolescents are particularly vulnerable to the development of gambling problems and also that levels of problem gambling among this group are high, relative to adults (Fisher 1999).

Given that adolescents have specific experiences and needs in a general social, emotional and economic sense, and that their experiences of gambling are also quite specific, it is likely that they may also have quite specific requirements in terms of treatment. However, it is less obvious what these needs might be and how they might be best served by the various treatment approaches. Whilst it has been noted that certain approaches, such as the lifelong abstinence espoused by G.A., may be more suitable for older people with long histories of problem gambling, it is not certain which approaches, if any, may be most beneficial to youth. Few treatment approaches have been designed specifically for adolescents and there are no studies or evaluations in this area in the U.K. However, from a practitioner standpoint, Bellringer (1993) has suggested a pragmatic approach known as 'ten key aspects', which combines behaviour change with a therapeutic analysis of the issues underlying the problematic behaviour. He divides the treatment into two phases: 'preparation', in which the issues to be addressed are analysed and understood, and 'action' which involves providing counselling and support, developing trust and self esteem, and practical techniques such as managing finances, developing social skills and assessing progress. This approach attempts to change behaviour by moving through a series of stages and maintains that a return to controlled gambling may be possible. Although this appears to be the only explicitly adolescent-oriented approach to treatment in the U.K., it is not always clear in what ways it differs from treatment offered to adults and, as with treatment services in general, no evaluation of its effectiveness has been undertaken.

Women

Treatment facilities tend to be dominated by males, with the GamCare helpline and counselling services and Gamblers Anonymous used predominantly by men, and Gordon House facilities catering primarily for males. A similar gender bias has been noted internationally, while in the U.K. anecdotal evidence has been presented that women may be uncomfortable in treatment regimes that are dominated by men (Bellringer, 1999). This situation has changed recently in some jurisdictions where electronic gaming machines are widely accessible; in those jurisdictions male and female prevalence rates in the general population are now similar. It is too early to yet analyse the small number of women accessing the facilities at Gordon House, although their presence raises a number of issues. For instance, it is known that the concerns of women in treatment are different from those of men, tending to focus more on problems with

intrapersonal and physical functioning rather than on the more 'external' factors such as employment and legal issues reported by men (Crisp et al, 2000). Such divergences raise questions for the development of counselling for female problem gamblers, with implications for the nature and effectiveness of treatment provision in general.

Ethnic groups

The experiences of the Chinese Healthy Living Centre (CHLC) point to the need for specialist treatment for problem gamblers from ethnic groups. The CHLC emphasises the need for a culturally appropriate approach to Chinese gamblers, as well as the specialist requirements of counselling and information provision in the Chinese language. In addition, the CHLC points out that the meanings of gambling, as well as measures of and responses to, problem gambling, can vary substantially across ethnic minority populations, pointing to the need for a treatment approach that is aware of cultural variation and tailored to the different needs and expectations of various ethnic groups.

3.4 Impact of alternative approaches to public education and awareness raising

3.4.1 Commentary

This section reviews international and United Kingdom approaches to problem gambling public education and awareness raising and what is known of the effectiveness of these approaches. Primary prevention activities in relation to youth, the adult general population, gamblers and gaming venue employees as well as several recent innovative approaches to educating target audiences are reviewed first. Secondary prevention activities, including staff awareness and training, server interventions, exclusion programmes and responsible gaming features on gaming machines are reviewed next, followed by a brief description of tertiary prevention activities in relation to problem gambling. Awareness activities undertaken by service providers are then described, followed by a discussion of effective prevention activities in other public health areas including alcohol-impaired driving and tobacco cessation. Finally, the importance of strategic planning for responsible gaming is discussed followed by presentation of implications of the foregoing discussion for the United Kingdom.

In recent years, problem gambling has increasingly been defined as a significant public health concern (Korn, Gibbins & Azmier, 2003; Korn & Shaffer, 1999; Volberg, 1994). From a public health perspective, individuals who endorse fewer gambling-related difficulties than those deemed necessary to meet a psychiatric diagnosis for pathological gambling (sometimes referred to as 'at-risk' and/or 'problem' gamblers) are of at least as much concern as pathological gamblers because they represent much larger proportions of the population than pathological gamblers alone. Problem and at-risk gamblers are also of interest because of the possibility that their gambling-related difficulties may become more severe over time. Problem and at-risk gamblers are of further interest because of the likelihood that their gambling can be more easily influenced by changes in social attitudes and public awareness (Castellani, 2000; Shaffer, Hall & Vander Bilt, 1999).

As noted in a previous section, the public health approach distinguishes between the agent, host and environment and seeks to identify and influence aspects of each that are implicated in the onset and progression of particular illnesses. This approach has been used to develop effective responses to various physical health problems and, increasingly, to non-infectious diseases and mental disorders. Given the very recent emergence of a public health approach to problem gambling, it is not yet possible to identify the most effective methods to prevent the onset and progression of gambling problems in the general population in different countries. Nevertheless, efforts are going forward, particularly in Australia, Canada and New Zealand. While it is still too early to identify the most effective methods, there is value in reviewing the range of activities that are being implemented and that are likely to be evaluated in the near future.

It is worth noting that effective harm minimisation measures are likely to have a substantial impact on gambling revenues, particularly from electronic gaming machines. For example, the Centre for International Economics (2002; cited in Livingstone, Woolley & Borrell, 2004) estimated that the responsible gambling features proposed for gaming machines in New South Wales, Australia could result in a 20% loss of revenue in clubs and a 40% loss of revenue in hotels because of the disproportionate consumption of EGM gambling by problem gamblers.

3.4.1.1 Role of research and contribution to policy

The Reviewing Team was able to identify only 15 studies evaluating problem gambling prevention practices internationally. These included five evaluations of mandatory or voluntary

casino exclusion programmes, three evaluations of public awareness media campaigns, three evaluations of prevention programmes aimed at youth, two evaluations of training programmes for VLT retailers and two evaluations of responsible gambling features on electronic gaming machines. While all of these efforts were characterised by one or more methodological weaknesses, there is value to such systematic reviews, particularly in pointing to promising future directions of research (Petticrew, 2003).

As with the review of treatment interventions for problem gamblers, this review of research on problem gambling prevention highlights a broad range of issues and challenges for the future. From a policy perspective, there is a basic need for strategic planning with regard to problem gambling prevention, along with commitment from the *full range* of stakeholders to work together in the process. Building on that commitment, a strategic plan *specific to the U.K.* would need to include short-, intermediate- and long-term priorities in increasing awareness, reducing the potential for harm, and promoting the availability of services for problem gamblers and their families. Once there is consensus on the strategic plan, there is a need for well-designed, well-executed scientific research to inform public policy and industry policies along with monitoring and evaluation to ensure the effectiveness of the plan. As with any plan, there must be room for flexibility to respond to changing conditions over time as well as attention to the possibility of unforeseen negative consequences of even the most well-intended measures.

The need for a strategic plan and commitment from the full range of stakeholders is especially apparent in relation to mandated versus voluntary measures for preventing problem gambling. Mandated measures tend to lack flexibility and may easily result in unintended consequences while voluntary measures are often poorly and/or unevenly implemented by industry. Even when measures are mandated, however, compliance can be uneven and requires monitoring.

Research is central to strategic planning, both in the development of appropriate interventions and in the evaluation of their effectiveness. There are two distinct directions for prevention-relevant research on problem gambling. The first direction is basic research that identifies suitable targets for prevention with adolescents, the general adult population and subgroups in that population including women, ethnic minorities, regular gamblers and gaming venue employees. The second direction is evaluative research that assesses the effectiveness of problem gambling prevention programmes as these are developed and implemented.

A key challenge is in passing out responsibility for evaluation while simultaneously including it as an integral element of programme design. One possible approach is to identify a separate evaluation team at the beginning of a project and involve them in the project design phase in an advisory capacity. Another possible approach is to have evaluations of pilot projects or early phases of large projects conducted internally while evaluations of later phases are conducted by external evaluation teams. Regardless of the approach, it is essential that reflexivity between the intervention and the evaluation be built into the project from the beginning.

In considering approaches to *primary* problem gambling prevention, internationally it has been easiest to achieve stakeholder agreement with regard to youth. A challenge specific to youth problem gambling prevention is the difficulty of adding new material to school-based curricula. Consideration of alcohol and substance abuse prevention with youth suggests that strategies which (1) stretch across the domains of family, school and community, (2) include a range of activities (e.g. education, information, skills training, alternative activities, problem identification and referral), and (3) target multiple risk behaviours, work best. While support for ‘social inoculation’ and ‘reasoned action’ models of youth problem behaviour prevention delivered within schools is high, there is growing promise in the development and delivery of telephone- and Internet-based materials.

With regard to *adult* primary problem gambling prevention, evidence from within the gambling field suggests that effective campaigns can lead to measurable increases in awareness of community services, in the number of calls to helplines and in the number of first-time clients seeking help. Systematic reviews of mass media campaigns both for tobacco and alcohol support the effectiveness of such approaches, particularly in combination with other actions to delay initiation and reduce consumption, and with complementary efforts at the local level. Lessons from these fields emphasise the importance of conducting formative research to develop targeted and effective messages, using television as a broadcast medium, planning for extended campaigns and relying on brief, recurring messages. Additional considerations in developing effective problem gambling awareness campaigns include balancing the tension between creativity and budget, the need for involvement and communication among partners in the campaign and the value of timing in launching the campaign. Finally, it is worth noting that even effective public awareness campaigns face considerable competition from far more heavily financed industry advertising campaigns to increase gambling consumption.

Secondary problem gambling prevention encompasses voluntary (occasionally mandatory) exclusion policies and procedures, and training for gaming venue employees. The most recent innovation is mandated 'responsible gambling features' on gaming machines. While exclusion programmes have received the greatest evaluative attention internationally, it is important to expand our notion of such measures. To date, exclusion has been viewed as an isolated activity; such measures could be viewed as a gateway to formal treatment and work is needed to improve treatment seeking and access to services once an individual has chosen exclusion. Other challenges in relation to exclusion policies include difficulties in identification and detection as well as in enforcement and monitoring. Another area of investigation could be the effectiveness of linking exclusion programmes with pre-commitment betting limits.

Employee training programmes have been implemented primarily in the casino and VLT sectors of the gambling industry. An important first step in the U.K. would be to expand such efforts to additional sectors of the gambling industry, such as on- and off-track betting facilities and charitable bingo operations. Difficulties encountered in the implementation of these programmes internationally have emphasised the importance of establishing centralised tracking systems and mandatory site compliance to ensure consistent and effective delivery of training. Another challenge for gaming venue employee training programmes is in the identification of 'signs' of problem gambling; this is an area where venue-based sociological research could be valuable. Secondary analysis of prevalence data to identify 'moderate gambling' guidelines specific to the U.K. could also be valuable.

Despite the intuitive appeal of Responsible Gaming Features (RGFs) and the speed with which governments have mandated such measures, little research has been done on their effectiveness in preventing gambling problems. What research has been done suggests that on-screen clocks and displays in cash amounts rather than in credits are effective. However, the evidence with regard to game speed and bill acceptors is equivocal and more research is required on these specific measures as is research on the timing and content of 'universal' messages. Research on implementing RGFs on online gaming sites would also be valuable; the interactive technology to address problem gambling online has existed for several years and has the potential to exceed any protections offered in the 'physical' world. In the case of gaming machines and online gaming, as with exclusion programmes, investigation of RGFs in conjunction with pre-commitment betting limits seems warranted. Finally, it would be advisable to fund small-scale research on RGFs, initially in the laboratory followed by field studies and to investigate the effectiveness of targeted RGFs before mandating jurisdiction-wide implementation of 'universal' programmes.

3.4.1.2 Practitioner contact with problem gamblers

Internationally, problem gambling primary prevention activities (e.g. public awareness campaigns) are more often carried out by specialist non-governmental organisations than by mental health or addictions counsellors. Thus, practitioner contact with problem gamblers in relation to public education is limited. Nevertheless, in some jurisdictions (e.g. Victoria, Australia), counsellors do engage in extensive community education activities. More commonly, counselling staff establish relationships with gaming venue staff to ensure that information about problem gambling services is available within the venues and to assist, if desired, in managing difficult patron situations. One recent innovation, problem gambling information kiosks inside gaming venues, represents a significant partnership between practitioners and gaming operators and dramatically increases the likelihood of practitioner contact with individuals experiencing gambling problems *in situ*. Implementation and evaluation of such efforts in U.K. gaming venues of different kinds seems warranted.

Secondary prevention activities, such as gambling employee training, are sometimes, but not always, carried out by practitioners. Other major providers of problem gambling training for gaming venue employees include specialist non-governmental organisations and academic institutions. Staff training in relation to problem gambling awareness generally focuses on increasing understanding of problem gambling, identifying behaviours suggestive of patrons' gambling problems, increasing knowledge of resources for problem gamblers in the community and providing strategies for assisting patrons with problems. Increasingly, training in problem gambling prevention is being built into broader training and certification programmes for gaming management.

Future directions for prevention research in relation to practitioner contact with problem gamblers are suggested by the growing involvement of counsellors in voluntary exclusion programmes as well as the promise of brief interventions in formal problem gambling treatment (see Section 3.3.2.4). Results of evaluations of voluntary exclusion programmes as well as emerging expert consensus suggest the value of involving problem gambling counsellors in interviewing individuals seeking to self-exclude from gaming venues. Research on involvement of practitioners in exclusion procedures should include assessment of the effectiveness of such steps in improving treatment seeking and treatment access after exclusion as well as the effectiveness of single session information sessions in conjunction with time-limited exclusion in assisting in natural recovery.

3.4.1.3 Relevant industry practice

Different sectors of the gambling industry have been involved in problem gambling prevention for some years. In many cases, the gambling industry has voluntarily provided significant funding for youth problem gambling prevention efforts in schools as well as for public awareness campaigns directed at employees, customers and the general public. Partnerships between the gambling industry and specialist non-governmental organisations as well as government health and social service agencies[10] have benefited not only from this funding but also from the creative talents of industry-oriented marketing and advertising agencies. However, these efforts compete with heavily financed gambling industry advertising campaigns that work directly to counteract their effectiveness. A possible way forward may be the adoption of industry-wide 'responsible gambling marketing and advertising' codes, along with research to monitor compliance and assess their effectiveness.

[10] Such partnerships have emerged primarily in the United States although examples can be found in Australia, Canada and the U.K.

Secondary prevention efforts by the gambling industry have included the development and implementation of employee training programmes, mandatory and voluntary exclusion programmes and gambling venue partnerships with practitioners and government agencies to provide information and improved access to formal treatment services. As noted previously, the implementation of these efforts has not always been of the highest quality and compliance across all sectors of the gambling industry has been uneven. Based on existing research, it appears that exclusion programmes are most effective when staff roles are clearly delineated, managers are appropriately trained to conduct or call for interventions, and working relationships with treatment providers in the community have been established to improve the likelihood of excluders afterwards seeking and obtaining help. Existing research further suggests the importance of mandatory promotion of exclusion programmes across all sectors of the gambling industry and the likely value of computerised identification checks and clearly defined penalties for operator and patron to improve enforcement. Other possible approaches that overlap with tertiary prevention include involvement of practitioners in interviews with patrons seeking exclusion and mandatory education for excluders.

Internationally, gambling industry employees are rarely required to take steps with regard to patrons with gambling problems in spite of requirements that may exist to obtain education and training. Tertiary prevention within the gambling industry is generally limited to establishing and maintaining liaisons with treatment providers to increase the likelihood that patrons identified as problem gamblers seek and obtain help. If 'server intervention' training is developed in the U.K., review of evaluations of similar programmes to prevent alcohol-impaired driving suggests that management support of such interventions will be critical to their success. Another critical element will be basic research, most likely within gaming venues, to identify the most salient 'signs' of problems among different types of gamblers. There is also a clear need for further evaluation of the effectiveness of gambling industry employee training programmes and voluntary exclusion programmes, as well as research on the most appropriate methods to implement such measures.

Partnerships that include gambling equipment suppliers as well as operators have additional promise for preventing gambling problems among patrons. Major gambling industry suppliers, such as Global Cash Access (GCA) and International Game Technology (IGT), have not only committed resources to problem gambling public awareness campaigns but are also working to develop problem gambling prevention measures on the products they supply to the gambling industry, including Automatic Teller Machines (ATMs) and electronic gaming machines. Placement of 'problem gambling information' kiosks in gaming venues, programmes to permit patrons to establish 'pre-commitment' betting levels and implementation of responsible gambling features on gaming machines are promising future areas for industry-practitioner-research collaboration. Key challenges in the evolution of these partnerships include the importance of funding research to evaluate the effectiveness of such measures as well as ensuring both the *actual* and *perceived* independence of the investigators.

3.4.2 International perspective

Researchers have noted, with regard to alcohol and drugs, that "the preponderance of social costs in the general population results from individuals with low- and intermediate-level symptom patterns. As a result, small improvements among these individuals can result in greater overall improvements in public health than larger improvements among those with the most severe symptoms" (Shaffer, Hall & Vander Bilt, 1999, p.1373).

Prevention is defined as any activity that is taken to stop or interrupt a course of action or events (Merriam Webster, 2004). Prevention is generally subdivided into primary, secondary and tertiary activities, or more recently and with specific reference to behavioural medicine,

into universal, selective and indicated interventions (Dorfman, 2000). Primary, or universal, prevention is directed at all members of the population in question, encompasses activities intended to prevent the onset of a targeted condition and is widely acknowledged as the most cost-effective form of health care. Examples of primary prevention include immunisation and health protecting education, such as the use of seat belts and bicycle helmets. Secondary, or selective, prevention is directed at particular members of a group who are at-risk and typically focuses on the identification of, and assistance for, persons who have identifiable risks for a disorder but in whom the condition is not clinically apparent. Screening tests for physical conditions such as diabetes, hypertension, and breast and prostate cancer are examples of secondary prevention measures. Early case finding is important because it can often alter the course of an illness to minimise suffering and maximise wellbeing. Tertiary, or indicated, prevention is directed at individuals who already display signs of the problem or symptoms of disease. The focus here is on preventing re-occurrence of the problem, minimising disease-related complications and restoring individuals to the highest possible level of functioning (U.S. Preventive Services Task Force, 1996).

Whilst governments have had a great deal to say about how gambling operations will be organised and run, they have had little to say, until very recently, about what gambling operators ought to do to protect their customers from the harms of problem gambling. Beginning in the 1990s, a growing number of governments internationally started to mandate measures by lotteries, casinos, clubs and hotels to address problem gambling. For example, many lotteries in the U.S. have been required to print helpline numbers on tickets and develop 'point of sale' materials about problem gambling to be posted in lottery retail outlets. In several U.S. jurisdictions, a portion of lottery revenue or of a lottery's advertising budget has been redirected to support problem gambling services. In other U.S. jurisdictions, gaming operators have been required to post helpline numbers and brochures around their properties and to provide employees with training about problem gambling (e.g. Mississippi and Nevada) (Palermo, 1999). Internationally, an increasingly common legislative action involves mandating that a small percentage of revenues from new gambling operations be set aside for problem gambling services.

As noted in the previous section, the gambling industry has historically been reluctant to engage directly in interventions or provide treatment for individuals with gambling problems. However, a growing number of gambling operators internationally have begun to develop 'responsible gaming' guidelines, policies and procedures. Perhaps due to the greater stigma historically attached to casino gambling, the casino industry has been the most proactive arm of the gambling industry in developing responsible gaming initiatives. Given the mix of ownership and regulation by government and industry that characterises the gambling industries internationally, it can be difficult to split out industry from government responsible gaming initiatives. Such initiatives are also quite variable in terms of whether they are mandated or voluntary.

In an extensive review, Blaszczynski (2001) notes that the typical three-tiered prevention approach also characterises the implementation of mandated and voluntary problem gambling harm minimisation strategies worldwide. In the case of gambling, *primary prevention* strategies, intended to protect players from developing gambling problems, include public and player education about characteristics and potential hazards of the games, signage promoting responsible play, ethical codes outlining responsible advertising and promotional activities, limitations on types or locations of venues relative to regional characteristics and limits on prize structures. *Secondary prevention*, intended to limit the potential for problems to arise and to contain the impact once gambling has commenced, includes policies and procedures to deal with problem gamblers such as staff awareness and training, exclusion programmes, modifications to the environment such as placement of automatic teller machines or cooling-off periods after wins, modifications of machine design to limit expenditure and/or session length,

policies regarding service of alcohol, restricted access to cash, and improving access to tertiary services through advertising and other promotional materials. Secondary prevention strategies also include caps on the number of machines in locations and across geographic regions, limits to hours of operation, and limits to stake and prize sizes. *Tertiary prevention*, intended to reduce the severity of existing problems and prevent relapses, includes effective referral to treatment and counselling services and close liaison with treatment service providers, particularly in cases of exclusion.

In a critical review of the international literature on problem gambling prevention, Papineau and Chevalier (2003) identified numerous government and industry initiatives over a 10-year period, although very few of those initiatives have been systematically evaluated. These researchers were able to identify only 11 evaluations of primary and secondary problem gambling prevention programmes and all were characterised by one or more methodological weaknesses. Weaknesses included failure to state programme objectives, absence of a strong theoretical understanding of the causes of problem gambling and of methods for modifying attitudes and behaviour, inadequacy of evaluation time frames, mismatching of evaluation tools with the programmes and their target audiences, lack of pre-testing, and lack of data on programme effects, response rates and attrition. At a more theoretical level, Papineau and Chevalier (2003) note (as does Wynne, 2002b) that evaluation must be viewed as an integral element of programme design that reflexively contributes to programme performance and improvement.

A study in New South Wales, Australia by Hing (2003) examined awareness of, and opinions of, the adequacy and effectiveness of responsible gambling measures by the gambling industry. In 1999, after voluntary measures were poorly implemented by the clubs, the New South Wales Government passed legislation requiring the clubs to provide information on counselling services and self-exclusion programmes, limit cheque cashing and cash payment of prizes, locate ATMs away from gaming machine areas, limit gambling-related advertising and provide training for staff in responsible gambling. In response, the clubs established the 'ClubSafe' programme. With no prior evidence of the effectiveness of this or other responsible gambling programmes, Hing (2003) conducted a survey to assess patron awareness of the 'ClubSafe' programme as well as the perceived adequacy and effectiveness of the programme. Specific measures that were evaluated included: responsible advertising and promotion outside the venue, signage and information inside the venue, the gambling environment (e.g. clocks, lighting), restriction of access to cash and self-exclusion. The results of the survey showed that the 'ClubSafe' programme had been effective in reducing money spent for 19% of respondents, reducing frequency of visits for 18% of respondents, and reducing session length for 17% of respondents. However, at-risk and problem gamblers (assessed using the Victoria Gambling Screen) were less likely to have changed their behaviour than non-problem gamblers. Hing (2003) concluded that compliance with the clubs' responsible gambling programme was uneven and that much could be done, particularly with regard to gaming machine design, to improve the effectiveness of responsible gambling practices.

In spite of the consistent approach taken to problem gambling prevention internationally, Blaszczynski (2001, p.7) notes that "there is a significant absence of credible research data on the effectiveness of specific interventions to guide and inform policy decision-making". Two factors underlie the rarity of evaluative efforts in the area of problem gambling prevention, including the very recent development of these programmes and the bias built into existing evaluations, which are often conducted by the developers of the programmes themselves. There is, however, a substantial literature on conducting prevention programme evaluations and a growing number of guides specific to problem gambling prevention (e.g. Dickson, Derevensky & Gupta, 2002; Shaffer, Hall & Vander Bilt, 1997; Wynne, 2002b). Furthermore, the (U.S.) Center for Substance Abuse Prevention (CSAP) has published widely-adopted criteria for conducting credible evaluations of prevention programmes. Those criteria include

theory-driven, evidence-based findings and high-fidelity implementation, including adequate and appropriate sampling design, use of appropriate psychometric evaluation measures, appropriate data collection and analysis techniques, and the need to address plausible alternative hypotheses concerning programme effects, integrity and utility (Brounstein, Zweig, & Gardner, 1999).

3.4.2.1 Primary prevention

To remind readers, primary prevention is intended to prevent the onset of the targeted condition (in this case, gambling problems) and is widely considered the most cost-effective form of health care. Examples of primary prevention considered here include school-based, youth education programmes as well as youth-oriented websites that address gambling problems and awareness campaigns targeting the general public, gaming patrons and gambling industry employees. We also consider a series of quite recent innovations, including game education for players, the development of 'moderate gambling' guidelines and the emergence of gaming venue information centres.

Focus on youth

Perhaps because it is easier to achieve agreement among stakeholders regarding the dangers and undesirability of youth gambling, the great majority of primary prevention in relation to problem gambling has been aimed at school-age children. There is certainly ample research evidence that youth gamble for money with peers and family members and that many are able to participate in forms of legalised gambling in spite of legal restrictions. Furthermore, adolescents appear to be particularly susceptible to the development of serious gambling problems (Derevensky & Gupta, 2004; Jacobs, 2000; National Research Council, 1999).

Primary prevention programmes directed at youth have been developed primarily in Canada, although several Australian and U.S. states (e.g. Victoria, Connecticut, Minnesota) have active youth prevention programmes and New Zealand is in the process of trialling and rolling out a recently developed programme. Those programmes are generally school-based curricula aimed at adolescents between the ages of 12 and 17 years. Examples include:

- *California's Youth At Play* and *Gambling Education for Teens Just in Time* (California Council on Problem Gambling)
- *Facing the Odds: The Mathematics of Gambling* (Harvard University Division on Addictions)
- *Spare Time, Spare Cash: Teens Talking About Gambling*, *Your Best Bet*, *When Young People Gamble: An Early Intervention Resource* and *Playing for Keeps* presentation kit (Alberta Alcohol and Drug Abuse Commission)
- *Deal Me In: Gambling Triggers* (video and posters) and *Improving Your Odds* (Minnesota Institute for Public Health)
- *Kids Don't Gamble … Wanna Bet* (North American Training Institute)
- *Count Me Out (Moi, je passe)* (Le Groupe Jeunesse, Québec)
- *Drawing the Line* (Nova Scotia Department of Health)
- *Gambling: Reducing the Risks* (Saskatchewan Health)
- *When is it not a game?* (Problem Gambling Foundation of New Zealand)

In addition to school-based curricula, adolescent problem gambling prevention includes the production and dissemination of stickers, brochures and posters. Several affiliates of the (U.S.) National Council on Problem Gambling have held successful poster contests and campaigns that provided an opportunity to facilitate discussion and raise awareness of gambling problems.

In 2000, the Responsible Gambling Council (Ontario) took this approach further and sponsored an annual contest throughout all the high schools in Ontario, Canada for the production of a screenplay. To date, approximately 90 screenplays have been submitted and three winning screenplays have been produced, including *After the Beep*, *Three of a Kind* and *Caught in the Game*. The plays have been performed 308 times in 183 communities before 67,500 students. Feedback from the students found that 77% liked the play that they saw, 75% thought that it was realistic and 82% thought that it was a good way to become informed about problem gambling. An external evaluation of this project is planned in 2004 (Bell, 2004).

Although there are increasing numbers of adolescent problem gambling prevention programmes, understanding of the effectiveness and efficacy of these programmes remains limited. The vast majority of these programmes are 'universal' preventive efforts that seek to raise awareness concerning gambling and gambling-related problems. Most present information about gambling, problem gambling, motivations to gamble, warning signs, consequences of excessive gambling and how and where to seek help for a gambling problem. A few programmes go further and encourage the development of interpersonal skills designed to foster coping, techniques to enhance self-esteem and suggestions for resisting peer pressure to gamble. Some programmes focus on the mathematical aspects of gambling while others focus on reducing erroneous cognitions (Derevensky et al, 2001). Few of these programmes have been tested for effectiveness before their widespread implementation or been evaluated as to their efficacy in achieving their goals. Most fall far short of the models and standards associated with 'best practices' in prevention.

Gaboury and Ladouceur (1993) report on an early adolescent problem gambling prevention programme in Québec that aimed at increasing knowledge of gambling and problem gambling among high school students aged 16 and 17 years. An experimental group (n=134) and a control group (n=155) were surveyed at three points in time to determine their gambling participation and problem gambling status, knowledge of the gambling industry and the psychology of gambling, attitudes toward gambling, and skills for preventing gambling problems. The prevention programme consisted of three 75-minute sessions administered over one week during normal class time. At post-test, the experimental group scored significantly higher on knowledge and skills but no significant changes were identified in gambling participation or attitudes. At follow-up, six months after the programme, the experimental group maintained significantly higher scores on knowledge about gambling and problem gambling but not on skills. Based on these findings, the researchers argue that future prevention programmes should provide more explicit information and be administered over longer periods of time. They further recommend presenting gambling prevention material within the context of prevention programmes on substance abuse and employing teachers rather than university graduate students.

Based on this earlier experience as well as on clinical studies showing the effectiveness of cognitive interventions, Ferland, Ladouceur and Vitaro (2002) designed and tested an intervention intended to modify erroneous beliefs about gambling using a video-based format among adolescents in Québec. This format was used in order to capture students' attention more effectively than a teaching approach and also offered the advantages of affordability and consistency of message. The participants (n=424) high school students with an average age of 13 years were randomly assigned to four conditions (control, video presentation alone, lecture and activities without the video, lecture and activities with the video). Questionnaires were administered to assess knowledge and misconceptions about gambling one week before the intervention and one week after the intervention. Analysis showed that the intervention was effective in increasing knowledge and in modifying misconceptions towards gambling in all of the experimental groups but was most effective in the video with lecture and activities condition. Ferland et al (2002) conclude that a short and amusing video can successfully change youthful misconceptions regarding the notion of randomness.

A recent school-based survey of youth in Ontario, Canada formed the basis for an examination of the implications of youthful lottery play for prevention and social policy (Felsher, Derevensky & Gupta, 2004). These researchers found that lottery tickets are highly accessible to youth despite legal prohibitions. Playing scratch cards was the most popular gambling activity among these respondents and also had the youngest age of onset, at 12 years. The majority of the youth were aware that the legal age to purchase lottery tickets in Ontario is 18 years but few reported any difficulties in making such purchases. The majority of the youth reported viewing lottery advertisements on television, billboards and in the print media and could readily recite popular lottery commercials or slogans. Given the appeal and easy access of lottery products for youth as well as the possible role of lottery participation as a 'gateway' to other gambling activities, Felsher et al (2004) strongly encourage policy makers to enforce existing statutes prohibiting underage youth from purchasing lottery tickets and to develop and implement specific training programmes targeting lottery vendors and law enforcement personnel. These researchers also argue for other options to reduce the accessibility of lottery products for youth, including reducing their visibility at the point of purchase, restricting the sale of lottery tickets at retail outlets near schools and restricting retailers from 'up-selling' (e.g. asking consumers whether they wish to purchase a lottery ticket when they are at the cash register). With regard to prevention, Felsher et at (2004) contend that problem gambling prevention programmes aimed at primary school students are needed, that efforts must be made to ensure that school administrators, school counsellors and teachers are aware of the risks of gambling among youth, and that any school-based programme must be accompanied by a public-education awareness programme encouraging parents and adults to be attentive to the types of gambling-related problems experienced by adolescents.

In another recent study in Ontario, Weibe & Falkowski-Ham (2003) conducted a three-phase study to assemble a profile of youth between the ages of 9 and 16 years for the purposes of guiding the development of problem gambling prevention strategies. The researchers extracted data from a yearly survey of youth aged 9 to 16 years ('tweens'), conducted focus groups and then conducted their own survey to validate their findings. Highlights of that project include:

- Youth view 'betting' differently and more positively than 'gambling' and are also more likely to define the types of activities in which they engage as betting
- 10% of youth report betting on the Internet but nearly all do so without risking money (playing 'free' games) or using pre-paid credit cards
- While four percent of youth reported problems related to their gambling, 16% stated that their friends have experienced problems from gambling
- Perceptions of betting as 'cool' and 'fun' increase with age and youth who describe themselves as popular, leaders or risk-takers are more likely to gamble
- 25% of youth do not feel that spending more time or money gambling than intended or borrowing or stealing to gamble are potential warning signs of a gambling problem
- 78% of youth could recall messages promoting gambling from television or the Internet but only 12% could recall a message regarding problem or responsible gambling

The researchers identify a variety of implications of this research for prevention strategies with youth, particularly with regard to providing meaningful and targeted problem gambling messages to youth. These include understanding the language of the target group, developing messages that speak to the negative impacts (e.g. lost money, fights) and perceived positive impacts of gambling (e.g. status, bragging rights), increasing parents' awareness of youth gambling and associated negative impacts, and disseminating messages outside the confines of school. Given that the popularity of betting increases with age, the researchers conclude that there is a need for problem gambling prevention initiatives to target younger ages.

A very new development in youth problem gambling prevention is the emergence of teen-oriented websites that address gambling problems. In the U.S., the North American Training Institute in Minnesota hosts a webzine about underage gambling (http://www.wannabet.org) and the Louisiana Office for Addictive Disorders hosts a 'youth gambling prevention' website with interactive games, information and assistance (http://www.thegamble.org). Most of these new websites are based in Canada; examples include Zoot2 (http://www.zoot2.com) hosted by the Alberta Alcohol and Drug Abuse Commission and Lucky Day (http://www.luckyday.ca) hosted by the Addictions Foundation of Manitoba. A similar website has just been launched in New Zealand, offering information and assistance to youth (http://inyaface.co.nz).

In a recent conference presentation, Korn, Lombardo and Murray (2002) provided a description of the development of a Toronto website called TeenNet (http://www.youthbet.net). The goal of TeenNet, based at the Department of Public Health Sciences at the University of Toronto, Canada is to promote informed, balanced attitudes and behaviours towards gambling, prevent youth gambling-related health problems, and protect vulnerable and at-risk youth. The research team established partnerships with five community agencies, conducted focus groups involving over 100 youth to help develop the website design, content and messaging, held a roundtable with 30 youth to create the website concept, and recruited seven members of this group to serve as a website working group. The website concept is a neighbourhood with different locations (library, store, community centre, casino, school and work site) where visitors can interactively learn about money and time management as well as minimising negative consequences, develop strategies for making decisions, assess whether they have a gambling problem, and learn about randomness, odds and probability. A bulletin board linked to a chat room and a telephone linked to the Ontario problem gambling helpline appear in each location. An evaluation is underway to assess utilisation and changes in gambling knowledge, awareness, attitudes and behavioural intentions.

In addition to websites, rapid changes in technology-based systems of communication continue to provide new mediums for providing gambling education and support among youth. Possibilities that are likely to emerge in the near future include interactive texting and text-based education.

There are a range of considerations in developing primary prevention programmes targeted at youth. First, evidence from the field of adolescent alcohol and substance abuse prevention suggests that no single approach is likely to be uniformly successful and that a combination of strategies works best at nurturing resilience among adolescents (Baer, MacLean & Marlatt, 1998). Strategies that combine programmes across school, family and community domains are likely to be most successful as are programmes that include a range of activities aimed at informing youth, parents, educators and others, improving life and social skills, offering alternative activities, ensuring problem identification and referral, and fostering community-based processes. Finally, programmes need to be adapted as coping strategies and social, academic, employment and economic pressures change over time.

Evans (2003) makes a similar argument but emphasises the potential of the 'reasoned action' and 'social inoculation' models for problem gambling prevention with adolescents. The social inoculation model involves 'inoculating' adolescents with the knowledge and social skills necessary to resist various social pressures to engage in risky behaviours to which they may be exposed. The theory of reasoned action rests on the notion that a sequence of cognitive and social processes precedes possible changes in behaviour. This approach has been found effective in predicting cigarette smoking, alcohol and drug use, dieting and exercise, family planning behaviour, breast feeding, and testicular and breast cancer detection behaviour. A small number of studies of the theory of reasoned action in relation to gambling behaviour among adults and adolescents have been carried out in Australia and the U.S. with promising results (Cummings & Corney, 1987; Moore & Ohtsuka, 1997). A specific focus on the

different factors that lead adolescents to *begin* or to *continue* gambling will be particularly important.

Moving forward, Derevensky et al (2001) argue for adoption of the scientific standards for validated prevention programme evaluation advocated by Brounstein, Zweig and Gardner (1999). Derevensky et al point to increasing reliance on harm reduction approaches, as opposed to abstinence, in the fields of alcohol and substance use and argue for the adoption of a similar approach in relation to gambling. In addition, the theoretical and empirical evidence of common risk and protective factors across multiple domains of risky behaviour among adolescents is an argument for designing and implementing prevention strategies that target multiple risk behaviours.

Raising awareness: public, players and employees

Early efforts to raise awareness of the risks associated with gambling were limited to signage posted in gaming venues or on gambling products (e.g. lottery tickets, racing forms). These efforts were generally followed with community activities, including presentations at schools and community organisations, informational tables at health fairs, informational workshops for civic organisations, businesses, Employment Assistance Programme (EAP) organisations, and social service and law enforcement agencies. The next step was the development of national conferences, followed more recently by regional conferences in the U.S. and Canada as growing numbers of counsellors (and more recently, gambling industry professionals) seek 'continuing education' to qualify for specialised credentials.

Since 2000, advocacy organisations, gaming trade organisations and governments have developed more focused 'awareness campaigns' to heighten public awareness of the parameters of responsible gambling and the availability of 'hope and help' for problem gamblers and their families. Whilst such events are an opportunity to increase awareness of problem gambling, there has been little effort to formally evaluate the effectiveness of these efforts in raising awareness or in prompting individuals to seek help for a gambling problem.

Beginning in 1998, the American Gaming Association (AGA) has designated one week in August as 'Responsible Gaming Education Week'. During that week, casino properties and gaming equipment manufacturers engage employees in awareness-raising activities about underage and problem gambling and the importance of responsible gaming practices. The week is an opportunity for companies to introduce new employee training tools and resources with a focus on these topics. The week is also an opportunity for the distribution of informational materials to employees and customers and for contests to solicit ideas from employees about responsible gaming practices. Finally, the week is an opportunity for government officials to issue proclamations and focus public attention on the importance of responsible gambling.

The most recent Responsible Gaming Education Week (2-6 August 2004) focused on the AGA's Code of Conduct for Responsible Gaming, a voluntary code which it hopes will be implemented nation-wide in September 2004. The AGA supplied all of its member companies with material to help increase awareness of the code and its provisions. Properties were encouraged to display posters, to erect table tents on the casino floor and in employee areas, and to distribute buttons, stickers and ribbons for employees to wear. Brochures and paycheque 'stuffers' promoting adherence to the code were provided for distribution to customers and employees. The week also included educational activities and employee training. Existing training materials, with a focus on probability, underage gambling and overall responsible gambling awareness, were supplemented with a quiz and a cryptogram to increase employees' awareness of problem gambling. A new brochure, providing information about the

probabilities of winning or losing at different casino games, was also widely distributed (*Responsible Gaming Quarterly*, July 2004).

In October 2002, Nova Scotia became the first Canadian province to hold a similar week-long event. The organising committee included the Nova Scotia Gaming Corporation, the Atlantic Lottery Corporation, Casino Nova Scotia and the Canadian Department of Health. This collaborative effort was the first step in a three-year strategic plan to promote responsible gaming in the province. In addition to a series of workshops aimed at players and gaming employees, the event was publicised using billboards, advertisements in major newspapers, posters at gaming venues and a contest. Thousands of brochures were distributed to players by VLT retailers, lottery retailers and casino employees. In its second year, the focus was on educating players about randomness and odds. Activities included workshops for employees, shopping mall displays, and newspaper and cable television guide advertisements (http://www.gamingcorp.ns.ca/responsible/). In assessing the impact of the first event, the organisers noted that the local problem gambling helpline reported an increase in the number of calls received from people seeking information or assistance for a gambling problem and that many callers specifically mentioned the literature distributed during the week-long campaign as a catalyst in their decision to call the helpline (*Responsible Gaming Quarterly*, Winter 2003).

In 2003, the (U.S.) National Council on Problem Gambling and the (U.S.) Association of State Problem Gambling Service Providers organised the first National Problem Gambling Awareness Week (NPGAW). NPGAW is designed to utilise the structure and partnerships of the National Council's 33 state affiliate chapters, corporate members and other non-profit organisations. Held in early March, between the two premier sporting events on the North American calendar (professional football's Super Bowl and the 'March Madness' college basketball playoffs), NPGAW is primarily targeted at the families of problem gamblers and at primary care health professionals. The goal of the campaign is to educate the general public and medical professionals about the warning signs of problem gambling and to raise awareness about the help that is available both locally and nationally. A total of 52 organisations participated in events in 24 states during the first National Problem Gambling Awareness Week in spite of delays in distribution of the informational material.

In 2004, the National Council, in collaboration with the Association of State Problem Gambling Service Providers, the Oregon Department of Human Services and the Oregon Lottery, developed and distributed a free tool kit which was made available to its network of affiliates and corporate members as well as the general public on a dedicated website (http://www.npgaw.org). The materials include a 30-second video Public Service Announcement (PSA), radio PSA scripts, posters, brochures, sample editorials, press releases and proclamations. In 2004, events were held in over 30 states. More than 2,500 resource kits were distributed and the television spot was run during the week in nine states around the country with a combined population of approximately 75 million. A key component of the 2004 NPGAW was a direct mail flier aimed at primary care physicians with the message 'Chances are one of the patients you'll see today has a gambling problem'. In Nevada, the Nevada Council on Problem Gambling sent those fliers to more than 1,400 primary care physicians and medical clinics throughout the state (Whyte, personal communication).

Evaluation of public awareness campaigns

Evaluations of problem gambling awareness campaigns are rare but increasing. The earliest published study evaluated whether a brochure on problem gambling increased understanding of the disorder in the general population (Ladouceur et al, 2000). Participants (n=115) were recruited in a shopping mall and in a municipal park and randomly assigned to receive or not receive the brochure. All of the participants were subsequently assessed to determine their

knowledge of information contained in the brochure, including the number of pathological gamblers in Québec, Canada, identification of at-risk behaviours and the existence of professional help. The experimental group was significantly more likely than the control group to provide this new information accurately and the researchers recommended that systematic evaluation of informational material be conducted before widespread implementation occurs. However, they noted that further research is needed to evaluate the long-term effects of such campaigns.

Najavits, Grymala and George (2003) reported on a $200,000 (USD) state-wide campaign to educate the public about the signs of problem gambling and to increase awareness about problem gambling services in Indiana. Two telephone surveys were conducted, just prior to, and six weeks after, the campaign, which included radio, newspaper and billboard advertisements, presentations by nationally recognised speakers, a gubernatorial declaration of 'Indiana Problem Gambling Awareness Week', town hall meetings and extensive local press coverage. The researchers found no significant differences in pre- and post-campaign responses to questions assessing familiarity with the issue of problem gambling, identification of problem gambling warning signs or awareness of problem gambling services in Indiana. However, only eight percent of the post-campaign respondents (n=400) reported seeing one of the advertisements. The researchers concluded that problem gambling awareness campaigns require both an effective message and adequate dissemination of the message and they recommended the use of television advertising in future campaigns.

The largest and longest running problem gambling prevention programme is probably the community education campaign developed by the Victoria Department of Human Services, Australia. That campaign which was initiated in 1995, included a phased centralised state-wide media and print component and a decentralised component that involved deployment of 13 Community Education and Gaming Facility Liaison Officers (CEGFLOs). CEGFLOs are employees of social service agencies with responsibility for local community education as well as liaison with gaming industry venues and personnel. In addition to the work done by the CEGFLOs, there are 55 BreakEven counsellors in Victoria who also engage in extensive community education activities. The three phases of the state-wide media campaign included a five-week multi-language radio, newspaper and billboard advertisement phase in 1995, a 14-week television advertisement phase in 1996, and a 30-week radio and television advertisement phase between 1997 and 1998.

Jackson, Thomas, Thomason and Ho (2002) report on the effectiveness of the community education campaign undertaken in Victoria. Evaluation of the campaign included a telephone survey (n=502) to test recall of the state-wide television campaign, analysis of telephone calls to the problem gambling helpline (G-Line) before, during, and after the campaign, analysis of the number of new clients at BreakEven services before, during, and after the campaign, a postal survey of CEGFLOs, analysis of two-week task diaries undertaken by CEGFLOs during the campaign, postal surveys of gaming venue staff and managers, face-to-face interviews with members of the general public and with gaming venue patrons, and collation and analysis of all problem gambling information products created and distributed as part of the local campaigns.

Six months after the conclusion of the third phase of the state-wide campaign, community awareness of support services for problem gamblers increased to 71%, from 43% prior to the beginning of the first phase of the campaign. There was an immediate and sustained increase in the number of telephone calls received by G-Line following the third phase of the campaign as well as an increase in new client enrolments at BreakEven. Nearly all of the staff at the gaming venues (97%) had heard of BreakEven, 51% of the venues had contact with BreakEven and eight percent of the venues had actively sought advice from BreakEven on how to manage a difficult situation involving a patron. Problem gambling material was displayed in 99% of all gaming venues and 83% of gaming venue staff had attended a training/information session

about problem gambling. The evaluation team concluded that the state-wide and local campaigns worked successfully to reinforce each other and that community awareness of the existence and nature of problem gambling and problem gambling support services as well as direct access to those services increased substantially as a result of the campaign. Despite the diversity of the local community awareness materials, the 'branding' of problem gambling services in Victoria was deemed a success (Jackson et al, 2002).

In March 2001, the Victorian Government announced that $6 million (AUD) would be spent over the following year on a new advertising and communications campaign, this time to reduce problem gambling. That campaign highlighted the risks associated with gambling, provided for self-assessment of problem gambling behaviours, and provided information about treatment, counselling and support services. According to the Minister of Community Services, the first wave of that campaign, which targeted middle-aged married men and women, cost $1.8 million (AUD) and began in November 2000, resulted in a sustained increase of approximately 70% in counselling calls to Gamblers Help (as the problem gambling helpline is now called) as well as a 118% increase in new face-to-face counselling appointments in the first month of the campaign. The second wave of this campaign will target older and younger people. According to the Department, the press and radio advertisements will be broadcast in Arabic, Italian, Greek, Vietnamese, Turkish, Spanish, Cantonese and Mandarin with brochures, education kits and self-help information available in all of those languages (Victoria Department of Human Services, 2001). According to the Department's 2002-2003 annual report, an evaluation of the campaign had been funded and was underway. However, the results of this evaluation are not yet publicly available (Victoria Department of Human Services, 2003).

In 2004, Olynik (2004) presented the results of an advertising tracking study to measure the effectiveness and impact of the second phase of the Manitoba Lotteries Corporation responsible gambling advertising campaign, a relatively 'hard hitting' television and radio effort aimed at males aged 18 to 24 years. The study surveyed 630 Manitoban adults and assessed awareness of problem gambling as an issue, consumer attitudes and awareness and use of the Addictions Foundation of Manitoba (AFM) helpline. The results showed that message recall was higher for television than for radio advertisements with four out of ten respondents recalling seeing the television advertisements compared with two out of ten for the radio advertisements. The results also showed that the advertisements had a more positive impact among the targeted age group with 66% of young adults recalling signs of problem gambling based on the 'young man in office' advertisement compared with 37% of older adults and with 58% of young adults recalling the 'wife with baby' advertisement compared with 43% of older adults. Several challenges to the campaign were noted, including the tension between budget and creativity, the mixed impact on corporate image and the timing of the launch of the campaign. Lessons learned included the importance of attending to research on at-risk groups, targeting messages, evaluating the impact, developing a public relations strategy and communicating with partners.

All of the researchers who have conducted evaluations of problem gambling awareness campaigns emphasise the challenge that media campaigns to *promote* gambling pose for problem gambling prevention efforts. For example, Najavits et al (2003) note that in the same year that Indiana, U.S. funded a $200,000 (USD) public awareness campaign, the state spent $11.5 million on advertising for its state lottery. Jackson et al (2002) point out that spending on gambling advertising in the Melbourne area (Australia) was nine times greater than spending on the Victoria Department of Human Services awareness campaign in the same period. "This comparative spend by the industry … is introduced … to contextualise what we believe are very good results in reach and recall of the state-wide media campaign" (Jackson et al, 2003, p. 24). Deguire (2003) goes even further and questions the potential effectiveness of *all* current industry efforts at primary prevention, given the much greater budgets, extensive reach, and aggressive nature of industry promotion and publicity campaigns.

Recent innovations

Game education for players

In 1998, Game Planit, a business partnership of multimedia, problem gambling and educational specialists from Canada, developed Safe@Play, a comprehensive educational module about how slot machines work. In 2001, Game Planit released a CD-ROM version of that tutorial and made it available for purchase (www.gameplanit.com). Whilst there has been no evaluation of the effectiveness of Safe@Play, the tutorial has been used in numerous treatment programmes in Canada and the U.S. as well as in public awareness and prevention campaigns, in undergraduate psychology classes, at gambling conferences and in gaming venues.

Since the 1980s, numerous programmes have developed internationally to encourage moderate drinking behaviour. One consequence of such approaches has been the emergence of international definitional standards of 'moderate drinking' and the development and broad dissemination of moderate drinking guidelines (Dufour, 1999). In a recent conference presentation, Currie (2004) employed prevalence survey data from five Canadian provinces and the Canadian national survey to calculate low-risk parameters for 'moderate' gambling frequency, duration and spending. Maximums for the Canadian adult population were: gambling no more than two to three times per month, gambling no longer than 60 minutes per session, and spending no more than $75 (CDN) per month and no more than two percent of monthly income. Whilst Currie cautions that those parameters may not be internationally generalisable, the approach of using population data to determine acceptable levels of gambling participation is both interesting and promising.

Gaming venue information centres

An innovative programme in Manitoba, Canada is the Responsible Gaming Information Centre, developed as a partnership between the Addictions Foundation of Manitoba and Manitoba Lotteries. The centre, located at a Winnipeg-area casino, is staffed by counsellors who primarily provide guest education about how gambling works using the Safe@Play slot tutorial. When requested, Centre staff provide on-site support and referral for guests, consult with casino staff and managers, and participate in interviews with guests seeking voluntary exclusion. The Centre holds Responsible Gaming Open House/Awareness Weeks on the gaming floor of the casino several times a year. At each of these four-day events, approximately 1,000 people will watch the slot tutorial as it is projected on a large screen and obtain questionnaires and handouts. Developed as a pilot project, the programme is now permanent and will be implemented in the other Winnipeg-area casino later in 2004 (Mehmel, personal communication).

A similar programme in Victoria, Australia is the Crown Casino Customer Support Centre. This industry-initiated effort involved the establishment of a separate facility within Crown Casino in Melbourne where patrons who are concerned about their own or someone else's gambling can obtain information and referrals as well as professional counselling on-site and access to a self-exclusion programme (Crown Casino, 2004).

Another recent, innovative programme involves a partnership between Global Cash Access (GCA) and the (U.S.) National Council on Problem Gambling. GCA is the leading provider of cash access and customer financial management technologies in gaming venues in the U.S. The GCA/NCPG Responsible Gaming Partnership includes signage as well as a recorded audio message at ATMs and other key locations, encouraging sensible play and publicising the Council's 24-hour toll-free helpline number. Two-thirds of GCA's ATMs have telephone

handsets with direct connection to GCA's 24-hour call centre which is linked in turn to the National Council on Problem Gambling's helpline. Customers can be linked immediately to a problem gambling counsellor, if required. Finally, that programme provides an option for customers to block access to credit card cash advances (Self Transaction Exclusion Program, STEP).

The convergence of financial and gambling technology (e.g. ticket-in ticket-out (TITO) technology[11]) and growth in casino 'responsible gaming programmes' suggests a possible future developmental direction. Self-service 'kiosks' are becoming ubiquitous on gaming venue floors, providing integration of an increasing array of gaming and financial services. Patrons can redeem tickets and loyalty card points, check balances for loyalty programmes, obtain cash from bank accounts and credit cards, purchase show tickets and make restaurant and spa reservations, and learn to gamble in a friendly, non-intimidating fashion. Kiosks appeal to gaming operators because of the ability to reduce marketing expenses and track marketing programme effectiveness in real time (Green, 2004). However, it would not take much for gaming operators to include 'responsible gaming' information and access to problem gambling services directly to customers from such kiosks. The move toward incorporating responsible gaming features on kiosks would be further hastened if governments required such implementation.

3.4.2.2 Secondary Prevention

During the 1990s, a growing number of gaming companies worldwide began to introduce measures to increase staff awareness of problem gambling and to establish programmes allowing customers to exclude themselves from gaming venues. In some cases, these steps were taken voluntarily; in other jurisdictions, government regulators mandated these actions. However, the legal and ethical issues related to 'consumer protection' in the various sectors of the gambling industry remain largely unexplored.

Staff awareness and training

In 1989, Harrahs began the first employee training programme to address the issue of underage gambling. The programme, Project 21®, is centred on three basic themes including the notion that *all* casino employees (and not just gaming personnel) must take responsibility for identifying underage individuals, the importance of educating the public about age restrictions for different types of gambling, and the consequences of underage gambling for the operator and the under aged individual. Initially, Project 21® relied on an in-house approach aimed at employees and customers utilising posters, brochures, employee training, paycheque 'stuffers', internal publications and a back-of-house advertising campaign. In 1992, Harrahs began working to reach young people directly by engaging high school students in a competition for college scholarships. To compete, students submit original essays, posters or public service announcements focused on increasing community awareness of the Project 21® themes. Participating casinos award student scholarships of up to $2,500 (USD). In 1995, Harrahs began licensing Project 21® to state gaming associations as well as casinos in the U.S. and Canada. Currently, casino properties in 14 states participate in some form of the Project 21® programme (*Responsible Gaming Quarterly*, Winter 2004).

Operation Bet Smart® is another Harrahs training programme designed to inform employees about the corporation's commitment to responsible gaming and Harrahs' policies and

[11] Ticket-in ticket-out (TITO) involves receiving a ticket when cashing out on a slot machine. This ticket can then be inserted in another machine for continued play or exchanged for cash.

procedures (Harrahs Entertainment, 2004). Operation Bet Smart® was developed to increase awareness in casino employees in how to recognise problem gamblers and to provide them with techniques as to how to offer assistance. This programme also provides back- and front-of-house signage that includes problem gambling helpline telephone numbers as well as brochures posted at cashier cages and other strategic locations in the corporation's casinos. Similar initiatives have been adopted by other casino companies and by state lotteries (e.g. Connecticut, New York). Other gambling industry employee training programmes include:

- *When the Stakes Are Too High: Understanding Problem Gambling* (California Council on Problem Gambling)
- *Advancing Responsible Gaming, Underage Gambling: A Bad Bet for the Gaming Industry* and *Compulsive Gambling: Red Flags and Referrals* (North American Training Institute)
- *When the Fun Stops: Problem Gambling Awareness Training* (Nevada Council on Problem Gambling)[12]
- *Careplay* (College of Social Work, Lucerne, Switzerland)

In 1998, the Addictions Foundation of Manitoba began development of the Manitoba Problem Gambling Customer Assistance programme for owners and employees of establishments offering video lottery terminals (Smitheringale, 2001). That programme aims to increase understanding of problem gambling, identify on-site behaviours indicating that customers are experiencing gambling problems, increase knowledge of resources for problem gamblers in the community and provide strategies for assisting customers with problems. The course content was developed by AFM staff with input from focus groups of G.A. members and the 400 participants in the pilot phase training. Following the 1999 pilot phase, that training programme became mandatory for employees at all VLT sites. During the following year, 20 AFM trainers travelled to communities throughout the province and delivered the training free of charge to nearly all VLT sites with five or more employees. A centralised database tracked course attendance and site compliance and generated personalised certificates of attendance. The Manitoba Gaming Control Commission was responsible for enforcing VLT site compliance with this mandated training through their inspectors and non-compliance penalties.

As of August 2001, 1,550 participants from 623 sites had taken the training and AFM staff had delivered 160 training sessions in 45 locations across the province. All participants complete a course evaluation at the conclusion of the training session. Participants report significant increases in knowledge of problem gambling, learning a variety of skills to assist customers experiencing problems with their gambling, and find the course interesting and informative. Nearly all of the participants (98%) felt that they would use the information they had learned and 99% said they would be able to provide assistance to a customer who was concerned about their gambling and asked for help (Smitheringale, 2001).

A similar programme was implemented by the Nova Scotia Gaming Corporation in 1999 to train video lottery terminal retailers about responsible gaming. The goal of the programme is to provide VLT retailers and their staff with the skills, knowledge and attitudes to implement and maintain responsible gaming guidelines and procedures. To date, no evaluation of this programme has been published.

Ladouceur and colleagues (2004) recently completed an evaluation of a two-hour awareness promotion workshop aimed at VLT retailers in Québec. That awareness programme, titled 'As luck would have it', provides retailers with information about chance and randomness, links

[12] This programme is recognised by the Nevada Gaming Control Board as meeting its regulatory requirements for employee training on problem gambling.

between misunderstanding the concept of chance and excessive gambling, the signs and symptoms of the disorder, and how to intervene in cases where retailers decide to do so. The results of the evaluation showed that retailers developed a better understanding of problem gambling, felt more capable of coping with problem gamblers and more confident of choosing the appropriate moment to do so. In a follow-up phase of the evaluation, retailers who had attended the workshop were significantly more likely than retailers who had not attended to report that they had approached a problem gambler and had discussed how to help problem gamblers more often.

In 2004, the Manitoba Lotteries Corporation announced the establishment of the Canadian Gaming Education Forum, in partnership with the University of Nevada, Reno. The goal of those bi-annual gaming employee training events is to provide courses on gaming management for Canadian gaming professionals. Each one-day course counts as six hours of instruction toward the 93-hour requirement for a certificate in gaming management from the University of Nevada, Reno and costs approximately $600 (CDN). Whilst the majority of courses focus on gaming operations (e.g. accounting and auditing, marketing, security and fraud), the latest announcement includes a course titled 'Strategies for Dealing with the Gaming Patron' including problem gamblers (Manitoba Lotteries Corporation, 2004).

In a similar vein, the National Center for Responsible Gaming (NCRG) is currently working with the Institute for Research on Pathological Gambling and Related Disorders to create an employee responsible gaming certification programme. Scheduled to debut in 2004, the programme will teach employees about 'disordered' gambling and train them to encourage customers to gamble more responsibly (National Center for Responsible Gaming, 2004).

Host responsibility or server interventions

Evidence exists internationally for the effectiveness of 'host responsibility' training programmes for servers of alcoholic beverages in decreasing alcohol-impaired driving (Shults et al, 2001). One element of those programmes is education in how to identify signs of intoxication. A significant challenge in the development and implementation of 'host responsibility' training programmes for gaming venues is that there are few obvious physical signs of gambling impairment which servers could be trained to recognise.

In the process of developing a training programme for gaming staff to deal with potential problem gambling behaviours, the Australian Gaming Council solicited the opinions of a group of prominent psychologists and practitioners in the field of problem gambling regarding their views on criteria that might be used in gaming venues to identify problem gamblers (Allcock et al, 2002). The conclusion of the group was that clear, definitive behaviours caused by gambling problems cannot be reliably described. There was consensus, however, that some behaviours are likely to indicate distress related to gambling problems. These behaviours, ranked from most likely to indicate the presence of problem gambling to the least likely, include:

- Requests for assistance to self-exclude
- Patrons who personalise machines (e.g. verbal and physical abuse)
- Patrons irritated at being addressed by venue staff while playing
- Attendance at venue every day
- Repeated visits to ATMs during playing time
- Patrons waiting for opening time and/or present until closing time
- Patrons who attempt to borrow money from staff or other patrons
- Patrons requesting that staff maintain secrecy about their attendance
- Family members/partners/colleagues coming in search of the patron

- Patrons exhibiting mood swings (e.g. abusive to staff)
- Attachment to a particular machine
- Claims of malfunction of EGMs

As Allcock et al (2002) note, there is a long way to go in developing empirically tested models of behaviour indicative of problem gambling. Their recommendations are that gaming venue staff should receive information and training regarding potential behaviours and situations with which they may be required to deal. House policies should clearly outline and delineate roles and responsibilities of different staff and senior, appropriately trained managers should be responsible for handling difficult situations. Finally, senior staff should be knowledgeable about, and have a working relationship with, treatment providers in their community or region since this can help improve patron access to treatment and provide information and resources to the venue.

Exclusion programmes: imposed and voluntary

From a public health perspective, exclusion has the potential to be an effective tool for minimising harm from gambling by assisting some individuals to control their gambling. Several European governments have mandated 'imposed exclusion' programmes, where patrons with problems are identified by casino staff and barred from gambling, for all of their casinos. A growing number of governments have mandated 'voluntary exclusion' programmes, where patrons (or family members) may request that they be banned from the gaming establishment, removed from its mailing list and sanctioned if they re-enter the premises. Voluntary exclusion programmes are operated primarily by casinos but increasingly are being required for clubs, pubs and taverns where electronic gaming machines are located. Exclusion programmes have been introduced in several European countries, all of the Canadian provinces, several U.S. states (e.g. Connecticut, Illinois, Louisiana, Michigan, Mississippi, Missouri, Nevada, New Jersey), in New Zealand and in some states in Australia, most notably Victoria.

Imposed exclusion

Holland Casino's Responsible Gambling Programme (RGP) is a proactive strategy that depends on a computerised, linked visitor registration system. All patrons who visit any of the Holland Casinos 20 or more times per month for three months are interviewed by a floor manager and a 'Security and Risk Control' (SRC) representative. All floor managers and SRCs receive training on recognising problems and conducting such interviews and SRCs receive additional training in crisis management. After the interview, all of these frequent visitors are banned from visiting any of the Holland Casinos for a minimum of six months. When the entry ban expires, a return interview is required before the patron can enter any of the casinos. During that interview, patrons are strongly encouraged to opt for limited visits (no more than eight visits per month) for a period of six months to a year.

Bes (2002) reports on an evaluation of the Holland Casino programme. The evaluation included interviews with floor managers and SRCs, review of files on 6,753 casino visitors, a postal survey of 972 patrons and in-depth interviews with 40 problem gamblers. Less than one percent of the gamblers at Holland Casinos visit more than twice a week. One-third (36%) of the patrons surveyed knew of the existence of the Responsible Gambling Programme. Whilst 90% of the survey respondents had not had contact with the RGP, 40% of the respondents who scored five or more on the SOGS had received an entry ban at some time. In addition, a considerable number of patrons themselves request either an entry ban or limited visits. In response to that evaluation, Bes (2002) notes that Holland Casinos made changes to the programme, including targeting patrons who visited less frequently, developing a new

informational brochure, advertising the programme on its website, and training train floor managers and SRCs in motivational interviewing techniques.

Like the Netherlands, Switzerland requires casinos to engage in extensive prevention activities. Prevention within the casino includes staff training, monitoring of patron visits and expenditures, and dissemination of information about exclusion options. External prevention includes an awareness campaign for the general public, a helpline, a website, focused campaigns for operators and youth, and coordination and cooperation with other agencies. Sani and colleagues (Sani, 2003; Sani, Ladouceur & Carlevaro, 2002) conducted an evaluation of the efficacy of single information sessions attended by patrons identified by employees of the Casino de Locarno as having gambling problems. Twelve individuals were monitored for one month to evaluate the frequency of their gambling and their expenditures in time and money. A control group of six players was not informed of the results of that monitoring; an experimental group of six players was informed of the results. At the end of the monitoring period, a single counselling session was provided where the client was offered a choice of self-exclusion, an imposed exclusion by the casino, or another period of monitoring followed by a second counselling session. The results of the evaluation demonstrated the importance of the counselling session that accompanied the alternatives of exclusion. The monitored clients reduced their expenditures of time and money and their frequency of visits, with a greater reduction among the experimental group.

In June 2004, Caesars Entertainment announced that it was starting an exclusion programme to ban problem gamblers from all of the company's U.S. casinos. In the three months since that programme started, 50 individuals have been involuntarily excluded for life from Caesars casinos (Wexler, personal communication). That programme involves training casino staff to identify patrons exhibiting specific behaviours. It is not known whether an evaluation of the programme is planned.

Voluntary exclusion

Several small studies of voluntary exclusion programmes have been conducted or are underway. For example, Ladouceur and colleagues (2000) carried out a descriptive study of the characteristics and outcomes for a cohort of individuals who self-excluded from the Montreal Casino in Québec, Canada. Individuals signing up for that programme can select a period ranging from six to 60 months for self-exclusion. The researchers found that 95% of the self-excluders met the psychiatric criteria for pathological gambling, that 24% had one or more previous exclusions, that 36% of the repeat excluders admitted returning to the casino to gamble, and that 50% gambled on multiple forms. Nearly half of the self-excluders had considered seeking professional help but only 10% actually did so. The researchers concluded that self-exclusion was helpful for gamblers who might need assistance but were not ready to seek professional help.

In a conference presentation, Steinberg (2002) provided information from patrons who were surveyed at the time that they chose to self-exclude from a large tribal casino in Connecticut, U.S. Over a 14-month period, 294 patrons voluntarily excluded themselves from the casino and 63% of those individuals completed the survey. Respondents were most likely to have learned about the exclusion programme at the casino from a family member or friend (39%), followed by Gamblers Anonymous (14%) or a casino employee (11%). Nearly all of those respondents (96%) scored five or more on the SOGS. Overall, 64% of the respondents identified slot machines as their main problem although women were more likely than men to nominate slot machines while men were more likely to nominate blackjack. All of the respondents were invited to participate in a follow-up study and 43% (n=80) agreed; however, only 20 of those individuals were actually contacted and re-interviewed. The interval between

the two interviews was not specified. Half of the respondents felt that the self-exclusion programme needed to be better publicised and 42% felt that casino employees had known that they had a problem. Only four respondents returned to the casino to gamble after excluding themselves; 81% of those who did not return said that this was because they were determined not to gamble and 75% said that it was because they feared arrest. Three-fifths of the respondents felt that exclusion should be permanent with no provision for appeal. Nearly half of the respondents (45%) were satisfied with the programme and another 40% had mixed feelings but 85% indicated that they would recommend self-exclusion to others. Based on those respondents' subsequent help-seeking behaviour, Steinberg (2002) concludes that self-exclusion is an effective gateway to formal treatment or self-help for problem gamblers.

More recently, the South Australia Centre for Economic Studies (2003) conducted a thorough review of self-exclusion programmes in Australia and internationally in the course of a study of the effectiveness of the self-exclusion programmes operating in Victoria. The researchers concluded that self-exclusion programmes are evolving rapidly and that it is difficult to identify 'best practice' in self-exclusion programmes for a variety of reasons including rapid growth of the gaming industry, community concerns about the accessibility of gambling and technological innovation within the industry. These researchers identified several important challenges to the effective implementation of voluntary exclusion programmes, particularly in relation to systems of identification, detection and enforcement. Another key problem is the lack of integration with complementary harm minimisation measures. Their recommendations included jurisdictional standardisation and uniformity, introduction of voluntary measures such as pre-commitment betting limits, development of cost-effective, technology-based systems for notification, monitoring and compliance, involvement of trained counsellors in the assessment and implementation of exclusion along with follow-up with the excluder, and development of a research and evaluation component.

Whilst existing exclusion programmes are a step in the right direction, there is considerable room for improvement. At an Alberta conference on problem gambling prevention, Nowatzki and Williams (2002) reviewed all of the Canadian exclusion programmes and made a series of recommendations to improve exclusion programmes internationally. These recommendations included:

- Mandatory promotion of exclusion programmes
- Jurisdictional standardisation and uniformity so that the ban applies to all properties in the jurisdiction and patrons would not have to enter a casino or venue to sign up or renew self-exclusion
- Extending exclusion to all gaming venues
- Use of computerised identification checks to enforce exclusion
- Penalties for venue and gambler upon breach of exclusion
- Optional counselling and mandatory gambling education seminars for persons who choose to self-exclude
- Increased training and education of gaming employees

Earlier this year, the (U.S.) National Council on Problem Gambling published a set of recommendations for voluntary exclusion, based on a series of forums and reflecting consensus among a broad range of stakeholders, including industry representatives, gambling regulators, problem gambling counsellors, researchers and recovering gamblers (National Council on Problem Gambling, 2003). Those recommendations, which addressed issues related to venue concerns, duration, administration and enforcement, were quite similar to the Canadian recommendations.

Napolitano (2003) has argued that the entire concept of voluntary exclusion is flawed, contending that these agreements are not enforceable contracts and that the sanctions imposed

on the gambler are disproportionate to the agreement as well as unjustified. In the present context, his most interesting argument is that voluntary exclusion programmes use "a fixed as opposed to an individualised approach" (Napolitano, 2003, p.313). Since exclusion programmes are unlikely to be discarded as a weapon in the 'responsible gambling' armamentarium, this remark points to the likely importance in the future of developing exclusion programmes 'matched' to the type of gambler and specific difficulties that person is experiencing.

3.4.2.3 Responsible gambling features: applications for electronic gaming machines and online gambling sites

Rapid expansion of electronic gaming devices and the emergence of a public health approach to minimising gambling-related harms have led to growing interest by governments and gaming operators in Responsible Gambling Features (RGFs). RGFs are features built into electronic gaming devices that are intended to reduce the likelihood of players losing control over their gambling. Examples include placing limits on game speed, maximum bets, and high-value bill acceptors, displaying information about time and expenditures per session as well as pop-up messages regarding responsible play, and requiring mandatory cash-outs after a predetermined period of play. To date, the governments of the Australian state of New South Wales and the Canadian provinces of Manitoba, Nova Scotia and Québec have mandated the implementation of RGFs.

In 1999, the New South Wales government adopted the Gambling Legislation Amendment (Responsible Gambling) Act. This Act, which includes a range of initiatives intended to minimise harms related to electronic gaming machines, mandated three changes to gaming machines in the state. These included (1) reconfiguration of machines to eliminate high-value bill acceptors ($50 and $100 (AUD)), (2) reduction of reel spin speed to slow speed of games to a minimum of five seconds, and (3) reducing maximum bet size from $10 to $1.

In 2000, the Nova Scotia Gaming Corporation announced that 3,200 video lottery terminals would be replaced with new or modified machines incorporating responsible gambling features designed to discourage excessive play. The features, developed after consultation with problem gambling experts, video lottery manufacturers and player focus groups, included (1) a permanent on-screen clock showing the time of day, (2) display of betting activity in cash amounts rather than in credit points, (3) pop-up reminders of time spent playing after 60, 90 and 120 minutes of continuous play, and (4) a mandatory cash-out after 150 minutes of continuous play. To complicate matters, however, the new machines in Nova Scotia also included new, faster games as well as the addition of a bill acceptor.

In 2003, Loto-Québec, the Crown corporation that runs Québec's lottery and casinos, began replacing the 14,293 VLTs that it owns and operates with machines that included responsible gambling features. The new machines in Québec include a permanent on-screen clock and display of betting activity in cash amounts. The new machines also include (1) mandatory selection of session length before play begins, (2) a display of helpline numbers and warnings on all screens, (3) an explanatory module on games of chance for players to read if they choose, (4) a reduction in the number of games available, (5) a reduction in the speed of the games, (6) a reduction in the maximum stake from $600 to $100 (CDN), and (7) deactivation of the machines outside the hours authorised by the liquor permit.

Manitoba is the latest jurisdiction to incorporate RGFs on new electronic gaming machines at charitable casinos and racetracks. In 2004, the Manitoba Lotteries Corporation will replace all of its existing VLTs at its charitable casinos and at racetracks throughout the province with new machines with responsible gambling features. In addition to a permanent on-screen clock,

display of betting activity in cash amounts and a mandatory cash-out, the RGFs on the new machines in Manitoba include (1) player-initiated time limits, (2) a cap on the number of extensions of session time permitted, (3) varied content and appearance of pop-up messages to avoid habituation, and (4) provision of a 15-minute warning to give players time to prepare for the mandatory cash-out. Additional measures include restrictions on the amounts that players can insert into a machine in a single session of play, a system that allows players to track their expenditures in a given session and the ability to print out responsible gambling messages from the machine. The new machines, which also feature new games and lower stakes, will be introduced throughout Manitoba over the course of the year.

A similar trend is emerging in the rapidly developing area of interactive gambling services. Online gambling provided by licensed and regulated operators now exists in approximately 30 countries, including Australia, Canada, the Netherlands, South Africa and the U.K. (Sinclair & Volberg, 2000). McMillen (2003) notes that the interactive technology to address problem gambling online has existed for several years and has the potential to exceed any protections offered in the 'physical' world. Licensed operators are increasingly adopting such measures and their further enhancement is the subject of extensive research and development. For example, licensed online gambling sites in Australia are required to have player protection measures in place. In addition to provisions for voluntary and imposed exclusion, those measures include limits set by the service provider or by the player on monthly expenditures and on amounts bet, prohibitions against credit betting, delays in payment of winnings, player tracking systems that monitor behaviour and identify potential problems and which can trigger imposed exclusion, and online links to counsellors and other forms of problem gambling assistance (Lasseters Corporation, 2003).

A study into the psychological factors involved in 'impaired control' established that the majority of regular gamblers are liable at some time to experience some measure of loss of control over time or money spent gambling (Dickerson, Haw & Shepherd, 2003). Those researchers proposed that a range of technical measures be made available to enable players to pre-determine the scale of their gambling activity, including time limits, monetary limits and avoidance of venues. Enforcement of those limits could be accomplished through the use of an identity or 'player tracking' card readable at a central network server linked through card readers at all gaming venues or even on each machine. Comparable enforcement is possible on online gambling sites through identification of the unique 'digital signature' associated with every personal computer.

Evaluation of responsible gambling features

Whilst all of these measures have good face validity with problem gambling experts generally agreeing that it is desirable to limit the amounts of time and money spent gambling and to provide gamblers with information that will allow them to make informed decisions about their gambling involvement, it is unclear precisely what impact each of these measures will have on regular gamblers and problem gamblers. Despite their intuitive appeal, there has been very little research into the development of RGFs or their effects on problematic gambling behaviour.

A small, qualitative study carried out in New South Wales, Australia (Riley-Smith & Binder, 2003) highlights the complexities of implementing RGFs. Forty-five regular or problem poker machine players were invited to play on video poker machines with ten different 'harm minimisation' messages (running either consecutively or randomly) and then to participate in focus groups to assess the likely impact and effectiveness of those messages. All of the messages were accompanied by the phrase 'If gambling is a concern for you, call G-Line'. Three messages were evaluated as the most effective: Have you spent more on gambling than

you intended? Are you gambling longer than planned? Have you felt bad or guilty about your gambling? However, the researchers concluded that the ability to *identify* with one of those messages appears to reinforce the *lack* of a gambling problem unless links are made to other potential problem indicators. For example, 'Are you gambling longer than planned?' is such a common experience for regular poker machine players that it was not considered an adequate reason to initiate a call for help.

To date, only two large-scale studies have been carried out to assess the impact of changes to electronic gaming machines on regular and problem gamblers.

Methods

In New South Wales, Australia the Gaming Industry Operators Group commissioned an independent study of the mandated RGFs by researchers at the University of Sydney Gambling Research Unit (Blaszczynski, Sharpe & Walker, 2001). That research was aimed at evaluating the differential impact of proposed changes to electronic gaming machines in New South Wales on recreational and problem gamblers and at determining whether there might be negative unintended consequences associated with the recommended changes.

Blaszczynski, Sharpe and Walker (2001) completed a series of studies to assess the likely impacts of those changes to gaming machines in New South Wales. The first study assessed player satisfaction among regular players after experience playing on modified and unmodified machines in a laboratory setting. The second study assessed differences in wager size, number of bets and time spent playing by regular players on modified and unmodified machines in gaming venues. The third study tracked differences in expenditures on modified and unmodified machines by way of the computerised accounting system that tracks cash flow for individual machines. The final study employed focus groups to assess the views of diagnosed pathological gamblers of the likely effectiveness of the changes to the machines.

In Nova Scotia, Canada the two-year implementation plan called for an introductory roll-out of 1,000 modified machines and an independent evaluation of the impact of the RGFs. The evaluation was intended to assess awareness of the new features, the effects of those features on player behaviours, perceptions and attitudes, and identification of additional enhancements to improve the effectiveness of the features in minimising excessive play (Schellinck & Schrans, 2002).

The research design in Nova Scotia included two components. The qualitative component included observation of play sessions, focus groups with regular VLT players and interviews with a small number of players. The quantitative component consisted of baseline and follow-up interviews with a sample of 222 regular VLT players recruited either through an intercept method at VLT locations throughout Nova Scotia or from an existing database of regular VLT players developed by the same research team for an earlier evaluation of VLTs. Baseline data were collected prior to the introduction of the new machines and follow-up data were collected over a period of six months after the introductory rollout.

Results

In New South Wales, the research team found that limiting bill acceptors affected expenditure more than any other individual modification. One out of ten (13%) of eligible participants used high-denomination bill acceptors. Problem gamblers were twice as likely as non-problem gamblers to have used high-denomination bill acceptors at least once. Only four percent of all respondents placed maximum bets greater than $1 (AUD) although problem gamblers were

three times more likely to have done so at least once. However, use of high-value bill acceptors was not reliably associated with problem gambling status, problem gambling severity, amount of money lost or persistence in play. Slowing the speed of games was consistently viewed as leading to lower levels of enjoyment. When other factors were held constant, slower players displayed more persistence in their play.

The research team concluded that there was little evidence that the RGFs mandated in New South Wales would reduce problem gambling substantially although those features were likely to reduce the profitability of the machines. Slower reel spins negatively impacted the enjoyment of all players while the reduction in maximum bet appeared to have a relatively small impact on the enjoyment of recreational gamblers but did result in shorter session length, fewer bets and less money lost for all players.

In Nova Scotia, Schellinck and Schrans (2002) examined information for the total sample as well as comparing those who voluntarily chose to switch to the new machines (Adopters) with those who continued to play the older machines (Non-Adopters or Control Group). The researchers also compared respondents in terms of their CPGI problem gambling status.

There were reductions in specific behaviours associated with increased risk for problem gambling, including losing track of time and money, playing beyond desired time limits and spending more money than intended. Interestingly, although there was a significant decline in average session length on the new machines (from 135 minutes to 116 minutes), there was no significant change in the average amount of money spent per session. On a machine basis, rather than player basis, there was an increase in the rate of expenditure per minute.

Exposure to the 60-minute pop-up reminder was associated with a small but significant reduction in session length and a decrease in expenditure among higher-risk players. While the on-screen clock was associated with improvements in keeping track of time and playing within desired time limits, it had no measurable effect in reducing session length or expenditure. Other play behaviours and machine characteristics had significant effects on changes in session length and expenditure and in some cases over-rode the effectiveness of the RGFs. For example, cashing out and then re-commencing play or running credits down to zero before putting in more money reset the internal clock for the pop-up reminders and thus precluded exposure to the message. Extended continuous play, due to either chasing losses or to winning, may have limited the effectiveness of the pop-up messages in motivating players to stop.

Assessment of responsible gambling features

Given the limited amount of research and the fact that these features were introduced in conjunction with changes in game content and speed, it remains unclear whether RGFs alone are effective in reducing the potential for harm from electronic gaming machines. For example, the on-screen clock and display of betting activity in cash amounts rather than credits are measures that were adopted in both Nova Scotia and New South Wales. The two independent research teams agreed that those features appear to be effective in helping gamblers keep track of time and money spent and may contribute to reductions in specific behaviours related to increased risk for problem gambling while not creating negative unintended consequences.

However, conflicting approaches taken in Nova Scotia and New South Wales with regard to bill acceptors make it difficult to assess the impact of that feature on player behaviour. In Nova Scotia, bill acceptors were introduced along with RGFs while in New South Wales, high-value bill acceptors were eliminated with relatively little impact on player behaviour. Similarly, game speed was increased in Nova Scotia and reduced in New South Wales. Increased game speed appears to have contributed to maintenance or increases in expenditures per session in

Nova Scotia. In contrast, slower game speed seems to have contributed to persistence in play in New South Wales with implications for increases in excessive gambling.

Exposure to the 60-minute pop-up message in Nova Scotia was associated with a significant reduction in session length and decrease in expenditure among higher-risk players. However, the feature was annoying to low-risk players. Furthermore, players were able to reset the internal clock and avoid exposure to the pop-up messages in Nova Scotia by cashing out and re-commencing play or by running credits down to zero before putting in more money. Finally, the researchers in Nova Scotia speculate that habituation may reduce the effectiveness of pop-up messages.

Targeted responsible gambling features: A direction for the future

One significant drawback of all of the RGF systems implemented thus far is their 'universal' approach to establishing the parameters for spending time and money playing the machines. This is a challenge both for gaming machine venues and for online gaming sites. An alternative approach, which has not yet been fully developed but appears to be moving forward in the online gambling environment, is to target the provision of information and prevention efforts to patrons who are exhibiting behaviours that are indicative of problem gambling. The appeal of targeted RGFs is that these features promise to minimise interference with regular non-problem players and, therefore, to minimise the impacts of such approaches on gambling revenues.

With an integrated network of hardware, software, interactive content and online support, such a system is capable of analysing a blend of information from player tracking and accounting databases to detect patrons who are exhibiting statistically extreme behaviour and automatically deliver customised content to those individuals. Content could include banner messages, streaming public service announcements, targeted information and prevention materials, a risk survey, betting limit registration, online support and referral, and online self-exclusion.

Conclusion

The few studies that have been completed suggest that some RGFs can be beneficial. However, other such features may have negative, if unintended, consequences and it is not always easy to predict the overall impact of the introduction of these features. Most importantly, it is clear that empirical evaluations of changes to electronic gaming machines need to be conducted on a small scale before being implemented on a jurisdiction-wide basis.

In a discussion paper circulated in August 2004, Livingstone, Woolley and Borrell (2004) identify several difficulties in conducting research on RGFs. A key methodological challenge lies in the differing limitations of field and laboratory studies. Laboratory studies are unable to account for the extent to which the gambling behaviour observed clinically would be replicated in a commercial gambling context. Field studies conducted in 'naturalistic' settings are unable to account for the extent to which the gambling behaviour of participants under observation replicates their usual gambling. Another limitation to field studies is that no consideration has been given to the possibility that gamblers may have quite erratic patterns of participation, such that the *natural* behaviour displayed may not be *typical* of the gambler.

Livingstone et al (2004) note that a critical challenge in implementing RGFs is balancing the individual freedom of the player against the community concern with preventing problem and underage gambling. There is also the important potential that gamblers will utilise a number of 'electronic identities' in order to bypass mandated limits. Nevertheless, these researchers conclude, like many others, that "integrating gambling consumption more fully into the system

of checks and balances common to everyday electronically-based commercial transactions, such as those that accompany credit card use, would appear to provide a framework for some potential solutions" (Livingstone et al, 2004, p.101).

3.4.2.4 Tertiary prevention

Tertiary prevention involves care in cases where disease is established. In fact, tertiary prevention shades substantially over into treatment and intervention, a topic addressed in Section 3.3 of this report. As noted previously, the gambling industry has historically been reluctant to engage in interventions or become involved in providing treatment within gaming venues that requires specialised training and expertise.

In a review of gambling industry harm minimisation strategies, Blaszczynski (2001) devotes only four short paragraphs to the question of tertiary prevention. He cites a review of the effectiveness of the dominant treatment approaches taken internationally, notes that treatment programmes are generally located in existing public and private health and addiction treatment facilities and funded in a variety of government-industry arrangements, and that in most cases "industry players form a relationship with existing … health service providers and refer clients on to these when necessary" (Blaszczynski, 2001, p.23).

In the case of the gambling industry, tertiary prevention includes effective referral to treatment services and liaison with treatment providers in order to prevent future problems with identified problem gamblers. Internationally, venue staff are rarely required to refer patrons about whom they may have concerns but are encouraged, and in some cases required, to obtain education and training about problem gambling and to have information on counselling services available if patrons ask. Similarly, liaison with treatment providers is rarely required of gaming venue staff but does appear to be on the rise, particularly in jurisdictions where venue staff are required to obtain training about problem gambling and/or in situations where exclusion policies are in place.

Several instances of liaison between the gambling industry and treatment or prevention specialists have been highlighted in this review. For example, the patrons identified as problem gamblers at Casino de Locarno (Switzerland) were identified as such by casino staff but the single information sessions were provided by specialist counsellors (Sani et al, 2002). In Manitoba, Canada (and more recently at the Crown Casino in Melbourne, Australia), specialist counsellors staff kiosks located inside the gaming venue to provide information, support and referral for guests and to consult with staff. In Victoria, Australia the Community Education and Gaming Facility Liaison Officers work closely with gaming venue staff on a regular basis. The duties of CEGFLOs specifically include delivering education programmes on problem gambling to gambling facilities and working with gambling facilities to assist them to develop policies, practices and procedures to deal with problem gamblers. In reviewing the effectiveness of the Victoria community education campaign, Jackson et al (2002) note that eight percent of the venues had also actively sought advice from BreakEven on how to manage a difficult situation involving a patron during the campaign.

3.4.2.5 Service providers and awareness training

Most jurisdictions internationally fund efforts in awareness raising with a wide range of audiences including the general public, targeted at-risk groups in the population such as youth and older adults, employees in the major gambling industries, employees of government agencies, and government regulators and legislators. Generally, these efforts are conducted by staff of health and social service agencies or are contracted out to non-governmental agencies.

For example, the 13 Community Education and Gaming Facility Liaison Officers (CEGFLOs) in Victoria, Australia are employees of social service agencies around the state and have primary responsibility for local community education and liaison with gaming industry venues and personnel (Jackson et al, 2002). In South Africa, the National Responsible Gambling Programme coordinates efforts by relevant government agencies, including the Department of Social Services, the Department of Education, and the Department of Finance to raise awareness of problem gambling at public events, such as health and school fairs.

In the U.S., awareness training is most often the responsibility of one of the 33 affiliates of the National Council on Problem Gambling. Many of these non-governmental, non-profit agencies have established 'speakers bureaus' or other organised methods to disseminate information about problem gambling to community-based organisations, neighbourhood associations, adolescent, senior and women's groups, community mental health and addictions agencies, fraternal organisations, and professional and business associations. One example is the Nevada Council on Problem Gambling, which maintains a Community Outreach Programme as well as a Speakers Bureau. The Speakers Bureau is made up of professionals from the fields of medicine, mental health, education, public policy and industry as well as lay people with personal experience with the issue of problem gambling. The programme is designed to reach out into the community with resources appropriate to different audiences including the media, businesses, professional organisations, community organisations, schools and institutions of higher education. The Community Outreach Programme disseminates information about problem gambling to non-profit and social service agencies at health fairs, conferences and workshops. Another example is the Florida Council on Compulsive Gambling which provides training and resources to legal and judicial organisations, corporate audiences, gaming operators and community organisations, including clergy, neighbourhood associations, educators, health insurance and managed care providers, recreational programmes, fraternal organisations and others.

In New Zealand, the non-profit Problem Gambling Foundation which is primarily a problem gambling counselling service, also provides presentations and resources to health professionals including general practitioners, alcohol and drug workers and mental health workers, helping organisations, schools and law enforcement personnel. The Foundation's 'local government' and health promotion teams work directly with community groups to mobilise interest in problem gambling issues, help organise action groups, and assist in presenting petitions and information to local governments. At the end of August 2004, the Foundation played a major role at a two-day conference, organised by the lobby group GamblingWatch, on problem gambling issues for community and activist groups on how to initiate and influence change in their communities. In addition to learning more about how to lobby local governments to enforce regulations on gaming venue signage, time limits and licensing conditions, delegates discussed needs for independence, accountability and transparency in the management of gambling revenues as well as needs for increased awareness by community groups of their sources of funding. The final outcome of the conference was an agreement to develop a coordinated plan to hold a national 'gamble-free' day to raise awareness of problem gambling.

3.4.2.6 Prevention in relation to other behaviours

Programmes and services that prevent substance abuse and mental health disorders have the potential to lessen an enormous burden of suffering and to reduce the cost of future treatment and lost productivity. Furthermore, research has produced solid evidence that selected preventive measures are associated with positive outcomes. While prevention of mental disorders dates back to the 1930s, early efforts were based on humanitarian concerns rather than a foundation of research. Beginning in the late 1960s, increased emphasis was placed on the importance of creating and building a knowledge base (Dorfman, 2000). Nevertheless,

much public health decision making and health promotion practice remains based on "plausibility, politics and timeliness rather than on research evidence" (Petticrew, 2003, p.2).

While systematic reviews and meta-analyses of clinical interventions (e.g. Cochrane reviews) are widely accepted, the use of such reviews in pursuit of public health aims is newer and remains somewhat controversial. Nevertheless, systematic reviews of public health interventions offer at least two pragmatic benefits: (1) the facilitation of the management of increasing amounts of information of variable quality in a critical, reliable fashion, and (2) an abbreviation of the time between research discoveries and implementation of effective interventions. Systematic reviews of public health interventions are also helpful because they explicitly consider the balance of positive *and* negative effects of interventions, very few of which are wholly beneficial even if they are shown to be effective. Finally, systematic reviews are needed because so many public health interventions are based on relatively sparse empirical evidence and as they can point out where future research work could usefully be directed (Petticrew, 2003).

Tobacco use is the single largest cause of preventable premature mortality in many developed countries and also represents an enormous cost burden to society. A recent systematic review addressed the effectiveness of community-based interventions in three areas of tobacco use and control: (1) strategies to reduce exposure to environmental tobacco smoke, (2) strategies to reduce tobacco use initiation, and (3) strategies to increase cessation of tobacco use. The review was conducted by a team of experts on behalf of the Task Force on Community Preventive Services, an independent body appointed by the Director of the (U.S.) Centers for Disease Control and Prevention. Recommendations were based on the strength of all published evidence of effectiveness (Task Force on Community Preventive Services, 2003). Ten strategies were considered in the domain of tobacco cessation and four were determined to have insufficient evidence to determine effectiveness. Among the remaining strategies, *strong* evidence was found for increasing the unit price for tobacco products, for mass media campaigns when combined with other interventions, for provider reminders combined with provider education and for patient support helplines when combined with other interventions. *Sufficient* evidence was found for provider reminder systems and for reducing patient costs for effective treatments for tobacco use and dependence. All of the evidence, findings and expert commentaries were published in a special issue of *American Journal of Preventive Medicine* (No. 2S).

In considering mass media campaigns, the Task Force found that, when combined with other actions such as increasing excise taxes, this strategy was effective both in reducing initiation of tobacco use and increasing cessation of use. Seven studies, all of which lasted two years or longer, evaluated campaigns to reduce initiation of tobacco use. Overall, a median decrease in initiation of tobacco use of eight percent was observed compared with groups not exposed to the campaign. Studies evaluating the effectiveness of mass media campaigns in reducing tobacco consumption in statewide populations (as measured by statewide sales of cigarettes) found a median decrease of 15 packs per capita per year. The reviewers concluded that formative research was needed to develop messages and that television and radio were the most effective media for broadcasting these messages, although other formats including billboards, print media and movies were used. The review also showed that campaigns needed to be conducted over long periods of time and employ brief, recurring messages to inform and motivate individuals to quit or remain tobacco use-free. Since the studies were effective with a variety of populations across geographic regions, a final conclusion was that the results of mass media campaigns should be applicable in most settings and populations (Hopkins et al, 2001).

Based on this review, the Task Force identified areas that required further study. These included questions regarding the elements of multicomponent interventions that contributed the most and least to these efforts, the minimum and optimal requirements for the duration and

intensity of mass media campaigns, and the most effective combinations of messages for mass media campaigns. Possible differences in the effectiveness of mass media campaigns for different ethnic groups and as a result of the level of scale (local, state, regional, national) at which they are delivered also remain to be investigated. Another question is whether mass media campaigns that focus on tobacco use have unassessed effects on drug use. Considerable economic research is needed on the costs of mass media campaigns and how the costs per additional tobacco quitter compare with other interventions. Finally, at the policy level, research is needed on the most effective ways to maintain adequate funding levels for mass media campaigns on cessation of tobacco use.

Another systematic review conducted by the Task Force on Community Preventive Services focused on the effectiveness of community-based interventions for strategies to prevent motor vehicle occupant injuries, including reducing alcohol-impaired driving. Five strategies were evaluated in relation to reducing alcohol-impaired driving. *Strong* evidence was found for reducing blood alcohol concentration (BAC) laws uniformly to 0.08%, for minimum legal drinking age laws and for sobriety checkpoints. *Sufficient* evidence was found for server intervention training programmes and for lowered BAC laws for young or inexperienced drivers. As with the tobacco review, all of the evidence, findings and expert commentaries on the motor vehicle occupant injury review were published in a special issue of *American Journal of Preventive Medicine* (No. 4S). A subsequent review found *strong* evidence for mass media campaigns under certain conditions (Elder et al, 2004).

As noted previously in this report, server intervention programmes provide education and training to servers of alcoholic beverages with the goal of altering their serving practices to prevent patron intoxication and alcohol-impaired driving. Specific interventions include offering patrons food with drinks, delaying service to rapid drinkers, refusing service to intoxicated or under aged patrons and discouraging intoxicated patrons from driving. There are currently no standards for server training programmes and their implementation varies widely in terms of content covered, instructional time and mode of delivery. Generally, the programmes involve education about alcohol beverage control laws, training in identifying the signs of intoxication as well as specific intervention techniques. Support by management appears to be an essential prerequisite for changes in server behaviour following training. Shults et al (2001) identified eight studies of the effectiveness of server training, only five of which met criteria for inclusion in their review. Three of these studies were conducted in the U.S., one in Canada and one in Australia. With one exception, all of the participating establishments volunteered to have their servers complete the training. Three of the qualifying studies found that server training was associated with average decreases of 33% in the proportion of intoxicated drivers. One study assessing a state-wide server-training programme found that it was associated with a 23% decrease in single-vehicle night time injury crashes.

In considering mass media campaigns to prevent alcohol-impaired driving, the Task Force found that most such campaigns aim to persuade individuals either to avoid drinking and driving or to prevent others from doing so. Seven qualifying studies found that mass media campaigns were associated with a median decrease of 13% in total alcohol-related crashes, six qualifying studies found that these campaigns were associated with a median decrease of 10% in injury-producing alcohol-related crashes, and two qualifying studies found that the campaigns were associated with decreases in the proportion of drivers who had consumed alcohol. The mass media campaigns that were evaluated had several components in common: pre-tested messages, high levels of audience exposure to the message, generally achieved through paid advertising and complementary prevention efforts at the local level such as high-visibility enforcement of impaired driving laws. Campaign messages ranged from those focused on law enforcement activities and the legal consequences of drinking and driving to the social and health consequences of alcohol-impaired driving (Elder et al, 2004).

Based on the review of the effectiveness of community-based interventions for strategies to prevent alcohol-impaired driving, the Task Force again identified areas that required further study. These included the general question of the effects of these interventions on long-term changes in social norms regarding drinking and driving. There are also questions about the effectiveness of different interventions to reduce alcohol-impaired driving in different settings (e.g. rural, urban) and with different groups in the population. As with cessation in tobacco use, there is the question of whether targeting media campaigns to specific subgroups in the population will improve the effectiveness of the intervention. Substantial research is also needed on the cost-benefit, cost utility and cost effectiveness of mass media campaigns to reduce alcohol-impaired driving as well as on barriers to effective implementation.

In relation to server intervention training, future areas of investigation include:

- Are community-wide server intervention training programmes effective at decreasing alcohol-impaired driving and alcohol-related crashes?
- What essential content areas should be included in these training programmes?
- What effect does the method by which training is delivered have on the effectiveness of the programmes?
- How do mandatory versus voluntary programmes differ with respect to management support, level of participation and overall effectiveness?
- What specific management policies and practices are necessary to obtain maximum benefits from such training?
- What is the long term effect of server intervention training programmes? Are 'booster sessions' required to maintain effectiveness?
- What effect does server intervention training have on alcohol sales and overall revenues?
- What situational and environmental influences help or hinder the implementation of server intervention training?

While public health and prevention approaches have clear and measurable impacts, it is plain that much work remains to be done to assess the effectiveness of such efforts. This is even truer of responsible gambling initiatives than it is of more established campaigns to reduce tobacco use and alcohol-impaired driving. What does seem clear is that effective prevention and public health campaigns involve engagement of a broad range of stakeholders and establishment of a 'safety net' of awareness, education, economics, technology, regulation and enforcement, and ongoing evaluation (Kelly, 2004).

3.4.2.7 Strategic planning for responsible gaming

Responsible gambling measures vary greatly across jurisdictions although such approaches are most advanced in Australia and Canada. While there is widespread agreement that responsible gambling should be a fundamental principle guiding the gambling industry's practices and behaviours, there is no consensus regarding how responsible gambling should be defined or what measures are most effective (Blaszczynski, 2001). In a review of practices across the Australian states, Hing and Dickerson (2001) found no common framework of responsible gambling principles and practices that would allow for comparisons and assessments across jurisdictions in Australia or internationally. Hing and Dickerson propose a framework with the following elements:

- Responsible gambling practices that codify what is meant and what should be done on a mandatory and voluntary basis
- Stewardship processes relating to how organisations are encouraged to implement practices

- Programme implementation including monitoring and evaluation
- Programme evaluation to determine whether introduced practices are effective

These researchers note that little research had been carried out to assess the effectiveness of existing responsible gambling practices in countering problem gambling or promoting responsible gambling and they emphasise the critical need for independent evaluation of the effectiveness of different responsible gambling practices (Hing & Dickerson, 2001).

In a few jurisdictions, governments have developed long range plans to address harm reduction related to gambling in a systematic way. While all of these efforts are in their infancy, there is clear value in consulting a broad range of stakeholders, establishing a mission and goals, and setting measurable criteria of performance. For example, the Manitoba Lotteries Corporation (MLC), which operates the provincial lottery as well as several charitable casinos, has developed a five-year Responsible Gaming Strategic Plan with three major goals. These include: (1) advocating responsible use of MLC products through media, education and awareness campaigns, (2) reducing the potential for harm from use of gaming products through a range of measures including casino advertising guidelines and the introduction of responsible gaming features on electronic gaming machines, and (3) promoting the availability of problem gambling services in Manitoba, Canada. MLC has established partnerships with the Manitoba Gaming Control Commission, Addictions Foundation of Manitoba, local governments, suppliers and other stakeholders and has conducted an evaluation of its first public awareness advertising campaign (Olynik, 2004).

Blaszczynski, Ladouceur and Shaffer (2004) describe a set of principles that they argue should guide industry operators, health service and other welfare providers, interested community groups, consumers and governments and their related agencies in the adoption and implementation of responsible gambling and harm minimisation initiatives. This framework, which they dub the 'Reno model', is needed because gambling markets are not yet characterised by socially responsible regulatory efforts with demonstrated effectiveness for targeted groups. Furthermore, many regulatory steps are taken without assessing the potential for those regulations to cause unintended negative effects, both in the targeted population and in the broader population of harm-free recreational gamblers. Internationally, these researchers note that the perception that gambling can cause harm "has led to the convergence of strong socio-political forces designed to reverse, restrict or moderate gambling activity in the community" (p.5). Lack of conceptual clarity and an absence of consensus regarding the parameters of responsible gambling are identified as the primary barriers to the implementation and evaluation of comprehensive responsible gambling strategies. The 'Reno model' consists of five principles:

- The key stakeholders will commit to reducing the incidence and ultimately the prevalence of gambling-related harms
- Working collaboratively, the key stakeholders will inform and evaluate public policy aimed at reducing the incidence of gambling-related harms
- Key stakeholders will collaboratively identify short- and long-term priorities thereby establishing an action plan to address these priorities within a recognised time frame
- Key stakeholders will use scientific research to guide the development of public policies. In addition, the gambling industry will use this research as a guide to the development of industry-based strategic policies that will reduce the incidence and prevalence of gambling-related harms
- Once established, the action plan will be monitored and evaluated using scientific methods

To illustrate the viability of a coherent responsible gambling strategy, Blaszczynski et al (2004) provide three examples from their own experience. These include a study into proposed

changes to the configuration of electronic gaming machines (Blaszczynski, Sharpe & Walker, 2001), a training programme developed for the Québec VLT retailers (Ladouceur et al, 2004) and a multiyear, prospective study investigating health risks among casino employees (Shaffer & Hall, 2002; Shaffer, Vander Bilt & Hall, 1999; Shaffer et al, 2000). Looking to the future, it seems probable that equally fruitful collaborations lie ahead for the Responsibility in Gambling Trust.

3.4.3 United Kingdom perspective

In this section it should be noted that there is no coherent or structured public health approach to gambling in the U.K., nor any kind of 'alternative' response to issues of public education and awareness raising.

Although the number of problem gamblers in the country, at somewhere between 275,000 and 370,000 is larger than the estimated number of problem drug users at 270,000 (Frisher et al, 2001), the latter is recognised as a serious public health issue for which government provides funding for research, prevention and local health authority treatment, while the former remains a relatively invisible problem, which is 'off the radar' of such public health approaches.

However, there is limited evidence that this situation is beginning to change and that medical professionals are starting to show some interest in the potential health risks associated with problem gambling. For instance, a British Medical editorial by McKee and Sassi (1995) generated some discussion about the role of gambling in perpetuating social inequality and contributing to poverty and ill health amongst the population (Moran, 1995; O'Brien, 1995; Persuad, 1995). More recently, the publication of the Henley Centre's report into the potential impact of the draft gambling bill has initiated widespread comment from the chairperson of the Public Health Association, Geof Rayner, regarding the adverse public health consequences of the expansion of commercial gambling in the U.K.

Nevertheless, it seems premature to discuss alternative approaches to public education and awareness raising when conventional approaches are so largely lacking. For this reason, the bulk of this discussion will focus instead on alternative approaches to problematic health-related areas that are broadly comparable and, to a lesser extent, will examine some of the theoretical ideas about human action and behavioural change that underpin them.

First, however, the contribution of GamCare in raising the profile of gambling and taking steps towards public education should be noted.

The role of GamCare

GamCare is the only U.K. organisation that systematically attempts to raise public awareness of the social impact of excessive gambling and has a number of strategies with which to undertake this, including the training of youth workers and industry representatives, the provision of educational materials and documents and the support of research projects, such as the 1999 U.K. prevalence study.

The organisation is particularly concerned with raising awareness of problem gambling amongst youth and those who work with them and to this end is involved in forming links with schools, student advisers, counsellors and teaching staff in order to deliver education and information on responsible gambling techniques, coping strategies and debt management.

GamCare is also engaged in raising awareness of problem gambling within the industry, developing codes of practice, training staff and designing certification of responsibility. In conjunction with the industry, GamCare distributes posters and leaflets in gambling-related venues throughout the country, such as in betting shops, which warn of the risks of excessive play, provide a check-list of danger signs and provide information about where to find help.

Despite these efforts, the impact of such strategies has not been evaluated, although it is clear from the prevalence study that awareness of GamCare itself is quite limited throughout the general population.

3.4.3.1 Public health approaches to related behaviours

Given the lack of evidence relating to gambling itself, it might seem pertinent to look to awareness-raising campaigns in other health-related fields such as those concerning alcohol, drugs and tobacco, that could provide lessons for informing the public about the potential risks of excessive gambling.

However, a brief review of these areas raises the possibility that the opportunities for comparison might actually be more limited than hoped. This appears to be, once again, due to the problem that surrounds much of our understanding of gambling itself, the lack of rigorous research into these areas, which undermines the basis for a sound knowledge base.

A meta-review of evaluations of interventions to change health-related behaviours concluded that, in general, there is very little high quality research on the efficacy of public health interventions in the U.K., with what does exist often producing findings that are inconsistent, inconclusive or contradictory. As a result, few definite conclusions can be drawn about how best to educate the public and raise awareness of the risks related to drug, alcohol and tobacco consumption and sexual risk taking (Jepson, 2000). However, the review was able to identify some areas where tentative conclusions could be drawn, and these are briefly outlined here.

In terms of smoking, it was found that community interventions and mass media campaigns aimed at young people could be effective in preventing the uptake of smoking in some cases. School based programmes achieved some success, with social reinforcement/social norms type programmes appearing to be more effective than traditional knowledge based interventions. The research evidence on the efficacy of alcohol interventions was found to be weak, although it appeared that public campaigns to reduce drink-driving had been reasonably effective. Again, evidence on education on the risks of drug consumption was lacking. While school-based interventions appeared to increase knowledge and raise awareness of drug risks in the short-term, there was little difference in drug use between those who participated in such programmes and those who did not, over the longer term. Finally, the most successful interventions for changing the attitudes and behaviour of young people towards sexual risk-taking were found to be theoretically based (involving multiple sessions that included skills training and strategies to modify peer or partner beliefs) and which provided practical information and general support.

Throughout the meta-review, the author raised serious questions about the generalisability of the findings of all of the studies examined and warned that not enough evidence existed to make recommendations on any of them (Jepson, 2000).

In its recommendations for the provision of drug education for young people, the Department for Education and Employment (DfEE) came to broadly similar conclusions about the lack of reliable evidence on the efficacy of drug education. However, it also isolated some specific strategies that could be used to inform future policy-making and practice, which are

summarised below. On the basis of evaluations of national and international evidence, the DfEE concluded that the impact of drug education on drug using behaviour was limited and that education was unlikely to prevent people ever experimenting with drugs. In addition, 'shock' tactics, such as 'Just Say No' campaigns, were likely to be ineffective and could actually be counterproductive. Finally, they noted that the impact of school-based drug education on reducing drug-related harm had never been effectively measured in any studies. They concluded that "establishing the effectiveness of drug education is a complex task. Almost all evaluations of programmes have been inconclusive in terms of perceived results in reducing or preventing drug use. Where programmes have shown positive results, the benefits have been in improved knowledge, decision-making skills and improved self-esteem. Personal and social skills, however, have not been shown in themselves to relate directly to the prevention of drug use" (DfEE, 1998).

However, the DfEE review also isolated some strategies that could be effective in educating young people about drug risks. Key points included:

- Educational programmes need to go beyond the provision of information to include an exploration of attitudes and values, as well as the development of personal and social skills. Life skills approaches are likely to be most effective
- In schools, youth and community settings drug education is best addressed through a comprehensive and well-planned programme of personal, social and health education (PSHE)
- In most cases it is more realistic for organisations that deliver drug education to focus on educational, rather than behavioural, aims. Broad educational aims of drug education include:
    - Increasing knowledge about, and understanding of, drugs (including dangers associated with them, the law, sources of help and advice) through the provision of accurate and up-to-date information
    - Exploration of a range of views, clarification of attitudes and challenging of stereotypes
    - Development of a range of skills to enable young people to make their own, informed decisions about drugs - whether that be to take them or not (such skills might include assessing and avoiding risks, communicating with others, assertiveness, accessing information and advice)

Overall, it appears that the research evidence relating to risk-related behaviours is limited and inconclusive in the U.K. Given this lack of knowledge (not to mention any problems with comparability, which are likely to be considerable) it is difficult to point to specific initiatives which could be applicable to attempts to raise awareness and educate the public about the risks of excessive gambling. However, despite these reservations and despite the difficulties in assessing the efficacy of public health interventions, it is nevertheless the case that some organisations in the U.K. have formulated strategies to inform the public about the risks of certain behaviours.

Practical strategies for delivery of public education and awareness raising

The organisations DrugScope and Alcohol Concern have developed a range of strategies for the provision of public education on the risks of drug and alcohol consumption. They also conduct an ongoing programme of research to attempt to improve the efficacy of these strategies and tailor them to the needs of particular groups. Both undertake extensive programmes for raising awareness about the risks of drug and alcohol consumption amongst the population including liaison with schools and local community organisations, the targeting and creation of links with vulnerable groups, and the organisation of seminars and dissemination of information.

The Drug and Alcohol Education and Prevention Team

Together, DrugScope and Alcohol Concern organise a joint project known as the Drug and Alcohol Education and Prevention Team, whose aim is to "identify, develop and promote good practice in alcohol and drug education and prevention as they affect young people, parents and professionals in schools and in informal educational settings, for example youth and community projects". The Team is funded by the Department for Education and Skills and the Department of Health and it also receives funds from partners on specific projects. The team undertakes a range of projects and services, including:

Alcohol and young men peer education project: a project run in partnership with U.K. Youth, in which youth and alcohol services organise peer education with hard to reach young men in their local areas.

Drug information for hard to reach parents: works with local community and drugs services partnerships in order to develop innovative models for informing and educating hard to reach parents about drugs and developing strategies for intervention with those groups.

Equal space project: involves the provision of parenting education for drug using parents, as well as collaboration with drug agencies in order to develop the capacity of drug services to provide support for this group.

Drug Education and Prevention Information Service (DEPIS): this is an online database which provides information about drug education and prevention projects for those working with children and young people and their parents and/or carers.

Drug Education Practitioners Forum: works to enhance and promote quality in drug education by supporting the development of drug education practitioners working in formal and informal settings. The forum communicates to its members at meetings and via E-mail, as well as using the distribution list to circulate various relevant documents and news.

Although DrugScope and Alcohol Concern have developed a broad range of strategies to increase public awareness on the risks of excessive behaviour, it is not clear what impact these actually have on the behaviour of the groups to which they are directed. However, such programmes could act as a template upon which to base plans to inform the public about the risks of problem gambling, while the infrastructure of the organisations themselves could provide an example of how best to undertake the task of targeting resources and disseminating information.

3.4.3.2 Theoretical and practical perspectives on behaviour change

At this point in the discussion, it is considered instructive to turn to broader theoretical and practical perspectives on human cognition and behaviour, in order to gain insight into some of the more general interactions between public policy and population responses, which may yield insights that could be applied to investigating approaches to problem gambling.

The most basic policy approaches regard individuals as rational actors, committed to maximising their welfare and making informed decisions about their behaviour based on perfect information. Such models of 'rational man' prioritise the imparting of knowledge as the route to behaviour change and assume that informing the public of risks and benefits will

encourage the appropriate behavioural response in a fairly straightforward manner. However, it is widely recognised that people do not behave in this manner, frequently acting in ways that are detrimental to their health, ignoring certain types of information while responding to others and generally confounding the expectations of policy makers (Halpern & Bates, 2004).

People tend to rely on heuristics and biases, short cuts and rules of thumb, to make decisions, while attributional biases and psychological discounting of the future allow them to disregard risks by thinking 'it won't happen to me'. Additionally, people are influenced by culturally embedded habits and social norms at least as much as by the information imparted by policy makers. The result is that individuals often engage in activities that they know to be detrimental to their wellbeing. Much research evidence shows that, even when provided with information on the risks their activities pose to their health and guidance on how to change them, significant numbers of people do not change their behaviour (Abraham et al, 2002). For example, the British Health Survey (1993) reported that 40% of individuals who were strongly advised to reduce their alcohol consumption by a medical professional or risk serious consequences had failed to do so five years later.

Knowledge alone is not enough to change behaviour, although health promotion still tends to focus heavily on information as a means of persuasion (Halpern & Bates, 2004). Furthermore, not only does possession of information frequently have little or no effect on behaviour, it can have unintended and sometimes harmful consequences.

For example, a bicycle safety education programme ('Bike Ed') that was designed to inform children of the risks involved in cycling, so reducing injuries, actually had the opposite effect and increased injury rates among boys (Carlin, Taylor & Nolan, 1998). The consequences of the intervention were unevenly spread throughout the target population and, for example, were more harmful to younger children and those from families with lower parental educational levels. As public health professionals have noted, it should always be borne in mind that interventions to raise awareness and change behaviour have the capacity not only to be ineffective but also to do more harm than good and to waste public time and money in the process (MacIntytre & Petticrew, 2000).

The fact that interventions can have such counterproductive outcomes highlights the need for policy makers to have a detailed understanding of a wide range of the factors affecting the lives of the groups they mean to target, not simply those surrounding the behaviour they wish to change. It also requires awareness that any messages they provide may not be interpreted as they intended.

Some of these issues can be instructive for the case of public education approaches to gambling behaviour. For example, many programmes to combat problem gambling focus on informing players of the risks of excessive play and raising awareness of the odds against winning. However, it could be that such an approach needs to be tailored to suit its target audience. We need to know what the effect of this kind of message might be on different groups, if it gets through at all, for the possibility exists that it might be interpreted in ways policy makers did not intend, for example, by youth who see its warnings as a challenge or an opportunity to beat the system.

3.4.3.3 Alternative approaches

Alternative approaches to public education and awareness raising focus on the 'ecology' of human behaviour rather than the 'information' possessed by 'rational man'. Such perspectives are based on a holistic approach to the individual within their environment and work on the understanding that a wide range of social, interpersonal and structural influences are constantly

acting on individuals in complex ways. These include factors such as the expectations of family and friends, behaviour learned through habits and traditions, as well as the influences of advertising and the availability of products and activities. They focus on changing these external social influences and environmental cues, which in turn alter their pressure on the individual so that the changed behaviour of both interact, eventually leading to the creation of new social norms (Halpern & Bates, 2004).

'Social marketing' is a pragmatic application of this idea, which aims to change behaviour through 'total campaigns'. Social marketing techniques adopt the medium and language of mass communication through, for example, mainstream advertising. They also adopt a cohesive 'lifestyle approach' to deliver their message and campaign on a number of integrated fronts, including trading situations and environments, and the interface between products (or activities) and consumers, in order to introduce and promote new ideas and establish new norms (Hastings & MacFadyen, 2000).

Such an approach has been adopted to counter, for example, tobacco marketing. Research into smoking from a social marketing perspective has suggested that, to be effective, campaigns should adopt a holistic approach that targets not only advertising but also the entire 'ecology' of the tobacco environment rather than simply delivering information, in order to elicit more profound and long lasting changes in attitudes (Hastings et al, 1994; Hastings & MacFadyen, 1998).

Such approaches require sensitivity to the needs of their target audience and must be based on an understanding of the cultural as well as the cognitive foundations of behaviour. For example, although it has been found that advertising has an effect on the acquisition and maintenance of smoking among young people, it is not simply a case of straightforward manipulation of a vulnerable group. Rather, research has pointed to more complex processes at work whereby consumption of cigarettes is intertwined with the creation of identity, making smoking a powerful tool in the process of adolescent self formation (Aitken et al, 1985; Arnett & Terhanian, 1998). The issue is not to ban advertising, which could only serve to glamorise tobacco but to understand the processes through which it becomes part of the process of identity formation and then undermine it, which Hastings (1998) describes as the 'emasculation' or 'denormalisation' of tobacco.

Campaigns to modify various forms of problematic behaviour follow similar principles of undermining the activity, consumption or brand through a number of denormalisation or 'demarketing' strategies. Thus, ultimately, a new set of social norms and attitudes are established within the environment surrounding the individual, providing a context for behaviour change.

Crucial to such strategies is detailed consumer research that uncovers the various motivations for behaviour and so enables campaigns to be targeted effectively. In some instances, as Hastings et al (1994) suggest, a single intervention may be sufficient such as advertising but in others a more complex message, more entrenched behaviour or more diverse audiences may require intervention on a range of different fronts.

Such a social marketing approach to gambling would be based on a thorough understanding of various social groups' motivations for playing, as well as of which environmental factors are involved in the process, before moving on to counter the ecology in which problematic play develops through a range of strategies that include the denormalisation of excessive play itself.

The bulk of the foregoing discussion does not relate directly to gambling but outlines some of the issues surrounding public health initiatives and examines some alternative theoretical approaches. This approach illustrates some of the complex factors that impact on human

action, which can in turn be applied to the development of strategies for public education on the risks involved in gambling.

3.4.4 Implications for the United Kingdom

In recent years, governments, gambling industries and welfare organisations have begun to subscribe to policies and practices of 'responsible gambling' in order to minimise the potential adverse effects of commercial gambling on the population. A range of voluntary and mandatory initiatives exist, which are led and implemented by a variety of governmental, non-governmental and industry organisations. These generally aim to educate and inform the population and those involved in the industry about the potential risks involved in gambling and the steps that should be taken in order to minimise harm. It is generally believed that the best way to achieve these goals is through a range of primary, secondary and tertiary prevention strategies.

Primary prevention is the most cost effective form of intervention, as the preponderance of costs associated with problem gambling tends to derive from the large sections of the population with low to intermediate levels of problematic behaviour, rather than the smaller groups with more severe problems. As such, primary prevention strategies aim to prevent the development of problems in the population, and operate through the dissemination of information and public awareness activities that alert players to the characteristics and potential risks of games, as well as strategies that involve limitations on the location of gambling venues and on the size of prizes. Such approaches have been particularly targeted at youth and are designed to provide information about motivations to gamble, problem warning signs, the consequences of excessive gambling and how and where to seek help for problematic behaviour. These strategies have been relatively successful in raising awareness of the issues surrounding problem gambling and it has been found that they tend to be most effective when provided through a variety of formats, for example, media campaigns, in association with a range of local and community groups, and in conjunction with a variety of generalised social activities. As well as providing information, such a multi-modal approach aims to improve social skills, foster community-based responses to problems and offer alternative activities to gambling; goals which could usefully inform the development of primary harm prevention strategies in the U.K.

Secondary prevention strategies that aim to limit the potential for problems to develop and to minimise the impact of problems that do develop, involve strategies such as staff awareness and training, on-site information dissemination, self-exclusion programmes and modifications to the environment and to machine design in the application of responsible gambling features. This latter policy has involved initiatives such as the reduction of maximum bet sizes and the reconfiguration of machines to slow the speed of games, reduce the amount of stake money accepted and display responsible gambling messages. It is not clear how effective such responsible gambling initiatives on machines have been, although it is believed that the modification of targeted Responsible Gaming Features (RGFs) may provide an effective form of intervention. Targeted RGFs utilise the information provided by machine technology and wider gambling environments to focus prevention efforts on players who are displaying problematic behaviour, rather than delivering 'universal' messages to all patrons. Such an approach would minimise disruption to regular players and, by extension, to gambling venues themselves. The development of targeted RGFs could prove to be a fruitful line of enquiry in the development of responsible gambling policies in the U.K., although it would be beneficial for such proposals to be evaluated in small scale pilot schemes before consideration of wider implementation.

Tertiary prevention is intended to reduce the severity of existing problems and prevent relapses. It involves liaison between treatment services and gambling providers, and strategies that

include referrals to treatment agencies and self-exclusion. The involvement of gaming venue staff is significant as with appropriate training they can identify patrons displaying problematic behaviour and provide information on counselling and treatment, where required. Although such training and/or liaison with treatment providers is not mandatory internationally, it presents an opportunity for the development of links between gambling venue operators, staff and treatment providers within the U.K.

Although responsible gambling initiatives are becoming widespread internationally, evidence of their effectiveness is limited (as is the case with interventions for a wide range of risky behaviours), which makes recommendations for their application in their host countries difficult. This is especially true in the case of recommendations for the U.K. where the lack of clear evidence of efficacy applies across a range of risk behaviours. Thus, it may be wise to bear in mind the limitations of public education and retain a realistic approach to what can be achieved. With this in mind, it is instructive to return to the recommendations of the U.K. Department of Education and Employment's report (1998) on the provision of drug education for young people, in which they caution against expecting the provision of information to transform behaviour and instead urge a more pragmatic approach in which education allows individuals to make informed choices. Their definition of drug education could be transferred to problem gambling education, as that which hinges on "the acquisition of knowledge, understanding and skills and exploration of attitudes and values which facilitate young people to be able to make informed decisions about their own, and other people's, use of drugs" (DfEE, 1998).

To conclude, based on the international evidence, it is suggested that the development of the most effective responsible gambling initiatives for the U.K. need to utilise a variety of primary, secondary and tertiary strategies in conjunction with a range of key stakeholders including, for example, local education authorities, community groups, treatment providers, gaming providers and policy makers. These should develop programmes to disseminate information and advice on the potential risks of problem gambling to the population as a whole, as well as to targeted groups, such as youth. The programmes should be run in a variety of gambling and non-gambling environments in order to raise awareness of the issues surrounding the disorder, minimise the occurrence of problematic behaviour and reduce the impact of harm when it does develop.

4 POTENTIAL AREAS FOR COLLABORATION WITH ORGANISATIONS IN RELATED FIELDS IN THE U.K.

The organisation of treatment services, public education, policy and research relating to problem gambling could benefit from developing links with established organisations in the related areas of social and mental health and addictions. In the U.K., these types of services and functions are carried out by a range of voluntary, statutory and private organisations and are organised in a variety of ways. In terms of public funding, a range of general services tend to be provided mainly through local councils and primary care organisations, with additional services being provided to certain areas through Social Inclusion Partnerships. These services have briefly been outlined below including mention of the areas where services for problem gambling could be incorporated. The remainder of this section discusses more specific services in the areas of drug and alcohol provision and again details areas where links with problem gambling could be made.

4.1 Local service providers

4.1.1 Local councils

Local government provides a range of services within their regions, working in partnership with voluntary and business organisations to identify and respond to the specific needs of their communities. Their discretionary powers give them the ability to provide the services they consider relevant, beyond the statutory services required by law. There is, however, considerable regional variation and the provision of any non-statutory service has to be first identified as an issue 'on the ground' and also as one for which the local council is prepared to take responsibility. Nevertheless, it is in this function that they may provide services for issues relating to problem gambling, if this were regarded as desirable and relevant for their jurisdiction. The following are broad areas where such provision might be fitted in:

- *Local education authorities (LEAs)*: in addition to statutory education provision, most LEAs have a community education wing, which provides formal and informal educational services to the general population, as well as to groups with special needs. In this latter category, information and education relating to problem gambling could be disseminated to locally identified groups
- *Social work*: local councils are involved in the provision of various types of social work services, with some allocating funds for addiction treatment when this is seen as posing enough of a problem within a specific area
- *Information dissemination*: local councils are responsible for the provision of information on a range of issues regarded as relevant to their constituents. Leaflets and advertising are used to educate the public and distributed in local authority areas such as, for example, General Practitioners' surgeries, libraries and employment offices

Thus, the scene with regard to local councils is one of considerable variation in terms of the allocation and funding of non-statutory services. However, councils have the ability to provide a range of services that they judge to be appropriate and it is here that either provision of services relating to problem gambling or collaboration with organisations that already provide such services may be possible. Given the constraints imposed by limited budgets, it is likely that the most practical means of ensuring resource allocation for problem gambling would be to incorporate it into an area already identified as being a priority in terms of statutory provision such as, for example, the field of crime prevention.

4.1.2 Primary Care Organisations

Primary Care Organisations are funded by the Department of Health and are responsible for the provision of health care in their local area. The prioritisation and funding of particualar services is discretionary and varies widely by geographical region. As in the case of local councils, funding for problem gambling is most likely to be provided if the latter can be incorporated into areas that are already priorities for local organisations such as, for example, drug treatment and mental health services. It has already been suggested that services for severe problem gamblers be incorporated into Primary Care Organisations under the remit of mental health. At present, the national development group for specialised mental health services is reviewing treatment for problem gambling and will provide guidance for Primary Care Organisations in the potential development of services for problem gamblers. In September 2004, the Department of Health will be convening a group of people representing the expertise available in the U.K. to advise the Department on what treatment facilities currently exist, how best to establish precisely what such services offer and to make proposals for service development in the light of the Bill and other influences on gambling prevalence. Currently, these processes are ongoing and no recommendations have yet been made.

4.2 Social exclusion and Social Inclusion Partnerships

The Social Exclusion Unit is operated from the Office of the Deputy Prime Minister and is designed to target social exclusion. This is defined as a series of linked problems in individuals and communities, and relates to unemployment, poor skills, low incomes, poor housing, high crime environments, bad health and family breakdown. It aims to offer 'joined up solutions to joined up problems' by consulting widely with local authorities, businesses and the voluntary sector as well as people and agencies who have direct experience of social exclusion. It commissions research, formulates policy, and directs public finances and resources to priority areas. At present, it has a focus on the areas of debt, mental health and social exclusion, and employment and enterprise in deprived areas.

In Scotland, a similar role is carried out through Social Inclusion Partnerships (SIPs). These target areas characterised by social deprivation, low educational attainment, high unemployment and poor health outcomes. Funding is provided through the Scottish Executive and additional funds are also made available through European Union initiatives. SIPs aim to oversee the effective targeting of local public sector resources towards locally identified as well as national social priorities. Overall, they aim to improve local services and to create partnerships with public, private, voluntary and community sector organisations.

As an area that is related to social inequality and deprivation, mental health, employment and debt problems, the area of problem gambling would seem to fit into the remit of the social exclusion agency and, in particular, the infrastructure of SIPs. It is likely that the latter could provide an avenue for collaboration over issues relating to problem gambling.

4.3 Drug and alcohol agencies

Given the lack of public agencies in the field of problem gambling, it is instructive to turn to similar organisations in the related area of drug and alcohol treatment provision as potential sources of guidance and collaboration.

In the U.K., two organisations undertake a range of functions relating to the education of the public and advising on policy issues: DrugScope and Alcohol Concern. Both are publicly funded, with charitable status, and neither provides treatment themselves. Their primary role is to coordinate the provision of advice and support to voluntary service providers.

4.3.1 DrugScope and Alcohol Concern

Alcohol Concern has a wide remit, including the provision of information on a range of issues related to alcohol and the support of specialist and non-specialist service providers who tackle alcohol problems at a local level. They also work to influence national alcohol policy. The organisation aims to reduce the incidence and costs of alcohol-related harm and to increase the range and quality of services available to people with alcohol-related problems. Alcohol Concern creates partnerships with a range of stakeholders including the Department of Health, local authorities and industry as well as Primary Care Trusts to ensure a streamlined response to alcohol problems in the U.K.

DrugScope conducts research, provides advice on drug policy and practice, raises public awareness and provides information on all aspects of drug use. The organisation works closely with central government to develop a strategy for tackling drug-related problems and also with local authorities to assist in the gathering of information required to target responses to local problems and issues. This work is carried out through ongoing collaboration with Drug Action Teams throughout the country.

The Drug and Alcohol Education and Prevention Team

Together, DrugScope and Alcohol Concern organise a joint project known as the Drug and Alcohol Education and Prevention Team, which is funded by the Department for Education and Skills and the Department of Health, and also receives funds from partners on specific projects. The team undertakes a range of projects and services including programmes for raising awareness about the risks of drugs and alcohol amongst the population, liaison with schools and local community organisations, commissioning research, targeting and building links with vulnerable groups, organising seminars and information dissemination.

The development of gambling services could benefit from collaboration with such a group, utilising their expertise in the fields of public education and awareness raising, policy direction and the organisation of research.

4.3.2 Drug Action Teams

The provision of drug treatment services is organised by Drug Action Teams (DATs) in England and Scotland, Drug and Alcohol Action Teams in Wales and Drug Coordinating Teams in Northern Ireland. DATs have responsibility for delivering the government's drug strategy at a local level and their boundaries are co-terminus with those of local authorities. In order to do this, they liaise with a range of local organisations, commission and organise services in order to meet the specific needs of communities and coordinate the response to drug use locally. They receive guidance in this from government departments and also from organisations such as DrugScope, with whom they also liaise regularly. Additionally, many DATs undertake alcohol-related activities, although alcohol was not included in the Government's Drug Strategies under which DATs were established.

Given that this extensive framework of communication, organisation and expertise already exists, it would seen appropriate for gambling service provision to be linked in with it in some way, perhaps in the first instance, through the coordination of gambling services with local DATs.

4.3.3 Local drug and alcohol treatment service providers

A wide variety of local drug and alcohol treatment service providers exist throughout the U.K. Most are voluntary organisations and do not receive public funds, although some receive support from local authority initiatives related to social work services and many others have links with a range of resource providers. There are many hundreds of these organisations throughout the U.K.

It would be beneficial to develop links with these groups, in order to utilise their existing facilities and expertise to develop strategies for dealing with problem gamblers. The benefits of such linkages lie in drawing on a solid foundation of existing skills as well as an infrastructure of service provision that is rich in local knowledge and so is tailored to the specific needs of the local community. Ideally, this would involve a continuation and expansion of the Breakeven-type models of provision and collaboration in a nationwide network of local service providers.

4.3.4 Modalities of treatment

Some mention should be made of the modalities of drug and alcohol treatment provision, as this could be the blueprint for a model for the provision of services for problem gamblers. At present, modalities of drug treatment follow the tiered system described in the Department of Health Models of Care (2002) document. Their four-tiered model, based on its recommendations, is briefly summarised below:

- Tier 1: Non-Specific (general) Services: involves General Practitioners, probation and housing services
- Tier 2: Open Access Service: involves advice and information, drop-in services and harm reduction services
- Tier 3: Community-Based Services: involves structured counselling, day programmes and aftercare services
- Tier 4a: Specialist Residential Services: involves inpatient and residential rehabilitation services
- Tier 4b: Non-Substance Misuse Specific Services: involves psychiatric and HIV-related services

These tiers are inter-linking and complementary, with transitions between them facilitated by protocols that identify at which stage a user is transferred to a new stage (Department of Health, 2002).

The Budd report suggested a system of stepped care along these lines, as did the review of addictions services which formed part of the previous commissioned research for the Trust (Arnold et al, 2003). From the evidence, this approach seems to be desirable and the recommendations are reiterated. The modalities utilised for the treatment of drug problems could be adapted to suit the particular requirements of problem gamblers and to fit with the services and modalities that already exist in this area, for example:

- Tier 1: could be utilised as a primary point of contact for referrals for problem gamblers
- Tier 2: could be adapted to suit the needs of problem gamblers in terms of the counselling services provided by organisations such as GamCare and the local drug and alcohol agencies involved in the Breakeven partnership scheme
- Tier 3: aspects of this level of provision, such as structured counselling and aftercare, could be adapted for problem gamblers
- Tier 4a: specialist residential services would be provided by the already existing organisation, the Gordon House Association, and by the further development of specialist mental health provision organised within primary care trusts
- Tier 4b: the non-substance specific services that are involved in this tier would involve psychiatric and mental health treatment for severe problem gamblers, which would be provided through existing facilities within primary care trusts.

The adaptation of the principles of tiered provision and the organisation of services for problem gamblers in this manner, would allow the targeting of resources to the areas and groups where they are most needed and would be based on a model which is already established as best practice for delivering those objectives. It could be helpful to involve an organisation such as DrugScope, which has considerable expertise in the coordination of related services, to assist in the adaptation and tailoring of the modalities outlined here for use in the treatment of problem gamblers. This should also assist in providing more comprehensive interventions for those problem gamblers who have significant substance dependence and/or other comorbid psychiatric disorders.

4.3.5 Summary

It would be desirable to establish links between public and voluntary sector agencies so that the full range of skills and capabilities that exist across all levels of the provision of services for addictive disorders, as well as those that operate in the field of problem gambling, could be drawn upon. For example, this could involve collaborative links between the services provided by organisations such as GamCare and its Breakeven affiliates and those provided by public organisations such as local authorities and primary care trusts.

In developing these strategies, it is important to establish clearly demarcated roles and boundaries between the various organisations, in order to ensure the most effective interface between service providers and resources. In this respect, it could be beneficial to utilise the resources of an organisation such as Alcohol Concern or DrugScope, which could oversee and coordinate the roles of the various agencies.

In summary, the following appear to be the most pertinent points to consider in the development of collaborative links between established organisations and treatment services, public education, policy and research relating to problem gambling services:

- Development of services for problem gamblers under the auspices of local authority projects and priorities, including those conducted by local councils and Primary Care Organisations
- Integration with frameworks such as Social Inclusion Partnerships
- Collaboration with bodies such as Drug Action Teams
- Coordination of services, policy, research and public education by organisations such as DrugScope
- Development of partnerships and associations with existing voluntary drug and alcohol treatment agencies, organised along similar lines to the Breakeven partnership

- Provision of services according to treatment modalities set out in the Department of Health's Models of Care document

5 STAKEHOLDER CONSULTATION MEETINGS

5.1 Stakeholders consulted and outcomes of meetings

Key stakeholders within the U.K. were considered to fall within five main categories: Government, industry, researchers, primary service providers and public health organisations. Further details regarding stakeholders and the consultations are detailed in the following subsections.

During May and June 2004, Dr Reith made contact with the majority of the listed key stakeholder groups requesting information pertinent to the services they provide. The contact was either through a face-to-face meeting, by Email or by telephone contact.

In the week commencing 10 May 2004, Professor Abbott, Dr Volberg and Dr Bellringer had a meeting with two key stakeholders, Mr Adrian Scarfe and Mr John Lepper, both of whom were present in New Zealand for the previously mentioned International Think Tank and associated conference. Mr Gary Clifford, CEO of the Gambling Helpline in New Zealand, and Ms Phillida Bunkle, former New Zealand Member of Parliament and Patron of the Compulsive Gambling Society of New Zealand also attended the meeting.

At that meeting, the Reviewing Team members were urged to closely examine the report from the Budd Commission as well as the Independent Report already submitted to the Trust by a separate consultancy team. It was noted that the deadlines for the draft and final report from the Reviewing Team are being driven by the timing of the pending legislation. Parliament will consider the new bill in the first part of September and the Trust would like to have its research plan in place by that time. There are concerns that the Trust will not be able to come up with the full amount of funding that they have been asked to raise, in which case it is likely that a levy on the gaming industries will be instituted.

It was noted that the Reviewing Team would need to clarify with the Trust the topics they wish to include in the report although it was noted that the Trust is relatively weak with regard to public education, awareness raising and prevention. The Trust is likely to want information about alternative approaches including multimedia efforts, online services and other innovative approaches that are being undertaken internationally. The Trust specifically does not want to fund any health services or conduct a study of the U.K. health system.

Finally, in the week commencing 21 June 2004, Dr Volberg visited London to meet with the Trust Research Panel to explore the views of the Research Panel and other members of the Trust on top priorities for future research. During the visit to London, Dr Volberg also met with key stakeholders, in particular with Professor Jonathan Wolff, the Department for Culture, Media and Sport, Professor Peter Collins and GamCare.

5.1.1 Responsibility in Gambling Trust

The face-to-face meeting with the Responsibility in Gambling Trust was requested in order to explore the views of the Research Panel and other members of the Trust on top priorities for future research. The first point made was that the recommendations of the Reviewing Team must be in support of the Trust's mission. The Trust is particularly interested in research into the *causes* of problem gambling and *effective* methods of help. However, it was noted that the Trust is more interested in applied research and evaluation rather than in basic research.

Responsibility for prevalence research in the U.K. will be with the new Gambling Commission and the Trust has no plans to conduct prevalence research. However, the Research Panel felt that it would be worth including some discussion of the definition of problem gambling and how gambling problems are measured, in this report. While this discussion should include international aspects, the need is for a way forward in the U.K. context.

The Research Panel expressed an interest in international models of problem gambling service provision. The importance of providing the political context as a framework was emphasised, particularly the contrast between the centralist approach taken in the U.K. with the federalist model that prevails in the United States and Canada. One challenge in the U.K. is the importance of the notion of 'polluter pays' which is in conflict with the way in which medical and health services are provided.

The Research Panel asked that the Reviewing Team examine the most rigorous studies on interventions and public education campaigns. They recognise the limited information on such efforts within the gambling field and emphasised the importance of looking at indicators from international efforts in other areas, such as driver behaviour and anti-smoking campaigns. The Research Panel believes that it is likely that indicators from these studies will be useful in developing problem gambling prevention. The Research Panel is also interested in industry-funded efforts in other countries, including staff training and self-banning programmes. It was emphasised that methods of help should include all forms of intervention and not just formal treatment programmes.

There was mention that the Department of Health was currently assessing the availability of problem gambling services in the U.K. However, no specific information about what the Department of Health was doing to complete this assessment was provided and follow-up with the Department of Health would be worthwhile. (Contact was subsequently made with the Department of Health; their comments have been incorporated into Section 4.3.4).

The Research Panel outlined several specific areas of concern to the Trust. These include screening and instrumentation, expected utilisation of services, processes of development and causes of gambling problems. A fourth area of monitoring and evaluation threads through these other concerns. With regard to screening and instrumentation, there is a need for reliable and continuous (as opposed to case identification) methods to identify individuals with whom the health services and specialist agencies may need to cope. There is also a need to plan for appropriate levels of service provision and the Research Panel is interested in what level of service utilisation can be expected. The Research Panel is interested in whether problem gamblers in the U.K. 'sort themselves out' as problem gamblers do in other jurisdictions. The question of why this happens and how it can be promoted is of particular interest. Finally, the Research Panel is interested in the causes of gambling problems to the extent that such knowledge can inform the interventions that are planned.

The Research Panel is particularly interested in looking at priorities for research in the areas of Internet, remote and wireless gambling. Other areas of interest include the importance of cross-disciplinary intervention services, the nature and effectiveness of responsible gambling programmes internationally and the role of the Trust in the training of gambling venue staff. There was also discussion of the structural difficulties associated with building gambling research capacity in the U.K.

5.1.2 Government

The following Government departments/officials were consulted:

- Gaming Board for Great Britain
- Department for Culture, Media and Sport
- Commonwealth Secretariat

Mr Tom Kavanagh
Secretary - Gaming Board for Great Britain

Mr Kavanagh began by explaining that the current regulatory climate was founded on the premise that gambling is an enjoyable leisure pursuit for the bulk of the population and so the challenge is to expand choice for the majority without increasing problematic behaviour amongst vulnerable groups.

In light of this, the key issues for the regulator involve keeping track of the numbers of problem gamblers and establishing what factors influence change, ideally through regular prevalence studies. Mr Kavanagh also stressed the need for a coherent picture of the best types of public education interventions and an understanding of when and where they should be targeted.

For example, he wondered whether targeting educational strategies at schools was likely to be too early to be effective and whether perhaps aiming such programmes at the point *after* individuals had made the decision to gamble in venue-specific locations might be better. In the case of the latter, he stated that gambling premises such as casinos were well-defined areas which individuals did not simply 'fall into' by chance but rather entered after they had made the conscious decision to gamble. In this case, he speculated whether confining educational and awareness raising efforts to specific premises and groups that already had a declared intention to gamble might be the best strategy. However, he concluded that overall, it simply was not yet known what the best strategies were and recommended more research into all areas of the prevention and treatment of problem gambling.

Mr Peter Dean
Ms Geraldine Meneaud-Lissenburg
Mr Tom Kavanagh
Gaming Board for Great Britain

Under the terms of the proposed bill, a new Gambling Commission will take over responsibility for overseeing and regulating casinos, bingo clubs, gaming machines and lotteries in the U.K. and will also take over the regulation of football pools and horse race betting. The new Gambling Commission will be directly responsible for protection of the vulnerable and will have statutory responsibilities in this area.

The Commission is expected to conduct problem gambling prevalence surveys at three-year intervals. The Commission is also expected to attach conditions to licenses with the purpose of limiting problem gambling, providing education for players and directing those in need towards some form of help. The Commission is expected to establish loss limits and to require self-exclusion programmes from all of its licensees.

The Gaming Board expressed a particular interest in any research on the possible differential impacts of a limited number of high-prize electronic gaming machines compared with more widespread availability of machines that offer lower but more frequent prizes. The Gaming Board was informed that, to our knowledge, no research has been done that addresses the

question of a relationship between prize level and differences or changes in rates of problem gambling. While limiting stake or prize sizes is a politically attractive option, there is no empirical evidence supporting the effectiveness of such an approach.

Much of the meeting with the Gaming Board was spent discussing prevalence research since the Board expects to conduct a second prevalence survey in the U.K. quite soon. Questions about the performance of the two screens used in the 1999 prevalence survey in the U.K. as well as the importance of maintaining comparability with this baseline research were considered. Substantial time was spent explaining the structure of the two national studies in New Zealand as well as the national study in the United States which incorporated additional elements that particularly interested the Gaming Board, such as the Phase Two follow-up interviews and the patron survey.

Mr Elliot Grant
Professor Stephen Creigh-Tyte
Mr John Lepper
Ms Moira Redmond
Department for Culture, Media and Sport

Once the new bill is adopted, responsibility for gambling policy and regulation will move from the Department for Culture, Media and Sport to the new Gambling Commission. In addition to developing policy and regulations, the Gambling Commission will be responsible for producing an annual report, conducting prevalence surveys every three years and advising ministers on all gambling-related matters.

The Department for Culture, Media and Sport has a representative on the Trust's Research Panel. From the Department's perspective, the priority in research must be away from conducting small, self-contained projects and towards conducting a longitudinal panel study. This approach would provide a firmer handle on what it is that makes certain kinds of people more vulnerable to gambling problems and on what would be effective prevention. There is also a need to conduct practical research that will feed into a system of fine-grained regulatory adjustments.

The example provided was the present political focus on gaming machines and how these can best be regulated. Given the current environment, there is particular interest in the effectiveness of responsible gaming features such as those implemented in New South Wales and Victoria in Australia and Nova Scotia in Canada.

The perspective of the Department is somewhat distinct with respect to the Trust's Research Panel. The Department is specifically interested in establishing a longitudinal research programme while the Trust is more broadly interested in reducing the harms associated with all forms of gambling through the effective and efficient provision of services.

The Department feels strongly that collaboration with larger, ongoing studies in non-gambling areas or with gambling research efforts in other countries is desirable. While acknowledging the significant value in maintaining comparability with studies conducted in other countries, the Department for Culture, Media and Sport has concerns about relying on existing measures of problem gambling, given doubts about the performance of all of these measures. Similar concerns were expressed by the Trust's Research Panel and the Gaming Board.

It was noted that while there is information about the tax duties received from gambling enterprises in the U.K., very little business or economic research has been completed on the different sectors of the industry. Little is known about the revenues, costs and profits of these

businesses and there is no way to tell how these businesses will change in response to proposed changes in the tax rate structure. Little is known about debt ratios in the industry sectors, about use of credit, flows of funds through these industries to government or the impact of increased gambling availability on savings levels. In addition to prevalence and incidence studies, time-use studies are greatly needed.

Mr Reginald Addo Amegatcher
Commonwealth Secretariat

There are 53 member governments in the Commonwealth Secretariat including the U.K., Australia, Canada, New Zealand and South Africa as well as many African and Pacific Island countries. Discussions with the Commonwealth Secretariat were helpful in considering how international efforts around the issue of gambling and its impacts might be mobilised.

The Commonwealth Secretariat has no programmes underway at present to address the challenges that are likely to emerge in developing countries as legalised gambling spreads. While gambling issues are currently a challenge for the developed countries, these same issues can be expected to emerge in the near future for developing countries. As a consequence, it is imperative that gambling and its impacts be addressed quickly within the Secretariat to prevent future difficulties in developing Commonwealth countries. While the developed countries, such as Australia, the U.K. and Canada as well as South Africa, may be helped immediately, other member countries would benefit from such efforts as well.

A natural home for gambling issues within the Secretariat would be the Social Transformation Programmes Division (STPD). Key people from that Division were unavailable but it was agreed that future meetings between the STPD and representatives of the Reviewing Team would be desirable.

5.1.3 Industry

The following gambling industry representative was consulted:

- Association of British Bookmakers

Mr Tom Kelly
Chief Executive - Association of British Bookmakers

In a telephone conversation, Tom Kelly briefly outlined some of the issues surrounding the proposed gambling bill from the perspective of the Association of British Bookmakers. He first pointed out that he feels the proposed bill has relatively little industry support. In the view of the betting industry, it is not necessarily regarded as a step towards liberalisation and its likely effects are considered to be at best, neutral and at worst, negative.

Mr Kelly is aware that the form the bill eventually takes is dependent on the government's response to the scrutiny report and highlighted that the main issues of interest to the Association lie in the regulation of betting exchanges and in the definition of fixed odds betting.

He highlighted a certain degree of scepticism regarding the establishment of a separate Gambling Commission to oversee the regulation of the industry and voiced the opinion that this was considered to be an expensive and bureaucratic body for which the industry would ultimately have to pay.

5.1.4 Researchers

The following researchers were consulted:

- Professor Peter Collins
- Professor Jonathan Wolff, Member of Budd Commission and Trustee of Responsibility in Gambling Trust

These researchers were queried about lessons that can be learnt from public education/ awareness raising campaigns in health-related fields and their relevance for informing the public about the potential risks of excessive gambling.

Professor Peter Collins
Director - Centre for the Study of Gambling and Commercial Gaming, University of Salford; Executive Director - South African National Responsible Gambling Programme; Chief Executive - GamCare

Professor Collins met with Dr Reith in May and with Dr Volberg in June.

In discussions with Dr Reith, Professor Collins stressed that the lack of research into all aspects of gambling and its treatment in the U.K. means that the foundations upon which to make recommendations or provide direction for policy issues quite often simply do not exist. He also drew attention to methodological problems with definitions and measurements of problem gambling pointing out that, for example, cultural variability and differing levels of honesty in responses to questions in gambling screens raises questions about the measurement of prevalence and also the comparability of results. He stressed that such basic issues needed to be resolved, so that researchers and policy makers could agree on exactly what they were talking about before moving on to tackle specific problems.

In terms of treatment, Professor Collins pointed out that a few salient factors were established, including the fact that problem gamblers who sought treatment and stayed in treatment tended to get better and that the involvement of family and support groups helped avoid the risk of relapse. However, he drew attention to the crucial fact that the vast majority of problem gamblers did *not* actually seek treatment. He considered that this could be partly due to the fact that many were not aware of the signs of gambling dependency and so were not actually aware they had a problem but that it could also be, in part, a result of simply not knowing how or where to get help. Given this, he concluded that it was imperative to increase understanding of the signs of problem gambling throughout the general population, as well as raise awareness of the types of help that are available for the disorder and how to access them.

He went on to note that education campaigns and treatment programmes addressing these issues should be carefully designed to target the general public as well as particularly vulnerable groups such as seniors, youth, the unemployed, minorities and the poorly educated. In terms of establishing what forms of treatment were most effective, he highlighted the fact that more needed to be known about the process of recovery itself and suggested the possibility of conducting substantive studies of recovered problem gamblers in order to investigate which processes and strategies had led to successful outcomes.

Finally, Professor Collins concluded that a wide programme of research was required in order to fill the gaps in knowledge about the factors involved in the development and treatment of problematic gambling behaviours.

In discussions with Dr Volberg, Professor Collins again noted the dearth of high-quality research on gambling and problem gambling. He argued that there is a need to look at normal gamblers rather than just problematic gamblers. He questioned whether gambling was best looked at in terms of cognitive science and wondered whether it might be fruitful to examine these issues from the perspective of economic irrationality to improve our understanding of chaotic behaviour in relation to money (along with compulsive shopping, chronic borrowers, credit card debt and day trading). It might also be valuable to improve our understanding of gamblers' emotional states: what people feel when they gamble, what are their motivations and what precautions do they take to prevent themselves from getting into difficulties?

Professor Collins felt that there was a place for guided research but that it would also be wise to provide funding for researcher-initiated proposals along the peer-review lines of the (U.S.) National Institutes of Health as well as the casino industry-funded Institute for Research on Pathological Gambling and Related Disorders. He noted the importance of comparing different treatment modalities such as 12-step programmes with cognitive-behavioural treatment.

Professor Collins noted that gambling researchers are bedevilled by requests for simple answers to complex questions driven by political and business interests. A pressing example in the U.K. is the question of the relationship between the rapidly increasing availability of electronic gaming machines and changes in the prevalence of problem gambling. Eighteen months ago, the betting industry successfully challenged regulations on electronic gaming machines by arguing that Fixed Odds Betting Terminals, essentially electronic roulette machines, are *not* gaming machines because they are linked to a central operating system. There are now approximately 33,000 FOBTs at 8,500 betting offices throughout the country. The bingo clubs are now in the process of arguing in the courts to be allowed to operate similar electronic games although they are arguing that these devices *are* machines because they are not linked to each other. The policy question being asked now is whether FOBTs are more or less dangerous than casinos with large numbers of machines.

Professor Collins believes that convenience is a crucial regulatory issue, particularly when combined with the absence of public awareness activities. He is less concerned about the stakes and prizes which other researchers have argued constitute the key element linking increases in the availability of gambling with increases in the prevalence of gambling problems.

Professor Jonathan Wolff
Member of Budd Commission; Trustee of Responsibility in Gambling Trust

Professor Wolff began by talking about the model that the Budd Commission had originally intended to introduce, using a free market approach that linked the number of gaming machines at gambling venues to the number of table games. Table games at U.K. casinos include roulette, blackjack, table stud (a form of stud poker) and a version of baccarat. The draft bill presently being considered in Parliament contains a two-tier system with 'super' casinos that would be allowed unlimited prizes on a limited number of machines and smaller 'regional' casinos that would be allowed to offer smaller prizes on a much larger number of machines.

Professor Wolff identified a range of questions which he believes are important as gambling legalisation proceeds in the U.K. From a policy perspective, he believes that it is most important to develop a model to predict the likely consequences of changes in the laws governing gambling in the U.K. This would permit Government to weigh the differential impacts of the changes being proposed and regulate the industries in such a way that the most beneficial and least harmful approach would be implemented. There is presently great interest in the possible differential impact of introducing machines with large prizes compared with permitting machines with smaller prizes.

Professor Wolff identified a much wider range of issues that he believes are poorly understood. For example, he believes that research is needed to understand the causes of normal as well as problematic gambling. He wondered about the impact of 'social reinforcement' (that is, social disapproval) on extremes in gambling behaviour. He also wondered about the impacts of stimulating demand, through advertising, in a market where, for nearly 40 years, demand was met but not stimulated. In the context of this discussion, he noted that when the Lottery was introduced in the U.K., the football pools were the only gambling activity whose revenues declined.

He wondered about motivations for gambling on machines and how these might differ from motivations for other types of gambling. He wondered what it is about slot machines that makes them 'addictive' although he argued that the psychological approach that dominates the field presently should be supplemented with more sociological observational studies. Finally, Professor Wolff noted that the Budd Commission as well as industry representatives have strong reservations about the utility of the existing terminology used in the gambling studies field as well as about all of the existing screens. There has been some discussion among the Trust trustees about developing a U.K. problem gambling screen although it has been acknowledged that such an effort would require far more time and resources than the Trust is presently willing to invest.

5.1.5 Primary service providers

The following primary service providers were consulted:

- GamCare
- GamCare's Breakeven partners
- Gordon House
- Gamblers Anonymous and GamAnon
- Chinese Healthy Living Centre
- Responsible Gambling Solutions Ltd

Each provider was asked for information on the range and scope of services provided, the uptake of services and their effectiveness, and any problems that were encountered.

Additional meetings (as detailed previously) were held with Mr Adrian Scarfe, Clinical Practice Manager of GamCare, and with Professor Peter Collins, part-time Chief Executive Officer of GamCare.

Mr Peter Cox
Managing Director - GamCare

Mr Cox outlined the rapidly changing regulatory climate regarding the expansion of commercial gambling and stressed that GamCare recognised the need to be proactive in this development. He described the shift in 'scene' that he felt would accompany potential casino expansion, explaining that, whereas traditional casinos were somewhat exclusive and difficult to access, the new casinos would be much more accessible and would offer a variety of 24-hour entertainments within wider leisure complexes. He felt that these new kinds of environment would be likely to be perceived as far more glamorous to a wider range of individuals than before, especially young people, who could begin to combine them with alcohol, music and socialising. Mr Cox stressed the importance of the involvement of GamCare at various stages of such developments, in order to ensure that player protection remained paramount.

One area of concern for the organisation lies in the development of new forms of gambling technology such as Internet gambling and betting via interactive television and the potential increases in problem gambling related to these. Mr Cox is worried that the percentage of individuals reporting problems with online gambling is increasing, as reflected in calls to the helpline and attendance at counselling sessions. Of particular concern to GamCare is the increasing popularity and proliferation of Fixed Odds Betting Terminals, which are being promoted by a growing number of operators holding a bookmakers licence. Mr Cox noted that their increasing popularity was quite markedly reflected in calls to the helpline and reported that during 2003, over eight percent of calls related to FOBTs. He explained that this form of gambling appealed to a wide range of players, including those who play casino table games, fruit machines, and fixed odds gamblers and warned that the games were somewhat out of place in betting shops. Not only were they very fast, with a high event frequency and opportunities for repeated play but they also introduced something of the glamour of casino games into an environment where structural constraints on excessive play were less effective.

Finally, Mr Cox explained that GamCare was in favour of the new legislation, as it would ensure regulatory consistency, while at the same time creating a climate of greater responsibility within the industry.

Ms Faith Freestone
Managing Director - Gordon House Association

Based on lengthy experience with the treatment of severe problem gamblers in the Gordon House Association, Faith Freestone highlighted several identifiable areas of concern and future development.

She identified a problem that she described as the 'scattergun approach' to problem gambling service provision, whereby relatively few services in restricted regions exist, with uptake of those services limited by geographical location. In the present situation, access to help is dependent on area, which means that the vast majority of people with gambling problems are denied crucial face-to-face contact with a counsellor.

Ms Freestone went on to highlight the necessity of post-treatment provision and after-care through outreach work to provide ongoing support, reinforce the behaviour strategies learned in Gordon House and prevent the risk of relapse. She has coined the term 'evercare' for this model, explained that it is designed to retain contact and is shown to lead to more effective outcomes. She stressed that 'evercare' is based on the need for a system of effective, integrated, tiered provision that is based on providing the level and type of support where and when it is needed the most.

She also highlighted that, in her opinion, the effective operation of such a system required an awareness of the cultural specificities of the U.K.; in other words, an understanding of what exists, and what works and does not work in relation to the cultural climate in this country. Leading on from this, she cautioned against being too quick to adopt treatment approaches used elsewhere, warning that what works internationally might not be so effective here, arguing that any developments in service provision should be based on a sound knowledge of the U.K. system and that there should be awareness of the potential impact of cultural variation.

Mr Eddie Chan
Managing Director - The Chinese Healthy Living Centre

The Chinese Healthy Living Centre is the only service that provides counselling for ethnic minority problem gamblers in the U.K. Mr Chan highlighted some of the specific issues that it faces in this role.

Most strikingly, Mr Chan emphasised language difficulties in terms of service provision and information dissemination. He pointed out that although Chinese counsellors deal with gamblers, constraints on facilities mean that some have to be referred to GamCare. When this happens, an interpreter is required, which presents practical difficulties of availability and organisation, as well as social problems where the problem gambler may feel constrained and embarrassed by the presence of a third party.

Additionally, Mr Chan pointed to cultural differences in the understanding of gambling and problem gambling. He explained that, in Chinese culture, gambling and its associated values of risk taking and luck testing is integrated into everyday life. Gambling is often pursued as a family activity with, for example, parents introducing their children to it and encouraging gambling during festivals such as Chinese New Year.

Overall, Mr Chan emphasised the need for a culturally appropriate approach to Chinese gamblers and the specialist requirement of counselling in the Chinese language. He also highlighted a pressing need for more funds, which would allow the extension of the service to include, in particular, a free telephone helpline. Pointing out that the Chinese population is the third largest ethnic group in Britain and also the most dispersed, Mr Chan argued that such a helpline would allow this diffuse group to access specialist help from all over the country.

Mr Paul Bellringer, OBE
Managing Director - Responsible Gambling Solutions Ltd

Mr Bellringer responded by Email suggesting that the factors that need to be considered include: direct and indirect treatment provision, involvement by the National Health Service and private practice psychologists, religious communities and retreats that cover gambling problems, positives and negatives of various treatment approaches such as the integrative model applied by GamCare versus the 12-step approach, voluntary and statutory provision, direct and indirect awareness and education programmes, what is likely to be effective and the measure of the effectiveness.

5.1.6 Public health organisations

The following public health organisations were consulted:

- Medical Research Council Social and Public Health Services Unit
- Centre for Tobacco Control Research
- U.K. Public Health Association

Professor Sally MacIntyre, OBE
Director - Medical Research Council Social and Public Health Services Unit

In a general discussion about strategies for raising awareness and educating the public about the risks of particular activities, Professor MacIntyre stressed that any such attempts should always

be underlined by an awareness of, and commitment to, the application of structural constraints. As examples, she listed legislation on commercial proliferation and restrictions on advertising opportunities, as well as specific interventions that are designed to target vulnerable groups, such as youth.

She also highlighted the point, often overlooked in policy developments, that strategies to increase information, education and knowledge do not always produce expected behaviour change. She stressed that the relationship between increased knowledge and changing habits or patterns of behaviour is not straightforward and requires a thorough understanding of a wide variety of relevant factors.

Professor Gerald Hastings
Professor of Social Marketing, and Director of the Centre for Tobacco Control Research, University of Strathclyde; Special Adviser to the House of Commons Health Select Committee

Professor Hastings outlined the ideas behind what is known as 'social marketing', an alternative approach to public education and awareness raising strategies. He explained that such an approach is based on the holistic notion of a 'total campaign' that incorporates a variety of elements to impart its message and, ultimately, change behaviour and the cultural norms and expectations around particular activities. Professor Hastings has utilised this approach in campaigns to reduce smoking, especially among young people. He stressed that in order to be successful, it must draw on a broad range of marketing techniques that aim to influence and change lifestyle and that focus on trading situations and environments, as well as more traditional advertising strategies.

In terms of approaches to problem gambling, Professor Hastings suggested that a broad knowledge base is vital. He emphasised the role of consumer research to investigate why people gamble, their motivations for playing, what they get out of it and if/how different forms of gambling involve different sets of motivations or players. He believes that such studies should form the basis for strategic interventions which could be formulated in various ways. For instance, he explained that while in some situations, advertising alone might be enough, in others and depending on the specific audience and the message, different types of interventions on various fronts would be more effective.

Geof Rayner
Immediate Past President, U.K. Public Health Association

Mr Rayner has particular interests in obesity and eating disorders but he has recently made several public statements about changes in the availability of gambling in the U.K. Mr Rayner noted his sensitivity to 'vocabularies' in the social services perspective and the importance of addressing addictions, or 'dependencies and vulnerabilities', from an integrated perspective. He questioned whether gambling problems were better addressed from the perspective of individual vulnerability factors or in environmental terms. It is possible that gambling problems are a normal response to the stimuli and environmental pressures that occur in gambling venues.

Mr Rayner mentioned that gambling in the U.K. has historically been informed by Methodism and Labour Party views. He finds it ironic that the present government, formed by the Labour Party, now views gambling as an issue of 'consumer choice' and is no longer working toward the social improvement of working people. He argued that gambling, drink and food are parts of the same issue which is the cultural transformation of consumption and the loss of skills at

the individual and community levels. He emphasised the role of advertising in this transformation and the importance of understanding the cultural impacts of gambling in the U.K.

In response to a direct question about research priorities, Mr Rayner emphasised the importance of surveillance and regular prevalence surveys. He noted that much of the research done to date is economic modelling which does not include social and cultural elements. From a public health perspective, Mr Rayner believes that it is important to understand people's sense of power and vulnerability rather than economics and technology. He believes it will be important to look at the cultural changes that have occurred such that people now take certain changes in the environment as given. This will be necessary in order to develop social marketing for the prevention of gambling problems. He argued for the importance of international comparisons and for understanding the hedonism and fatalism that recent cultural transitions in drink, food and gambling have fostered.

5.2 Role of industry in taking responsible gambling initiatives

In Section 3.4 of this report, the Reviewing Team presented a summary of relevant industry practice related to problem gambling prevention and responsible gambling. We noted that some sectors of the gambling industry have been involved in problem gambling prevention for several years although many recommended initiatives have never been implemented or have been introduced in a patchy, inconsistent and fragmented manner. Furthermore, these efforts must compete with heavily financed advertising campaigns that work directly to counteract their effectiveness.

While there is general agreement that 'responsible gambling' should be the fundamental principle guiding the gambling industry's practices and behaviours, there is as yet no agreed operational definition defining its parameters or identifying the most appropriate strategies for the prevention of harm (Blaszczynski, 2001). The challenge is to provide a balance between the provision of safe, recreational gambling, prevention of the development of gambling problems and assistance to those experiencing problems.

Hing (2002) notes that responsible gambling programmes established by the gambling industry have been criticised for their passive approach that places the onus on individual gamblers to recognise and act on a gambling problem. She argues that a full range of responsible gambling measures must include changes to the environment in which gambling is provided, changed marketing practices, improved consumer protection measures, more comprehensive patron education and harm minimisation strategies that target the most regular and lucrative player base, with attendant consequences for the industry's bottom line. She also points out that industry responsible gambling programmes tend not to have external mechanisms for monitoring, compliance and evaluation or effective penalties. This weakness must be addressed if these practices are to become more than exercises in window-dressing.

A possible way forward is suggested by Black and Ramsay (2003) in their consideration of ethical guidelines for gamblers and commercial providers. After arguing that there are several clear, intrinsic and humanly fulfilling reasons to gamble (i.e. social interaction, recreation, dreaming and hoping), these researchers ask: What principles must gambling organisations follow if they are to provide gambling responsibly? They provide four overarching principles for operating reasonably that apply to all types of gambling. These include (1) promoting the common good, (2) supporting individual capacity to make reasonable choices, (3) supporting individual capacity for control and choice, and (4) taking responsibility for the negative impact on the common good. After presenting a lengthy series of specific actions that flow from these general principles, they conclude as follows:

> A real commitment to reasonable gambling requires a shift in the industry's perception of its social responsibilities and new approaches to addressing them. Ethically sensitive gambling mandates a mature approach and new strategies should be a matter of pride to businesses that care about reasonable gambling (p.212).

6 COMMENT ON THE 'GAMBLING REVIEW REPORT' AND 'A SAFE BET FOR SUCCESS'

6.1 Introduction

Subsequent to receiving a preliminary draft of the present report, the Responsibility in Gambling Trust asked for the addition of specific comment on two documents, namely the 'Gambling Review Report' and 'A Safe Bet for Success - Modernising Britain's Gambling Laws'. The request was to consider assumptions made in these reports in light of the Reviewing Team's consideration of international and United Kingdom research.

The first document, the Gambling Review Report, outlines the findings and recommendations of the Gambling Review Body. The Home Office commissioned the Review Body, chaired by Sir Alan Budd, to:

- Consider the current state of the gambling industry and ways in which it might change over the next ten years in the light of economic pressures, the growth of e-commerce, technological developments and wider leisure industry and international trends
- Consider the social impact of gambling and the costs and benefits
- Consider, and make recommendations for, the kind and extent of regulation appropriate for gambling activities in Great Britain

The Review Body reported to the Department for Culture Media and Sport in 2001. It reported to the Department rather than the Home Office as a consequence of changes in departmental responsibilities following the General Election.

The second document, A Safe Bet for Success - Modernising Britain's Gambling Laws, released in 2002, draws on the Review Report, as well as subsequent submissions and public debate, and outlines Government's vision for a new regulatory system for the gambling industry.

Both reports are the culmination of wide-ranging information gathering, critical review of this information including relevant scientific literature and public consultation. The Review Body report includes 176 recommendations. The Departmental report endorses the principles outlined in the earlier report as the main objectives of new gaming legislation and regulation. It outlines 29 general proposals for change and provides a summary of Government's response to each of the Review Body's specific recommendations.

For the most part the Department's proposals give effect to the Gambling Review Report's recommendations that are intended to "simplify the regulation of gambling" and "extend choice for adult gamblers". They are also intended to ensure gambling activities are "crime-free, conducted in accordance with regulation and honest, players know what to expect, are confident they will get it and are not exploited and there is protection for children and vulnerable persons". Both reports also stress the importance of regulations remaining flexible so they can respond to future technical developments and adjust to take account of experience of the changes and the findings of future research. Finally, they make recommendations about research on the causes of, and treatment of, problem gambling.

To provide detailed comment on the foregoing documents and their recommendations and proposals would extend beyond the brief, timeframe, resources and competence of the reviewers. Rather, as requested and in light of our assessment of the research reviewed, we comment on assumptions made in these reports. We also comment more specifically on those sections and recommendations that relate to problem gambling and 'protecting the vulnerable'.

6.2 Assumptions

A key assumption underlying both reports is stated on page 85 of the Gambling Review Report, namely:

> We believe the benefits of providing greater freedom to the punter outweigh the costs that may be associated with increased availability of gambling.

The bodies of research that we reviewed focused on the development of, and risk factors for, problem gambling, the effectiveness of treatment and other interventions, and the impact of approaches to public education and awareness raising. Our review did not cover literature on the wider adverse health, social, economic and other costs of gambling and problem gambling. Neither did it examine studies that have attempted to assess the relative costs and benefits of gambling at community or national level.

The Gambling Review Report states that "the benefit of gambling is the recreational enjoyment that punters derive from it" (p.85). The Australian Productivity Commission (Productivity Commission, 1999), which did conduct cost-benefit analyses, also placed heavy emphasis on this factor. The results of these analyses, in financial terms, ranged from substantial net benefits to significant net costs, depending on the assumptions underlying weightings given to various factors. The Commission noted that a number of psychological and relationship costs could not be adequately quantified in this way.

In the section on problem gambling development in our review, we make reference to the satisfaction people report deriving from gambling involvement, noting that there is very little research on this and related topics including psychological wellbeing and quality of life. The Review Report does not assess "recreational enjoyment" from studies of this type. Rather it is inferred from the fact that people are "willing to pay a price - in terms of losses - which supports the labour and capital associated with the industry".

While agreeing that willingness to pay (lose) money to gamble may from some perspectives be regarded as a proxy for gambling 'enjoyment', 'willingness' pre-supposes both freedom to choose and informed choice. This suggests that qualification is required in the case of problem gamblers and others who lose varying degrees of volition with respect to gambling participation. While this group constitutes a minority of people who gamble, the percentage is much higher in the case of those who take part regularly in continuous forms of gambling, particularly electronic gaming machines. Furthermore, in a number of jurisdictions problem gamblers are responsible for a substantial proportion of total expenditure on some forms of gambling, in some instances over 50%. Consequently, it would be misleading to assume that net gambling expenditure is simply measuring 'enjoyment'. While accepting that problem gamblers may also derive satisfaction from gambling, for these people the costs of participation will presumably far outweigh the benefits. This may also be the case for many others in their family and close social networks.

The Review Report examined research on the various personal and social costs associated with problem gambling as well as studies from the few jurisdictions where attempts have been made to place a financial value on these and related costs. This included cost-benefit analyses where estimates both of monetary benefits and costs were considered. The Report noted a lack of reliable cost data in the U.K. and expressed scepticism about the value of analyses of this type. It did not attempt to provide its own financial estimates for the U.K. but did indicate that the costs associated with problem gambling are considerable.

We agree with the Review Report that cost-benefit analyses in this area, especially in situations such as the U.K. where necessary information is lacking, are of questionable value. We note that the Review Report places emphasis on more serious problem gamblers when considering the costs of gambling. From our examination of relevant literature it appears probable, as in other areas such as alcohol use, that greater total costs accrue from regular 'non-problem' heavy gamblers and less serious problem gamblers. As indicated in our report, this is a consequence of their much greater numbers. For this and other reasons we would place more emphasis on regulatory and public health approaches aimed at preventing the onset of problems within this group. Given the foregoing, in our view the Review Report may not have fully gauged the personal, social and financial costs associated with gambling.

Based on a review of international literature, the Review Report concludes that increased availability of gambling, particularly continuous forms including electronic gaming machines, will lead to an increase in the prevalence of problem gambling and associated costs. From our examination of this literature, as well as additional and more recent studies, we agree that while this is likely, there are situations where increased availability has not led to increased problem gambling prevalence. Indeed, in some cases it has decreased. Reasons for attenuation or reversal of the association between increased availability and increased problems are unclear. In Australia, states with widespread availability of electronic gaming machines have problem gambling prevalence rates three to four times higher than the two states with lower availability. Where rates have levelled off or declined with continued increases in availability, there appears to be high social awareness of problem gambling and widespread availability of problem gambling services.

What does this mean for the U.K.? The proposed changes, if implemented, will significantly increase accessibility to high-risk forms of gambling including electronic gaming machines. We agree with the Review Report that this will lead to substantial increases in gambling expenditure and a rise in problem gambling prevalence rates. Over a five- to ten-year period, this increase could be as high as three- to four-fold. This is presumably higher than the Review Report's anticipated "modest rise in problem gambling" (p.175). We further note that a prevalence increase will very probably be accompanied by significant change in the sociodemographic profile of problem gamblers, most notably erosion of the current large gender difference. The personal, social and financial costs of a prevalence increase of this magnitude, as well as perhaps even greater costs flowing from sub-clinical and regular non-problem gamblers, would be substantial.

In particular, we draw attention to recommendation 86 of the Review Body "that electronic roulette and other similar machines should be caught by the definition of gambling machines in new legislation, and that the Gambling Commission should have discretion to determine the legal status of any new machines that may be developed". The government accepted this recommendation and agreed to "establish a new regulatory framework for gaming machines in order to create an environment in which there is more choice for adult gamblers and new opportunities for business, but which also provides better protection for children and vulnerable adults" [10.11].

We recommend that these points be taken into account particularly when considering the future regulatory status of the relatively new Fixed Odds Betting Terminals in the U.K. These machines have proliferated in the past three years and are increasingly associated with reports of problem gambling by players. In addition, lower stakes versions of these devices have recently been appearing in bingo clubs and arcades. The international research evidence demonstrates that FOBTs possess the characteristics of those forms of gambling most associated with gambling problems, namely high event frequency and opportunities for rapid reinvestment. Many of the stakeholders interviewed in the course of our research believe that FOBTs should be confined to casinos. It is certainly possible that such machines have the

potential to increase problem gambling in the U.K and, therefore, we recommend that these developments be closely monitored with the proliferation of FOBTs regulated in accordance with the stated principles of player protection.

What is more uncertain is the extent to which the measures proposed for the "protection for children and vulnerable persons" could counteract the drivers of gambling-related problems. From existing research, it cannot be determined with confidence which specific measures are likely to be most effective in this regard. Furthermore, it is not known whether such measures, even if comprehensive and vigorously applied, can be effective during periods when the availability of continuous forms of gambling rapidly expand in a previously tightly controlled gambling environment. It may be that they do not have appreciable impact until the gambling market has 'matured' and problem gambling has increased and permeated more evenly throughout society.

If the level of liberalisation proposed proceeds and the intention is to minimise adverse impacts, wide-ranging public awareness raising, harm minimisation and treatment measures will need to be implemented from the outset. Firm monitoring of regulations will also be required. However, as indicated, we cannot be confident that such measures will have significant impact during the early expansion phase. This emphasises the importance of regularly assessing adverse impacts within society and piloting and evaluating the effectiveness of preventative and therapeutic interventions. In this situation, the intention of being flexible and prepared to adjust regulations and other measures in light of subsequent experience and research findings is prudent.

We are not in a position to comment from a research base on whether or not the key assumption underlying the proposed legislative and regulatory changes is valid or not. As indicated, this assumption is that "the benefits of providing greater freedom to the punter outweigh the costs that may be associated with increased availability of gambling" (p.85). There is research on likely costs, although little confidence can be accorded attempts to place a monetary value on them in the U.K. context. To our knowledge there is much less empirical information about the supposed major benefit (consumer satisfaction) albeit that this was not a focus of our literature review. In summary, we anticipate that costs will be significant and probably substantial in the short-term. Given the intergenerational nature of problem gambling, it is likely that some costs will extend well into the future. We are unable to comment with any confidence on the potential benefits or their significance relative to the likely costs.

Problem gambling

In our opinion, the section of the Review Report (Chapter 17, Protecting the Vulnerable) provides a comprehensive and balanced assessment of relevant research up to 2000. The major findings and implications inform Chapter 32, Researching, Limiting and Treating Problem Gambling. For the most part the conclusions reached regarding the status of problem gambling services and research in the U.K. are consistent with ours. The Review Report notes that "little research has been conducted in the U.K. on the nature of problem gambling" and that, with respect to measures to limit and treat problem gambling "current provision is woefully inadequate" (p.173).

We also consider that the Review Report's recommendations with respect to researching, limiting and treating problem gambling are generally reasonable in terms of what is currently known about problem gambling. These recommendations are that:

- Research is carried out to monitor the effect on problem gambling of changes in regulation

- That the Gambling Commission should have a duty to respond to findings concerning changes in problem gambling. In the light of those findings, it should make appropriate adjustments to the Government on other changes that are necessary but are outside its control
- Research is carried out to understand the nature of normal, responsible, gambling behaviour; and research is carried out to understand the development of, and risk factors for, problem gambling
- Research is undertaken to evaluate which forms of treatment for problem gambling are the most effective. Such research should include the development of treatment programmes and should build on existing knowledge
- The Gambling Commission should issue formal codes of social responsibility to which operators should adhere as a condition of licence
- That increased funding should be made available by the NHS for the treatment of problem gambling; that problem gambling should be recognised as a health problem by the Department of Health; and that Health Authorities should develop strategies for dealing with problem gambling
- That the industry should set up a voluntarily funded Gambling Trust with the further recommendation that the Government should reserve powers to impose a statutory levy, possibly linked to gross profit, if such a Trust is not established or subsequently ceases to operate

We concur with these recommendations and, in particular, draw attention to the proposal for the recognition of problem gambling as a health problem by the Department of Health, the provision of funding for its treatment within the remit of the NHS, and the development of strategies for dealing with problem gamblers by local health authorities. Leading on from this, the Review Report suggested a system of stepped care, similar to the system of tiered provision utilised in the treatment of drug problems. We would agree that a strategy of this kind would be the most beneficial for the effective targeting of expertise and resources for the treatment of problem gambling.

However, in general, we are of the view that insufficient attention has been paid to measures that could be taken to raise public, industry and professional awareness of problem gambling and the wide spectrum of strategies and approaches that have potential to prevent the onset of problem gambling (primary prevention). There is insufficient focus on whole-of-population approaches as well as more targeted interventions within an overarching public health or harm minimisation framework. Given that the bulk of the costs of gambling come from the large population of players with relatively low levels of problematic behaviour and that it is possible that the harms associated with increased gambling opportunities may, to an extent, be countered by effective public education interventions, we believe that it would be advisable to develop and implement as comprehensive a strategy in this regard at the earliest opportunity in the U.K. While these matters are mentioned, they generally reduce to a focus on education about problem gambling and the treatment of problem gamblers when it comes to specific recommendations. Education and formal treatment are necessary parts of an overall strategy to limit or minimise harm. However, they are not sufficient. We are of the view that a much stronger primary prevention and early intervention emphasis is required within an overarching public health framework that links closely to regulation and industry practice. Research priorities would need to accommodate this enhanced emphasis on prevention and early intervention.

An example of the focus on problem gamblers *per se* rather than the broader spectrum of people with minor problems or the potential to develop problems is the assertion that for all people other than problem gamblers, gambling is "an enjoyable and harmless activity" (p.85). This does not reflect findings from research showing that gambling problems lie on a continuum, with a much larger proportion of people experiencing at least some adverse

consequences some of the time. As such, we consider the effective targeting of this group to be crucial.

There are a number of recommendations relating to industry regulation, fairness to gamblers, protecting the vulnerable (including children) and wider social impacts that do reflect a concern to prevent problems and minimise harm. It could be that the recommendation concerning the role of the Department of Health and Health Authorities leaves the way open for them to assume responsibility for a comprehensive public health approach to problem gambling, including the areas mentioned in the preceding sentence. However, this is not made explicit and, if it were intended, substantial resource allocation would be required.

7 RECOMMENDATIONS ON PRIORITIES FOR FUTURE RESEARCH AND LIKELY COSTS

The following recommendations for research are focused in support of the Trust's mission "to make it less likely that people will become problem gamblers and more likely that those who do will be able to seek and to secure effective help". To make it less likely that people will become problem gamblers, there is a need for research to identify risk and protective factors and to apply this knowledge in conducting public awareness and prevention campaigns aimed at the general public as well as at subgroups in the population. To make it more likely that people who experience gambling problems will seek and secure effective help, research is needed on effective early intervention approaches as well as formal treatment. To ensure the overall effectiveness of this programme of research, there is a need for ongoing monitoring and evaluation of funded efforts as well as establishment of international collaborative relationships.

It must be emphasised that our estimates of the likely costs for the research efforts recommended here are somewhat speculative. These estimates are based on our knowledge of the costs of similar research undertaken internationally and translated into British currency, rather than on detailed knowledge of the costs of social science research in the U.K. In particular, variance in costs for employment of highly skilled personnel and for indirect (or overhead) costs in support of research can have a significant impact on the total cost of any specific research project.

7.1 Recommendations of the 2003 Independent Report

In 2003, the Trust commissioned an independent report to make recommendations on the development of an overall strategy to address problem gambling in the U.K. (Arnold et al, 2003). Before presenting the recommendations of the present Reviewing Team regarding priorities in problem gambling research, it is worth reviewing the major recommendations made in the earlier report.

Arnold et al (2003) presented a range of recommendations on problem gambling research in their report. Those recommendations were made within a larger framework that included the need for a close working relationship between the Trust, the new Gambling Commission and the National Health Service. Another important framing proposition was that the Trust should not be involved in prevalence research or in the training of gambling industry employees in recognising and addressing problem gambling. The final framing proposition was that the Trust support an informational body, along the lines of the (U.S.) National Council on Problem Gambling or the U.K. organisations Alcohol Concern and DrugScope, to help coordinate information dissemination and set standards for the work of private organisations dealing with problem gamblers and their families.

Specific recommendations regarding problem gambling research made by Arnold et al included:

- Research contracts should be for up to three years
- Priorities for research by the Trust should be monitoring effects of changes in regulation, understanding normal gambling as well as risk factors and the development of problem gambling, and identification of the most effective forms of treatment
- One-third of the research budget (£333,000 per year for three years) should go toward developing and applying methods to determine the effectiveness and efficiency of U.K.

strategies for reducing the incidence of, and harm caused by, excessive gambling, for example, development of appropriate outcome measures

- One-third of the research budget (£333,000 per year) should be allocated for small projects which would contribute to a better understanding of the differences between normal and problem gamblers, the cognitive elements implicated in excessive gambling, the role of impulsivity in problem gambling and its implications for regulation and public policy, the differential psychology of different forms of gambling and implications for reducing problem gambling in different sectors of the industry, the possible vulnerability of particular U.K. communities and groups, and the challenges and opportunities presented by electronic gambling
- One-sixth of the research budget (£167,000 per year) should go toward basic research and participating in international research programmes on aetiology (causes) and innovative services
- One-sixth of the research budget (£167,000 per year) should be allocated for funding the most promising applications submitted in response to an open solicitation for research proposals to improve understanding of gambling behaviour
- Within the above allocations, encourage the funding of Masters and Ph.D. students in order to build capacity in the U.K. for undertaking scientific and scholarly research on gambling and problem gambling

Additional research recommendations focused on assessing the effectiveness and efficiency of prevention efforts. Specifically, Arnold et al (2003) recommended that the objectives and measurement procedures involved in the evaluation of public awareness activities should be agreed upon at the beginning of such projects and reviewed annually. Finally, Arnold et al recommended that the Trust commission the development of a problem gambling counsellor accreditation scheme.

7.2 Research matrix

Building on the foregoing review of the literature on problem gambling risk factors, treatment and prevention, we have developed a matrix consisting of the key topics on one axis and an overall timeframe and proposed availability of funding on the other axis. Relying on both the Budd Report and the earlier consultancy to the Trust (Arnold et al, 2003), we have made the critical assumption that there would be approximately £1,000,000 per annum available for problem gambling research in the areas of risk factors, treatment evaluation, public awareness and prevention, and monitoring. Previous recommendations looked at the period 2005-2007; we were asked to consider a longer timeframe of three to five years.

	Short term (12 - 18 months)	Intermediate term (13 - 36 months)	Long term (37 - 60 months)	*Funding*
Monitoring	£100,000	£250,000	£250,000	*£600,000*
Risk factors	£300,000	£500,000	£500,000	*£1,300,000*
Treatment	£300,000	£500,000	£500,000	*£1,300,000*
Prevention	£300,000	£750,000	£750,000	*£1,800,000*
Funding	*£1,000,000*	*£2,000,000*	*£2,000,000*	*£5,000,000*

Critical concerns in developing the matrix were the need to incorporate long-term goals and strategies, the importance of building research capacity in gambling studies in the U.K. and our view that the development and implementation of effective problem gambling *prevention* is the most likely avenue for the Trust to achieve its overall mission.

Our recommendations for research differ somewhat from those of Arnold et al (2003). For example, we recommend allocating £800,000 over three years (rather than £1,000,000) to develop methods for assessing the effectiveness and efficiency of intervention strategies in the U.K. We have allocated a separate amount of £350,000 during that same period for research on measurement and monitoring, a category that was not broken out separately by Arnold et al. Whilst we share the opinion that several small basic research projects are desirable to investigate specific topics, we do not believe that allocating one-third of the research budget to small projects is the best approach. Instead, we believe that priority should be given to building a coherent monitoring system within the U.K. and to establishing collaborative relationships between the Trust and U.K. researchers engaged in longitudinal research, on the one hand, and international agencies pursuing significant programmes of gambling research in other countries, on the other. We also differ from Arnold et al in stipulating that all research contracts should be for three years. While this is certainly the case in some instances, we have identified a number of short-term projects in all four areas that would require no more than 12 to 18 months to complete.

7.2.1 Measurement and monitoring

Within the framework of a strategic plan, the importance of measurement and monitoring of gambling problems to assure that problem gambling is minimised and help for those in need is available and effective cannot be underestimated. Elsewhere in this report, we have emphasised the need for reliable and continuous funding for problem gambling services, for development of a strategic plan specific to the U.K., for development of comprehensive screening and assessment tools, and for evaluation of formal treatment services for problem gamblers in the U.K. We have argued that international collaboration is an essential element in moving forward in the U.K., as is multidisciplinary research into the effectiveness of public policy and regulatory approaches, as well as prevention and formal interventions.

The following recommendations in the area of measurement and monitoring are intended to provide the Trust with an array of accepted measures for use in multiple settings, to begin the process of establishing international collaborative relationships, to establish a firm knowledge base about the impacts of gambling in U.K. society and make this available to multiple audiences, and to ensure that the education and intervention efforts undertaken by the Trust as well as the building of research capacity in the U.K. are both effective and efficient.

Short term

Recommendation #1

Commission a review of problem gambling assessment and screening instruments in use internationally and identify the most appropriate set of instruments for use in the U.K. in clinical screening of problem gamblers as well as in other settings, including self-administration and prevalence research.

Projected Cost: £50,000

Discussion

Doubts have been expressed by a range of U.K. stakeholders about the performance of problem gambling screens. While some work has been completed on the psychometrics of the SOGS and the DSM-IV Screen used in the British Prevalence Survey (Orford, Sproston & Erens, 2003), additional work is needed to identify the best existing tools for measuring gambling

problems and gambling treatment outcomes across a range of populations and settings in the U.K.

This recommendation addresses the need to develop a comprehensive approach to monitoring the impacts of gambling in the U.K. As we have noted previously, there is a need for problem gambling assessments to be conducted in primary health and community settings, alcohol and drug treatment facilities, mental health centres and outpatient clinics, probation services and prisons. Identification of a set of measures for use across these settings is an important first step in establishing a coherent monitoring system of gambling impacts and harms in the U.K.

Recommendation #2

Organise an international conference of problem gambling research funding agencies to begin the process of developing international collaborations.

Projected Cost: £40,000

Discussion

International collaboration is essential to avoid repeating mistakes and duplicating efforts. International collaboration is also important to make the fullest use of scarce resources and to ensure that information on new developments in problem gambling research, intervention and prevention is shared. Whilst significant research programmes are presently underway in Australia, Canada, New Zealand, South Africa and the U.S., contacts between funding organisations in the different countries is nascent.

To hasten the process of international collaboration, it would be valuable for representatives of key agencies from these different countries to meet in person to discuss shared concerns and critical issues. A two-day conference in London with representation from federal, state and provincial agencies in countries (e.g. Australia, Canada, Europe, New Zealand, South Africa and the U.S.) where substantial problem gambling research programmes are underway would benefit the Trust in identifying key elements of the research programmes in these countries as well as specific projects with which the Trust might wish to collaborate.

In making this recommendation, we envision something rather different than funding U.K. researchers to attend conferences in other countries or funding visiting fellowships for U.K. or international researchers. Rather, we believe there is a specific need to foster international relationships between organisations with responsibility for the allocation of research funds. Representatives of organisations such as the Victoria Gambling Research Panel, the Independent Pricing and Regulatory Tribunal of New South Wales, the Australian Ministerial Council on Gambling, the New Zealand Ministry of Health and Department of Internal Affairs, the Ontario Problem Gambling Research Centre, the Alberta Gaming Research Institute, the (U.S.) National Institutes of Health and the (U.S.) Institute for the Study of Pathological Gambling and Related Disorders all have experience with establishing priorities for research funding, developing research agendas and soliciting proposals for research on gambling and problem gambling. However, we are aware of only one previous attempt (among organisations in the Canadian provinces) to bring representatives of funding agencies together to share information about research priorities and develop agreements to conduct collaborative research projects that span jurisdictional boundaries (Simpson, personal communication).

Recommendation #3

Encourage the public dissemination of data from the upcoming prevalence study

Projected cost: It is not anticipated that this would incur any cost.

Discussion

It would be beneficial for the data from the upcoming prevalence study (2005) to be made publicly available, in a timely fashion, to interested and registered researchers, through one of the U.K.'s data archives such as that organised by the Economic and Social Research Council (ESRC) or the U.K Data Archive (UKDA). This would enable secondary analysis and interpretation of these data to be undertaken at no extra cost and thus would maximise the output from the primary research overall.

It would also be beneficial to explore with ESRC the possibility of making the data from the first U.K. prevalence study publicly available. The investigators responsible for this project have published several articles and a monograph based on these data but it is likely that additional valuable analyses could be conducted by investigators with different interests and/or areas of expertise. This has certainly been the case with the 1998 U.S. national prevalence survey, where investigators who were not part of the original project team have carried out and published secondary analyses using the Public Use File available through the Inter-University Consortium for Political and Social Research (Desai et al, 2004; Taylor, Krepps & Wang, 2000).

Recommendation #4

Provide funding for the development of postgraduate research and scholarship in the area of gambling and problem gambling.

Projected Cost: £10,000 per studentship, one per year for five years

Discussion

As Arnold et al (2003) point out, funding student research would help build up a base of research expertise in the U.K., which at present is lacking. We would further suggest that the provision of such awards be linked with other sources, such as ESRC. The latter organisation has a programme whereby, in cases where the designated research area is one that is seen to meet the wider needs of the academic community, it provides funding for half of the cost of a research studentship, with another body (in this case, the Trust) providing the other half. Such an arrangement would maximise the funds available for research, allow the funding of more studentships overall, and would facilitate the creation of networks between existing academic funding bodies, young researchers and the Trust. We believe that one such studentship should be funded each year.

We are aware that budgeting only for one studentship per year may seem a rather slow approach to developing capacity for gambling research in the U.K. However, we believe that an integral element to these studentships must include mentoring from experienced gambling researchers. Given the very small number of active gambling researchers in the U.K., we believe that a slower approach to developing research capacity is warranted. This process can be accelerated in the future as new researchers gain experience, pursue gambling-related research and engage new students in this process.

Intermediate

Recommendation #5

Establish a web-based library and clearinghouse to monitor numbers of helpline calls, first time treatment seeking, problem gambling prevalence rates, gambling participation rates, gambling industry revenues, gambling tax revenues and other measures of the impacts of gambling on U.K. society.

Projected Cost: £100,000

Discussion

While peer-reviewed published literature is increasing rapidly in the gambling studies field, much of the available information remains difficult to identify and access. In several jurisdictions (e.g. Alberta, Ontario, Victoria), large amounts of research information are now disseminated primarily through the Internet. To assist U.K. researchers interested in gambling issues in gaining access to these sometimes difficult-to-obtain materials, the Trust should consider developing an extensive web-based library and clearinghouse on problem gambling issues. Such a resource would also be helpful to international researchers seeking to identify information specific to problem gambling initiatives in the U.K., as these are implemented. Information available from the clearinghouse on trends in the impacts of gambling on U.K. society will be a further valuable resource for policy makers, regulators, programme planners, treatment providers, researchers and the general public.

This recommendation is in line with the recommendation made by Arnold et al (2003), that the Trust support an informational body to coordinate information dissemination and set standards for the work of private organisations. Whilst the first priority for the clearinghouse would be information dissemination, the clearinghouse could eventually incorporate standard-setting and research coordination functions. Eventually, although continuing to receive financial support, it will be important for the clearinghouse to become a separate entity from the Trust.

We noted earlier that there is no jurisdiction internationally that has established a comprehensive monitoring system to assess the impacts of legalised gambling over time. Similarly, there is no jurisdiction internationally that has established a clearinghouse of the type we are advocating. The best examples of gambling research clearinghouses are the Victorian Gambling Research Panel in Australia and the New Zealand Department of Internal Affairs. In Ontario, the Responsible Gambling Council supports a web-based E-library with links to numerous documents. In the U.S., the National Council on Problem Gambling is beginning to serve as a clearinghouse for problem gambling research and clinical information. In the U.K., DrugScope and Alcohol Concern provide models for the scope and organisation of the type of clearinghouse we envision for the Trust.

Recommendation #6

Commission an evaluation of the effectiveness of problem gambling services in the U.K. to assess changes in help-seeking in response to prevention and outreach efforts as well as satisfaction with available services.

Projected Cost: £130,000

Discussion

To date, evaluation of problem gambling services in the U.K. has been carried out by the organisations providing those services. By 2007, it would be desirable for the evaluation of problem gambling services in the U.K. to be conducted by an external, independent evaluating organisation. This information will assist the Trust in refining its strategic plan as well as in fine-tuning its research commitments.

Long term

Recommendation #7

Develop a researcher-initiated grant application system similar to systems established in Australia, Canada and the U.S.

Projected Cost: £230,000

Discussion

While there is presently a shortage of gambling research expertise in the U.K., we expect this situation to change as funding for gambling research becomes available. As a long-term goal (post 2007), we believe that the Trust should become a major source of funding for researcher-initiated research projects on gambling and gambling problems. To ensure that the projects funded by the Trust meet the highest scientific standards, an independent peer-review system for screening proposals and identifying those most worthy of funding is needed. Such a system requires significant financial support over a sustained period. The projected cost provided here represents an initial investment in the long-term viability of such a system.

Like other gambling research funding bodies (e.g. the (U.S.) Institute for the Study of Pathological Gambling and Related Disorders, the Victorian Gambling Research Panel and the Ontario Problem Gambling Research Council), requests for tenders should be issued to conduct research in specific areas related to the priorities of the Trust. However, these requests for tenders should be as broad as possible to encourage the development and submission of innovative proposals. It will also be important to provide adequate reimbursement for reviewers who are asked to dedicate significant amounts of professional time to reviewing proposals as well as reports to the Trust on the results of these studies.

7.2.2 Development of, and risk factors for, problem gambling

In considering research on the causes of, and risk factors for, problem gambling, the Reviewing Team identified numerous challenges and future directions. Most important in our view is the need to address the dearth of longitudinal research on the development of gambling problems that characterises the gambling studies field internationally. Given the promise of research on biological and neurological factors that contribute to problem gambling, readers may wonder

why we have not recommended allocating funds for such research. In our view, the implications of neurological research for public health and population-based approaches to *preventing* gambling problems are limited. Such research is more appropriately funded through the large health research organisations in the U.K.

Little is known about how different risk factors influence the development of problem gambling in individuals or the relative strength of these factors. Basic research that focuses on the evaluation and refinement of multi-factorial theories of problem gambling is especially needed in order to identify suitable targets for prevention among adolescents, the general adult population and subgroups in the adult population such as women, minorities, regular gamblers and gambling industry employees. While basic research on different ethnic and cultural groups is important, we have elected not to focus on these groups specifically. Instead, given the likely pending changes in the availability of specific types of gambling in the U.K., we believe attention to changes in gambling participation and problem gambling among women and youth should receive the highest priority.

Basic research is also needed on different problem gambling 'subtypes' to improve the matching of clients with specific interventions as well as the efficacy of these interventions with individuals who may present with quite different needs. Finally, research on risk factors and the development of gambling problems is needed to inform the design and improve the eventual implementation of public awareness campaigns and host responsibility programmes.

On a somewhat different front, evaluations of the impacts of new policies and interventions are needed for ongoing refinement and enhancement of theories of problem gambling development and mitigation. With respect to the expansion of gambling opportunities, research attention is particularly needed in the area of the impacts of Internet, telephone and wireless modes of gambling. If possible, it would be best to pilot the availability of these activities and assess their impacts, initially on a small scale.

Short term

Recommendation #8

Fund analysis of gambling data from an existing longitudinal study in the U.K. and development of a publishable manuscript.

Projected Cost: £30,000

Discussion

To improve our understanding of the risk and protective factors associated with the development of gambling problems, it is imperative to establish collaborative relations with investigators running prospective studies where large, representative samples of non-problem and problem gamblers can be followed over a number of years, including some studies that commence during childhood.

The Reviewing Team has identified a number of longitudinal studies presently underway in the U.K. These include:

- Millennium Cohort Study funded by the Economic and Social Research Council and directed by the Centre for Longitudinal Studies, Institute of Education, University of London. This is a nationally representative sample of approximately 19,000 children, now aged about 4 years, and their parents

- Avon Longitudinal Study of Parents and Children (ALSPAC) (see overleaf)
- South London Child Development Study (n=170 mothers recruited at south-east London hospitals)
- Lifeways Cross-Generation Cohort Study (a sample of 1,000 Irish families)
- Southampton Women's Survey (12,500 women aged 20 to 34 years in 1998, only those experiencing pregnancy have been recruited into the longitudinal component)

There are a number of longitudinal studies underway in the U.K. that involve older adults, including the Hertfordshire Cohort Study, the 1958 Birth Cohort Study, the Aberdeen Children of the 1950s Study, the Boyd Orr Cohort of Scottish adults (all presently in their 60s), the Newcastle Thousand Families Study (1947 birth cohort), the Glasgow Alumni Cohort (15,000 participants recruited at a university health service between 1948 and 1968).

The most promising candidate for present purposes is the Avon Longitudinal Study of Parents and Children (ALSPAC; also called the Children of the Nineties Study). ALSPAC was designed to determine ways in which the individual genotype combines with environmental pressures to influence health and development. The study includes comprehensive data (including genetic and physiological) on an entire cohort of 10,000 children born in Avon (presently aged 12 and 13 years) and their parents. The study has an open policy with regard to collaboration within strict confidentiality rules (Golding et al, 2001). ALSPAC is affiliated with the European Longitudinal Study of Pregnancy and Childhood (ELSPAC) and has contacts with numerous investigators involved in longitudinal studies in Australia, Canada, the U.S. and elsewhere (see http://celse.alspac.bris.ac.uk/ for additional information).

The Reviewing Team made contact with the study's principal investigators and learned that an abbreviated version of the SOGS was included in the most recent wave of interviews with ALSPAC parents. The ALSPAC investigators have indicated that they are interested in identifying collaborators to assist in analysing these data. Funding this analysis presents an opportunity for the Trust to rapidly and cost-effectively increase gambling research capacity in the U.K.

Recommendation #9

Fund addition of gambling and problem gambling module to an existing longitudinal study in the U.K. and development of one or more publishable manuscripts.

Projected Cost: £150,000

Discussion

In addition to the short gambling module included in the last wave of interviews with parents, the ALSPAC investigators have expressed an interest in including a gambling module in the next wave of data collection with the study children, if funding were to be available. Given their age, it is likely that these children are already involved in some gambling activities (e.g. privately with friends and family as well as on Lottery and fruit machines). This would be an ideal opportunity to assess gambling involvement and gambling participation in a cohort of 'tweens' in order to establish a baseline for future assessments.

There are two possible options for adding a module to the ALSPAC children's interview. The first is to include a gambling module in an interview with the child at the study clinic, while the second is to include a gambling module in a questionnaire that the child completes at home and returns to the investigators. These two options have very different cost implications and we have included only an estimate for the lower cost self-completion questionnaire (£90,000)

along with estimated costs for analysing the data and developing one or more manuscripts for publication.

The Reviewing Team was unable to establish contact with other investigators involved in longitudinal research in the U.K., largely due to time constraints. However, given the broad public debate about gambling issues in recent years in the U.K., it is quite possible that other longitudinal studies have included some questions about gambling. Efforts are needed to identify these studies and establish collaborative relationships with the researchers involved. Particular efforts should be made with regard to the Millennium Cohort Study because of the size of the sample, the young age of the children involved and its national representation.

Recommendation #10

Solicit applications for sector-specific studies of normative and problematic gambling among regular on-course and off-course bettors, Fixed Odds Betting Terminal players, fruit machine gamblers, casino gamblers and bingo players.

Projected Cost: £120,000 (£30,000 per sector times four sectors)

Discussion

Sociological studies are needed to begin to develop understanding of different types of gambling *in situ*, the motivations that people have for engaging in these activities and the ways in which these activities fit into gamblers' lives. We envision several relatively small, naturalistic studies of different gambling venues that would yield important information about how and why people gamble regularly as well as how people sometimes get into difficulties with these activities. The results of these studies could be used to design subsequent larger surveys of regular gamblers, in the development and evaluation of public awareness campaigns aimed at regular gamblers and in the refinement of brief interventions aimed at increasing rates of 'natural recovery' in the sub-clinical problem gambling population.

Intermediate

Recommendation #11

Fund and commission a separate, follow-on study to the upcoming problem gambling prevalence survey in the U.K., scheduled to begin in 2005.

Projected Cost: £300,000

Discussion

Addition of a brief gambling 'module' to one or more longitudinal studies in the U.K. is important to enhance understanding of the relationship between problem gambling and numerous risk and protective factors. However, the brief modules added to these other larger studies do not permit in-depth examination of gambling participation and the development of gambling problems as these change in relation to each other over time. Given the dearth of longitudinal research in gambling studies overall, we believe that a separate and substantial effort to conduct longitudinal research focused specifically on changes in gambling and problem gambling over time in the U.K. is warranted.

In New Zealand and Sweden, large cross-sectional prevalence surveys have been enhanced with the addition of separate, follow-on studies with randomly selected sub-samples of respondents. Technically, these are referred to as 'two-phase' studies. In both New Zealand and Sweden, the first phase of the prevalence survey was carried out by the official statistics agency of the country while the second phase was completed by a private research organisation. In both cases, the second phase projects yielded valuable information about the accuracy of the problem gambling screens used in the larger surveys and about additional aspects of gambling involvement and lifestyle associated with gambling problems.

Adding a separate and distinct follow-on study to the upcoming prevalence survey in the U.K. would serve as the foundation for a longitudinal study of the risk and resilience factors associated with problem gambling in the U.K. and would also represent an important collaboration between the Gambling Commission and the Trust.

Recommendation #12

Fund and commission a study of Internet, wireless and remote gambling, problem gambling and help-seeking for gambling problems.

Projected Cost: £200,000

Discussion

This is our response to the request from the Trust to make specific recommendations for the U.K. Codes of Practice in the area of Internet gambling. Internet gambling has grown rapidly and is likely to continue although, as yet, regular participation is confined to a small percentage of the population. However, this may change in the future and the known demographics of these regular players are certainly cause for concern. We noted in our review of risk factors for problem gambling that research is needed to monitor Internet gambling and wagering and identify links between usage and problem gambling in different sectors of the population. We further noted, in our review of interventions and alternative approaches to preventing problem gambling that while the Internet has the potential to exacerbate excessive gambling, this medium also has the potential to curb such excesses and provide direct avenues for help-seeking. We believe there is merit in commissioning a large, well-designed study of these forms of gambling and wagering and their relationship to gambling problems and help-seeking over time.

Long term

Recommendation #13

Continue to monitor longitudinal panel study derived from 2005 U.K. prevalence survey.

Projected Cost: £300,000

Discussion

The Reviewing Team has consistently argued that there is tremendous need for longitudinal research focused specifically on the development of gambling problems in the general population. To our knowledge, there are no gambling-specific longitudinal studies in the general population underway internationally. Funding of this longitudinal panel study would be of benefit not only in the U.K. but internationally too.

Recommendation #14

Continue funding addition of gambling and problem gambling module to an existing longitudinal study in the U.K. and development of publishable manuscripts.

Projected Cost: £200,000

Discussion

As with the gambling specific longitudinal panel study, there is tremendous value in monitoring changes in gambling and problem gambling over time in a large cohort of young people. We recommend continuing to fund a brief gambling module in one or more longitudinal studies as these proceed to allow for monitoring changes in problem gambling over time and in relation to numerous other behaviours.

7.2.3 Intervention options for treatment of problem gambling and their effectiveness

As with basic research, research on problem gambling intervention options and their effectiveness is needed on many fronts. Research is needed on barriers to problem gambling treatment as well as on the best approaches for enhancing treatment engagement, retention and outcomes. While information exists on sectors of the population with high rates of gambling problems (e.g. youth, men), work is needed to determine the best design and location of treatment services for these groups. Research is also needed to determine whether different kinds of treatment may be effective with different types of problem gambler and to identify the variables most relevant in making decisions about treatment intensity. For example, little is known about the role of financial counselling and money management in the treatment of gambling problems. Research is needed on clinician variables that have an impact on treatment efficacy as well as on the most appropriate education, training and certification criteria for professionals who treat problem gamblers and their families.

As gambling availability increases over the next few years, we believe that there will be a need to target interventions towards women, youth and ethnic minorities in the U.K. and to assess the effectiveness of these efforts. Culturally appropriate approaches will be needed for ethnic minority and recent migrant problem gamblers and research will be needed to assess the effectiveness of outreach programmes to these underserved populations. In considering other sectors of the population, there is a need to view families as a population in need of services and to assess the value of family interventions.

Treatment outcome research using a broad range of measures, including controlled gambling as well as abstinence as an acceptable outcome, and assessing client satisfaction as well as emotional and financial improvements, is needed. Long-term follow-up studies, utilising appropriate control and/or waiting list groups, are needed to reliably assess the effectiveness of treatment services in the U.K. These studies must include adequate descriptions of participants' problem severity and comorbidities as these change over extended periods of time.

Finally, research is needed to examine promising new interventions, such as motivational interviewing, self-help workbooks, brief courses of therapy, online mutual aid and online support groups, that are likely to help larger numbers of people than formal treatment.

Short term

Recommendation #15

Fund and commission a retrospective investigation of 'natural recovery'.

Projected Cost: £100,000

Discussion

Given the large numbers of individuals who experience difficulties with their gambling but recover from these problems on their own, it would be valuable to know more about how this process occurs and what can be done to facilitate it. Given the challenges and expense of funding prospective research and the importance of gaining a better understanding of this process among U.K. gamblers, we believe there is value in initially funding a retrospective study in this area. The study could be modelled on Hodgins and el-Guebaly (2000) in which participants were recruited through radio and newspaper advertisements. While the study would be limited because of its reliance on a self-selected sample, the results could be used to inform subsequent work on natural recovery in a prospective study as well as longitudinal research being undertaken separately with children and adults.

Recommendation #16

Fund and commission a systematic review of problem gambling treatment and development of a treatment guide for the U.K. context.

Projected Cost: £75,000

Discussion

Korn and Shaffer (2004) recently developed a set of practice guidelines for professionals in the Commonwealth of Massachusetts, U.S. This treatment guide is intended to assist clinicians (specialist and non-specialist) throughout the state with the identification, assessment and treatment of gambling problems. Practice guidelines have the potential to improve quality of care and recovery outcomes for people seeking help for their gambling and its adverse consequences. We believe there is value in developing a similar set of guidelines for professionals in the U.K. since these could be helpful to counsellors and helping professionals without prior experience in treating problem gambling as well as to counsellors who have some experience in this field.

We believe the somewhat smaller fiscal allocation for this effort, compared with Recommendation #15 above, is warranted because of the dearth of evaluative research on problem gambling treatment and because of the importance of improving understanding of 'natural recovery' to the overall mission of the Trust.

Recommendation #17

Fund and commission assessment of clinical education, training and certification needs in the U.K.

Projected Cost: £75,000

Discussion

The Reviewing Team has noted the value of certification in assuring that a minimum standard of care is achieved in providing help to problem gamblers and their families. Certification initiatives are emerging in several jurisdictions and in relation to 'responsible gambling' as well as problem gambling treatment. Previously, Arnold et al (2003) recommended that the Trust commission the development of a problem gambling counsellor accreditation scheme. We concur with this recommendation but believe there is value in first developing a clear set of standards for clinical education and training within the U.K. setting. This will ensure that individuals seeking help will be able to access quality services. It will also improve the likelihood that larger counselling organisations will begin to recognise the value of providing their members with gambling-specific training.

It must be emphasised that we are *not* recommending the development of a problem gambling counsellor accreditation scheme or credential as part of the research budget. The focus here is to assess what has been developed in other jurisdictions with regard to gambling counsellor education, training and certification as well as what has been developed in the U.K. with regard to other counselling specialties. The results of this work will be a valuable resource in the efforts of the Trust to develop a gambling counsellor credential as part of its intervention budget.

Recommendation #18

Fund focus group study of youth and women problem gamblers to serve as basis for developing targeted services.

Projected Cost: £50,000

Discussion

Given projected expansions in gambling availability in the U.K., it is anticipated that youth and women will be increasingly likely to develop difficulties related to their gambling. Small, qualitative studies of youth and women who have experienced difficulties with their gambling would be helpful in the development of targeted services for these subgroups in the population. Areas for investigation would include the gambling activities most likely to give rise to problems, media and messages most likely to be effective in reaching troubled youth and women gamblers, the types of interventions most likely to succeed with these groups and the best ways in which to provide information and treatment.

Intermediate

Recommendation #19

Fund a study of the use of brief interventions and evaluate the effectiveness of this approach in the U.K.

Projected Cost: £150,000

Discussion

Brief interventions are a promising new area of treatment with problem gamblers that appear to be especially successful among less severely affected individuals. As such, it would be valuable to conduct additional research into the effectiveness and efficacy of such approaches. Based on the limited research literature, it appears that an approach that includes a self-help workbook as well as motivational interviews is likely to be most effective in assisting individuals with sub-clinical gambling problems to reduce their gambling involvement or maintain abstinence. Participants should be followed for at least 12 months and measures should include initial goals, gambling involvement outcomes, and emotional and financial issues.

Another brief intervention that deserves research attention is the 'single session' consultation that involves family members along with problem gamblers. If funds are available, both of these approaches should be trialled and evaluated.

Recommendation #20

Fund and commission long-term treatment outcome study.

Projected Cost: £125,000

Discussion

The Reviewing Team has noted that for most people and problems, any of a variety of interventions appear to perform equally well. We also made note of studies that demonstrated the importance of personal qualities of therapists and clients and the nature of the interaction between them to successful treatment outcomes. What is less clear is how durable the benefits of treatment are and how treated individuals compare, long-term, with gamblers who do not receive professional help. We are strongly of the opinion that a well-designed, well-executed study of treatment outcome is needed in the problem gambling studies field. In designing this study, it is essential that one or more appropriate control groups be included in the study, and that participants' problem severity and comorbid conditions are assessed over periods of up to three years.

Recommendation #21

Fund development and evaluation of online or telephone capabilities for problem gambling support groups.

Projected Cost: £100,000

Discussion

While there is limited evidence of the effectiveness of telephone and online approaches to problem gambling treatment specifically, these approaches have shown promise with a wide range of behavioural disorders. We believe there is merit in developing and testing the effectiveness of one or both of these approaches with problem gamblers in the U.K. These approaches are particularly attractive to youth, a group that we believe will experience significant difficulties in the next three to five years as gambling availability increases in the U.K. These approaches are also likely to be effective with sub-clinical problem gamblers, a group whose needs the Trust is particularly concerned to meet. Another possibility would be to establish one or more online mutual aid groups as 'chat rooms' within the larger web-based library and clearinghouse recommended earlier (see Recommendation #5). Regardless of the developmental approach taken, a careful evaluation of outcomes as well as the process of implementation will be needed.

Recommendation #22

Fund development and evaluation of culturally appropriate services.

Projected Cost: £100,000

Discussion

We have noted the need for culturally appropriate approaches and materials for problem gamblers from ethnic minority groups and recent migrants several times in our review. At a minimum, translation of informational materials into multiple languages should be funded under this initiative and assessment of how these materials are distributed. Speciality training about problem gambling diagnosis and referral for counsellors in agencies working with ethnic and migrant communities is also needed. It may be helpful initially to conduct some small-scale, qualitative research to assess community views of gambling problems and how best to address these. Careful attention in the evaluation of these services will need to be paid to language barriers, divergent cultural views of gambling and problem gambling, and multiple perspectives within communities.

Long term

Recommendation #23

Support development of problem gambling credentialing examination and collaboration with other counselling professions

Projected Cost: £200,000

Discussion

Building on work conducted in response to Recommendation #17, we concur with Arnold et al (2003) that there is value in supporting the development of a credentialing examination for gambling counsellors. Whilst this examination should draw on other problem gambling credentialing examinations internationally, it will need to be tailored to fit U.K. requirements for the counselling professions and U.K. requirements for licensing. Eventually, it would be helpful to establish reciprocity agreements with other counselling professions and credentialing bodies in the U.K. and internationally.

Recommendation #24

Support development and evaluation of targeted services for youth, women and family members.

Projected Cost: £200,000

Discussion

As noted previously, we expect youth and women (and possibly older adults) to experience greater problem rates as gambling availability expands in the U.K. over the next three to five years. With likely increases in the prevalence of problem gambling generally, we also expect more families to be affected by a member with a gambling problem. We believe it will be advisable to support the development of targeted services for these at-risk groups and to evaluate the effectiveness of these services in mitigating gambling-related harms. Attention should be given to early identification and brief interventions for these groups as well as building specialised counselling capacity and expertise.

Recommendation #25

Fund collaboration with international agencies to develop international criteria for counselling services for problem gamblers.

Projected Cost: £100,000

Discussion

At various points in our review, we noted increasing international cooperation with regard to presenting gambling populations and approaches to helping. We view collaboration among international agencies on the development of an international public health agenda on gambling as critical. As a representative of major stakeholders in the U.K., the Trust should play an important role in supporting this agenda and helping to shape it. We recommend that the Trust collaborate with the 'International Think Tank on Presenting Gambling Populations and First

Contact Services' and the emerging 'International Forum on Gambling and Public Health' and work with their organising agencies to develop internationally agreed-upon criteria for first contact services, education, training and credentialing, and public policy initiatives.

As above with Recommendation #17, it is worth emphasising that the intent here is to foster international collaboration in the development of criteria for standards for problem gambling counselling rather than the development of counsellor services (which would more logically be a charge on the intervention budget).

7.2.4 Alternative approaches to public education and awareness raising

Alternative approaches to public education and awareness raising have the greatest potential to make it less likely that people will become problem gamblers and more likely that they will seek help quickly. The Reviewing Team identified a range of promising approaches in problem gambling education and awareness raising; however, few of these approaches have been adequately evaluated. We believe that the emphasis in the U.K. should be on small trials of the most promising approaches along with evaluations of effectiveness before large-scale trials are undertaken.

Research in the problem gambling field as well as systematic reviews in relation to other behaviours supports the effectiveness of targeted prevention messages and strategies in reducing or stabilising problem gambling rates in the general population and in subgroups in the population. There are several important subgroups in the U.K. population that merit such targeting. These include adolescents, women, machine players and track bettors. Research is needed to develop the most effective messages and media for their delivery. Research is also needed to assess the effectiveness of mass media campaigns in prompting calls to the GamCare helpline. It would probably be wise to conduct mass media campaigns in selected markets to assess their effectiveness before implementing these efforts nationwide.

Voluntary exclusion programmes from gaming venues have received the most evaluative attention from gambling researchers and funding agencies. It would be worthwhile to conduct a review of exclusion policies in the U.K. and develop a plan to implement such policies in all of the gambling industry sectors. Development of a centralised tracking system for individuals who chose to self-exclude as well as a system to track site compliance is probably best left to the Gambling Commission. However, the Trust could commission research on the effectiveness of involving counsellors in exclusion interviews in relation to subsequent help-seeking as well as the effectiveness of single session information sessions in conjunction with time-limited exclusion in facilitating natural recovery. Another area worthy of research attention is the development of pre-commitment betting levels and evaluation of such a programme in preventing gambling problems.

We concur with Arnold et al (2003) that the Trust should not engage in providing education and training programmes for gambling venue staff and managers. However, we believe there is value in commissioning research on the elements of the programmes that have been implemented by different sectors of the gambling industry as well as the consistency with which these programmes have been implemented. We also believe there is value in commissioning research on the 'signs' of problem gambling within venues to improve server intervention training and the implementation of 'host responsibility' programmes through the industry. We further believe there is value in conducting secondary analysis of the U.K. prevalence survey data to identify 'moderate gambling' limits specific to the U.K.

Several small-scale research projects are suggested by our review of the literature on alternative approaches to public education and awareness raising. For example, a review of 'responsible

advertising' codes of ethics from other countries and in relation to other behaviours would provide guidance in the development of such codes in the U.K. A trial of one or more 'gambling information' kiosks staffed by GamCare or Breakeven counsellors would be informative along with an evaluation of the effectiveness of this approach in providing information and facilitating referrals for treatment. Finally, we believe that there is value in initially conducting research on the effectiveness of 'responsible gambling features' on gaming machines in the laboratory, followed by field tests at gaming venues and online sites before full scale implementation is attempted.

Short term

Recommendation #26

Fund and commission qualitative research on targeted messages to youth, women, machine players and track bettors.

Projected Cost: £50,000

Discussion

Lessons from the tobacco and alcohol fields as well as the gambling area emphasise the importance of formative research to develop targeted and effective messages in conducting effective mass media campaigns to affect behaviour. As a first step in the development of broad public awareness campaigns aimed at preventing the development of gambling problems among at-risk groups in the population, we believe there is merit in conducting qualitative, tightly focused research on the social and cultural meanings of gambling to these groups. A modest initial investment in research on views of gambling and problem gambling and on the most effective methods to convey messages to these groups will have long-term impacts on the later effectiveness of large media campaigns to prevent gambling problems nationally.

Recommendation #27

Fund and commission evaluation of voluntary exclusion policies across gambling sectors in the U.K.

Projected Cost: £50,000

Discussion

Although exclusion programmes have received more attention than many other problem gambling prevention programmes internationally, the existing studies are all quite small and only one study (of a mandatory exclusion programme) included a control group. As a first step in implementing effective voluntary exclusion policies in the U.K., we believe it is important to begin by developing a detailed understanding of the policies that currently exist in the different sectors of the gambling industry, how these policies and programmes are advertised, how consistently they are administered and the level of support for these policies among gaming venue management and staff.

Recommendation #28

Fund and commission systematic review of 'responsible gambling advertising codes' internationally.

Projected Cost: £50,000

Discussion

As with exclusion programmes, little is known about the content and consistency in adherence to advertising and marketing codes of conduct in the gambling industry. As a first step in implementing a consistent and coherent 'responsible gambling' marketing and advertising code of conduct, it would be helpful to collect and evaluate information about such codes internationally. This will permit future development in the U.K. based on knowledge of the most effective approaches and likely future directions of development.

Recommendation #29

Fund and commission evaluation of effectiveness of involving counsellors in exclusion interviews.

Projected Cost: £75,000

Discussion

On several occasions throughout our report, we have noted the reluctance of gambling industry staff and managers to engage in interventions with patrons who appear to be having difficulties. We have also noted the growing involvement of gambling industry managers in voluntary exclusion interviews and recommendations from several international review groups that specialist counsellors be involved in exclusion interviews to improve subsequent treatment seeking and access to services. As a second step in implementing a consistent and effective voluntary exclusion programme in the U.K., we believe there is merit in assessing the effectiveness of involving specialist counsellors in exclusion interviews. An important element in this evaluation will be random assignment to experimental and control conditions.

Recommendation #30

Fund and commission evaluation of effects of pre-commitment betting levels of gambling behaviour in casino and track betting facilities.

Projected Cost: £75,000

Discussion

There has been increasing discussion among gambling researchers and clinicians about the use of pre-commitment betting levels as a means for patrons to make informed decisions prior to gambling about how much money they wish to spend. Suggestions to permit patrons to establish pre-commitment limits at kiosks within gaming venues have been made. Other suggestions have been to link pre-commitment limits to exclusion programmes as well as to responsible gambling features on gaming machines and online gambling sites. However, to our knowledge, there has been no research on the effects of pre-commitment decisions on the behaviour of gaming venue patrons. We propose that a small-scale evaluation of pre-

commitment be conducted at selected gaming venues in the U.K. to assess the effectiveness of such measures in preventing gambling problems.

Intermediate

Recommendation #31

Fund and commission evaluation of targeted message public awareness campaign to youth and women in selected markets to assess increased general recognition of problem gambling as a disorder and improved knowledge about the availability of help.

Projected Cost: £150,000

Discussion

Building on earlier work conducted under Recommendation #24, we believe there is value in conducting a targeted public awareness campaign aimed at youth and women in selected markets. We concur with Arnold et al (2003) that objectives and measurement procedures involved in this evaluation should be agreed upon at the beginning of the projects and reviewed annually. At a minimum, changes in general recognition of problem gambling as a disorder and in knowledge about the availability of help should be assessed.

Recommendation #32

Fund and commission an evaluation of the role of gambling employee training programmes in increasing understanding of problem gambling and improving staff willingness to intervene when gambling problems are recognised.

Projected Cost: £150,000

Discussion

There are a rapidly growing number of mandated and voluntary employee training programmes in the gambling industry internationally. As far as the Reviewing Team could determine, there has been only one evaluation of the impact of such training on the willingness of gaming venue staff to approach a possibly troubled patron and intervene (Ladouceur et al, 2004). Whilst we concur with Arnold et al (2003) that the Trust should not be involved in delivering training programmes for gambling industry employees, we do believe that an evaluation of training programmes that are implemented in the U.K. gambling industry is an appropriate subject for research funding by the Trust. Comparison of venues with and without training programmes as well as pre- and post-training assessments will be important elements in this evaluation as will follow-up with patrons who are approached.

Recommendation #33

Fund and commission trial of 'gambling information' kiosk in one or more casinos and evaluation of effectiveness.

Projected Cost: £150,000

Discussion

'Gambling information' kiosks within the gaming venue, made possible by the continuing convergence of financial and information technology, can bring together a range of problem gambling prevention initiatives, including information and links to helping organisations, as well as providing the capacity to establish pre-commitment levels of expenditure and even speak directly with a problem gambling counsellor at the gaming venue. We believe that kiosks configured to provide responsible gambling information along with financial transaction capabilities and links to other gaming venue services are worthy of development and evaluation. We recommend an initial small-scale implementation and evaluation of this approach followed by full-scale implementation if the approach is proven effective.

Recommendation #34

Fund and commission laboratory studies of responsible gambling features of gaming machines.

Projected Cost: £150,000

Discussion

While the existing research on responsible gambling features is limited and equivocal, we believe that this approach holds promise and is worthy of further development and evaluation. A possible future direction for research is 'targeted' features that are only activated if the player's behaviour surpasses statistically determined parameters. Our recommendation is to fund one or more laboratory studies of responsible gambling features, perhaps in collaboration with other international organisations where research facilities are established (e.g. University of Nevada Las Vegas Gaming Studies Research Center, U.S.). If these features are found to be effective in the laboratory, future studies should be conducted in more naturalistic settings.

Recommendation #35

Fund and commission evaluation of the effectiveness of online self-help forms of assistance for problem gamblers in the U.K.

Projected Cost: £150,000

Discussion

Increasing numbers of people internationally seek help for a variety of problems through the Internet with online mutual aid groups offering a powerful and cost-effective alternative to formal interventions. There is also evidence that many people use online support as an adjunct to more traditional approaches to recovery. As with industry training programmes, we do not believe that the Trust should be involved in developing or managing online self-help or mutual support groups for problem gamblers in the U.K. However, we do believe that it is appropriate

for the Trust to fund and commission an evaluation of the effectiveness of such forums. Proving the effectiveness of such approaches will encourage their development by other organisations.

Long term

Recommendation #36

Fund and commission evaluation of targeted message public awareness campaign nationwide.

Projected Cost: £450,000

Discussion

We view this recommendation as the culmination of work undertaken in response to Recommendations #24 and #31. Public awareness campaigns have been proven effective in delaying initiation of problematic behaviours and in increasing cessation. The effectiveness of such campaigns depends on formative research to develop messages, the use of television, extensive field times and complementary local prevention initiatives. As with the preceding efforts, we believe that evaluation of the effectiveness of the national campaign is an essential element of the overall project.

Recommendation #37

Fund and commission field studies of responsible gambling features on gaming machines and online gaming sites.

Projected Cost: £300,000

Discussion

Funding of this initiative will depend on successful and satisfactory completion of work completed in response to Recommendation #34. Given rapid changes in financial and gaming technology internationally, it is difficult to specify exactly how these studies should be conducted. The Reviewing Team recommends soliciting proposals from a range of U.K. and international researchers in order to have an array of possible approaches from which to choose.

7.2.5 Summary

Each of the research priorities that we have identified relates to one or more promising directions in research on problem gambling prevention and treatment. In the event that fewer resources than estimated were available to fund problem gambling research in the U.K., the most sensible approach would be to reduce allocations proportionately. While such reductions are likely to affect the scope of each project, we believe that all of the priorities that we have identified warrant sustained research attention and funding support.

If only a small number of projects could be funded, we believe that the focus should be on supporting longitudinal research in the U.K. with adults (via a follow-on study of individuals interviewed in the upcoming prevalence survey) and with children (via addition of a gambling module to the Avon longitudinal survey). In this event, support should also be concentrated on

the careful development of a targeted problem gambling awareness campaign and the development of effective brief treatment interventions as well as evaluation of the effectiveness and efficacy of existing problem gambling treatment services in the U.K.

The majority of the recommendations we have made are 'stand alone' efforts addressing one or more gaps in the problem gambling knowledge base. The exceptions are all within the scope of prevention where, as we have noted frequently throughout the report, little research has been completed. For example, Recommendation #27 calls for an evaluation of existing voluntary exclusion policies across different sectors of the U.K. gambling industry while Recommendation #29 calls for a study of the effectiveness of involving counsellors in exclusion interviews. Recommendation #34 calls for laboratory studies of responsible gambling features on gaming machines and online gaming sites while Recommendation #37 calls for field studies of these features. Finally, Recommendations #26, #31 and #36 are the short-term, intermediate and long-term 'building blocks' necessary to develop an *effective* public awareness campaign targeting youth, women, machine players and track bettors. Lessons learned in several jurisdictions underscore the importance of conducting exploratory research and assessing effectiveness of a limited campaign before rolling out such an effort on a national basis.

8 CONCLUSIONS

This report has focused on Walker's "most important issue of all" and reviewed a wide range of studies on four aspects of problem gambling including monitoring and measurement, research on risk factors for problem gambling and its development, research on interventions intended to assist problem gamblers and their effectiveness, and research on the impact of approaches designed to prevent the development of gambling problems. Throughout, we have sought to indicate areas where the existing research provides a secure knowledge base sufficient to inform policy and practice and areas where understanding is thin or absent. Finally, we have provided a series of recommendations for future research in the U.K.

This has been a demanding assignment, made more challenging by the recent explosion in scholarly writing on the topics we were assigned to review. Ultimately, however, we believe that we have met our goal, to provide a report that will assist the Trust in understanding the issues and challenges related to problem gambling research and supply reliable guidance in establishing priorities for future research.

8.1 Limitations to this review

The use of evidence to inform practice is often difficult and misunderstood. We are often now urged to make use of current research-based knowledge to inform our decision-making and to critically appraise what we find. The most highly regarded form of evidence is a systematic review of appropriate and good quality research. The systematic review differs from traditional literature reviews in that an explicit and reproducible method is used in an attempt to identify and bring together in an unbiased way all the research evidence that can answer a particular question. The aim is to avoid the biased and selective reviews that have been clearly shown to provide an unreliable basis on which to make clinical (as well as policy) decisions. The U.K. National Health Service supports a number of bodies such as the NHSCRD and the Cochrane Collaboration which conduct such reviews. Resources such as the NHSCRD's *Effective Health Care Bulletins* and the Cochrane database of systematic reviews provide practitioners with access to high quality summaries of evidence.

There are two distinct types of limitations to the present review. Methodological limitations include our ability to find unpublished studies and studies published in less prominent journals within the timeframe of the project. Another limitation is that much of the work on this review was conducted in parallel by three different reviewers. While it would have been preferable for all three reviewers to agree on a standardised review process and for all three reviewers to consider all of the materials identified, this was not possible within the constraints of the project.

There are also important limitations to the research evidence that we were able to find. The most important limitation is that there are so few well-designed studies at all on problem gambling risk and protection factors as well as problem gambling prevention and intervention. The dearth of high quality research internationally made use of a 'quality of methodology' criterion largely impractical. There simply is not enough high-level evidence to identify promising approaches according to accepted practice in systematic reviews. The information that we were able to extract comes largely from studies limited by data and design considerations including small sample sizes, poor response rates and lack of control groups. These considerations make it difficult to determine the effectiveness of these programmes or whether they may be successfully replicated in other settings.

Another limitation is that although all of the reviewers queried our professional networks, we may not have identified promising interventions that have been implemented but that are not yet the subject of research. It is also possible that some of the studies we considered measured outcomes of relevance to the present review but that these were not reported. Another limitation is that many of the programmes that we considered have not been in existence for a sufficient time to permit assessment of their long-term effectiveness. Finally, almost all of the studies that we considered were conducted outside the U.K. with the implication that the results may not transfer easily.

8.2 General overview

Over a four-month period, the Reviewing Team was asked to prepare a critical review of research on three aspects of problem gambling. An additional topic, monitoring and measurement, was added after initial meetings with the Trust. The four members of the team, located on three different continents, retrieved and reviewed numerous publications identified through online databases and specialist libraries, searches of their personal collections, and by way of professional and informal networks. Based on our reviews, as well as consultation with key U.K. stakeholders, we came to numerous conclusions regarding the state of existing research on problem gambling as well as the most promising way forward for the U.K. and the Trust.

Our review of monitoring and measurement of problem gambling suggests the need for a comprehensive gambling monitoring system in the U.K., consisting of an integrated database, a basic research effort and a process for dissemination. The integrated database would include information on gambling participation and problem gambling prevalence as well as the availability, utilisation and effectiveness of problem gambling services, gambling industry revenues, and health, family, workplace, financial and legal impacts of gambling. The basic research component would include studies of the development of problem gambling as well as smaller studies of the impacts of specific initiatives and require multi-year funding commitments. The process of dissemination could be accomplished through establishment of a clearinghouse to gather and synthesise information and provide stakeholders with reliable and credible information. While a growing number of governments internationally have begun to establish such systems, little is known about 'best practices' in this regard.

Despite widespread agreement that gambling problems are a robust phenomenon and can be measured, there are strong conceptual and methodological disagreements among the experts. These disputes have led to a significant degree of public confusion and uncertainty. Early conceptualisations of problem gambling were based primarily on clinical experience and expert group consensus and the tools that were developed during this period to identify problem gamblers reflect a strong psychological perspective. The emerging public health approach has led to a focus on 'harm' as the foundation of several new measures of problem gambling although these new tools continue to reflect an emphasis on the psychological aspects of problem gambling. Moving forward, there is a need for the development and use of *credible* measures of problem gambling that derive from a clear conceptual account of problem gambling.

Our review of risk factors and the development of problem gambling highlights the tremendous need for longitudinal research to improve our understanding of the relative role of different risk factors in the development of problem gambling and to identify the risk factors that problem gambling has in common with other ailments and those specific to the disorder. While there are significant gaps in our knowledge of problem gambling, what is known suggests that significant increases in access to electronic gaming machines and other continuous gambling

forms will generate increases in problem gambling and related flow-on costs. Furthermore, the risk profile for problem gambling is likely to change. Problem gambling prevalence is likely to rise substantially although research suggests that it will eventually level out. What is not known is how long it will take for active measures to achieve stabilisation or if problem escalation can be prevented entirely.

While a very small number of prospective studies consistently show that problem gambling is more mutable than previously thought, there is still much that we do not know about 'natural recovery' and how to promote this process. Moving forward, it is imperative to conduct large, prospective studies that examine risk and protective factors across multiple domains and employ multivariate analyses. Another direction for the future is to work to establish problem gambling as an integral element of mainstream health services and health research agendas in the U.K.

We have noted that very few people identified as having gambling problems report them or receive assistance. Most health professionals who have contact with problem gamblers are probably unaware that they do, even in settings where moderate to large percentages of clients have gambling problems. There is a need for education and training for non-specialist professionals as well as additional training in substance misuse and mental illness among specialist professionals working with problem gamblers. There is a need for research on subtypes of problem gamblers so that therapeutic interventions can be developed or refined. There is also a need for research into 'controlled gambling' as an acceptable treatment outcome with some, probably less severe, problem gamblers. Work is needed to identify barriers to help-seeking among ethnic minority and recent migrant groups in the U.K. Finally, it will be important for existing problem gambling services in the U.K. to become more flexible in order to work effectively with an increasingly diverse client base as the characteristics of problem gamblers in the U.K. alter in response to changes in the availability of legal gambling.

With regard to the gambling industry, adoption of a public health approach to problem gambling challenges the view of this disorder as relatively rare and shifts the focus for preventing harm to structural aspects of gambling as well as to contextual features that pose risks to many, perhaps most, regular gamblers. Research on risk factors and the development of gambling problems has potential to inform the design of gambling industry initiatives in providing consumers with information about problem gambling and sources of professional help as well as more proactive host responsibility programmes. While there is a new measure of mutual goodwill, it remains to be seen how far independent researchers and the industry can go together in this direction.

In our review of intervention options for the treatment of problem gambling, we looked at formal treatment and alternative harm reduction strategies that have been adopted internationally in relation to problem gambling. Unfortunately, funding for the evaluation of problem gambling interventions has been so scarce that little can be said with confidence about the effectiveness of such efforts. As a consequence, there are large gaps in our understanding of the most effective treatments for problem gambling that remain to be filled.

Most research on problem gambling has been based on self-selected samples of treatment-seeking problem gamblers or community volunteers. Little is known about what kinds of treatment might be effective with different subgroups of problem gamblers or with groups in the population that are unlikely to seek any assistance for a gambling problem. Whilst upcoming expansion in gambling opportunities in the U.K. can be expected to affect youth, women and ethnic and new migrant minorities disproportionately, it is unclear what their needs might be and how they might be best served by the various treatment approaches presently in place.

A public health approach to problem gambling increases the likelihood that treatment modalities based on 'controlled' gambling outcomes may be trialled, as well as the likelihood that families will be included in any consideration of the population in need of services. Review of the funding and organisation of problem gambling services internationally highlights the need for cooperation and collaboration, for continuous and reliable streams of funding for services, for rational systems of resource allocation and flexible models of problem gambling service provision.

Unfortunately, essential questions about the effectiveness and efficacy of formal treatment for problem gambling cannot be answered on the basis of existing research. While certification and credentialing of problem gambling counsellors is increasing, little is known about the most appropriate education and training for professionals who treat problem gamblers and their families. Priorities for research include monitoring the impact and effectiveness of intervention strategies that are implemented as well as broadening the focus to examine promising new interventions. There is also a need for empirical studies of the role of financial counselling and money management in problem gambling treatment. Another aspect of problem gambling treatment that has received inadequate attention is the importance of providing help for family members of problem gamblers.

Internationally, problem gambling treatment services tend to be provided by individual counsellors who have received some specialised training and who are based within larger addiction or mental health treatment programmes. There is a need for training for non-specialist counsellors in screening for gambling problems among their clients and in making appropriate referrals. Cognitive-behavioural therapy, the only treatment approach that has received sustained evaluative attention, has demonstrated positive and consistent outcomes. There are also a growing number of pharmacotherapeutic approaches being taken in the treatment of gambling problems although there is, as yet, no single, widely-accepted pharmacotherapeutic protocol. Finally, there is some research suggesting that much larger numbers of individuals may be helped through brief interventions and public awareness campaigns than through formal, clinically-based treatment programmes.

The focus of formal treatment services on the most severely affected individuals has meant that prevention efforts, which can be expected to affect the behaviour of much larger proportions of the population, are poorly developed. Another critical concern is that although formal treatment services receive the majority of available funding, evaluation and monitoring of those services has been limited. The focus on formal treatment has also led to a short-changing of research on problem gambling which has, in turn, limited the development of theoretical understanding of gambling problems and hindered the ability to design effective interventions.

Long-term strategic plans for research and evaluation are needed along with provision for multi-year funding streams to encourage and support substantial research programmes. Another need is for multidisciplinary research incorporating perspectives beyond psychology. Finally, while the gambling industry has been understandably reluctant to engage directly in interventions, there is merit in gambling industry staff having an understanding of problem gambling as well as information to provide to patrons, if required.

The public health approach has been used to develop effective responses to many physical and mental health problems. While it is not yet possible to identify the most effective public health methods to prevent the onset and progression of gambling problems in the general population, it is likely that some of the many activities presently being implemented internationally will prove effective. Internationally it has been easiest to achieve stakeholder agreement with regard to problem gambling prevention among youth. Strategies which stretch across the domains of family, school and community, include a range of activities and target multiple risk

behaviours are most likely to be effective. There is also promise in the development and delivery of telephone- and Internet-based materials.

Evidence suggests that effective problem gambling awareness campaigns targeting adults can lead to measurable increases in awareness of services, in calls to helplines and in clients seeking help. Systematic reviews of mass media campaigns both for tobacco and alcohol support the effectiveness of such approaches, particularly in combination with other strategies at the national and local levels. In developing mass media campaigns, it will be essential to conduct formative research to develop targeted and effective messages, use television as a broadcast medium and plan for extended campaigns.

Industry exclusion policies are the problem gambling prevention measure that has received the greatest evaluative attention internationally. Challenges in implementing such programmes include difficulties in identification and detection as well as in enforcement and monitoring. Such measures should be viewed as a gateway to formal treatment. Research is needed on how to improve treatment-seeking and access to services once an individual has chosen exclusion. Difficulties encountered in the implementation of employee training programmes emphasise the importance of establishing centralised tracking systems and mandatory site compliance to ensure consistent and effective delivery of training. Another challenge is in the identification of 'signs' of problem gambling; this is an area where venue-based sociological research could be valuable.

Despite the intuitive appeal of Responsible Gaming Features (RGFs) and their rapid implementation in some jurisdictions, little research has been done on their effectiveness in preventing gambling problems. Research on RGFs should begin with small-scale laboratory studies followed by field studies before jurisdiction-wide implementation of 'universal' programmes is mandated. Another potentially fruitful area of investigation would be the effectiveness of pre-commitment betting limits and links between pre-commitment limits and RGFs or exclusion programmes.

Problem gambling prevention is most often carried out by specialist non-governmental organisations. Treatment practitioner contact with problem gamblers in this regard is limited. One recent innovation, problem gambling information kiosks inside gaming venues, represents a promising new partnership between practitioners and gaming operators and implementation and evaluation of such efforts in the U.K. seems warranted. Future directions for prevention research in relation to practitioners are suggested by the growing involvement of counsellors in voluntary exclusion programmes as well as the promise of brief interventions in formal problem gambling treatment. Research is needed to assess the effectiveness of such involvement in improving treatment-seeking and treatment access after exclusion. Another direction for research would be the effectiveness of single session information sessions in conjunction with time-limited exclusion in assisting in natural recovery.

Different facets of the gambling industry have been involved in problem gambling prevention for some years. However, these efforts must compete with heavily financed industry advertising campaigns that work directly to counteract their effectiveness. A possible way forward may be the adoption of industry-wide 'responsible gambling marketing and advertising' codes, along with research to monitor compliance and assess their effectiveness. Secondary prevention efforts by the gambling industry have included employee training programmes, voluntary exclusion programmes and partnerships with practitioners and government agencies to provide information and improved access to formal treatment services. However, implementation of these programmes has not always been of the highest quality and compliance has been uneven.

If ‘host responsibility’ training is developed in the gambling industry in the U.K., management support will be critical to its success. Another critical element will be basic research, most likely within gaming venues, to identify the most salient ‘signs’ of problems among different types of gamblers. There is also a need for further evaluation of the effectiveness of employee training programmes and voluntary exclusion programmes as well as research on the most appropriate methods to implement such measures. Finally, partnerships with gambling equipment suppliers, to implement problem gambling prevention measures on the products they supply to the gambling industry, have promise. Key challenges in the evolution of these partnerships include the provision of funding for research as well as ensuring the independence of the investigators.

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