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australasian gambling review

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A report prepared for the
Independent Gambling
Authority of
South Australia

Third Edition
covering 1992 - 2007

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Australasian Gambling Review

Third Edition (1992–2007)

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comprising

Gambling Research in Australia and New Zealand (1992–2002):
Implications for policy, regulation and harm minimization
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updated, with a preface, to cover the state of the literature as at 30 June 2005 as
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as at 30 June 2007

INDEPENDENT GAMBLING AUTHORITY
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Preface to the Third Edition

This is the third update of the Australasian Gambling Review (AGR) first commissioned by the Independent Gambling Authority of South Australia in 2003. The purpose of the review is to provide readers with a comprehensive and critical summary of relevant gambling research, with this update covering the last decade and a half. Although originally designed to assist in the regulatory needs of the Authority in South Australia, the review includes material from a variety of research areas and hopefully will be a useful research reference for people working in different areas of the sector, including university researchers, practitioners, and policy makers. This current version of the review builds upon the previous edition, and includes new material drawn from the 2006–07 financial year, as well as other material from previous years not previously included in the earlier editions.

As will be observed, the most striking feature of the recent year (2006–07) in Australian gambling research has been the substantial number of gambling prevalence studies that were published. In just one year, South Australia, New South Wales, the Northern Territory, and Queensland all released new prevalence reports. All of these were conducted using a quite similar methodology, had quite large samples relative to their populations, and used the same instrument to estimate the prevalence of problem gambling (the CPGI). These developments are encouraging in that they indicate some convergence in the national research agenda and a growing awareness of the value of conducting research that can be compared and contrasted with work undertaken in other jurisdictions. In light of this, this new edition of the review includes a number of new tabular summaries of findings that allow readers to examine the findings of multiple studies presented in a similar format.

As in the 1990s, much of the current interest in prevalence research arises from an interest in determining how gambling and problem gambling rates are developing over time. However, as will be observed from the findings summarised in this review, it is not entirely clear what trends can easily be discerned. Although overall expenditure on gambling is still slowly increasing in Australia, there does not appear to be any strong evidence to support any associated growth in either gambling participation rates or problem gambling. In some States (e.g., South Australia) both of these figures appear to be falling, whereas, in others, the rates are remaining very stable. Whether this is due to genuine loss of patronage at some venues, broad declines in disposable incomes, a loss of interest in the product itself, or greater awareness of responsible gambling, remains unclear.

Similar to the previous year (2005–06), a substantial amount of the recent research conducted in Australia has related to the effectiveness of responsible gambling measures or policies, or has focused on the social impacts of gambling in particular communities. For example, a thriving research program has emerged at Charles Darwin University with a strong focus on gambling in indigenous communities, whereas a new study

published by the South Australian Centre for Economic Studies has examined the different economic impacts of gambling in South Australia. A new study based at the University of Queensland (Boreham *et al.*, 2006) has researched the impacts of responsible gambling measures on older people, whereas another conducted in conjunction with the Mater Hospital has examined the links between family background and early childhood experiences, and gambling in early adulthood. In South Australia, the National Institute of Labour Studies (NILS) released its report into the impacts of the mandatory Codes of Practice introduced to South Australia in 2004.

Although much of the new research relates to social impact and regulatory issues, attempts have been made in this third edition of the review to include a more detailed examination of the psychological literature relating to problem or pathological gambling. There is now an extended coverage of material relating to the personality characteristics of problem gamblers, as well as a detailed discussion concerning the appropriate design of psychological interventions and evaluations. Although such material will be very familiar to those who work in the field of clinical psychology, there is now considerable policy interest in the process of clinical evaluation at a government level because of the desire to ensure that State and Territory funding for treatment is being directed towards the best possible services.

As in previous years, I once again apologise in advance for any omissions or selective attention given in this edition of the review. The principal focus of this review has been on studies with empirical findings or those that describe significant policy and practice developments, rather than broad scoping or prospective impact studies. It is hoped that the selection provided offers readers a comprehensive starting point for their own detailed research, and a useful reference point for those needing up-to-date summaries of key topics in this every growing, and always fascinating, area of research.

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March 2008

Summary of additions to the Third Edition

The Third Edition features a significant number of additions and revisions based upon the discovery of previously published material relevant to particular topics. It also contains summaries and reviews of a number of new papers and reports emerging in the 2006–07 financial year. A number of new tables have also been added to consolidate the findings from studies conducted using similar methodologies.

Section 3.1	Update of national gambling participation rates, including the provision of a inter-jurisdictional summary table derived from recent prevalence studies.
Section 3.2.1	New national expenditure figures for Australia and New Zealand 2005–06.
Section 3.2.2	Update of State/Territory-specific expenditure figures for 2005–06.
Section 3.3	Activity-specific participation rates have been updated to reflect the findings from the most recent 2005 South Australian prevalence study.
Section 3.5.1	Inclusion of Boreham et al's (2006) study of older people and gambling in Queensland.
Section 3.5.2	Inclusion of youth gambling component of the 2005 South Australian prevalence study conducted by the South Australian Department for Families and Communities.
Section 3.5.2	Inclusion of University of Queensland-Mater Hospital study of predictors of gambling in early adulthood.
Section 3.5.2	Inclusion of NZ National Research Bureau (2007) study of 199 adolescents interviewed as part of a national household gambling survey.
Section 3.6.2	A summary of the emerging indigenous research program at the Charles Darwin University is provided, including Young et al's (2006) prevalence study of the NT, McDonald and Wombo's scoping study, and Morris et al's (2006) report on indigenous gambling in the Territory.
Section 3.6.2	Greater detail is provided of studies into gambling in Maori and Pacific Islander peoples in New Zealand.
Section 4.2.7	Summarises the findings from two recent prevalence studies that administered both the SOGS and CPGI to the same respondents (Roy Morgan, 2005 in Tasmania and Young *et al.*, 2006 in the NT). Comparative analyses of classification rates are provided.
Section 4.3.1	Problem gambling prevalence: This section has been updated to include the findings from all recent prevalence studies, including those conducted in SA, the NT, NSW, and QLD.

Section 4.3.1	A table containing prevalence rates for all prevalence surveys that have administered the SOGS and /or the CPGI is provided.
Section 4.6.3	The sections on cigarettes and alcohol have been updated to reflect the findings of the most recent South Australian prevalence study as well as the University of Queensland-Mater Hospital study.
Section 4.7.3	The section on gambling and crime includes findings from the South Australian Centre for Economic Studies relating to the spatial distribution of offences and EGM densities in Adelaide.
Section 5.2.1	The section on gambling as a pathology has been revised to reflect the findings from Blaszczynski et al's (2005) study on tolerance and withdrawal in problem gambling.
Section 5.2.4	The section on gambling as a form of pathological risk-taking has been revised to include more detail on impulsivity as based on earlier studies by Blaszczynski and colleagues in Sydney.
Section 5.3.3	The section on the role of EGM features has been extended to include greater detail of Walker *et al.*'s (2005) study of the use of the double-up feature in NSW venues.
Section 5.3.3	There is also reference to Svetieva *et al.*'s (2006) machine tracking study that was designed to examine the behavioural characteristics of EGM players, e.g., how long they played, changed machines, and so forth.
Section 5.3.3	Sharpe *et al.*'s (2005) study of near-misses and their role in EGM gambling is included.
Section 6.2.3	Monaghan and Blaszczynski's (2007) study of the design of pop-up messages on EGMs (static vs. dynamic) is included in this section.
Section 6.3.11	The National Institute of Labour Studies (NILS) (2007) evaluative research of the impact of South Australian Responsible Codes of Practice is summarised and reviewed.
Section 6.4.4	Walker's (2005) and Blaszczynski's (2005) recent critiques of psychological interventions for problem gambling are included.
Section 7.2.5	The South Australian Centre for Economic Studies review of the economic impact of gambling on South Australia is summarised and reviewed.
Section 7.2.6	The section on the geographical accessibility of gambling is updated to reflect the findings from the NILS study and most recent South Australian prevalence study conducted by the South Australian Department for Families and Communities (2006).

Executive summary

Overview

1. This report provides a comprehensive summary of Australian and New Zealand (NZ) gambling research conducted in the period 1992–June 2007.

2. The report is divided into 5 principal sections: (1) The nature and prevalence of gambling, (2) The prevalence of problem gambling and its correlates, (3) Psychological explanations for problem gambling, (4) Harm minimisation and strategies to assist problem gamblers, and (5) Economic analysis and regional impact studies.

3. Research material was drawn from published journal articles, academic books, Government and consultancy reports, conference papers and proceedings, student theses, and Internet resources.

Nature and prevalence of gambling

4. Eighty percent of Australians and New Zealanders gamble at least once per year. In Australia, the most popular activities based on overall participation rates are lotteries (60%), electronic gaming machines (EGMs) (35%) and racing (20–25%). Lottery gambling is more prevalent in New Zealand with an overall participation rate of 72%, but EGMs are less prevalent with a participation rate of only 24–30% depending upon the jurisdiction.

5. Total net gambling expenditure was $17.57 billion in Australia and $2.98 billion in New Zealand in 2005–2006. Per capita expenditure in Australia was $1223 compared with less than $NZ700 in New Zealand. In Australia, there was a 3.9% growth in net revenue in the most recent financial year compared with a 2.0% decrease in New Zealand.

6. In Australia, around 60% of total expenditure is from EGM gambling compared with 46% in New Zealand. The per capita number of EGMs in Australia is almost twice that of New Zealand (approximately 10 per 1000 people vs. 5 per 1000), and this ratio is much higher when Western Australia is excluded.

7. The highest per capita expenditures are observed in the Northern Territory (NT), New South Wales (NSW), Victoria (VIC), Queensland (QLD), and the Australian Capital Territory (ACT). Lower expenditures are observed in Tasmania (TAS), South Australia (SA) and Western Australia (WA). NSW, ACT and SA have the highest proportions of expenditure derived from EGMs.

8. Gender and age are the two strongest demographic predictors of gambling involvement. Younger males are more likely than women to gamble on racing activities, and casino table games and sports. Women are more likely to gamble on bingo. EGMs tend to be equally popular across both genders. Poker machine players are significantly more likely to be in the 18–24 age group and as less likely to be older (aged 75+). Overall gambling participation rates as well as the rates for individual activities generally tend to be lower in older people. The only notable exception is lotteries, which tend to be less popular in younger age-groups.

9. Under-aged gambling rates in Australia appear to be lower than in overseas studies. Young people tend to favour lottery products and card games. Most are introduced to gambling by their families or by older siblings. Involvement is strongly predicted by positive attitudes towards gambling amongst family members and friends. Adolescent problem gambling is associated with significantly poorer psychological and social functioning. Problem gamblers do not appear to have a poorer understanding of gambling odds, but are more prone to erroneous beliefs about gambling.

10. Anecdotal evidence suggests that there have been increases in gambling in Indigenous and some specific Asian communities.

11. Gambling activities can be differentiated in terms of their continuity, the amount of skill involved, the degree of social and emotional involvement, and by their locational characteristics.

12. Gambling can be differentiated from other financial activities in that it involves an inevitable element of chance.

13. People are more likely to gamble on EGMs because of a desire for relaxation and escape, whereas racing and casino games are considered attractive because of their arousal inducing qualities.

Problem gambling

14. There are 5 primary measures available in Australia to assess problem gambling: The DSM-IV criteria, the South Oaks Gambling Screen (SOGS), the Victorian Gambling Screen (VGS), the Eight Screen (8–screen) and the Canadian Problem Gambling Index (CPGI). The SOGS has been the most widely used measure, whereas the VGS is the only one developed for use in Australia. The CPGI has now been adopted as the principal measure for all prevalence research in Australia.

15. The prevalence of problem gambling is around 2% of the adult population. This rate is over twice the rate observed in New Zealand (0.6%). Problem gambling rates tend to be relatively similar across jurisdictions, although the most recent South Australian figure is lower than in other jurisdictions. The lowest prevalence rates have been observed in WA

where there are no EGMs in clubs and hotels. More recent statewide studies, however, have suggested a small decrease, or stabilisation, in the prevalence of problem gambling in Australia.

16. Problem gambling rates tend to be higher among males and among younger age groups.

17. Approximately 75–80% of gambling-related problems are associated with EGMs

18. Current estimates suggest that between 60–80% of problem gamblers experience significant depression, anxiety, and suicide ideation.

19. Approximately 15–20% of problem gamblers are affected by substance abuse, 67% are smokers, and 33% are regular smokers.

20. Approximately 20% of children born to problem gamblers also appear to be at risk of developing gambling-related problems.

21. Approximately 20–50% of problem gamblers experience significant disruption to their employment and/or productivity.

22. Expenditure by problem gamblers is estimated to make up a third of total gambling expenditure. Problem gamblers are estimated to lose $12,000 per year or a rate of $250 per week.

23. Problem gambling prevalence rates tend to be 10–20 times higher amongst those in correctional institutions than in the general community. Approximately 30% of people with severe gambling problems have committed crimes to support their gambling.

24. Gambling amongst prisoners tends to reflect broader difficulties in impulse control and psychological functioning, whereas crimes committed by problem gamblers seeking assistance at agencies tend to be more directly linked to gambling and usually only occur once gambling problems are well established. Australian courts are generally reluctant to take gambling into account in their decision-making because of the difficulties in being able to demonstrate that criminal behaviour was driven by impulse or mental impairment.

Explanations for gambling

25. It is difficult to classify problem gambling as a form of physiological addiction as based upon the processes of withdrawal and tolerance because many gamblers do not experience genuine withdrawal symptoms, or experience the same physiological highs as drug users. The process of increasing bet sizes over time or the anxiety that is associated with losing is likely to be associated with cognitive factors (e.g., the disappointment and frustration of losing, or a need to win back losses). Nevertheless, approximately 20–30%

of problem gamblers experience cross-addictions suggesting the existence of some underlying proneness to addiction.

26. Gambling has also been explained in terms of operant and classical conditioning. The operant explanation has been primarily applied to EGM gambling and found to have good face validity. EGM players appear to be sensitive to variations in machine events and structural variations in machines. Modern machines, based upon a random ratio schedule of reinforcement, appear to be more effective in maintaining behaviour compared with older models. The classical conditioning explanation relates to the development of associations between gambling stimuli (e.g., sounds) and specific physiological responses (e.g., anxiety and arousal), and how these drive people's urge to gamble.

27. Recent studies of the behaviour of EGM players suggest that they most commonly adopt a "minimax" strategy (maximum lines/minimum credits per line) and prefer machines with free-spin features. Problem gamblers tend to bet on more lines and bet more credits per line as compared with recreational players.

28. Personality factors most likely to be associated with problem gambling include anti-social personality disorder and impulsivity.

28. Research involving the modification of machine parameters has shown that expenditure on EGMs is significantly reduced by restricting access to note acceptors and imposing limits on the maximum bet size. Slowing reel speed is generally thought to be less effective unless combined with other modifications.

29. Many people (and more often than not, women) tend to become psychologically dependent on gambling. Playing EGMs appears to be a form of avoidance or emotion-based coping. This coping strategy is common amongst people who have experienced early trauma, significant life-changes, or stressful events.

30. The cognitive theory of gambling is based on the idea that people over-estimate the probability of winning because of irrational-thinking or erroneous views about the odds of winning, and the nature of random events.

31. Common irrational beliefs include: the belief that machines pay out in cycles, over-estimation of the amount of skill involved in gambling, beliefs in personal luck, and a tendency to over-estimate the amounts won and to understate the amounts lost.

32. It has been argued that all of these explanations are likely to apply to at least some gamblers. According to Blaszczynski and Nower (2002), problem gamblers very likely fall into three main categories: (a) Those with underlying pathologies, e.g., antisocial personalities, impulsivity, that leads them to be prone to addictive behaviours, (b) Those who use gambling to regulate unpleasant mood states or escape from reality (psychological addiction), and (c) Those who develop problems as a result of being

exposed to sub-cultures or social groups with an involvement in gambling, and who are influenced by cognitive and behavioural processes.

Harm minimisation and strategies to assist problem gamblers

32. Current evidence suggests that only 10% of people with gambling problems will seek formal assistance.

33. The primary motivations for seeking help are desperation brought about by severe psychological distress, impending financial ruin, or legal difficulties.

34. The major obstacles to seeking help are: embarrassment, shame, or denial, as well as false beliefs about the capacity to regain control without assistance or by gambling more successfully. Several studies have shown that these barriers have been found to be even stronger in non-English speaking communities and in indigenous populations.

35. The report distinguishes between primary, secondary and tertiary interventions. Primary interventions are those designed to prevent the development of gambling problems. Secondary interventions assist gamblers once they are exposed to gambling (e.g., in venues). Tertiary interventions involve treating problem gamblers once they have been affected.

36. Primary interventions include: community education campaigns, changes to gambling advertising, the provision of safe-gambling messages, or the removal of gambling inducements. A number of studies based on self-report data have found support for these strategies both among recreational and problem gamblers, but there is little direct evidence that they have a significant influence on problem gambling.

37. Secondary interventions include restricting the accessibility of gambling, strategies to encourage greater awareness of gambling expenditure, exclusion policies, modifications to gaming machines, and interventions involving assistance from staff at gambling venues. Most of these interventions were considered more promising ways to reduce problem gambling as well as protecting those at risk of developing problems, but so far relatively little empirical evidence is available to support these policies. Nevertheless, it is clear that the removal of facilities such as ATMS, or reductions in the availability of cash in the gaming venue are strongly endorsed as harm minimisation strategies, and should be subjected to further evaluation. There is also some support for the use of smart-card technology as a way to limit expenditure, or which allow gamblers to "precommit" themselves to pre-determined expenditure limits. Existing evaluations of this technology suggest that this could be feasibly introduced to machines over time to allow the cost of implementation to be more gradually absorbed by the industry.

38. All industry groups in Australia operate according to industry codes of practice. In SA, the ACT and in the NT, these codes are mandatory, so that there are penalties for

industries that fail to adhere to the policies and practices specified by legislation. In QLD, a co-regulatory arrangement is in place, whereas WA, NSW, TAS and VIC operate largely according to voluntary codes of practice. Most codes require staff training in responsible gambling, limits on advertising, the provision of information about the risks associated with gambling, and self-exclusion programs. Several reviews of existing voluntary codes of practice in Australian gambling venues (in NSW, QLD, ACT) showed that many policies have not been consistently enforced by venues. Codes were more likely to be enforced by larger venues that could afford the time and costs required to implement them. One particularly controversial issue relates to whether staff should be required to identify problem gamblers in the gaming venue. Most industry groups are opposed to this requirement, but there is some qualitative evidence available to suggest that there may be some visible signs or behaviours which allow problem gamblers to be identified *in situ*.

39. A review of existing tertiary intervention strategies involved discussion of both counselling services and psychological interventions.

40. Counselling services typically involve an eclectic mix of financial counselling, relationships counselling, legal advice, and a variety of therapeutic interventions. These include: narrative therapies, motivational counselling, and group and individual counselling, based upon a combination of cognitive and cue-exposure techniques.

41. Psychological interventions tend to take one of two forms. The first involves treatments designed to reduce the urge to gamble by 'imaginal' or direct exposure to gambling-related stimuli. In 'imaginal desensitisation', gamblers are taught to associate a state of relaxation with a mental simulation of gambling involvement (e.g., image that they are visiting a venue), whereas direct cue exposure techniques involve visiting the site of the gambling and trying to resist the urge to gamble using relaxation training. Both techniques appear moderately successful, although limited long-term outcome data are available.

42. Problem gamblers in treatment report that structured and well organised programs involving practical support and advice concerning how to avoid gambling situations are the most effective.

Economic analysis and regional impact studies

43. A critical summary of the Productivity Commission's discussion of consumer surplus and the benefits of gambling is provided. The concept of consumer surplus is considered useful because it attempts to quantify the benefits of gambling, but is criticised because of the hypothetical nature of the construct, and because of ambiguities concerning the precise price elasticity of demand applicable to gambling.

44. The Productivity Commission's analysis of the costs associated with problem gambling indicates that these costs are likely to be substantial. However, the authors draw attention to a number of conceptual and methodological concerns that need to be taken into account in future cost estimations. These include the need to examine costs from a common reference point (e.g., problem gamblers vs. Government), as well as considering the difference between fixed and variable costs in the analysis of burdens imposed by assisting additional problem gamblers.

45. This section documents the findings of regional impact studies with a particular focus on the work of Ian Pinge in Bendigo and the Centre for Economic Studies in South Australia.

46. Regional impact studies indicate that the introduction of EGMs to regional communities is likely to have had a detrimental effect on rural economies. EGM gambling is highly capital intensive and establishes few linkages with the local economy. Only a relatively small proportion of money lost in State taxation revenue is returned to the communities. These analyses also show that significantly greater wealth and employment would have resulted from the redirection of consumer spending away from gambling to other industries that are more labour intensive and which establish greater links with the local economy.

47. Most studies are generally sceptical of the controversial 'savings hypothesis' advocated in previous regional studies. This hypothesis states that the recent increase in gambling expenditure has largely been financed from existing cash and asset reserves and has not been at the expense of expenditure in other areas. This view is challenged on the grounds that there is little evidence to support a link between recent changes in savings-ratios and greater expenditure on gambling. In fact, savings rates may have changed for many other reasons.

48. A recent comparison of VIC (an EGM state) and WA communities (non-EGM state) was undertaken to examine the differential economic and social effects of EGM availability. The results revealed higher rates of problem gambling, help seeking for gambling-related problems, and community concerns about the effects of gambling in VIC. In WA, a significantly greater proportion of men were reported to have experienced gambling problems and more in relation to racing, whereas Victorian problem gambling was much more evenly distributed between the sexes and predominantly related to EGM gambling.

49. Geographical analysis of the relationship between the density of EGMs, net expenditure and problem gambling prevalence rates consistently show greater densities to be associated with greater expenditure and a larger proportion of problem gamblers. EGMs tend to be most strongly concentrated in areas with greater social disadvantage, but this may only be because hotels and clubs have traditionally been more concentrated in poorer areas.

50. Several recent studies have been conducted to evaluate the effects of imposing very small regional caps on the numbers of gaming machines, or removing a percentage of

machines from specific areas (VIC), or statewide (SA). Both studies revealed a short-term slowing of expenditure growth as a result of these policies, but neither found evidence that these measures are effective in reducing problem gambling. In a market that is already very saturated by EGMs, people are still able to gain access to gambling opportunities relatively easily. The industry is also able to counteract the effects of machine removals by changing the mix of gaming machines (e.g., introducing more popular machines) and by choosing to remove less profitable models. Analysis of other harm minimisation strategies applied in Victoria suggest that a reduction in operating hours and smoking bans in venues has a greater influence on gaming expenditure.

1. Introduction

1.1 Terms of reference

As specified in the *Independent Gambling Authority Act 1995* (section 11(1)(aab), one of the functions of the Independent Gambling Authority of South Australia (IGA) is:

> to undertake, assist in or co-ordinate ongoing research into matters relevant to the Authority's functions, including research into—
>
> (i) the social and economic costs and benefits to the community of gambling and the gambling industry; and
>
> (ii) the likely impact, both negative and positive, on the community of any new gambling product or gambling activity that might be introduced by any section of the gambling industry; and
>
> (iii) strategies for reducing the incidence of problem gambling and preventing or minimising the harm caused by gambling; and
>
> (iv) any other matter directed by the Minister.

Accordingly, the IGA has commissioned the following report to provide a reference point for deliberations concerning future gambling research. The intention is that this report should provide a clear and comprehensive review of contemporary Australian and New Zealand gambling research, that could be used, by the Authority, as a starting point from which to develop specific projects relevant to the South Australian context.

Although similar, and in some cases very comprehensive, reviews have already been undertaken in Australia and New Zealand in recent years (e.g., Abbott, 2001; Blaszczynski, Walker, Sagris & Dickerson, 1997; Productivity Commission, 1999; South Australian Centre for Economic Studies, 2001), the terms of reference for this report ensure that it would differ in several ways. First, the present review was designed to ascribe priority to research that would appear to have immediate relevance to influencing current gambling practices and policies. Second, the report was designed to focus more specifically on evidence-based research so as to provide a stronger reference point for policy and regulation, allowing the identification of clear research priorities and policy objectives. In selecting this framework for review, the intention was not to downplay the importance of ongoing innovation in theoretical research, and in specific programs for problem gamblers, but to focus upon research that could be used to highlight areas of potential value to the IGA in its statutory role. For these reasons, the present report focuses predominantly on 5 main areas of gambling research (Section 1.2).

1.2 Summary of focal areas of gambling research examined in the review

1. **The nature and extent of gambling in Australia.**
2. **The impacts of gambling on individuals and the community, e.g., the prevalence of problem gambling and its correlates.**
3. **Theoretical explanations for problem gambling.**
4. **Harm minimisation and strategies to assist problem gamblers.**
5. **The economic costs of gambling.**

1.2.1 The prevalence and nature of gambling in Australia and New Zealand

The first analytic section of this report (Section 3.1 onwards) provides a broad overview of the current structure of the gambling market, including the prevalence of gambling, in Australia and New Zealand and the amount being spent per capita. Included in this analysis is a description of the demographic profile of gamblers, the relationship between demographics and gambling activity preferences, and people's reported principal motivations for gambling. Specific demographic factors considered include: gender, ethnicity, and age, with a particular focus on comparisons of gambling in younger and older age groups. This section also examines the structural factors that appear to differentiate gambling from non-gambling activities, as well as those that differentiate one form of gambling from another, and how these factors correlate with people's reported motivations and gambling preferences.

1.2.2 The impacts of gambling on individuals and the community, e.g., the prevalence of problem gambling and its correlates

The second analytic section (Section 4.1 onwards) examines the issue of gambling-related harm, with a particular focus upon the conceptual and methodological issues associated with defining and measuring problem gambling. In addition to a summary of all Australian and New Zealand prevalence research, this section describes how problem gambling is measured using 5 common instruments available in Australia (these are: DSM-IV, SOGS, VGS, 8–Screen, and CPGI). A detailed discussion of gambling-related harm and its correlates then follows. Included in this section is a summary of the demographic factors specifically associated with problem gambling, the types of gambling activities most engaged in by problem gamblers, and the various dimensions of harm (psychological, interpersonal, vocational, and legal). This section concludes with a detailed analysis of recent research concerning links between gambling and crime.

1.2.3 Theoretical explanations for problem gambling

The third analytic section of this report (Section 5.1 onwards) provides an overview of the principal theoretical explanations for problem gambling that have been developed

within the available literature. This includes a review of medical (or dispositional) approaches to gambling; behavioural explanations; and the recent growth in cognitive research. A particular focus of this section is on recent behavioural research concerning the relationship between the structural characteristics of gaming machines and gambling behaviour.

1.2.4 Harm minimisation and strategies to assist problem gamblers

The fourth analytic section (Section 6.1 onwards) provides a detailed overview of strategies and interventions to assist problem gamblers. This section is divided into 3 main parts. The first discusses *primary interventions* (which attempt to prevent problem gambling), the second examines *secondary interventions* (which minimise harm in those already affected) and the third summarises various *tertiary or formal treatment interventions* for problem gamblers who seek help. This section concludes with a discussion concerning the possible effects of advertising, public education, voluntary codes of practice, and venue modifications, as well as a summary of current treatment modalities.

The final section of the report (Section 7.1 onwards) provides a summary of recent economic and regional studies of gambling in Australia. Included in the first part of this section is a summary of the Productivity Commission's (1999) discussion concerning the benefits of gambling (based upon consumer surplus calculations), as well as its analysis of gambling-related costs, and the price elasticity of demand. The second part summarises the findings of recent regional impact studies conducted in both South Australia and Victoria, and their methodological strengths and limitations.

In various sections of this report, it will be shown that information is not available, in Australia and/or New Zealand, concerning a number of gambling-related topics. In such situations, attempts are made to identify potential research priorities or areas where significant information gaps exist, and recommendations are made concerning the types of knowledge or findings that would need to be obtained in order to enhance our understanding of these areas. In conjunction with this review, recommendations are made concerning appropriate gambling research methodologies, and how these might be used in future research initiatives in both Australia and New Zealand.

2. Research methodology

Material relevant for this review was obtained from a number of sources, using a variety of strategies. The first of these involved a complete search of published articles identified by relevant databases (PsychINFO, Sociofile, Medline, EBSCO host) using the names of all published gambling researchers in Australia and New Zealand (1992–2006). A second source involved outputs from university-based research centres, including the Australian Centre for Gambling Research (University of Western Sydney), New Zealand Centre for Gambling (University of Auckland), The Gambling Research Unit (University of Sydney), and National Centre for Training and Education on Addiction (Flinders University), Centre for Economic Studies (University of Adelaide), and University of Melbourne Problem Gambling Research Program. A third source involved Government websites, and included the Victorian Casino and Gaming Authority/ Department of Justice, Victorian Department for Human Services, Productivity Commission, and Australian Gambling Council. A fourth source of information involved proceedings from national conferences, including those of The National Association for Gambling Studies and the New Zealand Problem Gambling Council. A fifth strategy involved conducting extensive Internet searches using a wide range of keywords that included (amongst others): gambling, regulation, harm minimisation, gaming machines, and policy.

3. Prevalence of gambling in Australia and New Zealand

3.1 Overall participation rates

A considerable number of surveys have been conducted in both Australia and New Zealand to determine how many people gamble, and what are the preferred forms of gambling. These surveys consistently show that between 70 and 90% of the adult population gambles at least once per year, on at least one form of gambling. This finding has emerged both at a State or Territory level (New South Wales: Dickerson *et al*., 1996; AC Nielsen, 2007; South Australia: Delfabbro & Winefield, 1996; South Australian Department of Human Services, 2001; South Australian Department for Families and Communities, 2007; Queensland: Dickerson, Baxter, Boreham, Harley & Williams, 1995; Dickerson, Boreham & Harley, 1995; Dickerson, Baxter, Harley, Maddern & Baron, 1995; Queensland Government, 2002, 2007; Western Australia: Dickerson, Baron & O'Connor, 1994; Tasmania: Dickerson, Walker & Baron, 1994; Dickerson & Maddern, 1997, ACT: McMillen, Tremayne & Masterman-Smith, 2001; Northern Territory, Young, Abu-Duhou, Barnes, Creed, Morris, Stevens, & Tyler, 2006) and also in national studies in Australia (Productivity Commission, 1999) and New Zealand (Abbott & Volberg, 2000). Both national studies reported that approximately 40% of the population gambles at least once per week, on at least one form of gambling. However, comparisons between the two national studies demonstrate that twice the percentage of Australians (20%) compared with New Zealanders (10.8%) reported gambling weekly on so-called 'continuous' forms of gambling (casino games, racing, and EGMs) (Abbott & Volberg, 2000).

These national studies also demonstrated that reported levels of gambling involvement differed considerably, depending upon the type of gambling. By far the most popular activity in both countries was lottery gambling (e.g., Cross Lotto and Powerball). Approximately 60% of the Australian population reported gambling on lotteries at least once per year, with approximately 25% of the population, or around 40–45% of lottery gamblers, reporting that they gambled at least once per week. The second most popular activities were scratch tickets (or instant lotteries) and electronic gaming machines (EGMs), with an overall participation rate of approximately 35% (depending on the survey), and reported weekly participation rates of between 4 to 7%. The third most popular activity was race betting (thoroughbred, harness, and greyhounds), with a reported participation rate of between 20–25% (weekly rate of 4%). The fourth most popular activity was Keno, with a rate between 15–20% (weekly rate of less than 2%). All other activities, including sports betting, casino games, Internet gambling, and Bingo, had overall reported participation rates of less than 10% (weekly rates of around 1%) (Productivity Commission, 1999).

In New Zealand, the most popular reported activities were lotteries (72% participation rate for the previous 6 months; Abbott & Volberg, 2000), instant lotteries (36%), gaming machines (approximately 24%), and racing (18%). These figures suggest that lottery-style gambling is much more popular in New Zealand than in Australia, and that a much smaller proportion of the New Zealand population gambles on gaming machines (around 25% compared with at least 40% in Australia).

More recent jurisdiction-specific prevalence studies conducted within Australia have revealed similar patterns of results. Table 1 summarises the participation rates obtained in the Productivity Commission's (1999) survey and those obtained in four of the most recently published prevalence studies in SA, NSW, QLD and the NT.

Table 1

Comparative gambling participation rates in recent prevalent research
(the dates refer to the year in which surveys were physically undertaken)

	PC (1999)	QLD (2003)	NSW (2006)	SA (2005)	NT (2006)
Overall	82	80	69	70	73
Lotteries*	60	67	56	52	53
EGMs	39	32	31	30	27
Scratchies*	46	26	n.a.	24	29
Horse Racing	24	16	20	19	19
Keno	16	17	11	8	23
Sports	6	4	8	4	5
Casino games	10	6	5	6	10

* Art Union tickets in Queensland, NSW grouped all lottery products in one category. The figures refer to the proportion of the community who gambled at least once on each activity in the previous 12 months.

The first general observation to be made about the figures in Table 1 is that they indicate a very similar pattern of activity across different jurisdictions. Lotteries, EGMs, and scratch tickets remain the consistently most popular activities in terms of the participation rates.

The second observation is that overall participation rates are significantly lower in NSW, SA and NT than in the Productivity Commission's national survey in 1999. EGM participation rates are now closer to 30% rather than 40% (e.g., in SA, the rate of EGM participation has fallen significantly from over 40% in 1996 to under 30% by 2005). Similar decreases are observable in relation to lottery-style products (e.g., lotteries and scratch-tickets), particularly in SA. Participation rates for these products have fallen from over 60% (lotteries) and 35% for scratch tickets in 1996 to just over 50% and 24% by 2005. These findings suggest that in some jurisdictions and, in South Australia in particular, total expenditure on gambling for these more popular activities appears to have become more concentrated in a smaller proportion of the population. Although

interpretation of these comparative figures needs to be undertaken with caution and can only be speculative, it is possible that these changes have resulted from a gradual diminishment in the novelty of gambling products, decreases in disposable income due to rising costs of living, or greater awareness of the risks associated with gambling brought about by responsible gambling promotions in the media.

3.2 Gambling expenditure

3.2.1 National expenditure comparisons

Overall reported participation rates provide only one indication of the extent to which people are involved in gambling activities. A potentially more useful indicator is the amount people spend on gambling, both as a whole and in terms of specific activities. In the financial year 2005–2006, Australians were estimated to have lost a total of $17.57 billion on gambling (Queensland Treasury, 2007), which represented a net amount of $1,223 for every Australian aged 18 years or older. A comparison of these figures with the previous financial year (2004–2005) indicates that total gambling expenditure has increased by approximately 3.9% (from $16.98 billion or $1,097 per adult). These Australian figures are considerably higher than those reported in New Zealand, where the total amount lost in 2005–2006 was $1.98 billion or, with an adult per capita expenditure of less than $700 (as based upon an estimated adult population of around 3 million people). Total net gambling revenue in New Zealand fell by 2.0% from 2004–2005 to 2005–2006 after a smaller fall of 0.6% in the previous comparison of financial years (2003–04 to 2004–05).

In terms of specific gambling activities, around 60% of total Australian gambling revenue is derived from electronic gaming machines located outside casinos. The remainder comprises: 17% from casino gaming (including EGMs), 12% from racing, 11% from lottery products (including Keno), and 2% coming from other activities (Qld Office of Economic and Statistical Research, 2007).

Until recently, the situation in Australia contrasted quite dramatically with that in New Zealand, where expenditure was much more evenly distributed across the different forms of gambling. For example, in 2000–2001 in New Zealand, approximately 30% of total expenditure involved lotteries, 24% EGMS, 25% casinos, and 22% racing. However, by 2005–2006, 46% of New Zealand revenue was derived from EGMS outside casinos, 25% from casinos, 13% from racing, and 16% from lotteries (NZ Department of Internal Affairs website, 2007

The differences observed between Australia and New Zealand (namely, the relatively higher proportion of expenditure on EGMS in Australia and racing and lotteries in New Zealand) is likely to be due to a number of factors. It may be that activities such as lotteries and racing are more heavily promoted in New Zealand, or that New Zealanders are particularly attracted, for historical/cultural reasons, to lotteries and racing compared with Australians. Alternatively, it may be that Australian expenditure is so dominated by

EGMs because of the greater prevalence of these machines in Australia. At 30 June 2007, there were 20,120 EGMs in New Zealand, or around 1 gaming machine for every 189 people in a population of 3.8 million (Department for Internal Affairs, 2007). In Australia, by contrast, in 2007 there were approximately 200,850 EGMs in Australia (Queensland Treasury, 2007), so that with a population of 20 million, there was around 1 EGM for every 100 people (see also Ferrar, 2004). In other words, it appears that when EGMs are more numerous, a greater proportion of total expenditure tends to be subsumed by this single form of gambling, so that other forms of gambling come to represent a relatively smaller proportion of overall expenditure.

> ♠ **Australia vs. New Zealand: Australians spend significantly more per capita on gambling than do New Zealanders. In NZ, lotteries are a more popular form of gambling than gaming machines, and account for a greater proportion of total expenditure. In Australia, gaming machines are more prevalent, they attract a significantly higher proportion of gamblers, and give rise to significantly higher expenditures per capita.**

3.2.2 Statewide expenditure comparisons

An analysis of data compiled by the Queensland Treasury (2007) demonstrated substantial jurisdictional differences in gambling expenditure, and in the breakdown of total gambling expenditure. These differences are summarised in Table 2. As indicated, the highest rates of expenditure per capita are observed in the Northern Territory (NT), New South Wales (NSW), Victoria (VIC), and in the Australian Capital Territory (ACT). Lower rates are observed in Queensland (Qld), South Australia (SA), and Tasmania (TAS), with the lowest rate of all in Western Australia (WA). Tasmania, the NT and WA are distinctive in that a significantly greater proportion of revenue is derived from their main casinos, which contain both casino table games as well as EGMs, whereas the ACT, NSW, and SA are distinctive in that a relatively higher proportion of total expenditure is from EGMs located outside casinos. In terms of recent expenditure growth, namely from 2004–2005 to 2005–2006, the NT has experienced very rapid growth (over 14%), WA and VIC have experienced modest growth, QLD, NSW a small amount of growth, whereas SA has remained static in terms of revenue growth. In Tasmania, net revenue has fallen since the previous financial year. All of the total figures (and especially those for racing) should be treated as close approximately to the true figure because small amounts of data were not available to the Queensland Treasury when these figures were compiled.

Table 2

Summary of gambling expenditure (net loss) data for Australian States and Territories: comparison of the two most recent financial years and breakdown by activity for 2005–06

	Net loss per capita 2004–2005	Net loss per capita 2005–2006	% change	% EGMs	% Racing	% Lottery	% Casino
NT	1918	2197	+14.5	17.8	28.6	5.0	30.9
NSW	1336	1357	+1.57	71.0	10.6	8.6	9.0
VIC	1134	1170	+3.17	54.2	13.4	8.7	22.5
ACT	998	1021	+2.30	74.8	10.5	7.4	7.4
QLD	1004	1029	+2.49	56.9	9.9	25.3	18.5
SA	922	921	-0.20	67.7	9.6	10.2	11.3
TAS	814	776	-4.70	38.1	9.7	17.3	34.8
WA	521	552	+5.95	-	27.8	28.4	40.4

Note: Percentages do not add to 100% because of other, usually minor, categories of gambling not indicated. In the Northern Territory, the category, sports betting, comprises a significant proportion of total expenditure (13%). The Lottery category includes Keno.

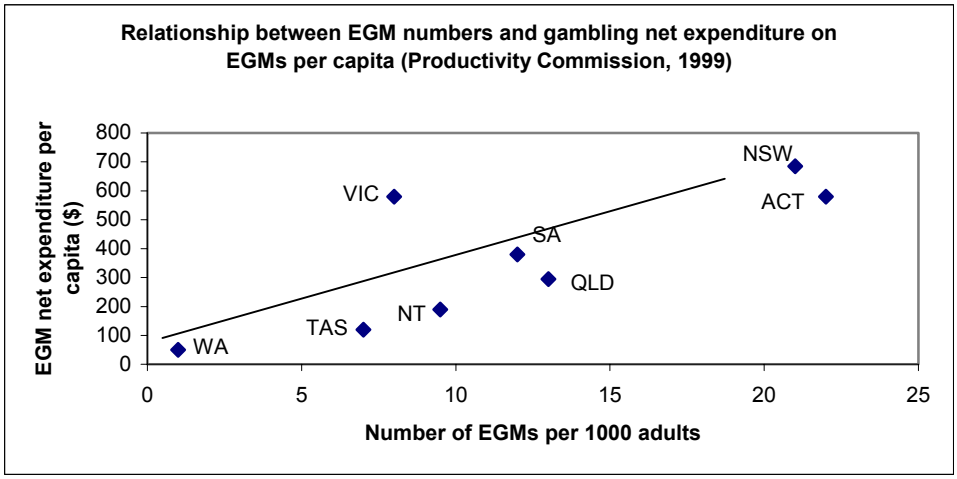

Figure 1
Association between density of EGMs and per capita expenditure on EGMs (source: Productivity Commission, 1999)

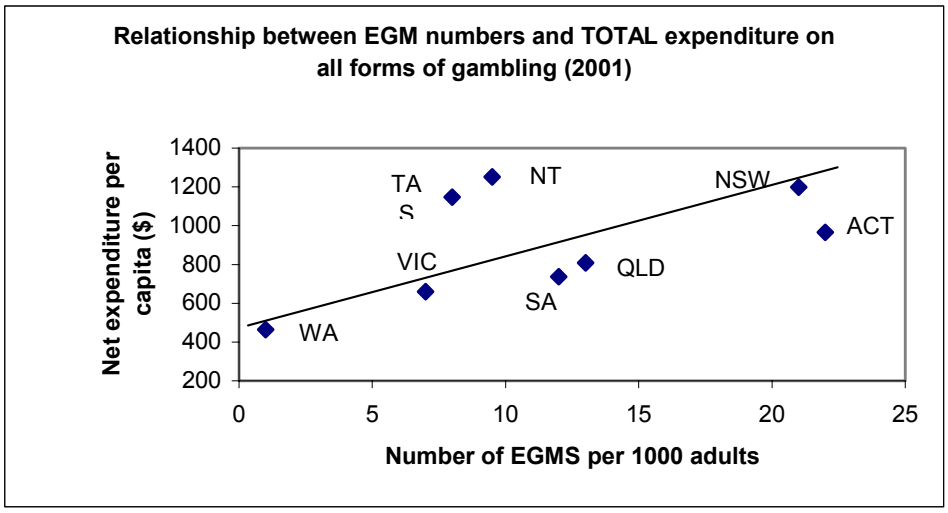

Figure 2
Association between density of EGMs per capita and total gambling expenditure

As pointed out by the Productivity Commission (1999), Delfabbro (2002) and Marshall and Baker (2001a, 2001b, 2002), differences in per capita gambling expenditure are very likely due to the differential availability of EGMs in the different States or Territories. As illustrated by Figures 1 and 2, there is clearly a positive association between the density of EGMs (per capita) and the total amount spent on EGMs in general. In other words, with some exceptions (e.g., Northern Territory because of its unique geographical characteristics with only 2 major centres, each with its own casino), the difference between States or Territories with very high levels of expenditure on gambling and those with lower rates is the density of EGMs Higher EGM densities are clearly associated with higher expenditures on gambling in general at a State-level.

As can be observed, New South Wales and the ACT with the highest densities of EGMs, clearly have the highest per capita expenditure on this form of gambling, and close to the highest overall gambling expenditure (N.B. Victoria has a lower density, but a high expenditure because of the Tabcorp/Tattersall's duopoly that allows for the more strategic location of machines). Such a relationship is clearly not observed for other significant gambling categories. For example, as observed by the Productivity Commission (1999), Western Australia, a State with the highest per capita expenditure on lotteries, and second highest on casino gambling, has one of the lowest overall per capita expenditure rates.

- **Western Australia, Queensland, Tasmania and South Australia have experienced the most rapid rate of revenue growth in gambling expenditure since the previous financial year, although the highest rates of overall per capita expenditure is still observed in the Northern Territory, New South Wales, in the Australian Capital Territory and in Victoria.**

3.3 Demographic profile of gamblers

Surveys conducted in Australia and New Zealand have attempted to describe the general characteristics of people who are more likely to gamble, and to gamble on specific activities. Not surprisingly, analyses based on overall participation rates have generally yielded few useful insights because such a large proportion of the population gambles; the characteristics of gamblers tend to be very similar to the general population. However, despite this, a number of distinct profiles have been generated, suggesting that gambling is not a uniform phenomenon across different demographic groups. Taking recent results from the Productivity Commission's national survey in 1999, the South Australian surveys of Delfabbro and Winefield (1996) and The South Australian Department for Families and Communities (2007), and also Abbott and Volberg's (2000) national survey in New Zealand, the following paragraphs summarise the typical descriptive profiles that tend to emerge in Australia from prevalence research.

- **Lottery gambling**: Both in Australia and New Zealand, lottery gamblers have been reported to be significantly less likely to be in the younger age brackets (particularly between 18–24 years). They are reported to be more likely to be middle-aged and in paid employment. In South Australia, lottery gambling (e.g., Crosslotto, Powerball, Ozlotto) is also reported to be significantly more popular amongst people of Aboriginal and Torres Strait Island backgrounds. The participation rate for this activity in South Australia is **52%** (South Australian Department for Families and Communities, 2007) compared with a national figure of **60%** (Productivity Commission, 1999).

- **Gaming machines (EGMs)**: Poker machine players in Australia and South Australia are reported to be significantly more likely to be in the 18–24 age group, and as less likely to be older (aged 75+), and never married. They are reported as more likely to have middle incomes (approximately $30,000). In New Zealand, the pattern is similar, with EGM players reported to be more likely to be aged under 35 years, to have never married, and to have incomes of around $NZ20–$30k. However, there are also differences. In Zealand, EGM players are also reported as more likely to be male, to be of Maori descent, and to be in paid employment. The participation rate for this activity in South Australia is **30%** (South Australian Department for Families and Communities, 2007) compared with a national figure of **39%** (Productivity Commission, 1999).

- **Instant lotteries**: In Australia, these activities are reported to be most popular amongst women, and people aged 18–34 years, and less popular amongst people aged 65 years and older. An almost identical profile is observed in New Zealand. The participation rate for this activity in South Australia is **24%** (South Australian Department for Families and Communities, 2007) compared with a national figure of **46%** (Productivity Commission, 1999)**.**

- **Keno:** In Australia, Keno gamblers are reported to be more likely to be male, aged 18–24 years, and to be unemployed, and as less likely to have incomes less than $20,000. No comparative data are available for New Zealand. The participation

rate for this activity in South Australia is **8%** (South Australian Department for Families and Communities, 2007) compared with a national figure of **16%** (Productivity Commission, 1999)**.**

- **Racing**: Racing gamblers in Australia are reported as significantly more likely to be male, and to be aged 20–35 years, and as less likely to be aged over 65 years. They are reported to be significantly more likely to be working full-time, and to have incomes of between $40k. and $80k. An almost identical profile is observed in New Zealand. The participation rate for this activity in South Australia is **19%** (South Australian Department for Families and Communities, 2007) compared with a national figure of **24%** (Productivity Commission, 1999).

- **Casino gamblers (table games)**: Casino table players are reported as significantly more likely to be single, employed males, aged 18–35 years. An almost identical profile is observed in both Australia and New Zealand. The participation rate for this activity in South Australia is **6%** (South Australian Department for Families and Communities, 2007) compared with a national figure of **10%** (Productivity Commission, 1999)

- **Sports betting**: Sports gamblers tend to be young males aged 18–24 years, who are single. Sports betting also attracts with higher incomes (over $50,000). No comparative figures are available for New Zealand. The participation rate for this activity in South Australia is **4%** (South Australian Department for Families and Communities, 2007) compared with a national figure of **6%** (Productivity Commission, 1999)

Taken as a whole, these figures indicate that it is possible to differentiate activity preferences using a relatively small number of variables, most notably: gender and age. Although income, employment status and marital status also appear to play a role for some activities, it is important to recognise that these factors are very likely to be significantly confounded with the effects of age and gender. In other words, since younger people are less likely to be married, more likely to have incomes in the range $30,000–$50,000, and to have never married in comparison with older people, then these factors are probably unnecessary when explaining the differences observed. In much the same way, once one controls for the fact that women are, on average, likely to have significantly lower incomes than men, it soon becomes evident that it is gender, rather than these other variables, that is probably more important in predicting gambling choices (ABS Census, 2001).

This issue of confounding was investigated by Delfabbro (1998) in a series of regression analyses designed to identify the best demographic predictors of participation in each form of gambling in South Australia (based upon prevalence data collected by Delfabbro and Winefield, 1996). On the basis of these analyses, Delfabbro concluded that almost all apparent demographic correlates of participation no longer predicted participation once those of gender and age had been controlled. Delfabbro (1998) also concluded that the effects of age and gender were very similar. Men and younger people reported preferring casino games, sports betting, keno and racing, whereas women and older

people reported a preference for activities such as bingo and scratch tickets. In other words, women reported gambling on a narrower range of activities than men (Productivity Commission, 1999). Age only appeared to play an independent predictive role in lottery gambling, with younger people reporting lower participation rates. More recent figures from the South Australian Department of Human Services (2001) and the Department for Families and Communities (2007) generally support these conclusions, although it now appears that young people (irrespective of gender) are more likely to report gambling on poker machines than do people aged over the age of 65 years.

The fact that the gambling market appears to be so strongly segmented by age and gender has attracted the interest of a number of researchers. Accordingly, studies have been conducted to investigate which aspects of gambling products form the basis for age and gender differences. One of the principal motivations for this type of work is that it has significant implications for the likely nature of future gambling markets, as based upon changes in range or form of existing gambling products.

- ♠ **Gender and age are reported as the two most significant determinants of gambling preferences. Young people and men report preferences for casino games, keno, sports betting and racing, whereas older people and women report favouring lotteries, bingo, and instant lotteries.**

3.4 Gender and its role in the growth of gambling

There is strong evidence that much of the expansion in gambling in the last decade is due to the introduction of gaming machines, and the fact that many women find this activity very enjoyable. Almost all recent surveys show that women now gamble as often as men in terms of overall, and weekly, participation rates. Given these circumstances, a question arises as to why gaming machines are so appealing to women when many other gambling activities are not. This issue has been the subject of debate in several Australian reviews (e.g., Brown *et al.*, 1999; Delfabbro, 2000; Walker, 1992a), as well as several recent empirical studies (Di Dio & Ong, 1997; Loughman, Pierce & Sagris, 1996; Thomas & Moore, 2001; Scannell, Quirk, Smith, Maddern & Dickerson, 2000; Trevorrow & Moore, 1998), which are summarised below.

According to Delfabbro (2000), several arguments have been put forward to account for gender differences in gambling. The first of these relates to what is termed gender role theory. This theory relates to apparent differences in the roles perceived to be appropriate for men and women in society, and was first articulated in America by Lindgren *et al.* (1987). The central assumption underlying this theory is that women are less disposed towards gambling because of their stronger involvement or role as household managers or 'guardians of the hearth'. Their greater role in managing household budgets, and responsibilities for day-to-day costs, is likely to lead women to believe that gambling is wasteful and a potential threat to their livelihood. In addition, since women are perceived by society to have these types of responsibilities, women are vulnerable to stigmatisation

or ridicule for engaging in an activity that is seen to be largely the province of men, or a part of male culture.

Delfabbro (1998) criticised this application of gender-role theory to explain gender differences in gambling on a number of grounds. One of the major criticisms was that the argument is clearly not borne out by data that indicate that women in Australia gamble just as frequently as do men. Furthermore, he proposed that as these arguments were put forward almost 15 years ago, there is no reason to assume that the same stigma associated with female gambling remains. He also pointed out that traditional gender roles (women at home; men at work) are unlikely to continue to hold, especially given the varied nature of home and family structures (e.g., single-parent households) in contemporary Australia.

A second argument to account for gender differences in gambling, articulated by Walker (1992a) and McMillen, Woolley, O'Hara and Jackson (1999) is that there are sub-cultural differences in the gambling industry itself. Some gambling venues have a long association with male culture, and this has made them unattractive or unappealing to female gamblers. Principal examples of historically male cultural venues would include racing, off-course betting agencies, and the table floors at Australian casinos. Such venues tend to be highly populated by males, many of whom engage in the consumption of alcohol and smoking while gambling. Women, it is argued, tend to avoid these venues because of the possibility of attracting unwanted attention from males; because there are few other women present, and also because they do not find the environments very aesthetically pleasing or physically comfortable. These venues are in stark contrast to many modern gaming machine areas which tend to be brightly lit and well maintained, are frequented by many other women, and tend to be located in locations where other facilities are also available (e.g., near restaurants and shopping centres). Some support for this argument was obtained by Delfabbro (1998) in a survey of over 100 casino patrons. He reported that women avoid casino table games because of the lack of other female players and the 'unhealthy' nature of the environment. However, Delfabbro also pointed to several flaws in this argument.

Many modern casinos (e.g., Crown in Melbourne) have gone to great lengths to create gambling environments that are attractive to different population groups, including women. Despite this, gender differences in gambling preferences still remain. In addition, skill-based activities such as card games are available on many of the touch-screen gaming machines in the same venues as those with electronic spinning reels. Again, women do not play these as often as men (Delfabbro & Winefield, 1996). Finally, the fact that a lot of gambling on racing and sports can be undertaken online or over the telephone without visiting a venue, suggests that venue characteristics cannot be the only factors influencing gender differences in preferences.

A third and potentially stronger argument to explain gender differences in gambling is that such differences arise from broader differences in activity preferences. According to this view, males and females, even from an early age, prefer different sorts of games as a result of early socialisation experiences with parents and peers. Research into school-

yard games has consistently demonstrated that boys tend to prefer more competitive activities, usually involving some test of physical mettle, and/or an element of risk, whereas girls tend to prefer more co-operative activities involving precision and skill (Griffiths, 1995). It is argued that these early gender differences in activity preferences are replicated in adolescence and adulthood. Thus, male adolescents will take a greater interest in competitive, often skill-based, gambling tasks such card games, race and sports betting. Knowledge concerning how to participate (e.g., the rules of blackjack, how to fill out a betting form, or read a form-guide) will be passed down to them by their fathers, older male siblings, or other relatives. As a result, by the time they are adults, these activities are accessible to males because they know what to do in order to engage in them.

These sorts of skill-based activities provide an opportunity for them to compete and demonstrate their bravado in front of other males (see Delfabbro, 2000 for a review). Support for this view was obtained by Delfabbro (1998) in a survey of casino patrons at the Adelaide Casino, in which males rated 'to test their skills' significantly more highly as a reason for gambling. Women rated significantly more highly as a reason for avoiding card games that they 'did not know how to play'. A similar finding was obtained in a Victorian study conducted by Pierce, Wenzel and Loughnan (1997) that sampled problem gamblers at a treatment agency. Using a multidimensional rating instrument called the G–Map, they reported that male gamblers were significantly more likely than females to rate a desire for control and prediction as a significant motivation for gambling. This finding may have implications for education campaigns that are designed to educate young people about the nature of gambling. A danger with interventions of this type is that if young people learn specific details about how to gamble (e.g., the rules of blackjack, how to read form guides), they may be more likely to gamble when they turn 18. This possibility would seem plausible given that a lack of knowledge about how to gamble is very likely to play a role in influencing women's gambling choices, in particular their tendency to avoid activities requiring prior knowledge.

A limitation with the argument that gender differences in gambling arise from broad differences in activity preferences is that it assumes that such activity preferences are relatively fixed, and that what people do as adolescents necessarily limits what they might do, and prefer to do, as adults. Many women enjoy card games, and many other games of skill, so there is always an opportunity for those who are unfamiliar with skilled forms of gambling to learn how to play these games once they are adults. In addition, a large percentage of women take part in informal sports-betting competitions (e.g., football tipping competitions). They also participate and place bets at race carnivals (e.g., The Melbourne Cup, The Oakbank Carnival, and many others), and participate in sweeps. The question remains as to why this interest is not generalised to the more frequent patterns of gambling that have been observed in males.

One explanation put forward by Delfabbro (2000), Brown and Coventry (1997) and Brown *et al.* (1999), and which is supported by the work of Pierce *et al.* (1997), is that women may have different motivations for gambling. Whereas men may be motivated

largely by extrinsic factors such as 'to win money', 'to beat the machine or table', to test their skills or to outperform their rivals, women may be motivated to gamble more by intrinsic factors such as escaping from stress or anxiety, or from boredom, and in order to relax (Hallebone, 1999; Victorian Department of Human Services, 2000). In recent years, a number of studies have provided evidence for gender-based motivational differences. Delfabbro (1998), for example, in his survey of casino patrons found that a significant number of women reported that they did not gamble on table games because it 'required too much concentration'. Pierce *et al.* (1997) found that women scored significantly higher on a G–Map factor called 'Oasis', indicating that female problem gamblers were significantly more likely to report using gambling as an avoidant coping strategy, that is, as a way to deal with anxiety. This finding has also been reported in a number of other empirical Australian studies, which are reviewed below.

Scannell *et al.* recruited 163 women from metropolitan and regional gaming venues and administered a scale measuring the degree of control they felt they had over their gambling, as well as the styles of coping employed. They reported that 'impaired control' over gambling was significantly higher in those women who used gambling as a form of emotion-based coping (e.g., who blamed themselves for their mistakes, who engaged in wishful thinking, and who used gambling as an avoidance strategy). Similar findings were obtained by Quirke (1996) who reported a negative correlation between emotion-focused coping and 'impaired control' ($r = -0.48$) in a sample of over 232 female poker machine players in Victoria. A similar outcome was obtained by Crisp *et al.* (1998) in analyses of Victoria's problem gambling minimum data set. Women who had gambling problems were significantly more likely to report using gambling in order to escape problems and other unpleasant physical symptoms that they were experiencing. In Thomas and Moore's (2001) study, 155 Victorian poker machine players were administered measures of coping style, problem gambling, and gambling frequency. Using regression analysis, they demonstrated that women, who scored higher on measures of anxiety, depression, loneliness, and boredom, also scored significantly higher scores on their measure of problem gambling. No such relationship was found for men. Thomas and Moore concluded that negative mood states or dysphoria appeared to make women vulnerable to excessive gambling, in that women could become dependent upon gambling to avoid these states.

Other researchers have also concluded that there may be differences in the ways in which women gamble, and in the machines that they prefer. Hing and Breen (1999), for example, in their Sydney study, argued that women were more likely to gamble alone, or with other relatives, than with their friends or colleagues. They tended to play 2c and 5c cent machines rather than those of higher denomination; tended to spend less money per session, but played longer (due to their use of lower denomination machines), and spent less per week overall. These findings are consistent with numerous other studies that have shown that women tend to spend less on gambling than do men (e.g., Delfabbro & Winefield, 1996 in South Australia and, internationally, Mark & Lesieur, 1992). One explanation for this finding is that women typically have lower disposable incomes than men, thereby making gambling less affordable for them. However, the finding would also appear to be influenced by women's tendency to gamble on activities for which the

entry price is lower. On electronic gaming machines, it is possible to obtain a reasonable amount of game play by spending only a few dollars, whereas in casino table-gaming, the minimum stake for one turn can be as high as $5. Thus, it is possible that gender differences in disposable incomes might contribute to the observed pattern that activities such as casino games, racing, and sports betting are less preferred by women. These activities do not allow extended periods of gambling unless one begins with a sizeable bankroll. Unfortunately, however, this argument still does not explain why women are less attracted than men to the sorts of video-card games that usually cost the same as regular poker machines, and which are located in the same venues as regular poker machines.

> ♠ **It appears that gender differences in gambling are probably best explained in terms of a variety of factors. The low level of female participation in racing, sports gambling, and casino table-games is likely to be due to a combination of venue characteristics; the entry cost of individual games; variations in knowledge; adolescent interests and experience; and motivational factors.**

3.5 Age differences in gambling

As indicated above, age is a factor that plays a significant role in determining the demand for gambling products. This demand is clearly higher in younger people aged 18–35 years, and this is particularly the case for activities such as casino games, racing, and sports betting. Older people tend to gamble less frequently on almost every activity with the exception of bingo games and instant lotteries. The following two sections summarise recent Australian research that has focused specifically on particular age groups. The second section focuses specifically on under-aged gambling, and how this phenomenon may relate to gambling in early adulthood.

3.5.1 Gambling in older Australians

Apart from general population surveys that compare gambling patterns across age, there is relatively little research that has focused specifically on the issue of gambling in older people. One of the few exceptions is study conducted by Roy Morgan Research (1997) for the Victorian Casino and Gaming Authority (VCGA). This study involved a series of focus groups consisting of older gamblers, and also a survey specifically targeted at people aged 55 years and over. The survey confirmed much that is already known about older gamblers, namely, that they have different gambling preferences to the population in general, with a greater likelihood of gambling on bingo-style games, and a lower rate of involvement in most other activities except gaming machines. Older people reported spending less per week on gambling compared to the general population, but this amount constituted a relatively higher proportion of their disposable incomes that, in many cases, were derived predominantly from pension payments. Older men also reported spending significantly more than did older women.

The study also provided some insights into older people's motivations for gambling, and their patterns of gambling. Most older people reported gambling primarily for enjoyment and to socialise with others, but approximately a third also indicated that winning money was important. This latter finding is generally consistent with what is observed in studies involving the general population (see below). However, there were some noticeable differences in their reported gambling habits. Older people reported being significantly more likely than other age groups to gamble during the day rather than at night. This difference was also observed by Delfabbro and Winefield (1996) in South Australia, who found that, whereas only 6% of 18–24 year olds reported gambling on gaming machines during the day, 39% of 59–64 year olds, and 63% of 65+ year olds gambled during this time. These figures compared with a mean of 29% for reported daytime poker machine gambling for the population as a whole. As discussed in section 6 below, these findings have clear implications for proposals to change the operating hours of poker machine venues. Restricting the operation of machines during the day would have little effect on gambling amongst younger people, but may significantly affect older people. On the other hand, nighttimes restrictions would affect gambling in younger people, more so than in older people.

Another study by McCormack, Jackson and Thomas (2002) examined the characteristics of people seeking assistance from Victoria's gambling helpline service. A central component of this project was a comparison of older gamblers (aged 60 years or older) with others seeking assistance. The project confirmed many of the findings above; namely, that gambling rates and the prevalence of gambling-related problems were generally lower in older people than in the younger group. However, a number of important differences were also observed. The first of these was the finding that women appear to be more likely to be problem gamblers in older samples. In younger gamblers, particularly those under 50 years of age, men comprised almost 60% of problem gamblers, whereas this ratio completely reversed in older age groups (50–59, 60+ years). The second finding was that older people differed in their motivation to gamble and also in the types of problem experienced as a result of their gambling. In particular, older people were more likely to report having gambled in order to escape loneliness and boredom, and to have been more reliant on household savings as the primary source of funding for their gambling. By contrast, younger people reported being more likely to have borrowed money from friends, to have committed illegal acts, and to have jeopardised significant relationships or occupational commitments because of gambling. Each of these differences in behaviour is very likely to be attributable to age-related variations in social and vocational circumstances prevailing across the younger and older groups (i.e., younger people are more likely to have larger social networks and to be in paid employment).

More recently, Boreham *et al.* (2006) were commissioned by the Queensland Government to undertake a detailed study of older people (aged 60+ years) who played EGMs and the extent to which current responsible gambling provisions appeared to be effective for this population. The study involved a number of components, including, a survey of licensed clubs, an interview survey with 414 older gamblers within clubs, semi-structured interviews with help-services, and secondary analysis of help service

data. As with the Roy Morgan Research study described above, it is very difficult to draw meaningful conclusions from the survey data collected from older people because no comparative data were available for younger gamblers. For this reason, one cannot determine whether the views, behaviours and experiences of older people are unique to them or common to many other regular EGM gamblers. The survey study of 414 older gamblers showed that most were female (65%) and under the age of 70 years. Two-percent were classified as problem gamblers (double the population average) and many more were low and moderate risk as compared with the most recent Queensland Household Gambling Survey. Just over 50% played more than once per week and 4% spent more than $200 per week.

When older people were asked why they gambled on EGMs, winning money and supporting one's club were most strongly endorsed (almost 50%). Around a third to forty percent rated socialisation, escaping isolation, dealing with depression and stress, as the next most important reasons for gambling. Escaping problems was significantly more important amongst women than men (consistent with previous Australian research). This list of motivations is similar to the results obtained by Roy Morgan Research (1997), although winning money was endorsed more strongly in this survey than previously. One reason for this difference is that the Queensland study was largely focused on regular gamblers, whereas the earlier study included a range of gamblers, many of whom might not have been as committed to gambling.

The principal feedback received from help-services was that there were often difficulties associated with providing help services for older people. This age group were often reluctant to seek help because of embarrassment, a reluctance to seek advice from others who were very much younger than them, and because they often feel that they should try to deal with their problems on their own.

- **The main implication of these studies of age differences in gambling is that the common public perception that gambling is rife amongst the elderly is probably incorrect. The elderly (55+ years) may be more visible in their activities because they gamble predominantly during the day. Older people, in fact, gamble less frequently, and spend less than other population groups, even on poker machines. However, because of their generally lower incomes, the elderly are potentially more at risk if they spend excessively. The difference in the typical timing of their gambling activities means that elderly people are unlikely to be affected by evening restrictions in the hours that poker machines can operate. Finally, further research on the help-seeking behaviour of older gamblers suggests that loneliness and isolation may be a major precursor for the development of gambling problems and that women are likely to be over-represented in samples of older gamblers.**

3.5.2 Under-aged and youth gambling

Although research into the nature, and overall prevalence, of adult gambling in Australia is well established, there has been, somewhat surprisingly, only moderate research

interest in the gambling behaviour of younger people. This may be because Australia, unlike other countries such as the United Kingdom and Canada, does considerably more to enforce the laws that limit the accessibility of gambling to minors. For example, whereas the United Kingdom allows minors to gamble on slot-machines in amusement arcades, most common forms of gambling in Australia are only available in licensed venues such as clubs, hotels, and casinos, all of which are restricted to adults aged 18 years or older. The only types of gambling in which young people can legally participate are lottery products such as Cross-Lotto, Keno and scratch tickets (e.g., in South Australia, these activities are legal for 16–18 year olds), or private activities such as card games or sporting contests (e.g., games in pool halls). These situations, combined with the fact that very few, if any, young people approach problem-gambling treatment centres for assistance, has led to the development of an assumption that under-aged gambling is not an issue that requires detailed consideration in Australia.

In the last five years, however, this assumption has been increasingly called into question by a number of policy-makers and researchers who have drawn attention to a range of reasons why the issue of youth gambling is worthy of greater attention in Australia (O'Neil, Whetton, & Duerrwald, 2003) and New Zealand (Rossen, 2001). First, as indicated above (Section 3.5), in almost all surveys of Australian gambling, it has been reported that the prevalence of gambling-related problems tends to be significantly higher in younger adults (aged 18–30 years) than in all other age cohorts (Delfabbro & Winefield, 1996; Dickerson, Allcock, Blaszczynski, Nicholls, Williams & Maddern, 1996; Productivity Commission 1999; South Australian Department of Human Services, 2001; South Australian Department for Families and Communities, 2007). This outcome has led researchers to suspect that gambling habits observed during early adulthood are likely to have developed at an earlier age. In support of this view, a number of studies in North America and Australia (e.g., Blaszczynski, Walker, Sagris & Dickerson, 1997) have found that problem gamblers frequently report having developed problematic behaviours as early as 10 years of age. For example, the Productivity Commission (1999) finding that 35% of male problem gamblers (female rate = 10.2%) currently seeking treatment reported that they had started gambling regularly between the ages of 11–17 years, and that 9% (female rate = 1.1%) reported that they believed that they had a problem at that age. Indeed, in studies which have administered measures of problem gambling to adolescents (aged 12–17 years), it has been found that adolescents report experiencing gambling-related problems at 2–3 times the rate of adults. This finding has been confirmed in studies undertaken in the United Kingdom (Fisher, 1999; Wood & Griffiths, 1998), the United States (Winters, Stichfield & Kim, 1995), in Canada (Gupta & Derevensky, 2000) and in New Zealand (Sullivan, 2001a). A comprehensive review by Jacobs (1999) pointed out that, whereas adult prevalence rates were typically in the order of 1–2%, the mean rates for adolescents emerging in a decade of North American studies was around 6% for Canada and 4% in the United States.

A second concern is that, although adolescents may not themselves be able to place bets at gambling venues, they can, nonetheless, engage in gambling by asking older siblings and friends to place bets (e.g., on sporting events or races) on their behalf. Furthermore, there is little to prevent teenagers from gambling on traditional casino games such as

blackjack and poker privately amongst their peers, or via the Internet or using a telephone account established using a credit card. A further possibility is that teenagers can gamble on activities in venues that they are legally entitled to enter, such as billiards and pool in amusement halls, which are common congregation points for teenagers in most Australian cities. In these venues, betting activities could easily be conducted without arousing the attention of staff. Given that all of these forms of adolescent gambling have been documented in numerous international studies (e.g., Derevensky, Gupta & Della Cioppa, 1996; Fisher, 1999; Ladouceur & Mireault, 1988; Ladouceur, Dube & Bujold, 1994; Lesieur & Klein, 1987), it is reasonable to expect that similar patterns would also be observed in Australia.

The third area of concern relating to under-age gambling that has been identified by international studies is the apparent association between adolescent gambling and other risk-taking activities, and also with broader problems in psychosocial development and educational performance (Fisher, 1999; Delfabbro *et al.*, 2006). Studies in both the United Kingdom (e.g., Fisher, 1992, 1993; Yeoman & Griffiths, 1996) and in Canada (Gupta & Derevensky, 1998) have reported that adolescent problem gamblers have a significantly higher incidence of delinquent behaviours, including substance abuse, truancy, and petty criminal behaviour. Adult problem gamblers are also reported as tending to have poorer educational outcomes, poorer self-esteem, and greater levels of anxiety and depression compared to their non-gambling peers. As Fisher (1999) pointed out in the UK, although it is not possible to determine whether these problems are a cause or a consequence of problem gambling, the clustering of problem behaviours suggests that screening for problem gambling should be an important component in the psychological assessment of young people who are experiencing broader psychosocial problems.

In recent years, a steadily growing number of studies has been conducted in both Australia and New Zealand, that have tended to report similar results, although the prevalence of both adolescent regular gambling and problem-gambling has been found to be lower than in the United Kingdom. Moore and Ohtsuka (1997), for example, surveyed over 1000 school and university students in Victoria (aged 14–25 years) and found that the majority approved of gambling activities, and had gambled in the previous 12 months. The most popular activities were reported to be lotteries, card games and poker machines. Using a modified 10–item version of the South Oaks Problem Gambling Screen (SOGS) (Lesieur & Blume, 1987), they concluded that 3.1% of the sample could be classified problem gamblers. In addition, they reported that regular gambling was significantly associated with the holding of positive and optimistic attitudes towards gambling amongst young people, and whose parents and peers shared similar views. A follow-up study involving 769 adolescents aged 15–18 years confirmed these results, with 3.8% of the sample found to score in the problematic range on the SOGS (Moore & Ohtsuka, 2001).

Other studies have focused specifically upon teenagers, and have extended the investigation to consider relationships between gambling involvement and psychosocial adjustment. Burnett, Ong and Fuller (1999), for example, surveyed 778 final-year high-

school students (age 16–18 years) in Melbourne, and found that weekly gambling tended to be associated with dissatisfaction with school (males), social maladjustment, having friends who gambled, and involvement with other at-risk behaviours, including under-aged drinking and risky driving.

Similar results were reported by Jackson (1999) in a study of 2700 first-year high-school students (Year 8) in Melbourne. He found that students who were more involved in gambling (as measured by the number of activities preferred) were more likely to engage in risky behaviours (alcohol, smoking, drug-use), to be less engaged with school, and more likely to commit self-harm. The most popular activities amongst the students surveyed were lotteries (23%), putting money on races or sporting matches (23%) and card games (12%). Jackson did not, however, provide any details about how the students went about engaging in gambling activities, in particular, whether they were gambling on their own or with the assistance of adults.

In the first major study conducted in South Australia, Delfabbro and Thrupp (2003) surveyed 505 adolescents aged 15–17 years in secondary schools. A summary of reported participation rates in various gambling activities is provided in Table 3. As indicated, the most popular reported activities amongst local teenagers were scratch tickets and lottery games, both of which were legally accessible to most of the students in the sample. Card games and sports betting were also prevalent with reported participation rates above those documented in adult surveys. There was little evidence to suggest that teenagers were engaging in much Internet gambling activity; however, of concern was the fact that around 12% of young people indicated that they had gambled on poker machines, an activity to which they do not have legal access. More detailed analyses conducted by Thrupp (2000, 2003) suggested that young people are typically introduced to gambling by their parents, and that a great deal of gambling activity is undertaken in conjunction with friends. This finding suggests that much of the gambling reported in Jackson's (1999) Melbourne study might also have occurred in this context. The findings of both studies suggest that young people gain access to adult forms of gambling either by entering venues with adults, or presumably via using false identification cards.

Table 3

Number (%) of adolescents reporting gambling on each activity at each frequency, South Australian data

Gambling Activity	*Adolescent gambling behaviour (past 12 months) n (%)*					
	Never		*Infrequent*		*Weekly*	
Cards (Blackjack, poker)	397	(79.9)	93	(18.7)	7	(1.4)
Poker machines	431	(86.9)	61	(12.3)	4	(0.8)
Racing (horses, dogs, trots)	424	(85.5)	66	(13.3)	6	(1.2)

Sporting events	392	(79.4)	69	(14.0)	33	(6.7)
Lottery games (Keno, Crosslotto, Powerball, Pools)	317	(63.5)	158	(31.7)	24	(4.8)
Bingo or Scratchies	284	(57.7)	183	(37.2)	25	(5.1)
Internet gambling	486	(97.6)	10	(2.0)	2	(0.4)

From Delfabbro & Thrupp (2003)

Delfabbro and Thrupp's findings (2003) also replicated many of the findings obtained by Moore and Ohtsuka's (1999) Victorian study, namely, that adolescent participation in gambling was strongly related to gambling, and pro-gambling attitudes, amongst family members and friends, and differed according to gender (boys reported gambling more than girls). They also found that regular adolescent gamblers (defined as weekly participation or more often) were significantly more likely to report having obtained a large win soon after they commenced gambling (63%) compared with only 24% of those who gambled infrequently, and 7% of those who had not gambled in the previous 12 months. The experience of early wins has been consistently associated with problem gambling in studies of adults (Lesieur, 1984). Delfabbro and Thrupp's study also showed that reported participation in gambling was higher amongst Year 10 students than for those in Years 11 and 12, indicating a possible association between school retention rates and gambling involvement. Finally, using a standardised measure of adolescent problem gambling (DSM-IV-J), they concluded that just under 4% of the sample could be classified as experiencing problems with gambling, a rate significantly higher than in the Australian adult population (see section 4, below). Of the total sample, 38 (7.5%) students reported being preoccupied with gambling, 26 (5.1%) reported gambling to increase their excitement, 20 (4.0%) reported getting irritable when they tried to cut down gambling, 18 (3.6%) reported using gambling to escape anxiety and depression, 34 (6.7%) reported chasing their losses, 54 (10.7%) reported often spending more than they intended, 25 (5%) reported spending their lunch money or stealing money to gamble, 14 (2.8%) reported having fallen out with friends, or disrupting their studies because of gambling.

This early school-based study was followed in 2005 by a telephone survey of over 605 adolescents (aged 16–17 years) conducted as part of a broader prevalence study by the South Australian Department for Families and Communities. In general, this study yielded much lower figures than other surveys that have been conducted in Australia, New Zealand or in other countries. Only 44% of adolescents were found to have gambled within the previous 12 months and only 5.6% had gambled at least once per week. Only 1% were classified as problem gamblers using the DSM-IV-J. Participation rates on individual activities were also lower. Just under 30% of young people had gambled on scratch tickets, 9.6% on card games, 8% had played keno, 6.2% had gambled on racing, 6% had played lotteries, 5.1% had bet on sporting events, and 5.1% had played poker machines.

It is difficult to compare the findings from this study with others that have been undertaken in schools because of the difference in sampling methodology. One

interpretation of the results is that both surveys provide accurate estimates of the prevalence of problem gambling, but that young people's involvement in gambling has significantly declined in South Australia over the last 5 years due to other factors, including the provision of responsible gambling messages in the media and schools, or some diversion of discretionary expenditure towards other activities (e.g., mobile phones). Another possibility is that the previous survey over-estimated the prevalence of gambling because it over-sampled students who had an interest or involvement in gambling and was not a true random sample.

A strength of the telephone study was that it was based on a random sample drawn from the population rather than a convenience sample drawn from schools, so that it is possible to generalise the findings to the general community. However, it must be pointed out that telephone surveys are also known to experience significant difficulties in obtaining representative samples of young people (particularly under the age of 24 years). Since most teenagers now spend much of their time using mobile phones, it is unclear whether those who responded to a landline based survey and were home at the time were necessarily representative of the broader population of teenagers. Those who gambled may have been significantly more difficult to contact and have been less likely to have responded to the survey. For these reasons, it is also possible that the 2005 survey may have under-represented the prevalence of youth gambling.

Another school-based study was conducted by Delfabbro, Grabosky, and Lahn (2005a, b) in the Australian Capital Territory (ACT). In this study, 926 students aged 13–18 years from State, Catholic and Independent schools were administered a detailed survey that measured the prevalence of general gambling behaviour and problem gambling; the social context of adolescent gambling; gambling-related cognitions; and the relationship between problem gambling and psychosocial adjustment. On the whole, the results were very similar to those of Delfabbro and Thrupp (2003). Approximately, 70% of young people were found to gamble on at least an annual basis, with private games and bingo and scratch cards found to be the most popular activities. Relatively few young people reported having gambled on activities such as poker machines or on casino games suggesting that prevailing regulations prohibiting the entry of young people into gaming areas were working reasonably well. The only noticeable difference was that lottery participation rates in the ACT were generally lower than in South Australia perhaps reflecting the difference in the legal age at which young adults can gain access to lottery products in each State (16 in South Australia and 18 in the ACT). In the ACT, those young people who were gambling on adult forms of gambling (e.g. scratch cards, racing and lotteries) were generally gaining access to the activities with the assistance of their parents.

The ACT study administered two validated problem gambling scales (the Victorian Gambling Screen and the DSM-IV-J) and showed that approximately 3 to 4% of the sample were experiencing significant gambling problems. Significantly higher problem gambling rates were observed amongst boys (7.8% for boys and 2.7% for girls) and those from an Indigenous background (28.1% for Indigenous vs. 4.1% for non-Indigenous). Young problem gamblers typically reported having commenced gambling

at a significantly young age than others in the sample (9.62 years vs. 11.77 years), were more likely to report having a large win when they first started gambling, and were more likely to have friends and family who had problems with gambling. Further analysis of the psychological and social adjustment variables showed that problem gamblers scored significantly more poorly than other young people on a range of measures including self-esteem, negative mood, general psychological health, and anomie (a measure of alienation and disillusionment with society). Problem gambling was also highly related to involvement in other high risk behaviours with rates of smoking 4 times higher, marijuana use 6 times higher, and hard drug use 1 to 20 times higher than in non-problem gamblers. Young problem gamblers were found to live generally active social lives, but also reported greater disaffection with their other class-mates at school.

Another series of analyses in the ACT study examined differences in gambling-related attitudes and cognitions in order to investigate whether problem gamblers were more likely to hold irrational beliefs about gambling than others in the sample. On the whole, these predictions were borne out in the ACT sample. Consistent with the findings of Delfabbro and Thrupp (2003) in South Australia, problem gamblers were found to downplay the risks associated with gambling and were more likely to view gambling as a valid way of making money. In addition, when asked to rate how much skill was involved in a variety of common tasks, problem gamblers were more likely to rate activities such as poker machines and roulette as involving an element of skill. Problem gamblers similarly were more prone to irrational views about randomness; for example, the view that short term sequences of events should have large numbers of alternations, and that wins were more likely after a long series of losses. However, when asked to indicate the objective odds associated with winning on a variety of tasks, problem gamblers were found to be as accurate (if not more so) than the rest of the sample. In other words, the possession of objective knowledge concerning the odds of winning did not appear to shield the problem gamblers from various irrational beliefs.

As Delfabbro, Lahn and Grabosky (2006) have pointed out in a subsequent paper, although this finding appears to be somewhat counter-intuitive, it is consistent with the results obtained in a number of studies in the psychological literature that have similarly revealed a divergence between objective and subjective knowledge. According to this literature, people are generally accurate in any task that asks them to indicate the objective odds of winning. However, whenever the task is more personally relevant, or people have a high desire for outcomes (as is almost certainly to be the case for problem gamblers), people are likely to over-estimate the amount of control that is involved. An important policy implication of these findings is that it suggests that school education programs based solely on teaching young people the objective odds of gambling are unlikely to assist young problem gamblers. Instead, greater attention should perhaps be focused on tasks (e.g., role-playing exercises) that address, or help to identify, the more personally relevant cognitions that appear more prevalent among problem gamblers.

A final issue that has been explored by Australian research is the extent to which youth gambling can be predicted longitudinally by broader social or family risk factors. This topic was investigated by a research team from the University of Queensland

(Haytbakhsch, Najman, Aird, Bor, O'Callaghan, Williams, Shuttlewood, Alati, & Heron, 2006) as a part of a broader longitudinal study. Arising from collaboration between the Mater Hospital and the University, this project involved a follow up investigation of over 3700 mothers who had given birth at the hospital in 1982–83. By 2002–03, this cohort of mothers had children who were now 21 years old, so that it was possible to examine the current gambling habits of the children and analyse them in relation to variables (e.g., demographics, mother's health status, behaviours, child adjustment scores) that had been collected many years before (e.g., when the child was born, was 5 years old and 14 years old). Around 3700 21 year olds were asked to describe whether they gambled and just over one thousand (n = 1023) completed the Canadian Problem Gambling Index. The sample of young people included in the study had quite low levels of overall gambling participation (41%) as compared the general community rate (80%, see Queensland Government, 2007), but the rate of problem gambling (1.2% CPGI scores 8+) was reasonably similar to that obtained in the broader community.

The report arising from the study is set out in a series of chapters that include a long series of univariate analyses that cross-tabulate maternal demographics, substance use, prevalence of psychosocial adjustment scores at 14 and 21 years with current gambling involvement (yes/ no) and risk status (CPGI score = 0 vs. CPGI score > 0). These univariate analyses are then followed by a series of multivariate analyses (logistic regression) that attempts to identify the best combination of predictor variables. The results showed only limited evidence that gambling at 21 years of age was influenced by maternal health status or demographics. However, there were strong and consistent associations between maternal and child substance use (cigarette smoking, heavier alcohol consumption) and gambling involvement and substance use among young people. In other words, if mothers smoked or drank, their children were significantly more likely to be gamblers. Of those young people who smoked 10 or more cigarettes per day, 53% were gamblers compared with only 36% who never smoked. Amongst those classified as being at risk (CPGI score > 0), 37.7% were heavy smokers and only 7.5% were non-smokers, 16.3% used cannabis vs. 6.3% did not, 18.7% took other illegal drugs and 8.6% did not. Other analyses showed that young people who had externalising or behavioural problems at the age of 14, or who engaged in more delinquent behaviours, were more likely to gamble at the age of 21, and were more likely to be 'at risk' of gambling problems.

The findings from this study are useful in that they show that there are clear psychological and family profiles that could be used to identify young people who are likely to be at risk of gambling problems during early adulthood. A history of maternal substance abuse, behavioural problems, and interest in risk-taking behaviours (including teenage substance use) appear to be the strongest predictors. At the same time, the study has a number of limitations that need to be taken into account when interpreting the results. First, the study does not differentiate between different types of gambling, so young people who only gambled on lotteries would have been included in the same group as those who gambled regularly on EGMs. Second, the practice of classifying people 'at risk' if these scored even one point on the CPGI is questionable in that people who score 1–2 points are usually considered 'low risk' and qualitatively different from

those who score higher on the scale. Both of these methodological issues may have reduced the extent to which the authors were able to distinguish and identify young people with a heavier involvement in gambling from others who had only a very passing interest.

In New Zealand, research into adolescent gambling has generally been conducted using very similar methodologies although, as Rossen (2001) notes, the research evidence is generally more spare (Clarke & Rossen, 2000). Despite having identified the issue of adolescent gambling as an important policy concern (Bellringer, Dickinson, Perese, Rossen, Tse, Adams, & Manaia, 2002), very few detailed and published studies of adolescent gambling has been undertaken in New Zealand.

In 2001, Sullivan conducted a school survey of 547 teenagers in the Auckland area. Sullivan reported very high levels of adolescent gambling. In the previous year, a third of students reported having gambled on lotteries or instant lotteries, 10% on poker machines, 5% at a casino, and 4% on the Internet. Boys generally reported that they gambled more than did girls. Sullivan also reported very high levels of problem gambling, with the proportion of teenagers scoring in the problematic range of validated problem-gambling measures being many times higher than in the adult population (13% on the DSM-IV-J). Sullivan attributed these very high levels of under-aged gambling to the fact that New Zealand laws afford greater opportunities for young people to gamble than is the case for the same age group in Australia. In New Zealand, there are no age restrictions on any lottery products including Keno, and there are few ways to police telephone-based gambling (Sullivan, 2001a). Young people in New Zealand also appear to be able, illegally, to gain access to adult gambling venues at a much higher rate, suggesting that current club and casino practice codes are not adequately enforced.

A more recent study of adolescent gambling was conducted by the National Research Bureau (2007) and N.Z. Ministry of Health as part of a broader annual survey into the prevalence of gambling and community attitudes. Detailed interviews were conducted in the households of 1774 New Zealand adults and with 199 adolescent children aged 15–17 years. All were asked to provide details of how often they gambled, their attitudes towards gambling, and knowledge of the different activities. The results showed that 61% of young people had gambled at least once in the previous 12 months, but that participation rates for individual activities was quite low: 21% for lottery products including keno and scratch tickets, 4% for EGMs, and 8% for racing. Only 4% of young people reported having gambled on a weekly basis, and only half of these regular gamblers participated in continuous forms of gambling. Although considerable caution must be applied to these results because of the relatively small sample size and possible under-reporting caused by adolescent concerns about their parents' overhearing their responses, the results suggest that figures obtained from community surveys are much lower than from school surveys. These findings suggest that the figures obtained in schools surveys are either very over-stated, or that random surveys conducted via contacting households under-sample young people who are most likely to have a more extensive involvement or difficulties with gambling.

In summary, therefore, the results from both Australian and New Zealand research into adolescent gambling has revealed many similarities with overseas findings. A substantial proportion of young people are gambling and problem gambling rates are much higher than in adult population. In addition, adolescent problem gambling appears to coincide with involvement in a range of other high-risk behaviours and correlates with broader difficulties in psychological and social adjustment. However, in drawing this comparison, it is also important to be mindful that many of the controversies surrounding this area of research internationally are also pertinent to Australian and New Zealand findings. One of the most significant of these debates concerns the validity of administering problem-gambling scales to adolescents. According to some researchers (Thompson, Milton, & Walker, 1999), adolescents often misinterpret the questions, and may tend to endorse questions relating to over-expenditure or chasing losses even when very small amounts of money are involved. In addition, because adolescents do not have significant assets, significant marital or occupational commitments or access to very large amounts of funds, it is highly unlikely that they experience the serious consequences often experienced by adults as a result of excessive gambling (Griffiths, 1998). For this reason, problem gambling rates amongst adolescents need to be interpreted differently from those in adult populations. In adolescent samples, prevalence rates would appear to be indicators of the proportion of young people who are exhibiting the behavioural patterns typically associated with problem gambling (e.g., chasing losses, spending more than they can afford), whereas adult prevalence rates indicate the proportion of people experiencing both the behavioural symptoms as well as serious harms associated with excessive gambling. It is these differences which Griffiths (1998) believes to be the principal reason why relatively few adolescent problem gamblers seek help from formal services.

- **Taken as a whole, these findings regarding under-age gambling activity would appear to have some important implications for Australian gambling policies. First, it appears that there may need to be tighter enforcement of access to gambling products by minors, for example, via more extensive age-verification procedures. Second, there may be a need to consider the appropriateness of the current age-limit for some common forms of gambling (e.g., scratch-tickets) in South Australia. Third, interventions designed to inform new gamblers about the true odds and risks need to be targeted at young people before they can legally leave school (perhaps around 12–14 years of age), and be supplemented by information concerning irrational beliefs and fallacies associated with gambling. Knowledge of objective odds alone may not be an effective means of reducing problem gambling.**

3.6 Gambling in Indigenous and in specific cultural communities

3.6.1 Overview

Australia is a diverse multicultural society in which at least 23% of the population is born overseas (Australian Bureau of Statistics, 2000). In addition, there is a significant Indigenous population (2% of the Australian population) that can constitute as much as 20% of the total population in particular metropolitan local government areas. Although a substantial amount has been written about gambling in Australia, relatively little is known about the nature and extent of gambling within non-English-speaking or non-Anglo-Saxon communities in Australia. This is despite the fact that there is considerable anecdotal evidence suggesting disproportionately high levels of gambling, and gambling-related problems, in some particular ethnic groups in Australia (Blaszczynski, Walker, Sagris & Dickerson, 1997), and also reliable statistical evidence available in New Zealand relating to the Maori and Islander population (Abbott & Volberg, 2000). The following sections summarise the limited insights that have been obtained with regard to this issue in both countries, and the implications of these findings for gambling policies.

3.6.2 Indigenous gambling in Australia and New Zealand

General prevalence surveys have yielded inconsistent results concerning the relationship between indigenous status and gambling involvement. For example, in a prevalence study conducted in South Australia by the Department of Human Services (2001), indigenous people were reported to be just as likely to gamble as other people, and no differences were observed for potentially problematic activities involving poker machines, racing or casino games. In fact, Indigenous people were reported to be more likely than the general population to gamble on activities such as lotteries (77% vs. 61%) and bingo games (9.7% vs. 3.2%), neither of which are activities that are usually associated with problem gambling (see section 4, below). However, in a follow-up survey conducted by the South Australian Department for Families and Communities (2006–07), a somewhat different pattern of results was obtained. Indigenous people were more likely to gamble than non-indigenous Australians (79% vs. 71%), were more likely to gamble on poker machines (39% vs. 31%) but were no more likely to gamble on horse-racing. Similarly varied results were obtained in the prevalence study conducted by Young *et al.* (2006) in the Northern Territory where a relatively large proportion (30%) of the population is indigenous. Indigenous people were no more likely to gamble or to be regular gamblers. They also tended to have very similar rates of poker machine and racing gambling, but were more likely to gamble on private activities. Nevertheless, despite these similarities in participation rates, indigenous people were much more likely to report having experienced problems with gambling. For example, based upon the South Oaks Gambling Screen, it was found that 7.9% of indigenous respondents were pathological gamblers compared with 2.5% for non-indigenous people. For the Canadian Problem Gambling Index (CPGI) which was also administered in the same survey, 4% of indigenous respondents were classified as problem gamblers compared with only 1.9% of non-indigenous gamblers.

As Young, Barnes, Stevens, Paterson, and Morris (2007) point out, considerable caution needs to be applied when interpreting indigenous results obtained using telephone surveys because it is highly likely that only the more middle-class members of the community who have telephone landlines are likely to participate in these surveys. In addition, the comparative figures for the two gambling screens described above are based on unweighted data, so that they cannot be reliably generalised to the broader indigenous population in the Northern Territory. The results do, however, suggest that further more detailed studies into the prevalence of problem gambling in indigenous communities are warranted.

In other studies and reports concerning indigenous gambling, greater attention has been given to the role of gambling in Aboriginal communities. For example, in a paper by Foote (1996) and several submissions to the Productivity Commission (1999), it was argued that gambling is a traditional aspect of some Indigenous societies. Usually taking the form of communal card games, gambling is thought to have functioned as a way of facilitating social interaction and providing enjoyment. In its traditional form, gambling was thought to occur in a structured social context in which fellow members of the community shared the costs and risks, so that other community members would be present to support players who lose (Altman, 1985). However, with the introduction of gaming machines and casinos to towns and cities with higher proportions of Indigenous people (e.g., Darwin and Alice Springs), it was felt that similar protective factors are unlikely to be present (Busuttil, 2002). Foote (1996) expressed concerns that indigenous people would be drawn to these new forms of gambling and that this would inevitably lead to them being exposed to many of the same problems found to be prevalent in non-indigenous populations.

To investigate the extent to which this is already happening, Foote (1996) conducted an observational study in the Darwin Casino. The study involved unobtrusive categorisation of the ethnicity of players in various areas or 'zones' of the casino at various days and times of the week. Foote concluded that Aboriginal women were more likely to be observed at the Casino than men (67% vs. 33% of the total of 695 Aboriginal people observed in a 2 week period). Seventy six percent of the Indigenous gambling observed involved poker machines, 9% roulette, 7% Keno, and 8% blackjack. The potential extent of Indigenous people's involvement in gambling activities was indicated in a study conducted by the Australian Institute for Gambling Research (AIGR / LIRU, 1995), which found that Indigenous people who gambled in clubs in Queensland spent significantly more per week on gambling than did the general population. This amount represented 20% of the average weekly income of Indigenous people, and approximately half of this amount was spent on gaming machines.

Similar figures were obtained in a study of the regional community of Yarrabah (QLD), where 50% of Indigenous people were found to gamble either 'heavily', or on at least a weekly basis, compared with 4–6% of the population in general. Much of this gambling was attributed to the introduction of racing gambling via a TAB in local hotels (a finding also supported by recent research by Scull, Butler, & Mutzlburg, 2003 in Northern Queensland). This form of gambling was, it was argued, taking money out of the

Indigenous community. The researchers contrasted this pattern with traditional gambling activities that would usually involve little more than a redistribution of money between different people in the community (Altman, 1985; Productivity Commission, 1999; McMillen & Togni, 2000; Steane, McMillen, & Togni, 1998).

More recent research conducted predominantly by the School for Social and Policy Research at Charles Darwin University, has generally tended to support many of the views and predictions articulated by these earlier papers. In 2006, a detailed scoping study was published by McDonald and Wombo in conjunction with a broader review of indigenous gambling within the Territory (Morris, Young, Barnes, Marum, & Stevens, 2006; Young, Abu-Duhou, Barnes, Creed, Morris, Stevens, & Tyler, 2006). The scoping study involved a series of qualitative interviews with 64 people (indigenous and non-indigenous) working in health and community-support services in the major towns and cities in the Northern Territory. Respondents were asked a series of general questions about their perceptions of the nature and extent of indigenous gambling and its implications for policies, services, and future research. The report emphasises the important cultural significance of gambling to indigenous people, including the links between the outcomes of card games and broader spiritual beliefs, but also highlights the many negative personal, social and financial impacts of gambling. Although definitive quantitative data was not provided, most respondents reported that newly introduced forms of western gambling were giving rise to hardship for many indigenous people and were disrupting traditional games. With larger amounts of money now available in some communities due to mining royalties, tax rebates, and other sources, the stakes of traditional games had increased. People would travel from one location to another to gamble, or certain communities would become focal points for a concentration of gambling. In addition, modern gambling operators were now taking greater steps to encourage indigenous people to gamble by making venues more welcoming or inclusive by offering memberships to indigenous patrons (Young *et al.*, 2007).

Other studies have drawn attention to the links between indigenous gambling and other risk-taking activities such as alcohol consumption. For example, in a study of the potential impact of poker machines on communities in Aboriginal groups living in the vicinity of Yalata, on the South Australian-Western Australian border, Brady (1998) found that indigenous people who gambled were also very likely to consume alcohol at the same time. Money won from gambling would also be used to finance additional gambling. These views reflected similar points made previously by Hunter and Spargo (1988) in the Kimberley region of Western Australia, where gambling (usually card playing) was seen as a way to obtain money for alcohol, but also a way to relieve some of the psychological and social challenges associated with living in a very isolated environment.

A number of these publications have also drawn attention to the significant challenges associated with encouraging indigenous people to seek help for their gambling problems. It has been argued, for example, that many indigenous people are not aware of counselling services, or find them intimidating because of their middle-class façade (Tyler, 1996), or because the communication styles used by counsellors with their

emphasis on direct and open communication are not consistent with indigenous people's more subtle and non-verbal ways of communicating their feelings of distress (Chow-Fairhill, cited by Cultural Perspectives, 2005b). There is also significant shame and stigma associated with seeking help (Foote, 1996), a lack of indigenous staff in services, and a lot of denial in the community about the nature and extent of gambling problems (Cultural Perspectives, 2005b).

Based on a series of detailed consultations with stake-holders in Victoria, Cultural Perspectives (2005b) provided a number of best practice recommendations relating to the provision of problem gambling services for indigenous people. Much of this material is borrowed from previous practices used for assisting indigenous people with substance abuse problems. Some of the specific components include a greater emphasis on community education to create greater awareness of the problem of gambling in the community, as well as greater promotion of counselling and other support services so that these outlets come to be seen as more acceptable and less stigmatised sources of assistance. Most importantly, it is argued that there needs to be a substantial increase in the number of indigenous counsellors working in agencies ad well as more locally-based development officers who can develop projects, services, and information distribution campaigns that will reach the local communities more effectively.

In New Zealand, considerably more is known about the nature and prevalence of gambling in Maori and Pacific Islander peoples because it has been possible to obtain statistically meaningful numbers of people from these groups in population surveys. The consistent finding from this research is that Maori and Islander people have a very strong interest in gambling (e.g., Perese, & Faleafa, 2000; Tu'itah, Guttenbeil-Po'uhila, Hand, & Htay, 2004). They are significantly more likely to be involved in continuous forms of gambling than are non-Maori, in particular, engaging in activities such as track betting and electronic gaming machines located outside of casinos. Their monthly expenditure on gambling is higher, and they are also significantly more likely to experience gambling-related problems than Pakeha (Europeans). Approximately 44% of all problem gamblers identified in Abbott and Volberg's (2000) national prevalence study were of Maori or Islander descent, a rate over double what would be expected due to chance, based upon their population representation. Other research conducted by Abbott and McKenna (2000) in women's prisons in New Zealand found that Maori women were 70% more likely to be experiencing gambling problems as compared with a similar population of male gamblers (Dyall, 2003; Morrison, 2003).

As has been found in Australia, gambling in Pacific Island people has been found to share some similarities with indigenous gambling, in that, in its traditional form, it has often been principally a social activity and way to share wealth amongst the community (Bellringer, Cowley-Malcolm, Abbott, & Williams, 2005; Rankine & Haigh, 2003). For these people, gambling is seen as a potential way to increase one's family income and to alleviate difficult financial circumstances. However, as Dyall (2003) has pointed out, this potentially beneficial attraction of gambling can also be used by Governments and commercial interests in a broader context. Maori people, in particular, have been encouraged to consider the economic benefits of gambling as a justification of the

expansion of gambling into their communities and their potential involvement as providers of these services, a situation that is very widely observed amongst indigenous people in North America.

Many of the same concerns about services that have been raised about indigenous services for indigenous people in Australia have also been raised in relation to Maori and Pacific Islander people in New Zealand. Authors have emphasised the importance of Maori involvement in the design and provision of services, in communicating awareness of gambling problems within the community, and to assist people in overcoming the stigma associated with coming to terms with one's problems (Clarke, Tse, Abbott, Townsend, Kingi, & Manaia, 2007; Dyall, 2003).

3.6.3 Gambling in culturally and linguistically diverse (CALD) communities

Another cultural or ethnic group that has also attracted considerable concern in relation to gambling in Australia is the Asian community and, in particular, people from a Vietnamese background. There is now considerable anecdotal evidence that people of this ethnicity appear to be particularly attracted to Western-style gambling venues. In 1997, the Victorian Casino and Gaming Authority reported that people of South-East Asian appearance made up 25–31% of the total number of patrons who enter the Crown Casino in Melbourne, based upon the observations of casino staff (VCGA, 1997). Although analyses of several Victorian data-bases (e.g., Problem Gambling Services Minimum Data-set) indicated that Vietnamese people were not necessarily over-represented in the number of people seeking help for gambling problems, the results suggested that problem gambling may be as much a problem for this community as any other. Researchers based this conclusion on the assumption that gambling is readily accessible and attractive to Asian people because it provides them with a social environment where difficulties in English proficiency do not prevent them from becoming fully immersed in the activities.

Further consultations with representatives of Vietnamese communities have also provided insights into the motivations of some Vietnamese gamblers (VCGA, 2000). As with Western gamblers, members of this group also report gambling in order to relieve stress and boredom, but they related this stress more specifically to difficulties associated with migration and adjusting to life in a new country (Wong & Tse, 2003). A possible difference, however, is that Vietnamese gamblers appear to take their gambling more seriously, and often have unrealistically optimistic expectations about the prospect of making money from gambling (Zysk, 2002). Members of a Vietnamese community interviewed by Zysk (2002) indicated that Vietnamese gamblers tend to be very businesslike about their gambling than other gamblers, and viewed the activity as a potential source of income. They also tended to report gambling on a narrower range of activities such as roulette, card games and electronic gaming machines (EGMs). These findings differ from most studies of English-speaking gamblers in Australia, which have found that people tend to report gambling on a wider range of activities, and also that they gamble predominantly for enjoyment (Productivity Commission, 1999).

Another study of Vietnamese gambling (Duong & Ohtsuka, 1999) focused more specifically on the role of culturally-specific beliefs about luck and winning in Vietnamese communities; in particular, on how these beliefs might serve to reinforce the significance of gambling in the community. The findings suggest that this ethnic group may conceptualise gambling and gambling-related problems differently from others in the community, and that this difference could have significant implications for prevention and treatment. For example, the fact that gambling forms a focal point for many Vietnamese social activities means that it may be more difficult for people with gambling-related problems to remove themselves from situations where gambling is prevalent. It may also be difficult for them to obtain support from others who share their commitment to overcome their gambling problem (Zysk, 2002).

In several key informant interviews, the VCGA study (1997) reported that some Vietnamese people considered gambling to be a major problem in their community, largely as a result of the increased accessibility and availability of gambling opportunities. Although there was some general awareness of the availability of problem gambling services, such services were reported to be not widely used due to feelings of shame, and an unwillingness of Vietnamese people to admit to having a gambling problem. Such unwillingness may be a broader feature of Asian communities, in which shame and a loss of respect is seen as one of the worst iniquities a community member can face. In possible confirmation of this suggestion, Duong and Ohtsuka (1999) found that Vietnamese gamblers were very reluctant to talk about their losses in an interview study, and tended only to speak of their winnings. Matters are further compounded by the suggestion that people from non-English-speaking communities groups tend to be particularly reluctant to seek assistance for health-related problems from mainstream services (Zysk, 2002). Factors contributing to this low rate of help-seeking may include: language difficulties; a lack of cultural sensitivity by service providers; inappropriate treatments including lack of family involvement; a lack of information or misinformation; and a greater degree of stigma and shame associated with mental illnesses and related problems (Zysk, 2002). Nevertheless, Tran (1999) of Jesuit Social Services in Melbourne reported that there had been a significant increase in the utilisation of Vietnamese counselling services following the opening of the Crown Casino.

Similar observations have been made about the Chinese community by Blaszczynski, Huynh, Dumlao, and Farrell (1998) and the Ethnic Communities Council of NSW (1999). In traditional Chinese culture, gambling usually features prominently in specific cultural festivals such as the Chinese New Year, but is otherwise generally frowned upon by the Government and society in general. However, there is evidence (reviewed by McMillen *et al.*, 2004) that many people of Chinese background living in Australia become very actively involved in gambling, particular in casino table games and in private betting revolving around the game of mah-jong. Two groups of Chinese people who are thought to be particularly at risk in Australia are students and shift-workers. For shift workers, gambling is very tempting because it appears to be an attractive and easy way to supplement meagre incomes, whereas students may by tempted to gamble

because of the availability of student loans or other lump sum payments that are provided by their home countries to assist their studies in Australia.

A number of studies have also examined the prevalence of gambling in other ethnic communities (Brown & Coventry, 1997; Ethic Communities Council of NSW, 1999; McMillen *et al.*, 2004; Victorian Casino and Gaming Authority, 2000). Most of these studies are based on very limited anecdotal information, but essentially reached the same conclusions; namely, that people from non-Western backgrounds (Greek, Italian, Yugoslav, or Arabic) are typically reluctant to formally seek help for gambling problems because of the shame which this would bring to their families and their cultural community (Cultural Perspectives Pty. Limited., 2005a). Moreover, in studies of the gambling preferences of these different cultural groups, it has been generally found that the patterns are very similar to those observed in English-speaking populations. Arabic, Greek and Italian men favour card games and horses, whereas women tend to combine their gambling to lotteries, bingo or gaming machines.

A detailed review of the challenges associated with providing services to problem gamblers and their families in culturally and linguistically diverse communities (CALD) is provided in a recent report by Cultural Perspectives (CP) Pty. Limited. (2005a) for the Victorian Department of Justice. The CP study involved detailed consultations with a wide number of service providers in Victoria and a small sample (around 16) of CALD problem gamblers and their communities. The report provides a summary of much of the existing Australian literature relating to gambling in CALD communities, although much of the material is sourced from unpublished conference papers that are not widely available.

The findings arising from interviews with gamblers are, on the whole, very similar to those obtained in the previous studies described above. People from CALD communities reported gambling for many of the same reasons as most other gamblers in the community (out of boredom, to relieve anxiety or stress, to win money, and as a form of escape). Many did not seek help from counselling agencies because this was seen as a sign of weakness, or would bring shame or a loss of face to their families and themselves within their local community. Discomfort was expressed about the possibility of having to reveal one's private thoughts and affairs to strangers. It was also felt that there were few appropriate and well funded services available in the local communities in which CALD lived in Australia, and that there were both language and cultural barriers to seeking help because of the lack of bicultural or bilingual staff both in the agencies themselves and in telephone help-lines services.

Cultural Perspectives sets out a detailed set of best practice principles relating to the appropriate delivery of services for CALD communities. These principles include:

- *Access and equity*: That the management of agencies and their staff have a commitment and connection with the relevant CALD community
- *Language and Cultural Relevance*: That the service hires culturally and linguistically relevant staff, and have culturally appropriate ways in which to deal

with CALD populations. Staff should be aware of the social, economic and political background of the CALD population so that they are dealt with in a way that respects specific sensitivities and problems within the community (e.g., ethnic conflicts within the home country, the roles of men and women in the culture)

- *Community Involvement and Strategic Alliances*: The agency should forge links with recognised agencies relevant to the particular CALD community, so as to encourage referrals, promote the counselling service through appropriate channels, and to obtain knowledge about how to develop the service.
- *Community Education*: The service should attempt to raise its profile in the local community so as to make counselling more acceptable and less stigmatised. This could be achieved via community functions, newsletters and local TV and radio.

Based upon its consultations with stakeholders and gamblers, Cultural Perspectives (2005a) set out a series of recommendations to address these best practice guidelines and overcome the principal challenges currently faced by service providers. These barriers included community fears about the nature and role of counselling, the lack of culturally and linguistically trained staff, and a lack of trust. CP recommended creating greater awareness of counselling services through the use of various community education strategies, local community projects, and recommended the employment of many more bilingual and bicultural workers and interpreters to work in agencies and for help-lines. The principal aim was to create greater trust and reduce concerns about confidentiality using people who were recognised members of the relevant CALD community.

> ♣ **There is limited evidence that the negative impacts of gambling are also becoming more pervasive amongst specific ethnic groups in Australia including the Indigenous and Vietnamese communities. This evidence has also, and to a larger extent, been reported in studies of Maori and Islander peoples in New Zealand. In both countries, concerns have been expressed about the extent to which people from CALD communities are willing to seek assistance from agencies, and whether existing services have the capacity to accommodate the cultural and linguistic diversity of these communities.**

3.7 Forms of gambling and motivations for gambling in Australia

3.7.1 The dimensions of gambling: How activities differ

An important factor that needs to be taken into account in both gambling research and policy, as well as in treatment settings, is the fact that gambling is by no means a homogenous activity (Dickerson, 1993). Gambling activities can be clearly differentiated, or profiled, in terms of several key structural characteristics, and many of these arise from the process, or nature, of the gambling itself. The first key characteristic is the *continuity* of the activity. The term 'continuity' refers to the interval between the

initial stake or wager and the outcome of the gamble, as well as the frequency with which a gambler can resume gambling once the outcome has been determined.

There is little question that gambling activities differ substantially along this dimension. Activities such as lotteries and bingo clearly have very low continuity. There is usually a long interval between the purchase of tickets and the draw, and there is little opportunity for immediately repeated gambling. Keno, horse racing and sports betting are somewhat more continuous with outcomes occurring approximately every 5 to 15 minutes depending on the context. Casino gambling, with bets being taken every 2–5 minutes, is faster again. These activities are in stark contrast to those such as scratch-tickets that can be bought in clusters and purchased again and again at venues such as lottery outlets and newsagents, or to slot-machines. Electronic gaming machines are the most continuous form of gambling currently available, and allow repeated gambling approximately every 3 to 4 seconds. This means that players can gamble anything up to 15 times per minute, and reinvest varying amounts of their winnings merely by pressing buttons on a console or a screen.

Gambling activities can also be distinguished in terms of a *skill-chance dimension.* Some activities, including slot-machines, lotteries, Keno, and roulette are purely chance-determined, so that there is no strategy, method, or play that significantly increases the players' chances of winning. By contrast, there are activities that clearly allow for more skilful play, or for a playing style that increases the long-term expected return to the player above what is determined by chance. Activities falling into this category include race and sports betting, and casino card-games, in particular, blackjack which provides genuine opportunities for players to enhance their performance using various counting strategies (Ladouceur & Walker, 1997; Walker, 1992; Walker, Sturevska & Turpie, 1995).

These objective differences are generally borne out in studies of how gamblers themselves perceive the activities. For example, Delfabbro (1998) asked 120 casino gamblers to rate the degree of skill involved in variety of activities. On a scale of 1–7, where 1 = no skill and 7 = very high skill, blackjack (with a score of 4.4), racing (with a score of 4.3), and table poker (with a score of 4.2) were rated the highest, and sports was rated fourth overall (with a score of 3.8). All other activities scored towards the low end of the skill-scale, with the lowest scores being recorded for lotteries and Keno (See also Walker, 1992a). In other words, for these activities, people did not believe that any strategy or system could increase their chances of winning[1].

However, in drawing these conclusions, Delfabbro (1998) pointed out that the term 'skill' needed to be used carefully because it can have more than one meaning. Although in the present context, skill is defined in terms of strategies or systems that can increase the probability (P) of winning [in formal terms: P (win/strategy) > P (win/no strategy)], skill can also refer to the expertise associated with knowing how to gamble, and this does

[1] The only possible strategy is with respect to lotteries with shared jackpot pools in which one could choose numbers that are less frequently chosen by other people, so that the jackpot is divided amongst fewer people, i.e., P (share/winning numbers) is higher even though P (winning numbers/number combination or strategy) remains the same.

not always coincide with the former definition. Activities such as craps and baccarat, for example, have a number of rules that must be learnt before a person can gamble with an appropriate level of understanding, yet both these activities are games of pure chance. Moreover, in the case of craps, there are ways of gambling (e.g., betting on the point) that provide a better rate of return than bets placed elsewhere, e.g., on field bets, so that players can influence the expected rate of return (i.e., % of total stake returned). This strategising can work despite the fact that it is impossible to avoid the minimum house-advantage or take. Activities such as craps contrast with other activities such as blackjack, racing and table poker where greater complexity in the process of gambling goes hand-in-hand with a genuine capacity to use knowledge and/or strategy play. In these games, it is possible to increase returns above any upper limits predetermined by the mathematics of chance (Walker, 1992a; Walker *et al.*, 1995).

> ♣ **It is likely to be the complexity of the gambling process itself that is largely responsible for the age and gender differences described above, rather than the fact that many of the more complicated activities also happen to provide the opportunity for genuine strategy play.**

A second caveat emphasised by Delfabbro (1998) is that a distinction needs to be drawn between objective classifications of skill components in various forms of gambling and how people actually gamble. The fact that one form of gambling permits genuine strategy play does not mean that people will necessarily take advantage of this knowledge. On the contrary, a person could, through their own actions, make any activity (including any activity not usually considered gambling) into a game of chance, by relying upon non-objective strategies (not based on mathematics) or by allowing uncontrollable factors to come into play. For example, selecting horses based upon lucky numbers or other superstitions, or selecting investments on the stock market by drawing random numbers, would render both activities no more skilful than lotteries and Keno. In other words, some activities can only be classified as skilful to the extent that players actively take advantage of the objective strategies that are available.

These observations have implications for attempts to define which activities should be classified as gambling and as non-gambling. Although Ladouceur and Walker (1997) define gambling as 'an attempt to win money by staking money on an uncertain outcome', this definition could apply to any financial decision, including investments on the stock market. To address this problem, Delfabbro (1998) pointed out that the term 'chance' needs to be more carefully defined. The key issue is not so much that chance is involved in gambling, but that this element of chance is an inevitable element of gambling, a fact that is not the case in other activities usually not included in this category. This means that gambling activities are specifically designed so that it is almost impossible ever to be certain of the outcomes. Thus, although stock-market gambling and other investment activities (and many other everyday activities) might sometimes appear to be forms of gambling, and are certainly affected by uncontrollable, unpredictable, or chance factors, chance is not an inevitable feature of these activities. Indeed, in stock-market trading, if one knew what other sellers and buyers were doing, then the outcomes would be entirely predictable, whereas the same is not true of

legitimate sports or racing performances, no matter how good the previous form of a sports team or horse. In almost all other gambling activities, the house take is a predetermined percentage that cannot be avoided no matter what strategy is used.

> ♣ **Many activities and decisions involve chance, but gambling is distinctive in that chance is an inevitable feature of the activity.**

A third dimension on which gambling activities can be differentiated is the level of *involvement* (Solonch, 1991). Involvement is a broad term and refers to how socially, physiologically, and cognitively involved people can become when they gamble. This is clearly not an objective quality, yet it is evident that some activities allow gamblers to become involved to varying degrees. Some activities such as lotteries, Keno and poker-machine gambling are relatively passive activities, and can be undertaken without a great deal of concentration or attention, whereas sports and racing betting (if viewed live) provide much higher levels of visual and auditory stimulation.

The fourth dimension that potentially influences the nature of gambling activities is their *locational characteristics*, for example, whether they can be undertaken at home, alone versus in a group, at a casino, club, or hall, at a newsagency, or over the telephone or Internet. At present, it is clear that these factors play a significant role in people's choice of gambling activity (Productivity Commission, 1999). Different gambling locations influence the social context, environment, and atmosphere in which the gambling occurs, so that if multiple forms of gambling are located in one place (e.g., a casino), all activities will be influenced to varying degrees by these broader factors. In other words, activities come to be differentiated because of variations in the local context in which they are available. Table games at the casino, for example, will always be more socially interactive than other forms of gambling because it is not usually possible to gamble alone, without a croupier, or via the telephone or Internet. Similarly, poker machine gambling or Keno will always involve a visit to a gambling establishment. By contrast, there are gambling activities, such as racing, that are very context-independent, in that participants have the opportunity to gamble at home using a telephone or the Internet, at an off-course betting agency, hotel or club.

> ♣ **Note: As overseas researchers such as Griffiths have pointed out, home-based gambling is likely to become increasingly common. A growing trend in gambling, worldwide, is towards more technologically advanced forms of gambling that allow people more and more opportunities to gamble alone and/or in isolation without any form of social interaction.**

3.7.2 People's motivations for gambling: Australian survey findings

During the last decade, numerous surveys have been conducted to determine why people gamble. From these studies, it is clear that people gamble for a variety of reasons, but it is also evident that people's motivation varies, not only according to the activity

concerned, but also depending upon their level of involvement in gambling. For example, in a telephone survey of 1737 gamblers in Victoria in 1999, Roy Morgan Research (1999) found that 59% of people reported gambling because of the dream of winning, 38% reported gambling in order to socialise with others, and 13% reported gambling because of the excitement. However, when analyses were confined to regular gamblers, all of these motivations strengthened in importance, with socialisation becoming the equally most important motivation with winning (both 65%). A similar trend was observed in Abbott and Volberg's (2000) national study in New Zealand. Only 17% of non-regular gamblers reported participating in order to socialise compared with 23% of regular gamblers on continuous activities (EGMs, racing and casino games). Comparative figures (regular vs. non-regular) for other motivations included 25% vs. 11.5% for excitement; 66% vs. 51% to win money; and 55% vs. 39% for fun/entertainment and excitement.

More specific analyses have examined how these motivations vary depending upon the type of activity involved. According to the Australian Institute for Gambling Research (1999), approximately a third of racing gamblers report participating for social reasons compared with 42% of slot-machine players and 40% of casino gamblers. The thrill of winning money was much more likely to be endorsed by racing and casino gamblers (23%) than EGM players (4%). Similar figures were obtained by the South Australian Parliament—House of Assembly (The Hill Report: Hill, Deyell, Lockett & Pederick, 1995) in a survey of poker machine gambling. Only 2% of EGM players reported gambling to win money, whereas 92% reported gambling 'just for entertainment'. More elaborate analysis of the links between specific motivations and specific activities has been undertaken in a number of studies commissioned by the Victorian Casino and Gaming Authority. In 1995, AGB McNair and, also, DBM Consultants used telephone survey data to undertake perceptual mapping or correspondence analysis of gambling preferences and motivations. Their results confirmed that people who gambled on racing were more likely to report that they gambled to pick a winner, and for the excitement, atmosphere, and buzz; lottery gambling was more strongly related to beliefs about getting lucky and the dream of winning; whereas EGM, casino gambling, and bingo were seen more as social activities that could be used as an escape from boredom.

These findings have also been confirmed in studies of gambling motivation conducted by university-based researchers and those in agencies. For example, Loughnan *et al.* (1996), administered their G–Map instrument to both male and female slot-machine players seeking treatment for gambling-related problems, and found that escaping boredom, achieving relaxation, and 'good feelings' were the most important stated reasons for gambling on EGMs By contrast, in a comparison of male EGM and racing gamblers, it was found that 'control' was rated much more important in racing than in EGM gambling. Similar findings were obtained by Slowo (1997) in a comparison of 3 groups of gamblers (EGM, racing, and casino) seeking assistance at Victorian problem-gambling services. Using a formal motivational scale adapted from Cook and Gerkovich (1993), he showed that EGM players were more likely to report that they gambled in order to reduce anxiety. By contrast, casino gambling was preferred because of the nature of the activity itself (presumably because it was more interesting), whereas both

horse-racing and casino gambling were preferred because of the greater excitement involved.

In summary, the results of these studies reveal a clear interaction between people's reported motivations for gambling, and the structural characteristics of the activities themselves. Although many continuous activities share the common characteristic of being a focal point for social activities, there are also a number of clear differences across activities. Poker machines or EGMs are much more likely to be reported to be used because of their arousal-reducing qualities, and this is consistent with the passive, continuous, and less 'involving' nature of the activity. By contrast, casino and racing activities are reported to be popular primarily because of their arousal-inducing qualities, and because they provide a greater opportunity to deploy skill (i.e., pick a winner, exert control).

- **Most people report that they gamble for enjoyment, in order to socialise, and because they want to win money. People are more likely to report that they gamble on EGMs in order to achieve relaxation and as an escape from boredom, whereas racing and casino table games are reported to be chosen because of the thrill or excitement involved.**

4. Problem gambling

4.1 Conceptual issues in problem gambling

Despite the many obvious benefits that Australians obtain from gambling, there is also strong evidence to suggest that this activity also imposes a considerable burden on the community. The main source of this burden arises from the development of gambling-related problems in a small percentage of the population, a situation that can have serious social, financial, and psychological consequences, not only for the person affected, but also for those around them. In Australia, the term 'problem gambling' is the most commonly used and accepted label to describe people who fall into this category. This term is used in place of similar terms such as 'compulsive' and 'pathological' gambling that are commonly used in North America, Europe, and New Zealand. The term 'problem gambling' is preferred over these other terms because Australian researchers have argued that they can be potentially misleading when applied in the Australian context. 'Compulsive' gambling implies a compulsion, or a behaviour that is driven by impulse, and this is not always been found to be the case in many Australian studies. The term 'compulsion' is also problematic in that obsessive-compulsive disorders differ from addictions such as gambling. Obsessive behaviours are usually based upon negative reinforcement (i.e., people perform behaviours to reduce negative symptoms), whereas gambling, even amongst problem gamblers, is nonetheless usually driven, amongst other things, by the desire for positive reinforcement (i.e., winning money).

The term 'pathological' gambling is problematic in that it applies that gambling is a disease or medically based disorder with a clear pathogenesis; and this has also not been consistently borne out in the evidence. Research from the 1980s in Australia by researchers such as Blaszczynski, Walker and Dickerson (see Walker, 1992a for a review) found only limited support for the idea that problem gamblers differ substantially from non-problem gamblers in terms of their physiological make-up, personality, and general psychological functioning. Indeed, one of the fundamental flaws of the so-called 'disease model' was that problem gamblers do not always gamble excessively. Many drift out of problem gambling and back into safe levels of regular gambling. In addition, many of the so-called features of problem gambling (e.g., gambling more than can be afforded, being unable to resist the temptation to gamble) are also, albeit to a lesser degree, features of regular gambling. The suggestion, therefore, is that many (although not all, see Blaszczynski & Nower, 2002) problem gamblers do not appear to have an entrenched pathology. Instead, these people are better viewed as being located at one end of a continuum of behaviour that ranges from no gambling and occasional gambling at one end, through to regular and problematic gambling at the other.

Another important consideration is that problem gambling is also usually defined both in terms of behavioural characteristics, and in terms of its negative consequences. This

arises from the fact that each component, on its own, is potentially unsatisfactory (Nower & Blaszczynski, 2001; Neal, Delfabbro, & O'Neil, 2005). For example, it is conceivable that a person could experience severe consequences as a result of gambling (e.g., loss of employment, or of a partner) because of a very minor involvement in gambling. Such a situation might arise if a person gambled against the wishes or religious beliefs of his or her partner, or when a person was strictly forbidden to gamble in the workplace. In such cases, the people involved would not necessarily display any of the behaviours typical of problem gambling, such as spending more than they can afford, or chasing their losses (see section 4 below).

If, on the other hand, as Walker (1995) has pointed out, one went to the other extreme and defined problem gambling solely in terms of its consequences, two difficulties arise. The first of these is that there are many people who exhibit all the behavioural characteristics of problem gambling, yet do not experience serious consequences because they can afford to gamble. An obvious example is a millionaire gambler, who gambles continuously without any financial consequences in the short-term. The second difficulty with the definition of problem gambling solely in terms of consequences is both conceptual and practical. If one does not refer to gambling behaviours in a definition of problem gambling, then it will be difficult to identify problem gambling until severe consequences have arisen. In other words, early identification and diagnosis of the problem would be more difficult. Moreover, one would be placed in the logically awkward situation of attempting to infer the existence of a behaviour (problem gambling) from its consequences. Apart from the fact that this potentially violates the basic laws of logic[2], it also makes less conceptual sense to talk about a phenomenon (problem-gambling behaviour) solely in terms of something that it is not; namely: interpersonal, vocational, and legal problems. For all these reasons, current measures of problem gambling (as described below) tend to incorporate items relating both to the consequences of the behaviour as well as to the behaviour itself.

These arguments are discussed in a comprehensive review of definitions of problem gambling and measures by Neal, Delfabbro and O'Neil (2005). In this review, different stakeholders (including counsellors, researchers, industry representatives, regulators and policy makers) were consulted either via written submissions, interviews or focus groups and asked to indicate what they believed to the essential elements of problem gambling. In general, most respondents endorsed a dual definition of problem gambling that recognised both the behaviours and the consequences or 'harms' associated with the disorder. Harms were considered more important by policy makers, regulators and sociological researchers because these stakeholders had an interest in assessing the broader impacts of gambling upon society so as to develop appropriate services and regulatory responses. By contrast, most counsellors and psychological researchers placed greater emphasis on gambling behaviour because of the importance of being able to detect the early warning signs of gambling and to measure behavioural change. It was also pointed out that there are many problem gamblers (e.g., younger people) who often

[2] *Modus tollens* (If A then B). If A true then B is true. If only the consequent B is confirmed, there is the problem that B (marital problems, loss of job) could have arisen from antecedents other than A.

show all the behavioural hallmarks of problem gambling without incurring significant impacts because of their limited assets and commitments.

For these reasons, the researchers provided a national definition of gambling that incorporated both behaviour and consequences: "Problem gambling is characterised by difficulties in limiting money and/or time spent on gambling which leads to adverse consequences for the gambler, others, or for the community" (Neal, Delfabbro, & O'Neil, 2005). This new definition differed from previous definitions provided by Dickerson, McMillen, Hallebone, Volberg, & Woolley (1997) and that of the Productivity Commission (1999) that had defined problem gambling solely in terms of its consequences. Another difference between the new definition and previous definitions available in the literature was that it did not specifically refer to theoretical concepts that might be subject to contention. For example, although many previous studies have referred to gambling as an impulse disorder, a compulsion, or arising from impaired control over behaviour, references to all of these terms was avoided because of controversies surrounding the meaning of these terms. The term compulsion was generally avoided because obsessive compulsive disorders tend to involve the commission of acts to alleviate negative moods states (e.g., compulsive checking of doors to remove anxiety), whereas gambling more often involves the active pursuit of positive reinforcement (e.g., winning money). Other terms such as 'impaired control' were seen as problematic because of the conceptual difficulties trying to demonstrate that a person had no control over their behaviour. The national definition, therefore, was kept more general so that there was scope for the inclusion of many different explanations for people's inability to limit their time and expenditure.

4.2 How problem gambling is assessed

Much of the research relating to the development of problem-gambling measures dates back prior to the starting point of this review, and is also largely sourced from North America. Nevertheless, a brief overview of this research is important in order to understand how Australian researchers in the early 1990s came to approach the issue of problem gambling, and how they assessed and measured it.

4.2.1 DSM Classification and its origins

Problem gambling, or pathological gambling, as it is known in America, was not formally recognised as a psychological disorder until 1980, at which time it was incorporated into the Diagnostic & Statistical Manual (DSM-III) of the American Psychiatric Association (Neal, Delfabbro, & O'Neal, 2004). The DSM consists of a series of typologies or symptom lists relating to all forms of identifiable mental disorder, and these are used as checklists in clinical interviews. A person is only deemed to have a disorder if a specified number of items on these checklists are endorsed (4 out of 9 in the case of pathological gambling). Much of the impetus for this inclusion came from the distinguished addiction researcher, Robert Custer, who defined problem gambling largely in terms of its consequences on the person's life. Pathological gambling was

thought to be present if it was causing significant disruptions to person relationships, employment, and/or had led to involvement with the justice system, e.g., via forged cheques, default on debts, illegal borrowing (Dickerson *et al.*, 1997; Griffiths, 1995; Griffiths & Delfabbro, 2001).

This classification remained until 1987, at which time it was modified during the development of the DSM-III-R (revised diagnostic manual). One of the major criticisms of the original set of items was that it focused specifically on a particular type of gambler: white middle-class males living with a partner, with a house, job, and with ready access to money to gamble. For many problem gamblers, this was clearly not the case. In addition, there was concern that the checklist was not sufficiently grounded in a valid theoretical framework, so that questions did not appear to have a clear rationale. To address these problems, the criteria were remodelled largely in terms of the framework used to diagnose other bona fide addictions, such as alcoholism. A pathological gambler, therefore, came to be seen as a person who, like an alcoholic, was addicted to the physiological stimulation associated with gambling. As with alcoholics, pathological gamblers were thought to gamble with increasing amounts of money in order to maintain the same level of excitement (tolerance), and to avoid the negative affective states (withdrawal) that arose when they were not gambling. Other indicators referred specifically to the person's preoccupation with gambling, the tendency to gamble in order to recover losses, and the failure of the person to 'cut down' the behaviour.

Although recognised as an improvement, this version was also eventually criticised for many of the reasons discussed in the previous section. It was not considered sufficient to talk only of the nature of the behaviour itself without determining whether it was having serious consequences of the person's well-being. Thus, a third version of the checklist was developed (the DSM-IV in 1991, Lesieur & Rosenthal, 1991), which incorporated what were felt to be the best items from both earlier versions. Most of the items concerning the addictive qualities of gambling remained, but additional items relating to the effects of gambling on the person's well-being were included (see Table 3). This is the version that has existed ever since, and which remains in use and will probably continue to be used until the anticipated DSM-V is completed in North America.

As indicated in Table 4, there are 10 items in the DSM-IV. A person is classified as a pathological gambler if they have behaviours or symptoms that meet at least 5 of these criteria. The DSM-IV was the measure of choice in the New Zealand prevalence studies undertaken by Abbott and Volberg in 1991 and also in 1999. However, it has not been widely used in Australia, except in clinical settings as a way of validating other commonly used measures (Battersby, Thomas, Tolchard & Esterman, 2002). The main reason for this is that it is primarily a clinical instrument, which is supposed to be administered in a clinical interview. Unlike a regular survey instrument or checklist, each item provides a description of behaviour, and clinical psychologists or psychiatrists have to conduct formal interviews to determine to what extent a client meets each criterion.

Table 4

DSM-IV Classification for problem gambling (1994)

1. As gambling progressed, became more and more preoccupied with reliving part of the gambling experience, studying a system, planning the next gambling venture, or thinking of ways to get money.
2. Needed to gamble with more and more money in order to achieve the desired excitement.
3. Has repeated unsuccessful attempts to cut down or stop gambling.
4. Became restless or irritable when attempting to cut down or stop gambling.
5. Gambled as a way of escaping from problems or intolerable feeling states.
6. After losing money gambling, would often return another day in order to get even ('chasing' one's losses).
7. Lied to family, employer, or therapist to protect and conceal the extent of involvement with gambling.
8. Committed illegal acts such as forgery, fraud, theft or embezzlement, in order to finance gambling.
9. Jeopardised or lost a significant relationship, marriage, education, job or career because of gambling.
10. Needed another individual to provide money to relieve a desperate financial situation produced by gambling (a 'bailout').

4.2.2 The South Oaks Gambling Screen (SOGS): a critical overview

The SOGS is a North American instrument developed by Lesieur and Blume (1987) in order to assist in the screening of alcohol and drug abuse patients at a New York hospital (South Oaks). It was never intended to be a substitute for the DSM-III criteria on which it was modelled, but was designed as a quick and efficient way to identify people who could subsequently be referred for formal clinical interviews. It was also designed to provide a more flexible and continuous measure of pathological gambling. In contrast to the existing DSM classification in which a person was either diagnosed or not diagnosed as a pathological gambler, the SOGS (using a score out of 20) provided a way of expressing the degree of a person's gambling problem (Table 5).

The development of the scale involved the selection of 20 items that appeared best to distinguish between pathological gamblers and others in the treatment program, and then involved a process of validity and reliability testing. The scale was administered to pathological gamblers in treatment, members of Gamblers Anonymous (GA), college students, and hospital employees. Based upon these comparisons, it was determined that

a score of 5 or greater would classify a person as a 'probable' pathological gambler, and that scores of 3–4 would identify 'possible' problem gamblers. Subsequent analyses revealed that 97% of G.A. members were classified as pathological gamblers compared with only 5% of students, and 1% of the hospital workers using this scale. In addition, the correlation between SOGS scores and DSM-III-R ratings (using the DSM as a scale rather than as an adjunct to a clinical interview) was 0.94, suggesting an almost perfect degree of association.

Table 5

The South Oaks Gambling Screen

1. When you gamble, how often do you go back another day to win back money you lost? [*a*. Never; *b*. Some of the time (less than half the time) I lost; *c*. Most of the time I lost; *d*. Every time I lost]
2. Have you ever claimed to be winning money gambling but weren't really? In fact you lost? [*a*. Never or never gamble; *b*. Yes, less than half the time I lost; *c*. Yes, most of the time].
3. Do you feel you have ever had a problem with gambling? [*a*. No; *b*. Yes, in the past, but not now; *c*. Yes].
4. Did you ever gamble more than you intended to? [Yes, No].
5. Have people criticised your gambling? [Yes, No]
6. Have you ever felt guilty about the way you gamble or what happens when you gamble? [Yes, No].
7. Have you ever felt like you would like to stop gambling, but didn't think you could? [Yes, No].
8. Have you ever hidden betting slips, lottery tickets, gambling money, or other signs of gambling from your spouse, children or other important people in your life? [Yes, No].
9. 9a. Have you ever argued with people you live with over how you handle money? [Yes, No: *not scored*]
   9b. If you answered yes to the previous question: Have money arguments ever centred on your gambling? [Yes, No].
10. Have you ever borrowed from someone and not paid them back as a result of your gambling? [Yes, No].
11. Have you ever lost time from work (or school) due to gambling? [Yes, No]
12. If you borrowed money to gamble or pay gambling debts, who or where did you borrow from? [check 'Yes' or 'No' for each the items that follow).
13. From household money? [Yes, No]
14. From your spouse? [Yes, No].
15. From other relatives or in-laws? [Yes, No].

16. From banks, loan companies, or credit unions? [Yes, No].
17. From credit cards [Yes, No].
18. From loan sharks? [Yes, No].
19. You cashed in stocks, bonds or other securities? [Yes, No].
20. You sold personal or family property? [Yes, No].
21. You borrowed on your checking account (passed bad checks)? [Yes, No].

Scoring (Yes/No format): Q1 (Score 1 if most of the time or every time I lost); Q2 (Score 1 if less than half the time I lost or yes, most of the time); Q3,(Score 1 if yes, in the past, but not now or yes. Ignore question 9a. For all remaining questions, a score of yes counts as 1 point. A score of 5 indicates a 'probable pathological gambler', and a 'problem gambler' in Australia (Lesieur & Blume, 1987).

Time-frame: Original SOGS (Life-time, 'Have you ever…?'; SOGS-R (In the last 6 months….?), SOGS-M (In the last 12 months?, Productivity Commission, 1999).

Multiple-response category: 1=Never, 2=Rarely, 3=Sometimes, 4=Often, 5=Always for items with Yes/ No response categories. Rarely or more often yields 1 point.

Since 1987, the SOGS has been the most widely used measure of pathological or problem gambling in the world, largely as a result of its adoption as the measure of choice in dozens of American statewide surveys conducted by Volberg and her associates (Allcock, 1995; Dickerson, 1995; Dickerson *et al*., 1997; Productivity Commission, 1999; Walker & Dickerson, 1996). Despite its widespread usage, the SOGS has attracted considerable criticisms, particularly in Australia and New Zealand. These have been summarised in numerous papers, most recently by Battersby *et al*. (2002).

The first major criticism arises from the fact that the SOGS was soon found to over-diagnose problem gambling. In New Zealand's first national prevalence study, Abbott and Volberg (1996) found that 24% of those who had scored 5 or more on the SOGS in the 1991 prevalence study were not classified as problem gamblers when they were assessed using DSM-IV criteria. Other studies of regular gamblers at gambling venues (e.g., Ohtsuka *et al.*, 1995) found that around 30% of regular gamblers scored in the problematic range, and that many gambling researchers themselves scored 4 to 5 (Allcock, 1995). Moreover, in Dickerson *et al.*'s (1996) prevalence study of problem gambling in New South Wales, it was found that a substantial proportion of people who scored in the problematic range on the SOGS did not believe that they had a problem.

Particular attention was drawn to items relating to guilt, criticism about gambling, and attempting to win back losses, that were deemed problematic because many non-problem gamblers would also tend to endorse these items. As Allcock (1995) and Battersby *et al*. (2002) point outed, the fundamental problem with the validation of the SOGS was that it compared problem gamblers with people who probably did not gamble very much at all. Thus, it did not check to see whether many of the behaviours supposedly indicative of

problem gambling might have also been features of regular gambling. If this had been done, then items would have been selected that better distinguished genuine problem gamblers from others who gambled intensively, but without problems.

The second major criticism of the SOGS is that it does not appear to capture all of the behaviours thought to be indicative of problem gambling. As indicated in Table 4, almost all of the items relate to what is termed 'chasing' behaviour, a facet of problem gambling particularly emphasised by one of the authors of the SOGS (see Lesieur's 1984 book *The Chase*). According to Lesieur (1984) and Lesieur and Rosenthal (1992), problem gamblers proceed through a series of distinct stages: (1) A winning phase in which gambling is successful, (2) A losing phase in which gamblers begin to experience a downturn in their fortune and a need to obtain money from a variety of sources to finance their gambling, and (3) A desperation stage, when all legal avenues for funding are exhausted, and gamblers begin to commit illegal acts to obtain money. Thus, the SOGS contains items relating to getting money from family, friends, relatives, credit cards, and every possible legal source, as well as less legitimate sources. The problem with these items, according to Dickerson *et al*. (1997) is that they do not have a strong theoretical rationale. This is in contrast to the DSM classification, which is clearly framed in terms of an addiction model, and in which gambling is classified as a type of impulsive disorder. There are no items specifically relating to tolerance and withdrawal despite the fact that these items are contained in the DSM-III-R, the diagnostic criteria against which the SOGS was originally validated. Furthermore, there are few items that capture the key elements of the disorder, namely the impulsiveness of many gamblers, or which refer to impaired control (see section 5), despite the fact that both characteristics have been implicated in problem gambling (O'Connor & Dickerson, 2003; Steel & Blaszczynski, 1996).

This overemphasis on chasing behaviour and obtaining money to maintain gambling is also problematic in that these issues would appear to be more relevant for gamblers who are already experiencing significant gambling problems. Such items may be less useful for identifying people whose gambling behaviour is not sufficiently serious for them to have to chase after funds in the ways described in the SOGS. Once again, a problem with the SOGS was that all problem gamblers were sampled from an in-patient treatment program, so that only the most serious cases of problem gambling were included. It is unsurprising, then, that a substantial proportion of these gamblers had reached Lesieur's 'desperation stage' and were therefore engaged in frequent chasing behaviour. No attempt was made to determine whether a similar degree of endorsement would have been obtained if the scale had been administered to problem gamblers living in the community.

A third criticism of the SOGS was that it was developed as a lifetime measure. People were asked to indicate whether any of the statements were true of their behaviour during their entire lifetime. Thus, it is conceivable that a person who used to be a problem gambler, but had not gambled for years, would still be classified as a problem gambler. In addition, this time frame implied a very static model of problem gambling; namely, that a person who was a problem gambler once would be so for life. This, unfortunately,

does not tally with the findings of many researchers (e.g., Blaszczynski *et al*., 1997; Dickerson, 1993; Walker, 1992a) who have pointed out that many problem gamblers drift in and out of problem gambling, often having periods of many years away from gambling altogether.

Finally, a fourth complaint about the SOGS is that it does not incorporate any objective validation of problem gambling (Walker & Dickerson, 1996). According to Dickerson (1995, 2002), a clearer understanding of the gambling continuum and the differences between regular problem and regular non-problem gambling could be obtained by validating scores on the SOGS with reports of weekly expenditure and the amount of time spent gambling. This is, in principle, a useful idea. Unsurprisingly, research has consistently revealed that problem gamblers spend significantly more per week than non-problem gamblers (the Productivity Commission developed an estimate of around $250 per week for problem gamblers vs. $13 for non-problem gamblers). However, such figures are only useful in a broad sense. In addition to the fact that different people can afford different amounts before they become problem gamblers, there are significant difficulties associated with trying to estimate the amount gamblers spend using surveys.

Blaszczynski, Dumlao and Lange (1997), for example, conducted a study in which they asked university students the amount they spent on gambling. They found significant variations in how people interpreted seemingly clearly worded questions (e.g., net amount lost vs. gross amount put into machine vs. gross amount taken along to gamble). Similar difficulties were observed in estimates obtained by the Productivity Commission (1999) and Delfabbro and Winefield (1996), who showed (by comparison with objective data) that poker machine players understated their losses by almost 50%. This sort of problem was highlighted in the results of the Victorian prevalence study conducted by DBM consultants (1995) who uncritically presented survey-based expenditure estimates suggesting that card games were the highest grossing form of gambling in Victoria!

> ♣ **The widely used South Oaks Gambling Screen (SOGS) has been criticised on several main grounds: (1) The inappropriateness of items giving rise to unacceptable numbers of false positives, (2) The lack of validation against a suitable control sample of non-problem regular gamblers, (3) The omission of items related to impaired control, (4) The inappropriateness of the life-time framework, and (5) The lack of inclusion of items relating to the intensity of gambling.**

4.2.3 Modifications to the SOGS

During the last decade, there have been many attempts to address these criticisms. For example, in order to address the high rate of false positives, Dickerson and associates recommended that the SOGS cut-off score be raised to 10 (see Walker & Dickerson, 1996 for a review). As expected, this led to considerably lower estimates of gambling prevalence (an initial prevalence rate of 6.6% using a 5+ cut-off was reduced to only 1% when data from the first metropolitan prevalence study conducted in 1990–1991 (Dickerson *et al.*, 1996) were re-examined. However, it was eventually concluded that

this cut-off score was too conservative and so, in 1996, a new classification system was devised. This system was based upon the responses of clients seeking assistance for gambling problems at a NSW treatment program. Dickerson and his associates converted the SOGS from a diagnostic tool into a measure of relative risk.

According to the new system, any person scoring 10 or more was almost certain to be a problem gambler, whereas scores of 6–9 indicated a 50% chance, and a score of 5 indicated only a 1 in 5 (or 20%) chance. These values were used in the first NSW prevalence study in 1995, and generated what was thought to be a more reasonable prevalence estimate of problem gambling in the community. Another innovation was the introduction of multi-response categories for each item to replace the simple Yes/No binary scoring of the original scale. In addition, Dickerson addressed criticisms concerning the time-frame of the original scale by utilising a revised version of the SOGS that framed every question in terms of 'the last 6 months' rather than in the person's lifetime (referred to as the SOGS-R). Finally, SOGS scores were also validated against other measures of problematic gambling behaviour, including measures of impaired control, and also expenditure estimates. This methodology, or very close to it, was employed in almost all prevalence studies conducted in Australia during the mid to late 1990s (e.g., New South Wales: Dickerson, Allcock & Baron *et al*., 1996; South Australia: Delfabbro & Winefield, 1996; Western Australia: Dickerson, Baron & O'Connor, 1994; Tasmania: Dickerson, Walker & Baron, 1994; Dickerson & Maddern, 1997).

In the national study conducted by the Productivity Commission (1999), issues relating to the SOGS were discussed in considerable depth and, for the most part, the Commission agreed with most of the points made above. However, where the Commission's study differs from earlier ones was that the Dickerson method of SOGS scoring was relinquished in favour of the original 5–point cut-off score. This decision was based upon the fact that approximately 85% of people scoring in the range 5–9 points displayed very clear symptoms of problem gambling. Many (70%) admitted that they had a problem, nearly all reported that they were spending more than they intended, and 70% reported being unable to control their gambling. This finding was also verified by comparing SOGS scores with a derived indicator called HARM. HARM was a list of 21 problem-gambling issues thought to be highly indicative of a gambling problem (e.g., always spending more than one could afford, having been in trouble with the police because of gambling), and a score of 1 or more (i.e., endorsement of any item) was taken to indicate the presence of a gambling problem.

Comparisons of SOGS outcomes with this measure showed that 5 times more people scored 1 or more on HARM than would be classified as problem gamblers using a SOGS cut-off of 10. Accordingly, the Commission concluded that a cut-off score of 5 was the most valid criterion to use, and that it came at only a relatively small cost (an approximately 15% false-positive rate: people falsely diagnosed as problem gamblers). On the other hand, using a cut-off score of 10 grossly under-estimated the prevalence of problem gambling. This was notwithstanding the criticism that the HARM measure was largely an intuitive measure developed without any proper validity and reliability testing.

In summary, therefore, it has come to pass that many of the criticisms of the SOGS have been addressed. Although the scale may not contain an adequate coverage of all of the behaviours thought to be indicative of problem gambling (e.g., impaired control), the scale correlates very highly with measures of these behaviours (O'Connor, Dickerson, & Blaszczynski, 1995), and appears to distinguish reasonably well between genuine problem gamblers and other gamblers. The moderate false-positive rate must be acknowledged, but this needs to be interpreted in the context of prevalence surveys that are very likely to under-estimate problem gambling for other reasons (see below), and the fact that it is probably better, in the interests of public health, slightly to over-estimate the magnitude of the problem than to under-estimate it. Despite these reassurances, the ongoing criticisms surrounding the SOGS have led to the adoption of other measures for the purposes of prevalence research conducted at a population level (see section 4.2.6 below).

4.2.4 The Victorian Gambling Screen (VGS)

In response to criticisms raised about the SOGS, in 1997, the Victorian Casino and Gaming Authority (VCGA) commissioned researchers from the Flinders Medical Centre (Ben-Tovim, Esterman, Tolchard & Battersby, 2001) to develop a new measure. This measure was called the Victorian Gambling Screen, or VGS (Table 6).

The initial phase of the project involved a review of all similar instruments all over the world, and a series of structured interviews with gamblers to develop a suitable set of items. This initial set of items was administered to 138 gamblers selected from multiple locations, including outside venues (n = 40), in treatment settings (n = 16), door-to-door (n = 40) and over the telephone (n = 42). Responses to these items were analysed from taped-derived transcripts. Any item that was very seldom endorsed, or endorsed by almost all in the sample, was removed. The remaining items were subjected to factor analysis. The researchers identified 3 clusters of variables that appeared to 'go together' or form meaningful statistical groupings. The first factor, accounting for 63% of variance in the model, contained 15 items relating to gambling-related harm; the second explained 10% of the variance, and contained 3 items relating to gambling enjoyment; the third factor explained 8% of the variance, and consisted of 3 items relating to the harms caused by gambling to partners.

Table 6

The Victorian Gambling Screen

1. Have you felt that after losing you must return as soon as possible to win back any losses?
2. How often have you lied to others to conceal the extent of your involvement in gambling?
3. How often have you spent more on gambling than you could afford?
4. Have you and your partner criticised each other (about gambling)? (HP)

5. Have you felt guilty about your gambling?
6. Have you thought you shouldn't gamble or gamble less?
7. Have you hidden betting slips, and other signs of gambling from your spouse, partner or children or other important people in your life?
8. How often has anyone close to you complained about your gambling?
9. How often have you had to borrow money to gamble with?
10. Has gambling been a good hobby for you? (GE)
11. Nowadays, when you gamble, is it fun? (GE)
12. Have you gambled with skill? (GE)
13. Nowadays, when you gamble, do you feel you are on a slippery slope and can't get up again?
14. Has your need to gamble been too strong to control?
15. Has gambling been more important than anything else you might do?
16. Have you and your spouse put off doing things together because of gambling? (HP)
17. Has the thought of gambling been constantly on your mind?
18. Have you lied to yourself about gambling?
19. Have you gambled in order to escape from worry or trouble?
20. How often has your gambling made it harder to make money last from one payday to the next?
21. Has your partner had difficulties trusting you (about gambling)? (HP)

    Item scoring: 0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Often, 4 = Always

    Subscales: (HP = Harm to Partner (range 0 –12), GE = Gambling Enjoyment (range 0—12), All other items Harm to Self (range 0 –60). Only the Harm to Self scale reliably differentiates between problem gamblers and non-problem gamblers.

    Cut-off Score: (21 or higher out of 60 on the Harm to Self item indicates a gambling problem.

This final set of items was administered to a second sample of respondents (n = 261) drawn once again from a variety of sources. The results were subjected to a second factor analysis that confirmed the 3–factor structure. A total of 71 people were randomly sampled by quota from the original 261 to be interviewed in detail about the extent of their gambling, administered the SOGS, and also the DSM-IV (the validation sample). Tapes of the interviews were transcribed and analysed by a panel of experienced clinical practitioners. These clinical assessments were interpreted in conjunction with DSM-IV criteria to differentiate pathological and problem gamblers from non-problem gamblers.

A final series of analyses were conducted to determine: (a) An appropriate cut-off score on the VGS to differentiate pathological and problem gamblers from others, and (b) How many people would be classified as problem gamblers according to various cut-off points

on the SOGS as compared with the identified cut-off scores on the VGS. To identify an appropriate cut-off point on the VGS, the researchers considered each score on the Harm-to-Self scale, and determined the relative sensitivity and specificity of the scale at this score level. *Sensitivity* refers to the capacity of a score to classify someone as a problem gambler (PG) if indeed this is the case P (PG/true PGs), whereas *specificity* refers to the scale's capacity to avoid classifying people as PGs where this is not the case, i.e., P (nonPG/true nonPGs). The cut-off scores selected were those that maximised or optimised both qualities. Using this method, the researchers showed that a score of 21 out of 60 differentiated between problem gamblers and the rest of the sample, whereas a score of 9 differentiated borderline and problem gamblers from the rest of the sample. [NB. The status of the person as a problem gambler was based upon the 'gold standard' interview and administration of the DSM-IV]. Using a cut-off score of 21, it was found that 93% of cases were correctly classified as problem gamblers; a very high degree of accuracy.

A final series of analyses compared scores on the SOGS and VGS. The correlation between the two scores was very high (0.87), indicating that there was considerable overlap between the two scales. The SOGS also performed quite well in an analysis of specificity and sensitivity, although the VGS was found to be significantly (but not substantially) better. In order to compare the classification rates of the two scales, SOGS scores were converted into a 60–point scale by multiplying every score by 3 in order to make it comparable with the VGS (which is already a 60–point scale).

When scores on both scales were plotted and regressed against one another, it was possible to determine a line-of-best-fit against the magnitude of error on both scales (Figure 3). This analysis showed that SOGS scores and VGS scores are reasonably similar when SOGS scores of 0–10 are considered, but that one begins to observe discrepancies when scores are greater than 10. People who score very high VGS scores (e.g., 50 or higher) do not tend to score all that much higher than 10 on the SOGS. In other words, SOGS tends to be subject to more of a ceiling effect. That is, variations in gambling severity in the problem-gambling range are not detected by SOGS, whereas they are by the VGS. This means that the VGS can better distinguish between an extreme, but genuine, case of problem gambling and someone who has a serious problem.

By contrast, the SOGS is quite effective in distinguishing problem gamblers from non-problem gamblers, but it is less effective in describing the magnitude of the problem, or the extent of the diagnosis. This means that the VGS better captures the concept of problem gambling as lying on a continuum. This advantage is very likely due to the fact that the VGS contains a broader range of items than the SOGS which, as indicated above, contains an over-representation of items about one topic (chasing money). It is likely that people who successfully obtain money from 3 or 4 of the sources itemised in the scale, do not necessarily need to utilise all the others. By contrast, endorsement of items on the VGS will tend to go hand-in-hand with endorsement of many other items.

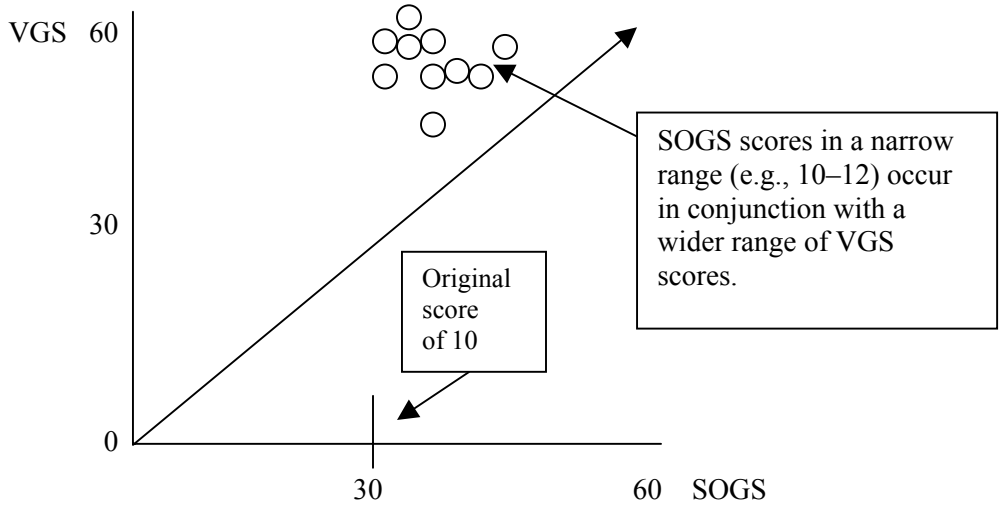

Figure 3
Comparison of SOGS and VGS variability (SOGS scores x 3)
(adapted from Ben-Tovim *et al.*, 2001)

Having highlighted the strengths of the VGS, it is important also to place this work in perspective, and consider how it influences current opinion regarding the SOGS. The first point that should be made is that the VGS does correlate very highly with the SOGS so that, in practical terms, one will probably obtain very similar results using these two measures in prevalence surveys or general population research (assuming that the SOGS cut-off scores are interpreted with care). The VGS also does not appear to yield any obvious advantages in terms of its capacity to identify people at risk, because the SOGS clearly picks up these cases as well. The fact that the VGS is more useful at the higher end of the scoring range would also be unlikely greatly to change how many people would be classified as problem gamblers because the scores only strongly diverge when SOGS scores are at least 10. However, this quality would make the scale potentially more useful in treatment settings where changes in scores even within the problematic range would have clinical significance.

The fundamental limitation of the VGS at the present time is that the scale has not been fully validated. The validation sample employed in its development was very limited, and contained only a very small sample of problem gamblers. In addition, there is no evidence currently available concerning the validity of the cut-off score in the context of a prevalence study, or in comparisons of non-problem regular gamblers and problem gamblers (the very problem plaguing the SOGS in its initial development). The validation sample consisted of a very mixed group of people of varying ages and genders, and it would be necessary for considerably larger samples to be used before results could be generalised to other gamblers in the community. Thus, until more extensive studies are carried out, it is not possible to be confident that the VGS is free of many of the problems that beset the SOGS.

- **The VGS is the only valid Australian alternative to the SOGS. It is a well developed, and conceptually coherent, scale with many advantages over the SOGS. However, more research is required to validate it using larger community and clinical samples before it can be widely adopted as a replacement for the SOGS.**

4.2.5 The Eight Screen

Another scale that has increasingly been used in New Zealand and Australia is the Eight-Screen (8-Screen) developed by Sullivan (1999). This is not specifically a diagnostic tool, but comprises a useful checklist that can be administered in various applied settings in order to ascertain whether a more formal diagnosis might be worthwhile. This instrument uses much the same steps as the VGS. A list of items was selected from a number of existing checklists (including the SOGS, DSM-IV, Gamblers Anonymous-20 Questions (not extensively used in research)), and validated through discussions with expert researchers and practitioners in the field. These respondents were asked to rate the face validity of the items selected and to indicate how many items or symptoms would need to be endorsed before an intervention would be required.

An initial list of 35 items was administered to clients attending a day-treatment centre for problem gambling. These clients were also given items from other well-validated scales, including the SOGS. Based upon an analysis of results, 8 items were identified as being most capable of distinguishing problem gamblers from others who did not gamble (Table 7). This scale of 8 items was then administered to over 1,000 patients in general practice, in conjunction with the SOGS. Using a SOGS cut-off score of 5 as the criterion for problem gambling, Sullivan found that a cut-off score of 4 on the 8-Screen maximised the sensitivity and specificity of the test. This score was thus adopted as the criterion score for future administration of the 8-Screen.

Table 7

The Eight Screen (Sullivan, 1999)

Instructions: Most people in New Zealand enjoy gambling, whether it's lotto, track racing, the pokies, or at a casino. Sometimes, however, it can affect our health. To help us check your health please answer the questions below as truthfully as you are able from your own experience.

1. Sometimes I've felt depressed or anxious after a session of gambling [1 =Yes that's true, 2 = No, I haven't]
2. Sometimes I've felt guilty about the way I gamble [1 = Yes, that's so, 2 = No, that isn't so.
3. When I think about it, gambling has sometimes caused me problems [1 = Yes, that's so, 2 = No, that isn't so.]
4. Sometimes I've found it better not to tell others, especially my family, about the amount of time or money I spend gambling [1 =Yes, that's so, 2 = No, I haven't]

5. I often find that when I stop gambling I've run out of money [1 = Yes, that's so, 2 = No, that isn't so.]
6. Often I get the urge to return to gambling to win back losses from a past session [1 = Yes, that's so, 2 = No, that isn't so]
7. Yes, I have received criticism about my gambling in the past [1 = yes, that's true, 2 = No, I haven't]
8. Yes, I have tried to win money to pay debts [1 = Yes, that's true, 2 = No, I haven't]

   Scoring: 1 point for each Yes response. Cut-off score (4 or more out of 8) suggests that a person's gambling may be affecting their well-being and that a formal diagnosis using the SOGS or DSM-IV might be worthwhile

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The 8 Screen has been widely used in New Zealand as a screening tool in prisons, general practices, and was also used in Sullivan's (2001a) survey of problem gamblers in Auckland high schools. It has also, more recently, been adopted in South Australia in a program implemented by the Department of Human Services in conjunction with the Australian Medical Association and Flinders Medical Centre's Anxiety Disorders Unit.

4.2.6 The Canadian Problem Gambling Index (CPGI)

Another potential rival to the SOGS is the Canadian Gambling Screen. This measure came into being as a result of dissatisfaction in Canada with both the DSM-IV and the SOGS. Researchers criticised the DSM-IV on the grounds that it was too medically based. It overemphasised the addictive properties of gambling and was not sensitive to the possibility of variations in the degree of gambling-related problems. Accordingly, a measure was desired that would be capable of identifying varying degrees of risk, and also be sensitive to the significant overlap between the behaviours observed in regular non-problem gamblers and problem gamblers. The SOGS was rejected, not because of its capacity to distinguish varying degrees of risk, but because it had not been designed, nor validated for use in the general community (Ferris & Wynne, 2001).

The development of the measure followed much the same methodological process as outlined above for the VGS, but the funding, sampling and level of analysis was much more extensive. Items were developed via an extensive literature review, consultation with leading experts in the field, and pilot studies with samples of problem gamblers. Factor analysis was conducted and a final set of items was developed and tested. In the second phase of the study, the measure was administered to 3,120 adult Canadians drawn from all provinces. A sub-sample of 417 respondents was re-administered the scale after this initial survey in order to determine its test-re-test reliability. A sub-sample of these participants (n =143) was also assessed using a validated clinical interview procedure based on the DSM IV to determine how many of the CPGI participants were confirmed to be problem gamblers as based on the DSM-IV classification. As with the VGS, the correspondence between the classifications produced by the two different methods was very high, and the test-re-test reliability found to be very good.

A summary of the scale is provided in Table 8. As indicated, the scale consists of 9 items, each of which is scored on a 4-point scale in reference to the previous 12 months, where 0 = Never, 1 = Sometimes, 2 = Most of the time, 3 = Almost always. These numbers represent the points that are scored for each question. Thus, the scoring range for the scale is 0—27, where 0 = "Never" responses to all items and 27 = 'Almost always' responses to all items.

This scale has been used in all recent studies conducted in Australia, including those undertaken in Queensland, New South Wales, Victoria, the Northern Territory, Tasmania, and in South Australia (see section 4.3.1 below) and has generally produced lower prevalence estimates than the SOGS.

Table 8

The Canadian Problem Gambling Index (Ferris & Wynne, 2001)

In the last 12 months how often have you [or have, for item 7]?

1. Bet more than you could really afford to lose?
2. Needed to gamble with larger amounts of money to get the same feeling of excitement?
3. Gone back another day to try and win back the money you lost?
4. Borrowed money or sold anything to get money to gamble?
5. Felt that you might have a problem with gambling?
6. Felt that gambling has caused you health problems, including stress and anxiety?
7. People criticised your betting or told you that you have a gambling problem, whether or not you thought it was true?
8. Felt your gambling has caused financial problems for you or your household?
9. Felt guilty about the way you gamble or what happens when you gamble?

Scoring: 0 = Never, 1 = Sometimes, 2 = Most of the time, 3 = Almost always. Cut-off scores: 1–2 = Low risk, 3–7 = Moderate risk, 8–27 = Problem Gambler.

4.2.7 Comparing the major problem gambling screens

Given the availability of many different screens, a question arises as to which is most suitable for prevalence research in Australia. To address this issue, the Victorian Gambling Research Panel or GRP commissioned two pieces of research. The first was a scoping report undertaken by Jackson, Thomas, Blaszczynski and McMillen (2003), and the second was a telephone survey of over 8500 Victorian adults conducted by Wenzel, McMillen, Marshall, and Ahmed (2004).

The aim of the scoping report was to outline the key differences between the measures; to summarise the factors that would need to be taken into account when assessing the

relative quality of different indicators, and to outline an appropriate research methodology for the evaluation. Comparative content analyses of the different problem gambling screens revealed that they contained three principal types of item: those referring to gambling behaviour, those referring the negative consequences of problem gambling, and those relating to attitudes and subjective impressions. In general, all three of the major scales contained a relatively similar proportion of items relating to the consequence of problem gambling (approximately 40–45% of total items), but differed in terms of the other categories. The SOGS and VGS, for example, contained relatively few behavioural items compare with the CPGI, whereas the VGS was much more heavily weighted towards subjective or attitudinal items (42% of total items vs. around 20% for the other two scales). In other words, the VGS (defined as a 'harm to self scale') was generally true to its name, and was predominantly a measure of harm, whereas the CPGI was more balanced in its inclusion of behavioural, attitudinal and harm items.

The scoping report provided a detailed summary of the qualities that should be investigated in the evaluation of the measures. These included: (a) Specific tests of the statistical coherence of the measures as assessed by internal reliability analyses and factor analysis, (b) Checks on the validity of the cut-off scores and their ability to make accurate classifications of people as problem vs. non-problem gamblers as based on an independent objective criterion, and (c) Examination of the variability of scores on each scale to determine whether each was capable of discriminating between gambling problems of varying degrees of severity.

On the whole, the validation study undertaken by Wenzel *et al.* (2004) was generally in keeping with the major recommendations of the scoping report, although it was not without methodological weaknesses as will be discussed below. Over 8500 adult Victorian gamblers were interviewed in a random telephone survey and 433 regular gamblers (people who gambled at least weekly on non-lottery activities) were divided into three equal groups (approximately 140 cases) each of which was administered one of the three scales. The results showed that the CPGI and VGS were generally superior to the SOGS on a number of evaluative criteria. Both scales generally had greater variability than the SOGS suggesting that they were capable of capturing a greater range of gambling behaviour and would therefore be more effective in identifying those on the brink of serious gambling problems as well as those with more serious problems. In addition, the VGS (harm to self scale) and CPGI had superior internal reliability and could be reduced to a clear single factor solution, whereas the SOGS appeared to be comprised of six different factors. Other assessments of the construct validity of the scales showed that the VGS and CPGI were more strongly related to known sequelae of problem gambling, including depression, anxiety, wanting help and suicide ideation, and were better able to classify people into groups based on the presence of these related problems. The only identifiable limitation of the VGS was that the original 21 point cut-off score appeared to be too strict and that it should be reduced to 14 in order for the scale to generate a prevalence rate more equivalent to the other scales. Overall, the SOGS was found to produce the highest prevalence of problem gambling (1.22%), followed by the CPGI with 0.97% and VGS with 0.74% (as based on the 21 point cut-off) and 1.28% as based on a 14–point cut-off.

From these results Wenzel *et al.* (2004) and McMillen and Wenzel (2006) concluded that the SOGS was unsuitable for use as a measure of problem gambling prevalence and that the VGS and CPGI were clearly superior. However, because the CPGI only contained 9 items, it was also a more efficient measure than the VGS and the one that should be most suitable for all Australian prevalence research. The only caveat associated with this conclusion was that it was based on the results of three separate sub-samples rather than from the same group of people, so one has to assume that the three groups were generally matched in terms of demographics or any other factor that might have influenced the results. If this were not the case (and it is not clear that this is so from the report), then it would be unclear whether the different results obtained are a consequence of sampling differences or genuine variations in the performance of the three scales. Furthermore, the fact that the study also does not provide any information concerning the prevalence of problem gambling amongst non-regular gamblers (e.g., those who gambled fortnightly), means that it is not possible to generalise the performance of the scales to other gamblers. Nevertheless, in defence of the study, the fact that the three scales were randomly assigned to the three comparison groups provides some confidence that the differences observed between the three scales are genuine, and probably unlikely due to sampling differences.

Many of the same conclusions were reached by Neal, Delfabbro and O'Neil (2005) in an extensive international review of problem gambling measures. In addition to the SOGS, CPGI, VGS and DSM-IV, the authors also undertook reviews of many other measures including the Gambling Severity Index, GA–20 (Gambler's Anonymous 20 questions), G–Map and other psychometric variants of the DSM-IV. The review showed that the SOGS remains the most widely used measure of problem gambling in Australia and in the United States, but that the CPGI has become the measure of choice for prevalence research in Canada and in several recent European studies. Usage of the different measures also varied depending upon the discipline in which the research was conducted. Typically, there was a tendency for psychiatric or more medically based researchers to use the DSM-IV, whereas psychologists tended to favour the SOGS. The conclusion of the report was that the CPGI is the most appropriate measure for future prevalence research in Australia, the DSM-IV should continue to be used as a diagnostic tool, and that the SOGS remains a useful screening tool to identify problem gamblers in research projects. All other measures reviewed were seen as potentially useful descriptive measures that could enhance information concerning particular aspects of problem gambling, but were seen as either conceptually inappropriate (e.g., referred to gambling as a compulsive disorder, or not sufficiently theoretically coherent or well enough validated to be used as research tools (e.g., the G–Map)).

In two recent prevalence studies, both the SOGS and CPGI were both administered to regular gamblers within the same survey (Roy Morgan Research, 2006 in Tasmania; Young *et al.*, 2006 in the Northern Territory). These studies are useful in that they allow one to compare the classification rates yielded by the different cut-off scores associated with the two scales. Table 9 summarises the classification rates for the two scales.

Table 9

Comparative classification rates based on the CPGI and SOGS

Northern Territory			
	SOGS < 5	SOGS 5+	
CPGI < 8	312	19	331
CPGI 8 +	3	35	38
	315	54	369
Tasmania			
	SOGS < 5	SOGS 5+	
CPGI < 8	239	45	284
CPGI 8+	4	40	44
	243	85	328

Note: The Tasmanian figures are inferred from Roy Morgan Research (2005), n = 328 for regular gamblers, n = 6048 for total sample, .73% for CPGI 8+, 1.41% for SOGS 5+.

In the Northern Territory study, the two scales generated the same classifications for 94% of cases (312 both not problem gamblers + 35 problem gamblers / 369). Only 3 cases classified as problem gamblers by the CPGI were not similarly classified by the SOGS, whereas there were 19 cases that scored as problem gamblers on the SOGS, but not on the CPGI. In other words, the SOGS appears to generate higher prevalence rates. Very similar findings were obtained in the Tasmanian study. Eighty-five percent of cases were similarly classified (239 + 40 / 328), but there were many more cases classified positively by the SOGS (n = 45) that were not similarly classified by the CPGI. Once again, and to an even greater degree than in the Northern Territory, the SOGS generated higher prevalence rates. More people will be classified as problem gamblers if one uses the SOGS rather than the CPGI.

A standardised measure of classification accuracy is the Kappa statistic. For the data presented above, the Kappa was .73 for the Northern Territory study and .54 for the Tasmanian study. The classification rate was, therefore, very good for the former study, and moderate for the latter study. In other words, despite the fact that the SOGS yields more generous prevalence estimates, both scales generally yield quite similar classification rates. This supports Neal *et al.*'s (2005) contention that the SOGS still remains a useful instrument for most forms of gambling research, but that it is likely to be less conservative when used in epidemiological studies.

A final issue of interest in relation to the use of CPGI and SOGS in prevalence surveys is the similarity of the classification levels. In the South Australian prevalence survey in 2005, both the problem gambling (CPGI 8+) and moderate at-risk (CPGI 3–7) rates were presented together and compared with the SOGS 5+ rate obtained in the earlier prevalence survey in 2001. The Northern Territory report does not provide detailed cross-tabulations of the different risk levels on the CPGI to allow this comparison, but information is available in the 2005 Tasmanian survey. The Tasmanian study found that only 22% of those classified as 'moderately at-risk' on the CPGI also scored 5+ on the

SOGS. In other words, prevalence rates based on moderately at-risk + problem gambling (in effect, any score 3+ on the CPGI) would tend to yield larger percentages than SOGS 5+. The Tasmanian survey also shows that use of a SOGS 10+ classification yields even lower prevalence estimates than CPGI 8+.

An indicative summary of the effects of using different screens and cut-off scores is provided in Table 10 below. As indicated in Table 10, one would typically obtain very low prevalence rates if one used SOGS with a cut-off of 10+, but obtain the highest rates if one used CPGI with a cut-off score of 3+ and grouped moderately at-risk and problem gamblers together. From a conceptual point of view, these conclusions do not invalidate studies that have conducted some analyses with CPGI moderately at-risk and problem gambler combined in the same groups (e.g., the South Australian Department for Families and Communities, 2006) but suggest that the two percentages should be clearly differentiated in the reporting of prevalence data. This indeed was how the figures were reported in the South Australian study and in nearly all of the others.

Table 10

How prevalence rates vary according to measurement instrument and cut-off score chosen

Most Conservative/ Lowest Prevalence Rates	SOGS 10+
	CPGI 8+
	SOGS 5+
Least Conservative / Highest Prevalence Rates	CPGI 3+ (or moderately at risk and problem)

4.3 The prevalence of problem-gambling in Australia and New Zealand

4.3.1 Summary of problem-gambling prevalence research

During the last 1990s, studies relating to the prevalence of problem gambling were conducted in every State of Australia, and also in New Zealand. Most of these were conducted by Dickerson and his associates at the Australian Institute of Gambling Research (AIGR). These included a door-knock survey (Dickerson *et al*., 1994, n = 1,220) and a telephone survey (Dickerson *et al*., 1996, n = 1,211) that were both conducted in Tasmania; a door-knock study in Western Australia (Dickerson *et al*., 1994, n = 1,253); two door-knock studies in NSW (Dickerson *et al*., 1995, n = 1,390; 1998, n = 1,209); a telephone survey in Victoria (Market Solutions & Dickerson, 1997, n = 2,000). Other studies during this period (not undertaken by Dickerson), included the New Zealand survey conducted by Abbott and Volberg (2000) (n = 4,053) and the 1996 survey conducted by Delfabbro and Winefield in South Australia (n = 1206). There are other surveys that contained items relating to problem gambling (e.g., DBM Consultants, 1995 in Victoria) but the findings were largely invalid due to a lack of knowledge of appropriate measures and methodologies. Most of these studies were conducted prior to the Productivity Commission's national survey of 12, 909 adults in 1999.

Since 2000, surveys have been undertaken in every jurisdiction by a variety of researchers. The published studies include:

- **ACT**: A telephone survey of 5445 residents undertaken in the ACT (McMillen, Tremayne, & Masterman-Smith, 2001)
- **South Australia**: A telephone survey of 6045 adults by the South Australian Department of Human Services in 2001 and a similar study conducted by the South Australian Department for Families and Communities of 17,140 adults in 2005
- **Northern Territory**: A telephone survey of 1873 residents undertaken by Young *et al.* (2006)
- **Queensland**: Large-scale telephone surveys conducted by the Queensland Government in 2001–02 (n = 13,082) and in 2003–04 (n = 30,000)
- **New South Wales**: AC Nielsen survey of 5029 adult residents in 2006 with oversight provided by the Australian National University
- **Victoria**: A telephone survey of 8479 residents by McMillen, Marshall, Ahmed and Wenzel (2004)
- **Tasmania**: Two telephone surveys conducted by Roy Morgan Research: one of 1223 residents in 2001 and another with n = 6048 in 2005

Despite some minor variations, the methodologies in these surveys have been generally very similar. Almost all have involved adults (aged 18 years or older) and a 2–stage methodology. People who indicated that they gambled at least once per week or fortnightly on a single form of gambling (Phase 1 of the survey) apart from lotteries (considered non-continuous and unproblematic) were administered a screening assessment for problem gambling. In the older surveys, this measure was almost always the SOGS-R (6–months version), whereas (as is explained in greater detail elsewhere in this review) researchers now consistently use the Canadian Problem Gambling Index (CPGI). Since 1999, most surveys have followed the Productivity Commission's lead and also administered more detailed questions to any person who gambles the equivalent of 52+ times per year, even if this person does not gamble weekly on any single form of gambling. Anyone whose average participation across a number of activities averaged out to once-per-week or more often was also included. The Productivity Commission also included those people who, based upon their typical expenditure per session, and gambling frequency for all activities, spent $80 or more per week on average. However, sample selections based on expenditure amounts have not been uniformly adopted because of concerns about the accuracy of self-reported gambling expenditure estimates.

Table 11 provides a sequential analysis of the changes in recent prevalence rates as based on the use of SOGS and the CPGI. Table 11 summarises the results according to the order in which the surveys were conducted and also breaks down the findings according to the measure of problem gambling that was employed. This division is important because it is recognised that the Canadian Problem Gambling Index (CPGI) is a more

conservative measure than the SOGS, so that it is really only meaningful to draw comparisons between surveys undertaken using the same measure.

Table 11

Summary of State/Territory-level prevalence figures across time by measure used

	Time 1	*Time 2*	*Time 3*
Using SOGS 5+			
NSW	2.59 (1995)	2.89 (1997)	2.55(1999*)
VIC	0.75 (1997)	2.14 (1999*)	1.22(2003)
ACT	2.06 (1999)	1.90 (2001)	-
QLD	1.88 (1999*)	-	-
SA	1.24 (1996)	2.00 (2001)	-
TAS	0.90 (1994)	0.44 (1999*)	0.90 (2000)
WA	0.56 (1994)	0.70 (1999*)	-
NT	1.89 (1999*)	1.06 (2005)	
CPGI Score 3–7 / 8+			
QLD	2.70 / 0.83 (2001)	2.0 / 0.55 (2003)	-
VIC	0.91/ 0.88 (2003)	-	-
NSW	1.60 / 0.80 (2006)	-	-
NT	n.a. / 0.64 (2005)	-	-
SA	1.20 / 0.40 (2005)	-	-
TAS	1.02 / 0.73 (2005)		

* Productivity Commission

1. On the CPGI (Canadian Problem Gambling Index), scores of 3–7 indicate moderate risk gamblers and 8+ problem gamblers.
2. Two results are not shown. A 1996 study for TAS and also the Productivity Commission's (1999) findings for SA appear to have been unduly affected by sampling error. Both studies yielded prevalence estimates that seemed inconsistent with other results obtained at the same time (2.97 in Tasmania and 2.45 for SA).

The results of these studies need to be treated with some caution because of likely differences in sampling error and variations in the timing of the surveys. If one focuses on the more recent CPGI results, it can be observed that the interpretation of the results differs depending upon whether one interprets the problem gambling figure, the moderately at risk proportion, or both together. Overall, problem gambling rates appear to be higher in Victoria and New South Wales as compared with South Australia or Queensland in 2003. The Tasmanian and Northern Territory figures fall in between. The moderately at risk rate is significantly higher in Queensland, but lower in Victoria and Tasmania.

In terms of the actual numbers of people involved, the Productivity Commission estimated in 1999 that 292,737 people in Australia are probably problem gamblers based on the SOGS cut-off score of 5.

The most recent New Zealand findings are interesting in that both the lifetime and SOGS-R versions were administered in the same survey. The lifetime estimate was 1.0% for SOGS (5+) and the current rate was 0.6%, suggesting that 0.4% of the sample who were previously problem gamblers were no longer in this category[3]. These findings added further weight to previous New Zealand research by Abbott, Williams and Volberg (1999) that followed 143 lifetime problem gamblers identified in the first 1991 national prevalence study. This study found that, of those assessed as currently being 'probably' problem gamblers in 1991 (SOGS 5+), only a quarter scored 5+ when assessed 7 years later. Even more surprising was the finding that only a quarter of those who reported being lifetime problem gamblers in 1991 still scored as lifetime 'probably' problem gamblers at this follow-up point. This suggests that people have a strong tendency to forget past gambling or to disguise it, and that life-time estimates are likely to be at least, very conservative, and at worst, unreliable. It also suggests that: (a) Many gamblers identified at any particular point in time necessarily remain this way from one year to the next, and (b) That the percentage estimates developed in 12–month prevalence studies probably translate into life-time prevalence rates that are many times higher.

Research in Australia indicates that gambling problems tend to be enduring. In the Productivity Commission's national study (1999), those who identified themselves as currently having a problem reported having experienced difficulties for an average of 9.1 years, with 28% reporting having experienced problems for more than 10 years. Similar results were obtained in the Commission's survey of clients at problem-gambling services around Australia who found that only 3.1% of clients reported having problems of less than a year's duration; 16.5% for 1–2 years, and 27.9 for 2–5 years. Over 50% reported having experienced problems for more than 5 years with 30% reporting gambling problems lasting over a decade.

These figures are also similar to those obtained by Dickerson *et al*. (1995) in a survey of Queensland Break Even (gambling counselling) services, who found that 40% of clients had problems lasting 10 or more years. Other Queensland data presented by the Commission, however, showed that the duration of gambling problems is strongly related to both gender and the type of activity. Women were significantly less likely to report having experienced gambling problems of a longer duration (approximately 70% had problems of a 1–5 year duration), and this was particularly so when EGMs were involved. On the other hand, 40% of male racing gamblers reported having experienced problems that had lasted 15 or more years. Similar results were also obtained in South Australia. Analysis by the Commission of data submitted by South Australian treatment agencies suggested that the mean duration of problems was 4.8 years. More recently, the

[3] This recent prevalence study has been subjected to a great deal of criticism in New Zealand. Although the weighting and sampling appear to have been undertaken very thoroughly, a number of odd results appeared: (1) The NZ prevalence rate has dropped from 1.1 to 0.5% since 1991 despite a doubling of expenditure in New Zealand in that period; (2) Concerns were raised about the inconsistent life-time measures; (3) No unemployed people were found to be problem gamblers; and (4) The 18-24 age-group had the second lowest prevalence rate which is inconsistent with almost all other surveys. Sullivan suspects that the survey may have been marketed the wrong way and that this dissuaded problem gamblers from participating. For example, respondents might have been less responsive if it were obviously a survey about gambling rather than one that began by asking them about their health and well-being or leisure activities.

South Australian Department of Human Services prevalence study (2001) showed that, among current problem gamblers, 15% reported experiencing problems of 1 year or less, 50% reported experiencing problems for 2 years, 23% for 6–10 years, and only 13% for 10 years or longer. These findings are very likely attributable to the fact that most gambling problems in South Australia are related to gaming machines, a form of gambling that has only been available in South Australia since mid–1994.

. Ideally, to investigate these issues more thoroughly in Australia requires the completion of a longitudinal study that tracks problem gamblers over time in much the same way as undertaken by Abbott, Williams and Volberg (1999) in New Zealand. Some preliminary work along these lines has been undertaken in Victoria by Palmer, Hayes, Smith, Folland, and Eneberg (2003) who conducted extensive interviews with problem gambling service representatives and problem gamblers in order to identify issues that should be investigated in a planned prospective longitudinal study. A total of 18 service providers, 24 problem gamblers and 8 family members were interviewed to canvass issues relating to gambling behaviour, its impacts, help seeking and perceptions of formal services. The findings from this study were intended to inform further quantitative research that would track over 200 problem gamblers over 12 months to investigate their experiences, critical events, and their use of services or other intervention strategies.

- **Prevalence rates across different jurisdictions tend to correspond with variations in per capita expenditure. The highest rates are in NSW, the ACT and Victoria (around 2.5%), with rates of approximately 2% in QLD, and SA and less than 1% in TAS, WA and NZ. Most recent Australian evidence suggests that individual cases of problem gambling endure for many years (particularly for race-gambling amongst males). However, longitudinal findings from NZ suggest that there is a need to investigate the long-term stability of gambling problems to obtain a better understanding of the occurrence (or incidence) of new cases.**

4.3.2 Sampling issues in prevalence research

Although attempts have been made to improve the quality of prevalence research, there are, nonetheless, many factors that remain beyond the control of researchers, and that need to be taken into account when interpreting research findings. The first of these factors is sampling bias. The vast majority of prevalence studies conducted around the world have relied upon telephone surveys. This methodology has many advantages; it is cheaper and faster that door-knock studies, allows many repeated contacts, and is more convenient for both interviewers and participants. However, it also has many limitations. Not all people with gambling problems necessarily have telephones. Many have silent numbers not listed in the White Pages (the usual basis for residential dialling), and it is likely that gamblers will be harder to contact because of their frequent involvement with gambling, or because of disconnections resulting from defaults on telephone payments. In addition, these sampling methods do not include people living in institutions including (most importantly) prisons, which have been found to have a significantly higher

prevalence of problem gamblers (Productivity Commission, 1999). This means that there is a high probability that prevalence studies based on telephone surveys will under-sample those in the population with a higher probability of having gambling problems. Although door-knock studies partially avoid these problems, they too are subject to many of the same criticisms. Door-knock studies also fail to avoid the problem of making contact with people who may not be at home very often, and suffer additional problems, such as gaining access to residences that might be secured, in blocks of flats, or in remote locations.

The second problem besetting prevalence studies is that they cannot avoid response bias. Problem gamblers tend to be reluctant to talk about their experiences in interviews, and often tend to be suspicious given that many are in serious financial and legal difficulties. They also, as with most gamblers, tend to understate the extent of their expenditure, and the extent of their problems. This problem was confirmed by Dickerson *et al.* in the 1991 prevalence study (Walker & Dickerson, 1996) involving 2–stage interviews in Australian capital cities (see also Dickerson, Baron, Hong, & Cottrell, 1996). The initial part of the survey asked respondents to indicate the extent of their gambling, and the second component asked them to complete the SOGS. Regular gamblers were found to be significantly less willing to proceed to the second part of the study. Thus, there are good reasons to believe that current prevalence estimates are likely to be lower than the actual rate in the general population.

4.4 Demographic correlates of problem gambling

One of the most useful functions of problem-gambling surveys is that they can assist in the identification of subgroups most affected by problem gambling. This issue is clearly important in terms of the design of public health campaigns and the promotion of treatment services. In Australia, by far the most consistent finding from prevalence surveys is that problem-gambling rates are negatively associated with age, and higher in males. Rates in the 18–30 age range tend to be almost double those in older age groups, and male prevalence rates tend to be 1.5 to 2 times higher than for females. Dickerson *et al*. (1996, NSW), for example, showed that 57% of people scoring 10+ on the SOGS were aged 18–29 years, and that 77% of people scoring 10+ were men. This trend was also observed in South Australian studies (e.g., Delfabbro & Winefield, 1996; South Australian Department of Human Services, 2001). Problem gamblers also have a greater likelihood of being single or living in households with greater numbers of adults (Delfabbro, 1998; South Australian Department of Human Services, 2001; South Australian Department for Families and Communities, 2007); or of having lower incomes (Dickerson *et al*., 1996). In New Zealand, the results are generally similar, with higher rates in larger households and in the 25–34 year age range and, as in Australia, the prevalence rate for men was substantially higher than for women (Abbott & Volberg, 2000). Abbott and Volberg also, as indicated above, found considerably higher rates among Maori and Pacific Islander people than among Pakeha.

The findings from studies of people seeking assistance from treatment services are only partially consistent with these results. For example, in a series of reports prepared for the Victorian Department of Human Services, Jackson *et al*. (1997, 1999) found that people seeking assistance from Victoria's treatment services (n =1,817 in 1996–1997) were more likely to be divorced or separated (21%), to be unemployed (15%), and to have low incomes (48% under $20,000 and 28% under $10,000) but that the age of clients was somewhat older (mean age of 38 years). There was also a much greater gender balance in the proportions of men and women seeking assistance (around 50% of clients were women, and almost all had problems with EGMs). Similar results were obtained in South Australia in the 1998 evaluation of Break Even data by Elliott Stanford and Associates (15% of problem gamblers were unemployed).

These trends were also observed by the Productivity Commission (1999) in their survey of clients seeking help at counselling agencies. Using data drawn from 5 different States and its own results, the Commission showed that the average age of people seeking help ranged from around 38–42 years, which is considerably older than the problem gamblers identified in population surveys. This led the Commission to conclude that the people who seek help are not necessarily representative of those who have gambling problems in the general population. Problem gambling clients tend to be older, and are more likely to be women than would be expected based upon population prevalence studies. Although, on one hand, it might suggest that young people and men are better able to resolve their gambling problems without formal assistance, it also may be that they are more reluctant to seek formal assistance for their problems.

A further problem identified by both Delfabbro (1998) and the Productivity Commission (1999) is that, in many of these studies, little attempt has been made to examine the statistical overlap between many of the risk factors identified. When such analyses are undertaken (e.g., using logistic regression to predict problem-gambling status), it is found that almost all the predictors are non-significant once age has been taken into account, or statistically controlled. In other words, the only reason why marital, employment, and housing status tend to correlate with problem gambling is that these factors tend to be highly correlated with age. Thus, age remains probably the single most important predictor of problem gambling in Australia.

- **Taken as a whole, these findings suggest that the factors that predict problem gambling are not necessarily the same as those that predict gambling in general. Whereas overall involvement tends to be higher in people with moderate incomes and who are employed, this association disappears when one considers problem gambling. Problem gambling is more common in people who have lower incomes and who are younger. Moreover, the results show that the factors associated with the demand for treatment services are not the same as those that predict problem gambling in general. These services appear to be disproportionately utilised by women and older problem gamblers.**

4.5 Problem gambling and specific gambling activities

A second important issue for policy makers is the extent to which problem gambling is attributable to different forms of gambling. Surprisingly, this is not an easy question to answer because, in many studies, specific questions allowing the association between involvement in specific forms of gambling and gambling problems are not asked. Nevertheless, by bringing together findings from many different sources, it is possible to obtain some convergent information relating to this topic. In the National Productivity Commission (1999) report, two strategies were used to answer this question. The first involved an examination of prevalence rates for weekly gamblers participating in different forms of gambling; the second strategy involved determining the number of people who identified each gambling activity as their favourite activity (based upon the one they spent most money on), and working out the percentage of these people who had problems.

The first analysis showed that 24% of weekly casino table gamblers, 23% of weekly EGM players, and 15% of racing gamblers were problem gamblers. Only 3% of weekly lottery players, and 5% of instant lottery gamblers were problem gamblers. The second analysis showed that 9% of people with EGMs as their favourite activity, 5% of racing gamblers, and 4% of casino gamblers, had gambling problems. These figures therefore suggested that all three gambling activities (all continuous activities) have the potential to cause problems when one examines the degree of risk in relation to the number of people who gamble regularly on each activity.

Clearer insights into this issue are provided in Dickerson *et al*.'s (1996) prevalence study in NSW, that examined the distribution of SOGS scores for regular gamblers on lotto/pools/bingo only (non-continuous) as compared with racing and EGMs The results showed that 12% of lotto-only gamblers scored 5 or more points[4], 22% of regular racing gamblers, and 30% of regular EGM players scored 5 or more. A similar finding was obtained by Delfabbro and Winefield (1996), who examined the gambling habits of the heaviest gamblers in the first South Australian prevalence study. This analysis showed that 41% of these people gambled regularly on racing, 31% on poker machines, and the remainder on a variety of activities. Delfabbro (1998) also showed, using multivariate analyses, that involvement in racing and poker machine gambling was significantly positively associated with SOGS scores, whereas involvement in other activities, such as lotteries, was associated with lower SOGS scores.

In New Zealand, much the same conclusion was reached by Abbott and Volberg (2000) in the most recent prevalence study. They found that approximately 1-in-4 regular gamblers on EGMs (outside a casino) and 1 in 5 track betters were lifetime problem gamblers. In other words, all of these studies have shown, that when one controls for the relative numbers of racing and poker machine gamblers in the community, both activities appear to be equally risky in terms of the likelihood of the development of gambling

[4] The lottery gambling was unlikely to be the cause of the problems. Many of these regular lottery gamblers also participated in continuous forms of gambling, but not at a weekly (or regular) level of participation.

problems. Similarly in a review of data collected by the Gambling Helpline and counselling services in New Zealand, Adams *et al.* (2004) found that 90% of people who sought assistance for gambling problems identified EGMs as their primary mode of gambling.

Other prevalence reports provide less specific information about the link between particular activities and problem gambling. For example, the South Australian Department for Families and Communities (2007) provides details of the activities undertaken by problem gamblers identified in a recent prevalence survey. What this analysis showed is that problem gamblers tended to gamble on many different activities, e.g., 93% gambled on poker machines, 47% gambled on racing, and 65% on lotteries. It provides little information concerning the *causes* of problem gambling, or the relative impact of different activities. Other prevalence studies, such as those conducted by Dickerson *et al*. in States such as Tasmania and Western Australia, have consistently confirmed that prevalence rates are significantly higher for people who gamble on continuous, as opposed to lottery-style, gambling activities. More recently, New Focus (2005) in a follow up of 142 problem gamblers previous identified in the 2003 prevalence study in Victoria (McMillen *et al.*, 2003), found that EGMs were implicated in 85% of all cases. This figure may be somewhat higher than in other studies because of the relatively greater proportion of women in the sample (around two-thirds).

Other useful information concerning the relative impact of different forms of gambling is derived from data collected by treatment agencies. In the Productivity Commission study of clients seeking help, EGMs were found to be the most significant cause of problems in NSW (72%), Victoria (81%), South Australia (74%) and in the ACT, NT, and Tasmania (65%), and QLD (48%). The only exception was WA with 20%. Across the remainder of the States or Territories, racing was responsible for around 12–15% of problems, with casino games causing between 7–15% of problems. In WA, casino gaming and racing were each identified by 30% of problem gamblers. Similar figures were presented by Jackson *et al.* (1997, 1999) in their report on Victorian gambling services. When asked on what activity they had most recently gambled, 81% of clients identified EGMs, compared with only 15% for racing, and 5% for table games. More recently, data from the South Australian Break Even Network 2000–2001 indicated that 74% of clients gambled weekly or more often on poker machines, compared with only 23% for other activities (Government of South Australia, 2003). Almost identical figures were reported by Paton-Simpson, Gruys and Hannifin (2001) in a report on 1,467 problem gamblers seeking assistance from New Zealand's problem-gambling services. Approximately 71% of problem gamblers identified non-casino EGMs as the cause of their problem, with 94% of female problem gamblers indicating that this was their preferred form (male percentage = 77%). Men, on the other hand, were significantly more likely to identify racing as the source of their problem (13% vs. 1.2% for women). A similar gender difference has been observed in almost every survey study conducted in Australia during the last decade (Productivity Commission, 1999).

- **Problem gambling is much more likely to be associated with continuous forms of gambling. Racing, EGMs and casino games are all likely to increase the risk of problem gambling. EGM gambling is most problematic only because it attracts a greater number, and wider range, of gamblers. Approximately 75–80% of gambling-related problems in NSW, SA, Victoria, and NZ appear to be associated with EGMs**

4.6 Psychosocial effects of problem gambling

4.6.1 Overview

In Australia, it is recognised that gambling has a number of inter-related effects upon people's well-being. These include: (a) Personal effects such as depression, anxiety, poor physical health, and suicidality; (b) Interpersonal problems, such as a loss of significant relationships, domestic violence, and family disruption; (c) Work and study problems such as reduced productivity and lost jobs; (d) Legal problems, including an involvement in criminal behaviour, police charges and court appearances; and (e) Financial problems, for example, debts, economic hardship, loss of assets, and bankruptcy. Despite recognition of the fact that many problem gamblers experience these problems, the issue of gambling-related harm remains a controversial one because of debates concerning the causality of problems. Are these problems genuinely caused by gambling or do people gamble in an attempt to alleviate these problems, for example, to escape depression and family stress, or to obtain money to pay off debts? In other words, how many gamblers would have these sorts of problems anyway, irrespective of their gambling? This latter view has been strongly endorsed by many industry submissions to the Productivity Commission (1999) report, and can be encapsulated by the frequently repeated epigram that problem gamblers were 'people with problems who gambled', rather than people who had been brought into hardship by gambling.

The debate concerning causality was considered in some depth by the Productivity Commission (1999) and will be examined in more detail, below, in a discussion of the aetiology of problem gambling. However, for now, some general comments will suffice to capture the conclusions generated by recent Australian research. The first general point is that the issue of causality is not one that can be resolved unequivocally based on the research findings. This is largely because research has tended to be cross-sectional or retrospective in nature. It is not always possible to obtain direct confirmation that problems preceded gambling, as opposed to being caused by it. Conclusions, instead, must be based upon the balance of evidence that is currently available. The second point is that the argument does not neatly fall either way; both explanations are likely to be valid, albeit to varying degrees. As pointed out later in this report (Section 5), there is considerable evidence that some people do gamble to alleviate pre-existing problems, and that problem gambling often coincides with high rates of co-morbidity and cross-addiction. However, at the same time, there are also a number of plausible arguments

that suggest that the industry viewpoint, as expressed above, is incorrect, or at best, misleading.

These arguments are as follows:

- The increased accessibility of gambling has clearly led to a rapid expansion in the rates of problem gambling in Australia, as based upon the number of people seeking assistance from agencies that existed prior to this expansion.
- Many people with gambling problems do not have any form of cross-addiction, and appear not to have had any significant difficulties prior to the rapid expansion of gambling in the mid–1990s. This argument applies most strongly to the very large numbers of women who have developed gambling problems in the last decade. If pre-existing depression and anxiety were the cause of this addiction, why has there also been no obvious decreases in the rates of alcoholism, or smoking in women?
- Not all forms of gambling are equally problematic. The fact that certain forms of gambling (e.g., continuous forms) are more likely to cause problems than others suggests that it is gambling, rather than the characteristics of individuals, that is important. For example, the fact that WA has lower rates of problem gambling than other States or Territories with a greater prevalence of EGMs suggests that the supply of gambling products plays a critical role. There is no evidence that people in WA are necessarily less afflicted by the problems (e.g., depression, anxiety, personality disorders) thought to drive people's desire to gamble.
- Many of the behaviours that are components of problem gambling (chasing losses, seeking out sources of money, being in debt) are clearly related to the process of gambling rather than being driven by dispositional or personal factors (e.g., depression). This is, indeed, the fundamental assumption underlying the problem-gambling model propounded by Lesieur (1984), and which forms the basis for the SOGS. Although other factors may initially motivate a person to gamble, it is the process of losing that creates the desperate chase for money.

Thus, to summarise: when one considers the balance of evidence (see section 4.6.2 below), it is very likely that gambling, either (at best) exacerbates existing problems and causes further harm to those who are most vulnerable, or (at worst) it creates problems for people who did not previously have any problems. The following sections describe current evidence concerning the nature of specific problems documented in recent Australian research.

4.6.2 Gambling and psychological health

Depression

There is consistent evidence that problem gambling is significantly associated with a high prevalence of depressive symptomatology. In the Productivity Commission's national survey (1999), 22% of problem gamblers reported having 'often' or 'always'

experienced depression associated with gambling. Almost all of those problem gamblers surveyed by the Commission had experienced depression in the previous year, and 60% reported having 'often' or 'always' felt this way. The Commission's results were also confirmed by a number of submissions to their inquiry, for example, from the Mental Health Foundation of Australia (MHFA). This organisation reported that 75% of problem gamblers who sought help had experienced symptoms of depression.

In South Australia, Delfabbro and Winefield (1996) found that 16% of regular poker machine players reported experiencing depression as a result of their gambling, a rate approximately three times that of the population average (Productivity Commission, 1999), whereas the South Australian Department of Human Services (2001) reported that 59% of problem gamblers scored in the clinical range on the Kessler–10, a widely used scale that measures anxiety and depression. Similar results were reported by MacCallum, Blaszczynski, Joukhador and Bettie (1999) in a study of 50 problem gamblers who received treatment in NSW. The mean score on the Beck Depression Inventory was 18.3 as compared with a clinical cut-off score of 15. Battersby and Tolchard (1996) found that 67.5% of problem gamblers being referred for a treatment program at the Flinders Medical Centre in Adelaide could be diagnosed as having major depression, as based upon formal psychiatric interviews. Similar results for the same program were reported by Oakes (2002) in a study of 20 problem gamblers. Unfortunately, the most recent prevalence study in New Zealand does not provide any clear information concerning the prevalence of depressive disorders amongst problem gamblers in New Zealand.

Suicidality

Not surprisingly, there is also a considerable amount of evidence that supports a link between problem gambling and suicidality. The Productivity Commission (1999) survey of counselling agencies revealed that 57.8% of problem gamblers reported having seriously contemplated suicide due to their gambling, with 14.8% reporting having done so 'often' or 'always'. The Commission also cites figures from the MHFA, which suggested that 61% of problem gamblers think about suicide, and that 22% had made active attempts. Much the same pattern emerged in a study by Blaszczynski and MacCallum (1999) in a study of 53 problem gamblers in treatment in NSW. Of these, 41% reported a history of suicide ideation associated with gambling, and 9% reported scores in the extreme range of suicidality. A further study conducted by MacCallum *et al*. (1999) also involving 50 NSW gamblers in treatment, indicated that 38% had reported having contemplated suicide, with 8% scoring in the severe range of suicide ideation. Of the total sample, 12% reported having made actual plans to commit suicide, and 8% had made unsuccessful attempts (see also MacCallum & Blaszczynski, 2003). Similarly, Battersby & Tolchard (1996), in their analysis of clients at Flinders Medical Centre in Adelaide, found that 70% of patients described having had suicidal thoughts, 12% reported having made plans and 8% reported having made attempts.

In one of the few prevalence studies large enough to gain valid insights into more serious problems associated with gambling, the South Australian Department of Human Services

(2001) found that 19 out of 123 or 15% of problem gamblers in the community reported having contemplated suicide, but that only 25% of these people reported having thought about suicide because of gambling.

Further data are provided in a study conducted by Blaszczynski and Farrell (1998) based on Coroner records from Victoria (1990–1997). They concluded that a total of 44 cases (which represented approximately 1% of the total number of suicides in Victoria during that period, and 1.7% for the period 1994–1997) could be attributed to gambling. Blaszczynski and Farrell pointed out that caution needs to be applied in the interpretation of these figures because it is unclear to what extent other co-morbid factors might have contributed to these suicides. Nevertheless, based upon these and other epidemiological data, the Commission cautiously estimated that at least 40 people commit suicide in Australia every year as a result of gambling.

In New Zealand, Sullivan, Abbott and McAvoy (1994) and Sullivan (1994) reported that, of those people contacting a gambling hotline during 1993–1994, 80% reported having suicidal ideation, 17% reported having planned a suicide, and 4% reported having attempted suicide. These figures are, however, contradicted by more recent figures collected by Paton-Simpson *et al*. (2001) in their summary of the 2001 national hotline statistics. Their figures indicate that only 9.2% of people reported having thoughts about suicide, 1.2% reported having planned suicide, and 0.8% reported having made attempts. It is not clear why such a discrepancy exists. One possibility is that the more recent data are based upon unprompted self-report, indicating that people do not mention suicide unless the issue is specifically raised.

Anxiety

Much of the evidence associating problem gambling and anxiety has already been described, above, in the section on gender and gambling. As was pointed out, there is evidence from a number of studies (e.g., Di Dio & Ong, 1997; Quirke, 1996; Loughnan *et al.*, 1997; Scannell *et al*., 2000) that women report using EGM gambling as a form of avoidant coping that helps them relieve stress. However, in addition to this correlational work, there is more general evidence pointing to higher levels of anxiety among problem gamblers than in the general population. Battersby and Tolchard (1996) report that 48% of problem gamblers referred to their anxiety disorders program at Flinders University have some form of anxiety disorder, with an even higher percentage (71%) recently reported by Oakes (2002) for the same program. Thomas (1998), also at Flinders University, found that problem gamblers scored over 50 on the Spielberger Trait Anxiety Measure compared with a mean score of 36 for recreational gamblers. Similar figures have been reported by Coman, Evans and Burrows (1996), Coman, Burrows and Evans (1997), and by Rodda, Brown and Phillips (2004) who found a positive relationship between anxiety scores and SOGS scores in 81 EGM players recruited from Victorian venues. These results are entirely consistent with survey studies of gamblers in the community that have indicated that a substantial proportion of problem gamblers report using gambling as a way of escaping from boredom and stress. For example, in the most

recent prevalence study in South Australia, 54% of problem gamblers reported 'often' or 'always' gambling for this reason.

Dissociation

Another psychological consequence thought to arise from excessive gambling and, in particular, heavy gambling on EGMs is the experience of dissociation. Dissociation is a psychiatric term which refers to a fragmentation of thoughts and experiences, as well as alterations in memory function, consciousness and identity (Garcia & Blaszczynski, 2006). Common symptoms include: assuming a trance-like state, adoption of an altered state of identity, feeling that someone else was controlling one's actions, and a loss of time (Delfabbro, 2006). Interest in this topic has arisen from two principal sources: anecdotal reports from problem gamblers themselves, and also theoretical models of gambling that identify dissociation as a principal element in the process of addiction.

Much of the anecdotal information about dissociation has arisen from qualitative interviews with problems gamblers. In these interviews, gamblers report sometimes losing track of time, or feeling that they have lost a sense of reality. For some, it feels like someone has taken over their actions, or that they feel as if they are someone else when they are immersed in the gambling environment. This experience is usually most commonly reported by EGM players who indicate that gaming rooms, with their absence of clocks and natural light, as well as the colours, light and sounds of the machines, creates an artificial world that detaches them from their normal reality (McCorriston, 2006). Such experiences (albeit reported only by a minority of players) have led to suggestions that venues should include various 'reality checks' or 'circuit breakers' to provide players with opportunities to take breaks from gambling so that they have opportunities to reconsider their actions more carefully and rationally. Many of these strategies are described later in this report and include: machine shut-downs, pop-up reminders on machines, and various recommendations relating to the introduction of clocks and greater natural light into gaming areas.

Dissociation has also attracted interest because it is a central component of Durand Jacob's general theory of addictions (Jacobs, 1986). The gist of Jacob's theory is that problematic behaviour arises from earlier traumatic or abusive experiences and therefore represents a form of escape from the intolerable realities of everyday life. Problem gamblers use gambling as a way to alter their state of reality and identity, and therefore find it increasingly difficult over time to live without this activity because it is both negatively and positively reinforcing. Much of Jacob's work has utilised a number of simple questions that attempt to measure the central symptoms of dissociation described above and has, on the whole, demonstrated some connection between problem gambling dissociative-like experiences. However, relatively little evidence has been amassed in Australia to determine the extent to which his findings are generalisable to Australian gamblers. The only exception to this is the most recent prevalence study undertaken by the South Australian Department of Families and Communities (2007) which included several standard questions relating to dissociative experiences. The results showed that 39% of problem gamblers 'often' or 'very often' lost track of reality while gambling,

40% 'often' or 'very often' felt like they were in a trance, 43% 'often' or 'very often' lost track of time, and 35% 'often' or 'very often' felt like someone else was controlling their actions. Poker machines were most strongly identified as the form of gambling where they were most likely to lose track of reality (73%), fall into a trance (79%), lose track of time (63%), or felt that someone else was controlling their actions (65%). The percentages for all other individual activities were very low (5%), although 11% reported losing track of time while playing casino table games.

The possible importance of dissociation has been recognised by the Australian Gaming Council (2006) who supported the production of a discussion paper which summarises the views of a number of international researchers and experienced counsellors. Edited by Dr. Clive Allcock, the report summarises the psychiatric definitions of dissociation, its theoretical links with gambling, its explanatory value, and the extent to which it is supported by empirical evidence. Most contributors to this view generally support the view that problem gamblers can often lose track of time, and can become somewhat detached from reality when they gamble, but most were sceptical about the extent to which this represented dissociation in its true psychiatric sense (Allcock in Australian Gaming Council, 2006). A number of authors pointed out that it was easy to confuse dissociation with other more mundane psychological processes such as avoidant coping, in which people are seen to become very preoccupied with gambling because of a desire to avoid negative emotional states (e.g., depression and anxiety). People may also try to find ways to justify or explain behaviour which they know to be undesirable, harmful or out of character by appealing to internal forces or influences beyond their control (e.g., another 'part of them' that makes them do things against their better judgement).

Some authors in the report (e.g., Delfabbro, 2006; Griffiths *et al.*, 2006) also draw attention to the fact that one might not need to refer to psychiatric terms such as dissociation to explain some of the experiences reported by gamblers. Any activity that people find particularly engrossing or interesting is likely to attract a considerable volume of people's 'attentional resources', so that it may not be surprising to find that people might lose track of time, or not know what is going on around them, when they are gambling. Some support for this view is provided in a recent study by the Australian Institute for Primary Care (2006) (referred to many times in different parts of this report), 60 problem EGM gamblers were interviewed in focus groups and asked to describe their gambling experiences. Many referred to 'the zone', a psychological or attention state often observed or achieved by problem EGM players in which they feel that there is 'only them and the machine', and where they shun interactions with others in the venue and remain very focused on the process of gambling to the exclusion of everything else.

It is unclear whether these experiences necessarily constitute genuine dissociation or simply a complete absorption in the process of gambling. Nevertheless, the results of this study suggest that these experiences are quite common amongst problem gamblers and are worth of further attention by both researchers and regulators. Intrusions of reality or so-called 'circuit breakers' may indeed be useful ways in which to break up these psychological states and to assist gamblers in making clear, more carefully reasoned choices.

- **There is a great deal of evidence to suggest that problem gamblers report experiencing significantly higher levels of depression, anxiety, suicidal ideation, and dissociation. Although questions might be raised about the direction of causality in this relationship, there is no question that these reported psychological problems need to be taken into account in any intervention involving problem gamblers.**

4.6.3 Gambling and other addictive behaviours

Another important issue in the treatment of program gamblers is the extent to which gambling coexists with other addictive behaviours. This issue is important, not only because of its potentially confounding role in understanding the causes of gambling-related problems, but also for practical reasons. If problem gambling is not the only behaviour causing problems, this could have considerable implications for intervention strategies. Specifically, if gambling were found to be commonly associated with various forms of substance abuse, for example, alcoholism or drug dependence, counselling services would not be sufficient to meet these people's needs. Instead, a more intensive intervention would be required, with professional involvement from a number of different disciplines, including doctors and psychologists. This finding would also underscore the need for more extensive screening for problem gambling in populations known to have a high prevalence of substance abuse disorders.

Alcohol

In Australia and New Zealand, there is evidence that gambling is often related to other forms of dependence. Dickerson *et al*.'s (1996) prevalence study in NSW estimated, for example, that 20% of gamblers who have sought help for their gambling have experienced some form of substance abuse. This was also found to be the case in a submission by Relationships Australia to the Productivity Commission Inquiry. Their results, derived from six years of client data, suggested that around 17% of problem gamblers in their treatment program in Queensland were also alcoholics. Almost exactly the same figure was obtained by MacCallum and Blaszczynski (2002) in a study of 75 problem poker machines players seeking treatment in New South Wales. Sixteen percent of these people were found to experience alcohol abuse, and half of these were diagnosed as having a dependency.

Similarly, in the prevalence study conducted in South Australia by the South Australian Department of Human Services in 2001, it was found that problem and regular gamblers were significantly more likely to drink heavily, although these figures were not greatly elevated above what has been found for the community as a whole (Australian Institute for Health and Welfare, cited by the Productivity Commission, 1999). For example, in the South Australian study, 8% of problem gamblers were found to have drinking levels classified as 'immediate to high risk', and this compares with a figure (7%) for the general population. In the more recent study conducted in 2007 by the South Australian Department for Families and Communities, 62.4% of moderate and high risk gamblers reported using alcohol or drugs while gambling, but less than 50% reported that they

gambled more when using these substances, and only 27% reported that they consumed more alcohol or drugs while they were gambling. When further asked whether they might have a substance abuse problem, 25% of problem gamblers reported that they had a problem compared with 15% of moderate risk gamblers.

Another recent study that has provided insights into the connection between problem gambling and alcohol consumption is the Mater Hospital-University of Queensland longitudinal study that tracked 3700 children since birth to 21 years of age (Haytbakhsch *et al.*, 2006, described in Section 3.5.2 of this review). The study examined the gambling status of the 21-year olds in relation to a number of current and previously collected variables including their general substance use. Although those who gambled were less likely to be regular drinkers (1 or more standard drink per day), those who reported having started drinking prior to 14 years of age were more likely to be gamblers than those who did not drink (47% vs. 15%). A similar pattern of results was obtained in comparisons of 'at risk' vs. other gamblers. Those who abstained from alcohol were more likely to be 'at risk' gamblers (CPGI scores > 0) than those who drank more frequently, but those with mild to severe impacts associated with alcohol use were more likely to be 'at risk' gamblers (19%) vs. those who did not drink (6%).

Very high levels of alcohol use have consistently been documented amongst samples of problem gamblers in a number of New Zealand studies. For example, as Sullivan (1997) showed, 58% of those diagnosed as pathological gamblers at the Compulsive Gambling Society clinic in Auckland scored highly on the Alcohol Uses Disorders Identification Test (AUDIT, Babor, de la Fuente, Saunders & Grant, 1989). This figure was almost identical to the figure of 60% obtained by Abbott and Volberg (1992) as part of a follow-up of problem gamblers identified in the 1991 national prevalence study. A similar trend was also reported by MacKinnon (1996) in data collected by Auckland's Regional Alcohol and Drug Service. Approximately 10% of these clients scored 5 or more on the SOGS. Further evidence was obtained by Sullivan in a series of assessments administered to 297 patients visiting Auckland general practices. In the first of these studies, Sullivan found that 45% of patients classified as problem gamblers scored in the hazardous to harmful/dependent range of the AUDIT. These results were subsequently confirmed in two follow-up studies involving similar populations (Sullivan & Penfold, 1999) that revealed that 20% of gamblers were dependent on alcohol, and that 15–20% were drinking at hazardous levels.

A particular concern with alcohol is that it may further reduce gamblers' capacity to maintain control over their behaviour during gambling sessions. To investigate the extent to this effect, Baron and Dickerson (1999) surveyed EGM players in gambling venues and asked to them to complete a number of questions relating to their gambling habits, as well as several relating to their alcohol consumption. Approximately 12% of gamblers reported that consuming alcohol while at gambling venues increased their urge to gamble, and that ongoing consumption made it difficult for them to discontinue a session. A field experiment was also conducted, involving 40 male gamblers, in order to examine how alcohol influenced behaviour (Kyndon & Dickerson, 1999). Participants were randomly allocated to one of two groups: one where they were administered several

placebo drinks, a second where drinks containing alcohol were administered. They were then asked to take part in a card-betting game in which they had to play for 10 forced trials, after which time they could play for as long as they liked. Players were given $10 to start and could keep their winnings. The results showed that the alcohol group played, on average, for 39 trials compared with only 20 for the placebo group, and that the alcohol group was significantly more likely to bet larger amounts after losing. These results suggested, therefore, that alcohol consumption increased not only the length of gambling sessions, but also the amount that was wagered.

Cigarette smoking

There are a number of studies that provide information concerning the rates of smoking amongst problem gamblers, and gamblers in general. The South Australian Department of Human Services prevalence study (2001) showed, for example, that the rate of smoking amongst regular and problem gamblers was significantly higher than amongst those who did not gamble. Whereas around 22% of people in the general population smoke regularly (daily) (AIHW, 1999), 33% of regular gamblers and 60% of problem gamblers in the South Australian were found to be regular smokers. Even if these figures are not entirely comparable because of the lack of frequency information in the South Australian study, it is reasonable to assume that the regular smoking rate particularly amongst problem gamblers, is still considerably higher than the population estimate of 22%, given the habitual nature of smoking.

A report (*Heath Matters, 2000*) also prepared by the South Australian Department of Human Services indicated that EGM players in Victoria spent twice the amount on cigarettes than did the general population. Similarly, in New Zealand, Sullivan reported that 64% of people who were treated by the Compulsive Gambling Society treatment centre in Auckland were smokers, compared with only 25% in the general New Zealand population (Raeburn, 2000; Sullivan & Penfold, 1999). More recently, Sullivan and Beer (2002) conducted a study involving 80 gamblers at a day-treatment centre, and found that two-thirds of them were smokers, with most reporting that their smoking increased considerably while they were gambling. MacCallum and Blaszczynski (2002) showed that 37% of problem gamblers seeking assistance at a treatment centre in New South Wales had nicotine dependence.

Very useful insights into the links between gambling and smoking is provided in a recent study by Rodda and Cowie (2005) for the Victorian Gambling Research Panel to assess the effectiveness of various harm minimisation strategies. A total of 418 EGM players were interviewed at a variety of metropolitan and regional Victorian venues. Smoking status was determined using the internationally recognised Fagerstrom Dependence Scale. The results showed that around half of all EGM players smoked and this included 20% who were classified into the high to very high dependence group. Around a third of smokers lit up a cigarette every 30 minutes, around 9% did so every 15 minutes, and 5% smoked almost continuously. There was a positive association between smoking status and problem gambling status as measured by the CPGI, although this correlation was only small (around .20). Almost all of the sample of EGM players took breaks from their

gambling; and 26% of these were because of a desire to smoke. Most indicated that the introduction of the smoking ban in Victoria was a very useful measure both from a public health point of view, but also because of its impact on gambling. Around a third of problem gamblers indicated that the amount of time they spent gambling had decreased since the introduction of the smoking ban.

The most recent study that has provided insights into the links between gambling and smoking is the Mater Hospital-University of Queensland longitudinal study (Haytbakhsch *et al.*, 2006, described in Section 3.5.2 and in the section on alcohol above). In this study, 3700 21-year olds who had been tracked since 1982–83, were asked to report whether they gambled and smoked (both frequency and amount). Of those who smoked 10 or more cigarettes per day, 52.8% were gamblers, whereas only 35.9% of non-smokers were gamblers. Similar analyses were conducted to compare 'at risk' gamblers (CPGI scores > 0) with other gamblers. Amongst those who reported being heavy smokers, 37.7% were 'at risk' gamblers, whereas only 7.5% of non-smokers were similarly 'at risk'. In other words, there was clear evidence that people who gamble are also more likely to be smokers.

Drug dependence

The South Australian Department of Human Services prevalence study (2001) showed that significantly more problem gamblers used medications and took drugs than did the rest of their sample, but this information was not disaggregated, so it is not possible to determine how many gamblers were affected by substance-abuse problems. In the follow-up survey conducted in South Australia in 2007, however, this question was reworded so that it was possible to examine the specific drugs that were being consumed. Neither the use of marijuana nor other illegal drugs was greatly elevated as compared with the general population (15% prevalence of marijuana use and around 3% for other illegal drug use). However, both problem and moderately at risk gamblers (as classified by the CPGI) had very high rates of anti-depressant use (21.4%) which compares with a rate of around only 7.5% for the general community.

Data derived from clinical or treatment samples have generally yielded elevated rates of substance misuse. For example, Battersby and Tolchard (1996) reported that approximately 15% of people visiting their Flinders Medical Centre based treatment program had some form of substance dependence, a figure equivalent to that observed by Dickerson *et al*. (1996) in NSW. Even higher figures have been observed in New Zealand. Sullivan and Penfold (1999), for example, found that 47% of problem gamblers visiting the treatment centre of the Compulsive Gambling Society in Auckland reported that they had, at some point in their lives, been addicted to a psychoactive substance.

As indicated in the previous sections, the most recent study that has provided insights into the links between gambling and substance use is the Mater Hospital-University of Queensland longitudinal study (Haytbakhsch *et al.*, 2006, described in Section 3.5.2 and in the sections on alcohol and cigarettes above). In this study, 3700 21-year olds who had been tracked since 1982–83, were asked to report whether they gambled and took illegal

drugs. Of those who reported having smoked cannabis, 16.3% were classified as 'at risk' gamblers (CPGI score > 0) as compared with 6.3% who were not users. These figures were even more differentiated when one considered the frequency of usage. If respondents were frequent cannabis users, 25.6% were 'at risk' gamblers as compared with only 6.3% of those who did not use cannabis at all. A similar pattern of findings was obtained for other illegal drugs. Of those who reported using other drugs, 18.7 were 'at risk' gamblers compared with only 8.6% of those who did not use these substances.

- **Only some regular and problem gamblers are involved in other addictive behaviours. However, the rates of alcoholism, smoking, and general drug-use appear to be significantly higher than in the general population. Current Australian data suggest that around 15–20% of problem gamblers experienced drug or alcohol dependence, and that around 33% of regular players, and up to 65% of problem players, are smokers.**

4.6.4 Gambling and physical health

Since most interactions with problem gamblers involve professionals working in the areas of psychology, psychiatry, and counselling, only limited information is available concerning the physical health status of people who gamble excessively. Nevertheless, some useful insights are gained through consolidation of findings from a variety of recent studies. For example, in the 2001 South Australian Department of Human Services prevalence study, participants were asked to rate their physical health status (poor to excellent), and also to indicate whether they suffered from a variety of illnesses. Eighty–five per cent of the general community rated themselves as having good-to-excellent health compared with 81% of gamblers, and only 76% of problem gamblers (a highly significant difference). On the other hand, there was no difference at all in the prevalence of physical illnesses, with problem gamblers reporting having exactly the same prevalence of illness as the general population (40.7%).

Studies conducted in clinical settings provide even stronger evidence. Sullivan and Penfold (2001), for example, observed that a significant number of New Zealand gamblers suffered many physical complaints, including hypertension, psychosomatic symptoms, and back problems. Physical symptoms were also reported by problem gamblers accessing Victorian problem gambling services (Jackson *et al*., 1997), with 44% of clients reporting physical symptoms in conjunction with their gambling. This was also observed in Relationships Australia's (QLD) submission to the Productivity Commission, in which physical symptoms were identified in at least 20% of clients seeking treatment. Finally, in South Australia, Battersby and Tolchard (1996) found that problem gamblers in treatment are significantly more likely than the general population to suffer from eating disorders, as well as the various forms of physical dependence described above.

- **There is reasonable evidence to suggest that problem gamblers have poorer physical health than the general population. However, given problem gamblers' greater predilection for smoking and alcohol consumption, it is unclear to what extent gambling contributes to this difference.**

4.6.5 Impacts on families and relationships

Despite the fact that problem gamblers have a greater probability of being single than others in the community, there is good evidence to suggest that gambling has significant effects on the well-being of families, especially given that around 50% problem gamblers are in relationships (Productivity Commission, 1999). In the Productivity Commission's national survey, 20% of problem gamblers admitted to having insufficient time for their families as a result of gambling (and 14% reported experiencing this problem in the previous year). Approximately 11% said that gambling had contributed to the break-up of a significant relationship, and 9% reported that this had led to a permanent separation. The national survey also showed that 42% of problem gamblers reported having money arguments with their families. The Commission's survey of counselling agencies indicated that 11% of problem gamblers in treatment reported having lost touch with their children, and 13% reported domestic violence, because of gambling. The most significant effects were thought to have been borne by partners, with 47% described as having been subject to very adverse effects. This compared with figures of 21% for children, 22% for parents, 15% for friends, and 9% for work colleagues. The Commission estimated that approximately 1,600 divorces in Australia every year are likely to be caused by gambling. This estimate was based upon a Relationships Australia telephone survey that was conducted in 1998 indicating that 4% of divorcees mentioned gambling as a contributing factor, and ABS estimates of annual divorce numbers (around 51,000). Some correction was made for the fact that gambling was not the only contributing cause mentioned by a number of the respondents.

Similar results have been reported by other studies around Australia. Dickerson *et al*. (1995) found that approximately a third of clients attending Queensland counselling services had experienced a relationship breakdown due to gambling. This was also confirmed by Relationship Australia's (QLD) submission to the Commission, which estimated that almost 1-in-2 clients had reported having gone through this experience. Jackson *et al*.'s (1997) analysis of clients attending problem gambling services in Melbourne indicated that 55% reported having jeopardised or lost significant relationships. Useful insights were also provided by the South Australian Department of Human Services prevalence study (2001) that contained a number of items from the VGS (Ben-Tovim *et al*., 2001), in addition to questions included in the Productivity Commission survey. This study indicated that around 23% of problem gamblers reported having 'sometimes' or 'often' put off doing things with their partners because of gambling; 11% reported that people close to them could not trust them due to gambling; and 7% reported the break-up of a significant relationship because of gambling. In New Zealand, Sullivan, Abbott and McAvoy (1994) reported that 35% of people calling a

national hotline in 1993 reported being the partners of gamblers, whereas Jackson *et al*. (1997) reported a figure of 10%.

It is thought that gambling affects children in a number of ways. On the one hand, there are numerous publicised cases of children being neglected because of gambling in several Australian States (Allcock *et al*., 2002). Carrig, Darbyshire and Oster (1999) and Darbyshire, Oster and Carrig (2001) provided some useful descriptive information concerning the experiences of a small number of children who had a parent who was a problem gambler. The children commonly reported that their parent had changed, that s/he was not themselves. They described the parent's agitation, irritability, selfishness, and a loss of interest in the child's affairs, as well as a steady deterioration in the household budget.

The second insidious effect of problem gambling by parents is that problem gambling often occurs across generations in the one family. Apart from the fact that parents often (wittingly or unwittingly) encourage their own children to take an interest in gambling (see section 3.5, above), there is a lot of evidence that problem gamblers are much more likely to have parents and relatives who also have gambling problems than would be expected by chance. In NSW, Dickerson *et al*. (1996) reported that 14.5% of problem gamblers claimed to have relatives with gambling problems, with a figure of 6.1% being obtained for Tasmania (Dickerson & Maddern, 1997), and 6.9% in WA (Dickerson *et al*., 1994). Abbott and Volberg's (1992) follow-up of problem gamblers surveyed in their 1991 national survey indicated that 17% reported having parents with gambling problems. Marshall, Balfour and Kenner (1998), in a study of prison inmates in Yatala Labour Prison in Adelaide (see also section 4.7.3), found that 32% reported having a father with a gambling problem, and 18% reported having a sibling with a gambling problem, compared with only 3% of non-gamblers. These figures were similar to those obtained by the Commission in their survey of counselling agencies, which showed that 22% of problem gamblers reported having a parent with a gambling problem compared with only 1.35% of non-gamblers (a 16–fold difference).

> ♣ **Gambling clearly has significant effects upon families and children. Potentially the most problematic aspect of these findings is that problem gambling can occur in families across generations. Current Australian estimates suggest that approximately 15–20% of children born to problem gamblers will also develop problems.**

4.6.6 Effects on employment

Not all problem gamblers are in paid employment. Current data available in Australia suggest that around 50% of problem gamblers in treatment are in employment (Jackson *et al*., 1997; Government of South Australia, 2002: Break Even data-analysis). These figures are even higher in prevalence surveys. Approximately 68–70% of problem gamblers in the 2001 South Australian prevalence study and also in the Productivity Commission survey were in full-time or part-time employment (South Australian Department of Human Services, 2001; Productivity Commission, 1999). Very similar

figures were obtained in the recent South Australian prevalence study conducted in 2007 (65% of moderate-risk and problem gamblers were in full-time employment) (South Australian Department for Families and Communities, 2007). This means that the problems described in this section are probably not applicable to around 50% of people in treatment, and around a third of problem gamblers in the community. Nevertheless, it is evident that problem gambling causes considerable disruption in the workplace.

The national survey conducted by the Commission indicated that 19% of problem gamblers reported having lost time from work or study during the previous year, and around 25% indicated that gambling had adversely affected their work. Only 6% of people reported having changed jobs, and only 0.5% reported having lost jobs because of gambling. Slightly higher figures were obtained in the 2001 South Australian Department of Human Services prevalence study in South Australia, which indicated that 8% reported having changed jobs, and that 4.3% reported having lost jobs. These figures were even higher in the follow-up study conducted in 2007 which showed that 16% of problem gamblers had changed jobs and that 15% had lost jobs (South Australian Department for Families and Communities, 2007).

Much higher figures are obtained if one examines figures derived from treatment services. For example, the Commission found that 50% of problem gamblers in counselling had lost time from work or study. These figures were similar to those obtained by Dickerson *et al*. (1995) in their study of agencies in Queensland, which indicated that 55% of gamblers scoring 10 or more on the SOGS had lost time from work, 32% had changed jobs, and 23% had been sacked. Similar figures were submitted to the Commission by Relationships Australia (QLD), and were also obtained by Jackson *et al.* (1997) in Victoria. According to the Commission, the most significant effects of gambling on employment are a loss of confidence or trust (major adverse effect for 17%), loss of concentration (17%), and poorer work quality (12%).

> ♣ **Current research suggests that (when averaged across different studies) approximately 20% of problem gamblers in community studies, and 50% in treatment services experience disruptions to their work as a result of gambling.**

4.6.7 Effects on financial security and the amounts lost

The fact that problem gambling can cause significant hardship for some people is very difficult to dispute. Almost every survey conducted in Australia during the last decade has shown that many gamblers consistently gamble more than they can afford. The Productivity Commission's national report, for example, showed that 70% of problem gamblers reported having spent more than they could afford in the previous year; 11% reported having sold property to gamble, and that 19% reported having borrowed money and not paid it back. These percentages were even higher for the sample in counselling, in which 37% reported having sold property, and 53%, borrowing money and not paying it back. The Commission found that 40% of gamblers in counselling reported that they 'often' or 'always' ran out of money to meet important commitments. Similarly, the

South Australian Department of Human Services prevalence study conducted in 2001 showed that 45% of problem gamblers in the community 'sometimes', 'often' or 'always' found it difficult to get from one payday to the next because of gambling. In terms of the practical effects of this shortfall, respondents to the Commission's counselling agency survey indicated that 43% went without food, and that 19% were unable to pay utilities at least on some occasions. When similar questions were asked of problem gamblers in the 2007 survey conducted by the South Australian Department for Families and Communities, 88% of problem gamblers (based on the CPGI classification) reported at least 'sometimes' having this experience. This included 24% who reported often having this problem and 26% who always ran short of money (as based on the total number of problem gamblers rather than the 88%).

Very few gamblers in counselling reported having become bankrupt because of gambling (only around 1%), but this is very likely due to the fact that so many prevent this from happening by borrowing money, selling property, and amassing debts. Approximately 13% of problem gamblers in counselling reported having gone to a pawnbroker, and 51% reported owing money due to gambling (Productivity Commission, 1999). In terms of where problem gamblers obtain money in order to continue gambling, results from the South Australian Department of Human Services prevalence study (2001) indicated that around 27% used credit card advances at least on some occasions, 28% borrowed from their partner, 41% borrowed from household money, but very few had ever sold property, pawned goods, used loan-sharks or any other sources.

The Commission attempted to estimate the typical amount spent per annum by problem gamblers in Australia. Using a complex weighting procedure, and data drawn from different State surveys, they estimated that problem gamblers tended to spend around $12,000 per year compared with the average of $645, although they pointed out that there are likely to be many who spend more, or less, than this amount. They further estimated that approximately 30–33% of total net expenditure on gambling in Australia is attributable to problem gamblers, based on their mean expenditure estimate, a problem gambling prevalence rate of 2%, and a current adult population of around 14 million. The Commission also showed that 42% of expenditure on gaming machines is generated by problem gamblers, compared with 33% for wagering, 19% for scratch tickets, and 10% for total revenue from casino table-games. Only 6% of lottery expenditure was generated by problem gamblers.

Further analyses indicated that figures derived from community surveys are probably quite conservative when compared with the magnitude of expenditure estimates derived from gamblers seeking assistance at agencies. Jackson *et al.* (1997), for example, reported that 45.5% of problem gamblers seeking treatment in Victoria spent $20,000 or more per year. These figures mirrored the Commission's findings from its own survey of counselling agencies that indicated that 30% spent over $20,000, 37% spent between $10,000 and $20,000, and 20% between $5,000–$10,000. In South Australia, the most recent summary of data from Break Even agencies suggested that 20% of clients were spending over $12,000 per annum, and that 22.1% were spending around $9,000 on gaming machines alone.

These figures appear comparable with similar data that have been recorded in New Zealand. The recent report by Paton-Simpson *et al*. (2001) based upon clients contacting the problem gambling hotline in 2000–2001, showed that over 40% of clients had spent over $1,000 in the month preceding their contact with the agency, and that almost 20% had spent over $2,000. These figures indicated that 40% of gamblers seeking help in New Zealand were spending at least $12,000 per year. The figures compare with a figure of around $7,000 obtained by Abbott and Volberg (2000) for problem gamblers in the community, based upon an average monthly expenditure of $569. This figure is lower than the $12,000 reported in Australia, but is generally consistent with the fact that New Zealanders spend only approximately 70% per capita the amount that is spent in Australia.

- **Approximately a third of total gambling losses in Australia are thought to be due to problem gambling. Problem gamblers in the community lose approximately $12,000 per year on gambling, or $250 per week, but considerably higher figures are observed amongst people in counselling. Only a relatively small proportion of problem gamblers in the community engage in behaviours indicative of severe financial strain (e.g., selling property); however, around 40% of people seeking assistance from agencies are affected in this way.**

4.7 Problem gambling and criminal behaviour

Problem gambling can often be seen to proceed through a clear series of stages. The initial experience often involves early wins or gambling successes, but this soon gives way to increasingly heavy losses, followed by a period of desperation and despair in which the gambler attempts to obtain money to continue gambling (Lesieur, 1994). At this stage, the temptation to commit crimes to obtain additional finances may increase.

4.7.1 Evidence from community prevalence studies

Not surprisingly, because this sort of behaviour tends to be a last resort for many gamblers, the results from community prevalence surveys have tended to be inconsistent because not all problem gamblers may necessarily have reached the point where criminal behaviour is considered necessary. For example, in statewide surveys in South Australia (Delfabbro & Winefield, 1996; South Australian Department of Human Services, 2001) less than 1% of problem gamblers (or 0.1% of the population) report legal problems arising as a result of gambling. These figures contrast with the most recent South Australian survey (South Australian Department of Families and Communities, 2007) in which it was found that 26% of problem gamblers reported having obtained money illegally to gamble and that 10% had been in trouble with the police because of activities relating to their gambling. In addition, 4% of problem gamblers had appeared in court due to gambling and 7% had been declared bankrupt. Although these differences suggest that the problem gamblers identified in the 2007 survey were experiencing significantly greater levels of harm than those in the 2001 survey, it is also important to recognise that

problem gamblers were identified using different methodologies in the two surveys. In the 2007 survey, problem gamblers were identified using the more conservative criterion of 8+ on the CPGI, whereas those in 2001 only had to score 5+ on the SOGS to be similarly classified. Those classified as problem gamblers in 2007 would, therefore, be expected to contain a higher proportion of more serious cases of problem gambling as compared with the earlier survey.

In line with this argument, it is possible to identify other studies that have used even stricter operational definitions of problem gambling and which have yielded an even higher prevalence of harm. For example, in studies conducted in New South Wales by Dickerson *et al*. (1996, 1998), it was reported that, of those gamblers scoring 10 or more on the SOGS, 43% had been in trouble with the police because of gambling, 71% had appeared in court on charges relating to gambling, and 29% had been in prison because of gambling-related crimes. The Productivity Commission's national community survey produced somewhat lower figures, with 27% of problem gamblers (SOGS 10+) reporting having committed illegal acts relating to gambling, and approximately 13% reporting having obtain money illegally, being in trouble with the police, and having to make a court appearance.

4.7.2 Evidence from counselling agencies

More detailed insights into the nature of the links between gambling and crime arise from studies conducted with counselling agencies. For example, in Jackson *et al*.'s (1997, 1999) analyses of agency data collected in Victoria, it was found that between 20% and 30% of clients admitted to having committed illegal acts in order to finance their gambling. In the Commission's survey of counselling agencies, 50% of clients admitted to having committed crimes, including 42% who reported having borrowed money illegally. Eighteen per cent reported having problems with the police, and 16% reported having appeared in court. These figures were similar to the results reported by Relationships Australia (QLD) in their submission to the Productivity Commission Inquiry. Of clients seeking assistance, 53% admitted having committed illegal acts because of gambling. Other analyses conducted in the same State by the Australian Institute for Gambling Research (Boreham *et al*., 1995) indicated that, in 1994–1995, 68% of male clients and 57% of female clients reported experiencing legal difficulties because of their gambling. Blaszczynski and McConaghy (1994) studied 154 clients in a hospital-based treatment program (NSW) and 154 Gamblers Anonymous members, in which they found that 59% had committed at least one gambling-related crime in their lifetime, with 48% (of the total sample) reporting that gambling-related offences were the only type of crime they had committed.

4.7.3 Prison studies in Australia

A number of studies have been conducted in both Australia and New Zealand to examine the prevalence of gambling in correctional populations. Although this would superficially appear to provide an extremely effective way in which to examine possible links between gambling and crime, there is one important caveat that needs to be borne

in mind. Many people in prison commit a range of crimes, and often do so over an extended period. They also tend to experience problems with a range of issues, including substance abuse, anger management, and symptoms of psychopathology (e.g., personality disorders). This means that, in many cases, gambling is only one of many problematic behaviours affecting these people. As a result, attempting to establish a clear link between gambling and criminal activity may be very difficult. People in prison who have a higher propensity to commit crimes, may also have a higher propensity to gamble heavily, but this does not imply that the two tendencies are related. Moreover, as Dickerson *et al*. (1998) have pointed out in NSW, there is the possibility that some offenders may use gambling as a justification for other aspects of their behaviour, and may not otherwise have mentioned gambling were it not mentioned in surveys administered to them. Nevertheless, the data presented below are useful in that they provide further insights into the potential role of gambling in criminal offending. These findings also strengthen the view that problem gambling should be screened for in correctional settings because of its potential effects on people's well-being, and their likelihood of achieving a successful transition back into the community.

One of the first studies of gambling in prisons was undertaken by Boreham *et al*. (1996) in Arthur Gorrie Centre (a remand centre in Queensland). A total of 74 inmates were surveyed about the legal consequences of poker machine playing. A total of 11% reported having experienced trouble with the police because of their gambling on EGMs, and 7% admitted having been imprisoned because of crimes related to this activity. Although some questions concerning gambling involvement were asked in order to confirm that the sample gambled on EGMS, the very poor response rate to the survey (13%), and the lack of inclusion of any validated measure of problem gambling limited the conclusions that could be drawn from the findings. A more thorough study was conducted by Blaszczynski (1994) in a prison in Western Australia. Sixty prisoners were interviewed and asked to complete a validated measure of problem gambling. Thirteen (or 21%) of this sample met the diagnostic criteria for problem gambling, and over half of these people reported having committing gambling-related offences.

A similar well-designed study was undertaken a year later in South Australia by Marshall, Balfour and Kenner (1998). In this study, 103 participants were recruited from the low-security section of Yatala Labour Prison that contained men who had been newly referred from the courts for immediate imprisonment. The advantage of this sample was that there was a higher probably of sampling people with either no previous, or only a very limited, criminal record. Thus, if crimes had been committed because of gambling, greater confidence could be placed in these findings. It was less likely (although not of course completely ruled out, see below) that gambling-related crimes were merely part of a wider repertoire and history of offending that extended back many years. The other strength of this sample was that the response rate was very close to 100% of those who were given an invitation to participate.

The Marshall *et al*. study yielded several useful findings. The first was that 33 respondents (34%) scored 5 or more on the SOGS (compared with a community-wide prevalence rate of around 1.5% to 2%). The second finding was that 26% admitted to

having committed gambling-related offences, and all of them scored 5 or more on the SOGS. A difficulty was that, of those who had gambling problems, 62% were classified as probable substance abusers, 38% had symptoms of alcoholism, and 47% had symptoms of anti-social personality disorder, based upon their profiles on the Psychiatric Diagnostic Interview (PDI). Many of the problem gamblers also had established criminal records. Although the prevalence of these potentially confounding factors did not differ significantly from those without gambling problems, Marshall *et al*. (1998) suggested that such factors would make it difficult to isolate the extent to which gambling had contributed to these people's criminal behaviour. Gambling could, for example, have been seen as a way to make money to purchase alcohol or drugs, or as a way to deal with other problems the person might have been experiencing.

Similar issues also arise in other recent studies by Powis (2002) and Lahn and Grabosky (2004). In the Powis study, 178 male prisoners in Queensland corrections were administered the more conservative Canadian Problem Gambling Index (CPGI) and found to experience high levels of problem gambling (17.4%). In Lahn and Grabosky's (2004) study, 102 prisoners in five ACT correctional facilities were interviewed about their gambling behaviour and administered the SOGS. The vast majority of the sample were regular gamblers and 60% reported having gambled while they were incarcerated (usually with other prisoners on televised sporting activities or in card games). Analysis of SOGS scores showed that 34% were problem gamblers, a rate almost 18 times higher than in the general ACT population. Over 25% of the problem gamblers indicated that gambling had led them into crime, and 47% indicated that they had committed crimes (usually non-violent property crimes) to pay off gambling debts or to obtain money for gambling.

Marshall *et al*. (1998) suggested that a better understanding of the links between gambling and crime could be obtained by undertaking research within a community-corrections (non-secure) context, by selecting first-time offenders. In response to this suggestion, a pilot study was undertaken by Meredith (2001) that involved a sample of 50 men who were serving community orders in South Australia. Respondents were asked to complete the SOGS along with other measures relating to their gambling and psychological functioning. The results again revealed high levels of problem gambling (around 20%), a rate over 10 times higher than that observed in the general population. However, the study was limited by the fact that the sample was only representative in terms of age and gender, was not randomly selected, and included both first-time and repeat offenders. Nevertheless, the study showed that the sorts of analyses previously applied in prison settings could be usefully extended to community-corrections populations, or to people held on remand.

Similar findings were obtained in a larger-scale study conducted for the Queensland Department for Corrective Services (2005). Five hundred and seventy-eight interviews were conducted at community correction centres across Queensland. Within this population, 9.4% were found to score in the problematic range on the Canadian Problem Gaming Index. These rates were around 9 times higher than had been obtained in the most recent State-wide prevalence study conducted in Queensland.

Apart from correctional settings, another feasible method of investigating the link between gambling and crime is to examine court records and crime statistics to determine the extent to which gambling is mentioned as a contributing factor. This possibility was considered in two reviews: one by the Centre for Criminology and Criminal Justice at Monash University in 2000 (commissioned by the VCGA) and another by the South Australian Office of Crime Statistics and Research (2004) (commissioned by the Independent Gambling Authority). Both reviews produced the same pessimistic conclusions. Although most stakeholders, including members of the legal fraternity, supported the need for gambling to be taken into greater consideration in police records and in the court system, the researchers found that current recording systems (both police and court records) did not systematically record sufficient detail concerning the causes and motivations of various crimes that were potentially linked to gambling. The authors provided recommendations for the modification of existing methods of recording in order to make gambling more visible in the legal system, but expressed some pessimism about how successful these modifications would be: (a) because of the lack of any formal requirement for defendants to describe the motivations for their actions, and (b) because the courts do not have the capacity to demand this sort of information.

This view was also underscored by the Productivity Commission's review, which received many submissions from agencies concerning gambling-related crime, as well as input from legal practitioners and judges. Many were sceptical of the capacity of the courts to detect gambling-related crime because of the focus on the crime itself rather than its causes. One of the particular problems identified by agency representatives related to their understanding that many gamblers steal money privately, or in such a way that they are not detected. Even when they are caught for stealing, other factors may be present that are taken as the cause of the crime (e.g., a need to purchase drugs). These concerns are consistent with the findings of Marshall *et al*. (1998) who argued that many problem gamblers in prison are plagued by numerous problems, not just by gambling.

In spite of concept difficulties, recent research by Crofts (2003) suggests that some meaningful data can nonetheless be obtained from reviews of court files. In her study, over 2,700 District court records in NSW were reviewed to identify references to problem gambling, or gambling-related crime. Of the cases reviewed, 105 made references to gambling. Most cases involved white-collar offences such as embezzlement or fraud and over 90% of defendants were males aged 17–71 years. Only half had previous criminal records. Of 63 files subject to detailed inspection, it was found that 47 of the defendants admitted to committing criminal offences directly related to gambling.

Very similar findings were obtained in a study undertaken in both Australia and New Zealand by the Australian Institute of Criminology and PricewaterhouseCoopers in 2003. A series of serious fraud cases that had been heard by the relevant authorities in both countries were identified and scrutinised to determine whether there was any evidence that gambling played a role in the commission of the crimes. A total of 155 files involving 208 defendants (183 convicted, 25 not convicted) were considered. Gambling was found to have been a primary motivation in 21 convicted cases. In these cases, it

appeared that the crime had been committed in order to finance gambling, with the most common criminal offences including: obtaining finance or credit by deception (43%), cheque fraud (43%), misappropriation of funds (19%), and obtaining goods and services by deception (19%) (Australian Institute of Criminology and PricewaterhouseCoopers, 2003; SACES, 2005). Three quarters of the offenders were male and had a mean age of 37 years (range 28–50), and almost half of the offences had been committed against employers.

A final method that has been used to study the relationship between gambling and crime is through the comparisons of crime rates per geographical area and gambling expenditure. An analysis of this type was conducted by the South Australian Centre for Economic Studies in 2006 as part of a broader investigation of the economic impacts of gambling in South Australia. Data relating to net EGM revenue per adult and total offences per 1000 adults was obtained for statistical local areas or SLAs in South Australia. The results showed that there was a small positive relationship between these two variables, suggesting that offence rates tended to be higher in areas where there was greater EGM revenue. Similar positive relationships were obtained when separate analyses were conducted for property offences and violent offences. On the basis of these results, SACES concluded that there appeared to be some connection or association between the level of gambling expenditure and criminal offending, and that relationship held even after controlling for demographic differences between the areas.

As SACES itself concedes, although these results are interesting, these relationships need to be treated with some caution because the data are only correlational, so that it is not possible or appropriate to infer causation. One distinct possibility, for example, is that this apparent relationship may be due to some factor that is common to both higher rates of gambling and higher levels of criminal offending. As shown in a recent study by Queensland university (Haytbakhsch *et al.*, 2006), people who gamble are more likely to engage in other risk-taking behaviours and tend to have a greater likelihood of engaging in antisocial or delinquent behaviours. If such people tend to cluster in similar areas and these areas also happen to have a greater density of gambling venues, then this would explain why offence rates and gambling revenue levels are related. In fact, there may be no direct association between gambling and the likelihood of people committing offences. Instead, it may be that the sorts of people who commit offences also like to gamble, and to live in areas close to gambling venues.

4.7.4 Prison studies in New Zealand

In the last 4–5 years, a number of studies of gambling and crime have also been conducted in New Zealand. Sullivan (2001), for example, administered the newly developed 8–Screen to 100 inmates in a medium-security prison, along with the SOGS, and found that 29% of inmates were probably problem gamblers, a figure that is very similar to that observed by Marshall *et al*. (1998) in South Australia.

However, by far the most detailed analysis of gambling in prisons has been undertaken by Abbott, McKenna and Giles (2000) and Abbott and McKenna (2000) with the support

of the New Zealand Department of Internal Affairs. This research took the form of two large survey studies conducted in both male and female prisons in a number of different locations in New Zealand. In the first study, 357 male inmates from four New Zealand prisons were administered an extensive survey containing questions relating to all aspects of their gambling behaviour prior to entering prison, measures of life-satisfaction, and also many questions about their previous offending behaviour. Both minimum- and medium-security prisons were selected. Only prisoners who had served less than 12 months of their sentence were eligible to participate. Interviews were carried out by professionally trained interviewers, face-to-face at the prison, with full consent from all participants. The response rate to this survey was very good, with only 14% of those presented with the information sheet refusing to participate.

The results indicated that two-thirds of the male inmates reported having gambled on a weekly basis on at least one form of gambling. This was over twice the rate observed for males in the general community. These gamblers also estimated that they spent $NZ305 per month on gambling, almost six times as much as men in the general population. Analysis of the SOGS results showed that 16% of gamblers scored 5 or more on the SOGS, based upon a 'previous 6 months' estimate. This prevalence rate was 32 times higher than that observed in Abbott and Volberg's (2000) national prevalence study. Most gamblers indicated that racing, card games, and EGMs located outside of casinos were the primary cause of their gambling problems.

When asked if they had committed crimes to finance their gambling, 51% of problem gamblers admitted that they had done so in order to pay off gambling debts or to finance ongoing gambling. Thirty-five per cent said that they had been charged and imprisoned because of crimes related to gambling. However, when asked about their earliest offending behaviour, only 9% reported that gambling had been the cause. Abbott and McKenna (2000) concluded, therefore, that although gambling may have exacerbated criminal behaviour and been a factor in recent offending, it had not been the primary cause of offending. Prisoners were better described as "criminals first and problem gamblers second" (p. 6). In other words, problem gambling was a behaviour that was statistically more likely to be observed in people who had a higher probability of criminal offending, without there necessarily being a strong link between the two. Again, as had been observed by Marshall *et al*. (1998) in South Australia, gambling in this population went hand-in-hand with many other problems likely to predispose people to both problem gambling and offending. Seventy-six per cent of problem gamblers were classified as hazardous drinkers based upon the WHO's AUDIT assessment, and were more likely to smoke marijuana. Analyses of the social background of the gamblers also revealed that 41% of them had parents whom they perceived to have had a gambling problem.

Abbott and McKenna's second study involving female prisoners was very similar to the one conducted in male prisons, except that the number of participants was smaller (n = 94), and only three prisons were involved. Again, the results demonstrated significantly higher rates of regular or weekly gambling participation, particularly on continuous forms of gambling (20% continuous gambling in the prison sample vs. around 10% in

the general population), and expenditure rates six times higher than for women in the community. The difference in this study was that almost all the continuous gambling was confined to EGMs located outside of casinos, and to instant lotteries. Of the sample of 94 women, 21 (22%) could be classified as 'probable' problem gamblers, based upon SOGS scores of 5 or more in the previous 6 months. Around a quarter (26%) of these 21 problem gamblers indicated that they had committed crimes in order to pay for their gambling or gambling-related debts, with fraud being the most common crime mentioned (14%) followed by burglary, shoplifting and selling drugs (all around 10% or less). Approximately 1 in 5 (19%) of the 21 women problem gamblers said that they had been convicted of a gambling-related crime. When asked whether gambling had been the precipitating factor in their offending, only 2 women said 'yes'; suggesting once again that gambling was a corollary of their offending rather than a cause of it. Gambling was reported as serving to fuel a pattern of offending that had existed for some time. Moreover, this sample, as with the males, had very high levels of hazardous drinking (50%), and a history of conduct disorder (34%).

Abbott and McKenna also found that a significant number of problem gamblers had committed crimes that were not attributed to gambling, and they questioned to what extent survey questions are necessarily able to capture the full impact of gambling on criminal behaviour. For example, although gambling might clearly, on some occasions, be linked to crime if people are borrowing money illegally and then spending it on gambling, gambling could also have an indirect effect. By undermining people's financial security, it would, perhaps in conjunction with other factors, contribute to a greater need to offend in order to obtain money. Unfortunately, these indirect effects may be difficult to measure using existing survey question formats.

4.7.5 The types of crimes committed by gamblers

The most comprehensive examination of this issue in Australia was provided by Blaszczynski and McConaghy (1994) in their study of 306 problem gamblers derived from a hospital-treatment program and Gamblers Anonymous. The most common offence was larceny or theft (31% of the sample), followed by embezzlement (22%), and misappropriation of funds (7%). Around 5% of problem gamblers had committed very serious or violent crimes such as armed robbery, breaking and entering, or drug dealing. However, by far the most startling finding from this study was the number of offences that had been committed. Those gamblers who had committed larceny admitted to an average of 14 acts, with some having committed up to a 1,000 offences. Misappropriation was also a repeat offence, with gamblers reporting a mean of 12 offences, with a range of 1–600. A similar history of repetition was observed for those who engaged in drug dealing. Embezzlement was less common per person (mean = 5 offences) but, again, there were people in the sample who had embezzled money on many hundreds of occasions.

A consistent anecdotal finding in research is that some gambling-related crimes very often tend to be committed by people in white-collar professions who have direct access to money. These include people working in payroll offices, in banks, shops, stock-

broking or financial planning organisations, or any other job that provides access to financial records, or direct physical contact with cash. This finding has been confirmed in Blaszczynski and McConaghy's (1994) study. In many cases, these offenders are not people who have any prior history of offending. Blaszczynski and McConaghy found that a significant number of gamblers in their study conformed to this pattern, with many having gambled 3-to-5 years prior to committing their first gambling-related offence. These people appear to be quite distinct from the sorts of problem gamblers observed in prison studies, in that very few (certainly in the New Zealand studies) indicate that gambling was in any way linked with their first foray into offending.

4.7.6 Conclusions and future research

Although prison studies may be useful in showing how gambling can serve to exacerbate existing patterns of criminal behaviour, greater insight into the potential links between gambling and the development of offending behaviour is probably going to be achieved by targeting different populations. As mentioned, one effective method is to replicate studies of the nature undertaken by Blaszczynski and McConaghy (1994), or to conduct more extensive studies within community corrections, selecting only first-time offenders (as suggested by Marshall *et al*. (1998). In other words, although both types of study (prison vs. non-prison) have attempted to address the issue of causality, each has, in effect, provided varying degrees of insight into what should perhaps be considered two separate (although related) research questions.

1. How does gambling affect existing patterns of criminal behaviour?

2. To what extent does problem gambling lead non-offenders into crime?

> ♣ **The prevalence of gambling-related crime tends to vary depending upon the context. Approximately 10% of people scoring SOGS 5+ in community surveys admit to having committed illegal acts to gamble. This figure increases to at least 30% when one considers people with SOGS scores of 10+, and those in counselling. At least 20–30% of men in Australian prisons have gambling problems. For gamblers in prison, gambling appears to exacerbate, rather than give rise to, offending, whereas for gamblers in treatment, it is more likely that gambling was the cause of their first offence.**

4.7.7 Gambling and the court system

The fact that problem gambling is often the cause of criminal offending and is recognised as a *bona fide* mental disorder in the DSM-IV has raised the possibility that the disorder might be taken into account in court decision-making. For example, it is possible that the presence of mental impairment might be used to explain why a person should not be found guilty of crimes associated with their gambling, or be taken into account in sentencing as a mitigatory factor. As Taylor (2004) points out, overseas courts in countries such as Canada have generally been amenable to taking gambling into

account during both verdicts and sentencing. In the view of the judges in several Canadian cases, crimes arising as a result of problem gambling have been considered symptomatic of a 'diseased mind' and people were seen as less able to act out of free choice or with the same degree of control. Imprisonment was generally considered undesirable because it reduced opportunities for treatment and rehabilitation. Indeed, in one Ontario case, a judge was highly critical of the Government for having legalised gambling and therefore created the circumstances likely to contribute to the development of problem gambling.

By contrast, most Australian courts have been unwilling to consider problem gambling a reasonable defence for crimes. Some of the most common reasons advanced in recent cases are as follows:

- Problem gambling explains but does not excuse the crime.
- There is a need to deter future crimes.
- Problem gambling not a mitigatory circumstance.
- No evidence to differentiate armed robbery to feed a heroin addiction as opposed to a gambling addiction.
- Gambling is motivated by greed and so the person is morally culpable.
- Addictions are common accompaniments to crime, but no excuse for them.
- A lot of crimes committed by gamblers have been in jobs entailing considerable public trust. This has encouraged judges intention to emphasise the need for deterrence.

As Ford (2002) points out, such views are entirely consistent with the court's general philosophy of sentencing and punishment as enunciated in noteworthy cases such as *Veen v. The Queen* (1988). According to this case, punishment serves four principal purposes; namely: to punish the offender, to protect society, to deter others, and to rehabilitate and reform the offender. In cases where people have committed crimes associated with gambling, they have often been in positions of considerable responsibility, involving large sums of money held in trust by members of the public. In most of these cases, the crimes have involved ongoing and systematic misappropriation of money, where it would be difficult to argue that the crime was solely determined by uncontrollable impulses or impairment of judgement, and so it is not surprising that courts have felt obliged to impose a custodial sentence in the interests of deterrence and public accountability.

Despite this, there have been a handful of cases in Australia that have indicated a willingness of behalf of courts to take problem gambling into account in sentencing. In these cases, courts have reduced sentences because gambling can be identified as a clear cause of the person's problem, even if this does not entirely absolve them of moral culpability. In such cases, problem gambling has been seen as something which led the person to act in a manner that was not consistent with their usual character, and so (given

that the person has made reasonable steps in seeking treatment and rehabilitation), the court is less likely to see the person as posing a future threat to society (Taylor, 2004).

One of the principal obstacles to introducing problem gambling in court proceedings is that there is some dispute about the causes of gambling and whether it should be classified as mental disorder at all (Taylor, 2004). For this reason, Ford (2002) argues that any submissions to courts given by counsellors should describe problem gambling in terms of the its DSM-IV classification and as "pathological gambling" rather than just "problem gambling", so as to emphasise its status as a recognised mental disorder. Such submissions should clearly explain how disorder is defined in the DSM-IV and how it is verified in clinical interviews or via psychometric testing.

5. Research into excessive gambling behaviour

5.1 Overview

Many different theories have been advanced to explain why people gamble excessively. Comprehensive summaries of these theories are provided in a number of books and papers (e.g., Griffiths, 1995; Griffiths & Delfabbro, 2001; Walker, 1992a) and these provide an extensive review of the many studies that have, since the early 1970s, been conducted internationally to investigate the validity of different theoretical explanations. In Australia and New Zealand, only a subset of these theories has been subject to research, and so the discussion that follows should not be taken as being fully inclusive of all that is known about gambling in an international context. In addition, it must also be borne in mind that this review is concerned primarily with research conducted since the early 1990s, and so it includes only passing reference to earlier work that was undertaken in late 1980s.[5]

In broad terms, research into excessive and/or problem gambling conducted in the 1990s has tended to fall into three principal streams.

1. Dispositional Approach

The first body of research has involved developing effective ways in which to identify people who are at risk of problem gambling. In other words, this research is concerned with the following sorts of questions: In what ways do problem gamblers, as a group, differ from those who do not have problems with gambling? What personality or dispositional factors appear to place certain people at risk?

2. Behavioural / Structural Approach

The second body of research has tended not to make any assumptions about the nature of problem gamblers themselves, but has attempted to understand problem gambling in terms of the structural characteristics of the activities involved. According to this view, problem gambling is not an inborn, or dispositional, characteristic, but a pattern of behaviour that develops largely through circumstances or environmental factors to which certain people are exposed.

[5] It should be noted that the mid-1980s was, in many ways, the turning point for Australian gambling research, in that this period witnessed the establishment of the Australian Institute for Gambling Research at the University of Western Sydney, and also the establishment of the National Association for Gambling Studies. It was also the time when several of Australia's leading gambling researchers completed the first gambling-related doctorates, and began to establish active research programs with their own post-graduate students. Nevertheless, the reference point for the original literature review (1992-2002) and this update remains a useful starting point because of the significant transformation in the Australian gambling industry that occurred during this period due to the introduction of poker machines in nearly every State.

3. Cognitive approach

The third area of research is similar to the second, but has focused predominantly on cognitive, as opposed to environmental, factors. The central premise of this work has been that gamblers do not understand the true nature of gambling activities and, as a result, they over-estimate their chances of winning. Outcomes are seen as controllable or predictable when this is not the case, or there is a selective emphasis on information relating to winning and a dismissal of information relating to losing.

5.2 The dispositional approach to problem gambling

5.2.1 Gambling as a physiological addiction

In the United States, it has been commonly assumed that problem gambling is an addiction, disease, or pathology like alcoholism and drug-dependence (Griffiths, 1995; Lesieur & Rosenthal, 1991). As with alcoholics, gamblers are thought to experience tolerance (the need to bet more and more in order to obtain the same excitement), cravings (a strong physiological desire to gamble), and also withdrawal symptoms (anxiety, physiological symptoms) if they do not gamble. Evidence in support of this view has been derived from the observation that gamblers tend to increase their bets over time; they also appear to gain considerable excitement or arousal from gambling, and report depression and anxiety when they are not gambling. Gamblers, it is argued, are also more likely to be plagued by co-morbidities, including psychiatric pathologies such as personality disorders, and impulse disorders, as well as other forms of 'addiction'.

Taken together, these findings have led to the common perception that problem gamblers are 'prone to addiction', or that there is such a thing as an 'addiction-prone personality'. Such a view is entirely consistent with a view sometimes promoted by the gambling industry (described above), namely, that problem gamblers are 'people with problems who gamble', and that these people would have problems irrespective of whether gambling existed in society (Productivity Commission, 1999). More broadly, these arguments support the view that problem gamblers can somehow be identified and differentiated from other people in society.

In general, this view of problem gambling as a *bona fide* physiological addiction is rejected by many Australian researchers (Walker, 1992a). This has come about for a number of reasons. The most important of these is that, unlike drug or alcohol addiction, problem gambling does not have a clearly identifiable physiological mechanism. It is, as Dickerson (1989) has pointed out, 'a dependence without a drug'. For example, the fact that gamblers increase their bets over time does not mean that they are pathologically addicted to the desire to obtain excitement. Instead, this behaviour probably has more to do with the desire to recover previous losses or obtain larger wins (Blaszczynski, Walker, Sharpe, & Hill, 2005). Another difference is that gambling, even for problem gamblers, is positively reinforcing, meaning that gamblers undertake the activity because it provides them with enjoyment and excitement. In many forms of drug addiction this is

not generally the case. People with long-term drug dependencies take drugs in order to avoid the pain of withdrawal, or to relieve the distress caused by cravings, rather than because of a desire for pleasure (even though this might have been the original motivation).

In problem gambling, there has also been limited evidence to support the existence of withdrawal symptoms. Although, as discussed above, many problem gamblers are depressed and anxious, this may also be more strongly related to the distress associated with financial losses. Furthermore, as discussed in more detail below, there is little evidence that arousal plays a significant role in gambling. Motivational research clearly shows that, although a desire for excitement and arousal might be important for some racing and casino gamblers, this does not appear to the case in EGM gambling. Instead, most EGM players report gambling because of a desire to reduce arousal levels, to relax and escape from stress. This is clearly evident in observational studies of EGM players, and has also been confirmed in several systematic *in vivo* studies of arousal and gambling (e.g., Dickerson *et al*., 1992) that revealed little association between arousal (heart rate) and variations in gambling-related outcomes. Finally, there is evidence that many problem gamblers overcome their difficulties without any formal intervention, or move between periods of controlled gambling and excessive gambling. Such characteristics would not be expected if the problem were an inherent and intractable component of their physiology.

To investigate these controversies, the prevalence of tolerance and withdrawal-like symptoms in problem gamblers was investigated by Blaszczynski *et al.* (2005) in a study that compared three groups of people in treatment in Sydney. The first comprised problem gamblers with no alcohol dependence (19). The second were those with a co-morbid substance abuse disorder (19), and the third were people who had problems with alcohol dependence, but not problems with gambling (25). The aim of the study was to determine whether the prevalence of tolerance and withdrawal symptoms (known to be common in substance abuse) were as prevalent in problem gamblers.

The results showed that a significant proportion of problem gamblers reported increasing their bets to "obtain the same level of excitement", but that (consistent with the explanations above), this did not appear to be based on physiological factors. Problem gamblers mainly increased their bets out of a desire to win larger amounts of money. A significant proportion did, however, appear to experience withdrawal-type symptoms, e.g., irritability, headaches, restlessness, and anxiety when they were not gambling, and these figures were generally higher than those reported by the alcoholics and group with gambling and alcohol problems. These findings suggested that withdrawal appears to be an important component of problem gambling, although it is not possible to rule out the possibility that these symptoms are due to cognitive factors (e.g., financial stress) rather than dysfunctions at the neurophysiological level. A principal limitation of this study was that the valid sample sizes for many analyses were less than 20 (in some cases, only n = 12–13), so that many of the significance tests are very under-powered, so that it is difficult to draw many meaningful conclusions from the

data. The authors also do not present any standardised effect sizes measures to aid in interpretation.

5.2.2 Gambling as a form of psychopathology

The problem with the argument that gambling is not a form of psychopathology, however, is that many of the findings described in previous sections clearly indicate that problem gamblers, particularly those in treatment or in prison, do have very high levels of cross-addiction and co-morbidity. This includes a high prevalence of psychiatric symptomatology (Battersby & Tolchard, 1996), very high levels of alcoholism and smoking, as well as generally poorer psychological and physical health. How can such findings be reconciled with the general rejection of the addiction or pathology model by many Australian researchers? Arguably the best answer to this question is provided in a number of studies by Blaszczynski and his associates in New South Wales (see Blaszczynski & Nower, 2002 for a review). According to Blaszczynski & Nower (2002) and Nower & Blaszczynski (2001, 2004), problem gambling is not a uniform phenomenon. Instead, it is possible to identify several distinct groups of problem gamblers within both adult and adolescent populations each with its own characteristics and pathways into problem gambling. One of these groups, that he terms 'Pathway 3' gamblers, do indeed possess many of the characteristics described above, including substance abuse, criminal behaviour, and various psychopathologies. However, as Blaszczynski points out, it is possible to explain this behaviour: (a) without reference to the traditional addiction models described above, and (b) without making the unfounded assumption that this explanation applies to all problem gamblers.

Blaszczynski's preferred explanation is that this group of gamblers possesses many biological and psychological vulnerabilities that make them prone to self-destructive behaviours. In particular, as reported by Steel and Blaszczynski (1996) in a study of 115 problem gamblers in treatment, this group scores highly on measures of impulsivity and anti-social personality disorder (Blaszczynski & McConaghy, 1994). Blaszczynski and Nower (2002) have referred to North American research (e.g., Comings, Rosenthal, Lesieur & Rugle, 1996) that has suggested that a substantial proportion of problem gamblers may have a genetic predisposition to gamble. This research has also suggested that a proportion of problem gamblers appear to display neurophysiological traits that are similar to those exhibited by some children who are classified as having Attention Deficit Hyperactivity Disorder (ADHD). These neurophysiological traits, usually taking the form of disruption to neurotransmitters thought to be associated with behavioural regulation, are argued to contribute to excessive impulsivity, poorer attention abilities, and a high degree of resistance to punishment. Blaszczynski and Nower have suggested that gamblers who exhibit traits such as these usually have a poor prognosis for treatment.

Unfortunately, Blaszczynski did not provide any details concerning how many problem gamblers fit this profile, only that this group represents a subset of the total number of gamblers who seek treatment. Nevertheless, on the basis of data derived from both prisons and treatment settings, it would appear that problem gamblers who have

consistently engaged in criminal behaviour, who exhibit serious psychopathology, and significant cross-addictions might constitute, on average, 25–30% of all problem gamblers in treatment. However, additional research is clearly needed to confirm this figure using more extensive multi-faceted assessments of problem gamblers in prisons, treatment, and in the community. Such research would have important implications for the likely nature of treatment services required, the strategies needed to encourage such people to seek help, and the appropriate settings to screen for problem gambling. It would also have implications for the likely success of regulatory strategies designed to reduce the harms associated with problem gambling.

5.2.3 Gambling as a psychological addiction

According to Blaszczynski and Nower (2002), a second identifiable group of problem gamblers are those who use gambling as a coping strategy to deal with psychological distress (e.g., depression and anxiety). Instead of attempting to solve their problems using any form of practical strategy, these people gamble as a form of avoidance or escape, and become conditioned to the feeling of relief or dissociation resulting from an immersion in the activity. People in this group tend to have low self-esteem, high levels of stress, are disillusioned, and feel that their lives are without purpose. This can come about either as the result of a significant change or distressing life event (e.g., loss of a partner or job, change in place of residence), or as a result of long-term life disruptions such as child abuse, domestic violence, or general family disruption.

Blaszczynski and Nower's (2002) description of problem gambling is very similar to that of the North American researcher, Jacobs (1986), and his 'general theory of addiction'. This theory does not refer to physiological processes such as tolerance and withdrawal, but describes addiction in terms of the gambler's desire to fulfil significant psychological needs. For these people, the primary need is conceptualised as being to escape reality, to feel stimulated and in touch with life; to compensate for experiences that have been either absent or denied elsewhere in life. Addiction arises from the fact that people become dependent upon this activity for self-regulation of their emotions, and this repetition often leads to personally destructive consequences (see also Walker, 1989).

There is no question that this theory can be applied to many gamblers in Australia. As pointed out earlier in this review, there is strong evidence that a substantial proportion of problem gamblers experience clinical levels of both anxiety and depression. It was also pointed out that a substantial number of people use gambling as an avoidant coping strategy, and that this was particularly a feature reported by women in relation to gambling on poker machines (e.g., Brown & Coventry, 1997; Di Dio & Ong, 1997; Johnson & McLure, 1997; Pierce *et al*., 1997; Quirke, 1996; Scannell *et al*., 2000; Slowo, 1997; Thomas & Moore, 2001). These findings suggest that much of the increase in female problem gambling in recent years (and possibly problem gambling in general) can be explained in terms of these factors. Such views are further supported by Australian clinical studies in which it has been found that people experience significant degrees of dissociation when they gamble (Coman, Evans & Burrows, 1996; Coman, Burrows & Evans, 1997), as indicated by a loss of reality and sense of time.

In summary, therefore, it can be said that a psychological addiction is a disorder that has many of the behavioural elements of a physiological addiction, namely, the urge to undertake the behaviour, the repetition of actions, where there are significant harmful consequences. The difference is that there is less emphasis on underlying physiological mechanisms, and a greater emphasis on negative, as opposed to positive, reinforcement. There is also no assumption that people necessarily have a genetic predisposition to become problem gamblers.

A potential criticism of this concept is that there is a danger that it could be logically extended *ad absurdem* to encompass any potentially repetitious activity. Such activities could include, excessive eating, compulsive shopping, sports fanaticism, even the over-consumption of chocolate or coffee. However, this argument fails to take into account the fact that these activities usually do not give rise to significant harm. Excessive coffee or chocolate consumption (while potentially harmful to some degree) is less likely to cause the multiple harms caused by gambling. This is because there are physiological limits to how much a person can consume at any one time, and because the harms are usually reversible. By contrast, gambling has no such physiological limits. The degree of harm is limited only by a person's capacity to obtain money, and this can be almost unlimited in the short-term due to the availability of credit. In addition, once money and property is gone, it is gone permanently. By contrast, a person who overeats or drinks coffee excessively can reduce consumption and put many of the harms behind them.

Similar arguments apply to other repetitive behaviours such as compulsive shopping. Although there may be superficial similarities, there are clear differences. Shopping provides physical/tangible assets, whereas gambling usually does not. Moreover, a person who buys more than they can afford often has the ability (whether voluntarily or involuntarily) to return the property if debts are not paid. In addition, shopping does not involve the expectation of winning large sums of money based upon chance events which, as indicated above, is one of the primary reported motivating factors in gambling (Walker, 1992a).

5.2.4 Problem gamblers as pathological risk takers

Another popular idea in the gambling literature is that gamblers are pathological risk takers. This idea has stemmed from psychological research that suggests that people differ in their habitual levels of physiological arousal, so that there are certain people who need greater stimulation in order to reach what is termed an 'optimal level of arousal'. It has been argued that there are some people termed 'sensation seekers' who are extreme examples of this (Zuckerman, 1979), and that these people are highly prone to boredom, are highly impulsive, and engage in a wide range of high-risk activities in order to gain stimulation. Not surprisingly, attempts have been made to determine whether these qualities were also shared by gamblers. The general finding from this literature is that gambling in general does appear to be related to sensation seeking. Burnett and Ong (1997), for example, conducted a door-knock survey of 251 women in inner-city Melbourne to determine what personality factors predicted whether they had been gambling on EGMs since they had been introduced. Participants were administered

the Arnett Inventory of Sensation Seeking (Arnett, 1994). The results showed that women with higher scores in the sensation-intensity scale (a measure of the extent to which people gain stimulation from risky activities) were significantly more likely to have gambled. Similar results were obtained by Burnett, Ong and Fuller (1999) in a study of 778 Year 12 students in Melbourne. Students were administered the Arnett sensation-seeking scale as well as items relating to their involvement in gambling activities. Consistent with the study described above, it was found that both males and females with higher intensity of sensation-seeking scores were significantly more likely to gamble regularly than were those with lower scores. These findings have also been confirmed in clinical settings by Steel and Blaszczynski (1996) in a study of 101 male, and 14 female, problem gamblers, that showed that problem gamblers scored significantly higher on Zuckerman's (1979) sensation-seeking scale compared with population norms.[6]

Other studies have examined the relationship between impulsivity and problem gambling. These studies are conceptually important in that pathological gambling is classified as an impulse control disorder in the DSM-IV, so that one would expect impulsivity scores to be elevated in this group. Blaszczynski and Steel (1998), for example, assessed the personality characteristics of 82 gamblers seeking assistance at an Impulse Disorders Unit in Sydney. All were asked to complete the Eysenck Impulsivity Scale. This revealed higher impulsivity scores particularly among those people with a variety other personality disorders, although the study did not include any comparative scores for non-gamblers or those without gambling problems. A similar paper based on the same data by Steel and Blaszczynski (1998) found that pathological gamblers had impulsivity scores that were significantly higher than normative controls, but no comparisons were made with regular gamblers without gambling problems to determine whether this was necessary a characteristic unique to gamblers in general or pathological gamblers specifically. Similar findings were obtained by Blaszczynski, Steel and Farrell (1997) in a study involving 115 pathological gamblers in treatment compared with normative controls. In this study, the researchers also examined the correlation between impulsivity and SOGS scores and found a significant result, but the correlation was relatively small ($r = .26$).

Another recent study that has examined the links between impulsivity and gambling is one undertaken by Cooper, Kennedy and van Houten (2003) in Ballarat. In this study, 226 people were recruited from various sources including the university campus, first year psychology classes, and the community, and administered the SOGS and Eysenck's impulsivity scale. The results showed only a very weak association between SOGS scores and impulsivity ($r = 0.17$) and other high risk-taking activities (e.g., alcohol assumption). These results were generally in line with the earlier findings of Allcock and Grace (1988) that similarly show very little difference in impulsivity between problem

[6] Earlier work by Blaszczynski in the 1980s questioned this whole enterprise on the grounds that many problem gamblers were found to score lower than the general population on sensation seeking. However, this outcome appears to be more a function of problems in the Sensation Seeking scale. The original version asked people to indicate how many risky-activities they were involved in and problem gamblers were only able to endorse one activity. More recent scales such as Arnett's inventory avoid this problem by distinguishing the desire for stimulation from the desire to seek novel sensation-seeking activities. Problem gamblers score high on the former, but not the latter.

gamblers and other gamblers, but that gamblers tend to be higher than normative controls.

Another study by Blaszczynski *et al.* (2002) examined the links between child and adolescent disorders such as attention-deficit hyperactivity disorder (ADHD) and problem gambling. According to a growing body of international research, there may be links between two disorders, so that young people who experience ADHD may be more prone to problem gambling as adults. Some of the symptoms common to both disorders include "an inability to cease or inhibit a behaviour regardless of its consequences, the tendency to act without first considering the consequences…increased sensitivity to immediate reinforcement and a lack of sensitivity to punishment." (p. 63). In overseas studies, most evidence has been derived from retrospective studies in which adult problem gamblers are asked to describe their behaviours during childhood and adolescence to determine whether they reported signs of ADHD. Since studies such as these are prone to biases and inaccuracies in reporting, Blaszczynski *et al.* undertook a prospective study involving young people with a current diagnosis of ADHD. In Blaszczynski *et al.'s* study, 77 adolescents (37 with ADHD and 40 non-ADHD controls) were administered measures of impulsivity, psychological wellbeing, the DSM-IV-J and other general measures of gambling behaviour. The results showed that greater impulsivity was generally correlated with higher scores on the DSM-IV-J, but that there were no significant differences between the ADHD and control group on this measure or any other measure related to gambling behaviour. The authors concluded that their study did not provide any support for the apparent association between problem gambling and ADHD.

5.2.5 The role of impaired control and gambling urges

Another construct that has been used in explanations in Australia is the notion of impaired control. Impaired control is not a term based on a specific theoretical framework, but is a descriptive term based upon observations of problematic gambling behaviour, and other related disorders such as alcoholism. The construct was developed because of concerns that existing measures of problem gambling did not appear to capture many of the key elements of the behaviour, and that a separate measure would potentially assist in the identification of problem gamblers. Described in a number of papers, for example, Baron, Dickerson and Blaszczynski (1995), O'Connor & Dickerson (2003), and O'Connor, Dickerson and Phillips (1999), impaired control, as the name implies, refers to the observation that the development of problematic behaviours, such as excessive spending and chasing losses, occurs because gamblers gradually lose control over their behaviour. Gamblers find it increasingly difficult to set limits on their behaviour, to resist the urge to gamble, and to stop gambling once they have begun.

A scale based upon this construct (The Control of Gambling Scale, later renamed the 'Scale of Gambling Choices') was developed by administering the scale to participants in several of Dickerson *et al.*'s prevalence studies, including the first prevalence study in 1991, the studies in Tasmania and Western Australia in 1994, and also a clinical sample. The scale consists of 18 statements, which require a 5–point response (1 = Never, 2 =

Rarely, 3 = Sometimes, 4 = Often, and 5 = Always). Example items include 'I tried to spend less on my gambling', 'Once I've started gambling I have an irresistible urge to continue', and 'I tried to gamble less often'. This scale was administered to a sample of 84 TAB gamblers and 137 EGM gamblers in Adelaide in 1998–1999 in conjunction with measures of gambling involvement. As predicted, the results showed that impaired control was positively related to the amount of time and money spent on gambling, as well as to how often gamblers chased their losses. This finding supported the view that a more intensive involvement in gambling is associated with reduced control over gambling.

A limitation of the study, however, was the cross-sectional nature of the design, so that it was not possible to determine whether this association is due to selection or exposure. On one hand, it may be that an increasing involvement with gambling leads to greater loss of control over behaviour (e.g., via exposure to schedules of reinforcement, greater emotional involvement in gambling), or it may be that people who have less regulation of their behaviour in general (e.g., those who are more impulsive) tend to gamble excessively (see Neal, Delfabbro, & O'Neil, 2005).

More recently, Dickerson, Haw and Shepherd (2003) have conducted a more detailed study examining the relationship between control over gambling behaviour and psychological coping styles in EGM players. Over 200 EGM players were administered the Scale of Gambling Choices, measures of coping style, and measures of general gambling behaviour. The results showed that there was a significant positive association between impaired control over gambling and the frequency and intensity of gambling involvement.

In a similar vein, Raylu and Oei (2004) have recently conducted research into the role of gambling urges in problem gambling. An urge is defined a strong "need, want or desire to gambling" (p. 100) and is thought to be a driving factor that compels people to commence gambling. To investigate this concept, Raylu and Oei developed an Urge to Gamble Scale by modifying a pre-exiting 8–item Alcohol Urge Questionnaire. This instrument, along with SOGS, were administered to 968 participants, including 1st year psychology students and volunteers from the community. A principal components analysis showed that 6 items loaded significantly on a single factor that accounted for 55% of the variance. The scale was found to have good internal consistency (Alpha = 0.81), and reasonable concurrent validity. The results showed urge scores to be positively correlated with the SOGS (0.43) and other measures of gambling motivation and gambling-related irrational thinking (with correlations ranging between approximately 0.30–0.40) (Neal, Delfabbro, & O'Neil, 2005).

The final scale comprised six items: 1. All I want to do is gamble, 2. It would be difficult to turn down a gamble this minute, 3. Having a gamble now would make things seem just perfect, 4. I want to gamble so bad that I can almost feel it, 5. Nothing would be better than having a gamble right now, 6. I crave a gamble right now. All items were scored on scale ranging from 0 = Do not agree at all to 7 = Total agree. Thus, scores could range between 0 (no urge) to 42 (very strong urge).

As Neal, Delfabbro and O'Neil (2005) point out, Raylu and Oei's results suggest that this scale could be used in public health surveys to identify people whose gambling behaviour is showing signs of being problematic (potentially before significant harms have arisen), or could be used in clinical settings to determine the success of treatment on gambling-related urges. However, a principal limitation of the evaluation was that it was based on first year psychology students who typically do not gamble a great deal. Another concern identified by Neal, Delfabbro and O'Neil is that the scale contains some American-style wording, e.g., "Just perfect" and "I want to gamble so bad" that could be irritating when administered to Australian populations. Furthermore, the scale does not provide a clear cut-off score to indicate when a person's gambling urge is likely to be considered problematic.

5.2.6 Summary

A potentially controversial aspect of the findings summarised in this section is that they imply that gambling-related problems probably have their origins in factors external to activity itself. At first glance, this would appear to contradict arguments presented earlier concerning the links between increases in problem gambling and the availability of gambling opportunities. However, two points need to be borne in mind. The first is that not all problem gamblers possess the personality characteristics described above. The second is that problems can only arise when people who are at risk are exposed to situations that trigger their behaviour. Thus, although people may have pre-existing problems, these problems are made considerably worse by gambling, which (in the case of EGMs) appear to be the game of choice for those with significant depression and anxiety. Risks such as these would not exist if gambling activities were designed so as to allow entertainment, without the capacity for rapid and significant financial loss. For this reason, research into the causes of problem gambling has also placed considerable attention upon the nature of specific gambling activities and why they so often lead to gambling problems. This research is summarised in the sections below.

5.3 Behavioural analyses of EGM gambling

5.3.1 Overview of operant theory

A behavioural approach is one that focuses predominantly on the relationship between behaviours and rewards. One of the most important theories in this field of research is operant conditioning, developed by Skinner (1938) and Ferster and Skinner (1957). This theory, or set of principles, is based on the idea that learning occurs as a result of animals and people coming to associate the production of certain behaviours with specific rewards. The more often a reward follows the behaviour, the greater the likelihood of the behaviour being produced. Gambling is thought to be highly enticing because it offers many rewards that are highly appealing to people. This includes not only the obvious reward of money or wealth, but also the complex array of stimuli and activities that provide gamblers with entertainment and excitement.

Operant conditioning also shows that how behaviour is rewarded, or the pattern or schedule of reinforcement, also has a very strong influence upon behaviour. From studies of animals, it is well documented that the most effective form of schedule is one based upon 'intermittent reinforcement', and where rewards are based upon what is termed 'ratio schedules'. On these schedules, people or animals are rewarded for every X responses produced. For example, on a fixed-ratio (FR) schedule, one gets reinforced only after a certain number of responses have been produced. For example, a FR–10 or 20 requires 10 and 20 responses before a reward is produced. There are also, however, what are termed 'variable schedules' (VR) which involve rewarding people for a varying number of responses (e.g., the 6th, 10th, 12th, 15th, 21st, etc. response is reinforced). The number of responses usually varies within a range. For example, a VR–10 means that one gets randomly reinforced on average for making 10 responses, but it could be as few as 1 or 2 responses or as many as 20 (thereby giving an average of 10).

Although most forms of gambling could arguably be described in terms of these operant principles and in terms of schedules of reinforcement, EGMs provide perhaps the best example because of their capacity to maintain both persistent, and also very rapid, rates of behaviour. EGMs are based upon a special form of variable ratio schedule called a random ratio (RR) schedule. On a standard variable ratio, the maximum interval between rewards has an upper limit, and there is also an average rate of reward. A VR–10, for example, would be created by running a random number generator based upon a seed value of 20, and getting numbers that lie in the range 1–20, but which average 10 (i.e., 10 responses before the next reward), or 1 in every 10 responses. By contrast, on an RR the number of trials between each reward would be generated by counting off the number of trials until the random number generator produced a 19 or 20 (or any other 2 numbers). In the long run, this would also yield a 2/20 = 1 in 10 hit-rate, but it is possible that some of the intervals could be considerably longer than 20 if no 19 or 20 was generated for a long time. Much the same principle applies on modern EGMs in relation to the symbols generated on each trial, except that the seed numbers are very large, and the outcomes are more complex (see Productivity Commission, 1999).

Variable and random ratio schedules are very effective in maintaining behaviour. When people are not rewarded for extended periods, there is a much greater likelihood that people will persist if they have been previously exposed to intermittent reinforcement, than if continuous reinforcement was used. This is what is termed the 'partial reinforcement extinction effect' (PREE), an effect that has been observed in psychological research studies for decades. This occurs because, if people are used to not getting rewarded for every response, but instead for every X responses, they get more and more accustomed to going without reward, and find it easier and easier to persist even when they are not being rewarded. One explanation for the effect is that, on intermittent schedules, people find it more difficult to discriminate periods of non-reward, or to detect that the schedule has changed, and rewards are genuinely no longer available. Perhaps a more plausible theory (see Capaldi, 1969) is that people become conditioned to periods of non-reward if these periods have usually been followed by reward. For example, if gamblers have endured long periods of losing in the past which have ultimately ended in rewards (which will eventually happen due to chance), any

future experiences of non-reward will be treated as a 'waiting period' for an anticipated reward. Accordingly, the longer the losing sequence, the greater the expectation of reward.

5.3.2 Schedule-based behaviour in poker machine gambling

The implication of this work is that excessive gambling may be due to this schedule-based nature of the behaviour. In effect, gamblers lose control because their behaviour comes to be increasingly dictated by the schedule. This issue was first investigated in Australia by Dickerson *et al*. (1992) in a study of 12 high-frequency poker machine players in gambling venues in the ACT. Players participated with their own money, and response rates and outcomes were recorded by on-site observers armed with electronic recording equipment. The machines were not modern machines, but 20c slot-machines with pull-handles. The results provided some evidence that player behaviour was sensitive to machine events, and therefore potentially influenced by the schedule of rewards. Players were found to increase their play-rates following minutes in which small wins had occurred, to slow down their response rates after having obtained large wins, but they maintained the same play rate when no win had occurred in a particular minute.

This study was criticised by Walker (1992a) on the grounds that the experimenter had stopped to ask the players questions after each large win, thereby potentially giving rise to the disruption that was observed. Thus, in response to these criticisms, a follow-up study was conducted by Delfabbro and Winefield (1999) using a similar methodology. A larger sample of regular players (around 60) was observed in a modern gambling venue with modern machines. Data were recorded using a small portable video camera placed next to machines to record screen activity and button presses. Players were given $20 as a participation fee, which could be kept or gambled after a certain number of minutes of play had been completed. The results confirmed Dickerson's observation that large wins disrupt play-rates, but showed that this was only due to players stopping to admire and collect their winnings, rather than because they had systematically slowed their response rates after these events. The study also showed that it is difficult to conduct analyses that compare response rates in minutes with and without reward because almost every minute of play on modern machines will contain at least one small reward (e.g., 2 or 5 credits). It was concluded that modern machines are more effective in maintaining consistent response rates than are the older machines because of the constant occurrence of small appetising wins. Response rates were also found to be significantly faster (around 11–12 spins per minute) than on the old pull-handle machines (usually only around 7–8 per minute). In addition, the study showed that the betting behaviour of regular players appeared to be more consistent or stereotyped compared with non-regular players. Whereas non-regular players were generally inconsistent in how they responded to wins and losses, regular players were more likely to increase their bets when winning, and decrease them when losing. In other words, their behaviour seemed more sensitive to the outcomes of the game than that of the non-regular players.

Walker (1992a) has expressed some scepticism about the role of operant conditioning in gambling behaviour on the grounds that gamblers lose more often than they win, suggesting that this should lead to a gradual decrease in the behaviour over time. However, as Delfabbro and Winefield (1999) pointed out, one does not necessarily have to assume that gamblers are entirely rational in their consideration of the balance of wins and losses. Instead, is likely that gamblers have very short-term goals when they gamble (e.g., to obtain a win of a given size, or to go home with a certain amount) and that longer-term outcomes are not taken into account. In their view, problems arise when gamblers fail to achieve short-term goals (e.g., getting enough to pay bills, or not getting the required amount of game-play). In such circumstances, they often feel compelled to draw out further money to keep playing, and thus begins a vicious cycle of chasing losses that frequently results in substantial financial hardship.

5.3.3 Patterns of play in poker machine gambling and role of specific features

Although the pattern of reward is a very important component of poker machine gambling, it is important to recognise that there are many other potential factors that are likely to make poker machines appealing. There are also the themes depicted by the games, the colours, and music sequences, the graphical features and special effects, the availability of bonus features such as bonus jackpots or free-spins, and the general ease of operation, or clarity of the payout tables. Machines also differ in terms of how many payout lines are offered, or in how many credits can be bet on each line, and in how many credits are awarded per unit of money that is inserted (e.g., 100 credits per dollar for 1c machines, 50 credits per dollar for 2c machines, 20 credits per dollar for a 5c machine). There are also differences in how money is physically inserted into the machines. Almost all require coins to be entered to obtain credits, but some machines have note acceptors allowing the insertion of notes of varying denomination so that very large credit balances can be obtained without the necessity of visiting a cashier. Any or all of these factors could potentially influence player behaviour and choices.

Several survey studies have included questions to determine what features of poker machines make them most attractive. The Productivity Commission (1999) national survey found that 1–cent machines were significantly more likely to be attractive to problem gamblers (25% played vs. only 18% of non-problem gamblers), but that this group also preferred the most expensive $1 = 1 credit machines (34% of those scoring 10+ played these machines, compared with only 5% of non-problem gamblers). Thus, there was no clear trend in terms of the denomination of machine preferred by problem and non-problem gamblers. Problem gamblers were, however, significantly more likely to bet multiple credits per line (over 70% vs. 36% of non-problem gamblers). They also tended to bet on more lines than non-problem gamblers (9 lines vs. 6 for non-problem gamblers). Similar results were obtained by the South Australian Department of Human Services (2001) and by the South Australian Department for Families and Communities (2007). In both of these prevalence studies, problem gamblers did not greatly differ from other gamblers in terms of their preferred denomination of machine (1, 2 or 5 cent machines were most popular), although problem gamblers and moderately at risk gamblers in the 2007 survey were more likely to play $1 machines than low risk

gamblers (8.7% vs. 4.5%). In the 2001 survey, problem gamblers were found significantly more likely to bet more than one line per spin (80% vs. 69% of frequent non-problem gamblers), and to bet more than one credit per line (27% said 'often' or 'always' vs. 16% of frequent non-problem gamblers). In 2007, there was no significant difference in the number of lines played, but problem and moderately at risk players were more likely to bet more than one credit per line (47% said 'always' vs. 34% for low risk players). Thus, taken as a whole, these results suggested that problem gamblers tend to gamble more intensively than other gamblers, and that limiting the number of lines or credits per line that could be staked per spin would be a potentially useful harm-minimisation strategy.

In the late 1990s, a number of large-scale observational studies were carried out in NSW clubs and hotels by Walker to determine the typical gambling patterns of slot-machine gamblers (Walker, 2001; Williamson & Walker, 2000). In the first of these studies (Williamson & Walker, 2000), approximately 220 players on the popular game 'Queen of the Nile' were observed in clubs and hotels, and details of betting strategies and play options were noted. Walker noted that players can adopt a number of different playing strategies when they gamble on EGMs (Table 12) based upon the different combinations of line numbers and credits per line.

Table 12

Choices of playing strategy in EGM gambling (Williamson & Walker, 2000)

	Min Lines	Max lines
Min bet	Least common (1– 2%)	Most common (45%)
Max bet	Very rare	Less common (10%)

In general, most players adopt what Walker terms a *maximin* strategy (maximum lines, minimum credits). People tend to bet on as many lines as possible, but with the least number of credits per line, and this strategy was preferred by both regular (weekly) and non-regular players. The second most popular choice was to play maximum lines with around 5 credits bet per line. According to Walker, the reason why people choose lines over credits is because they try to maximise their chances of obtaining bonus features. The most popular of these are free-spin features. A free-spin sequence is usually triggered when players obtain a certain number of a key symbol on the screen. The computer runs the spins automatically and bonus credits are awarded based upon the events that occur within this sequence. This tendency is consistent with overseas research (e.g., Griffiths, 1995) that suggests that slot-machine players are very sensitive to near-miss events. Players tend to bet on as many lines as possible because they cannot bear the thought of missing out on any outcomes occurring on other lines not chosen.

An alternative explanation is that this behaviour results from a player preference for more consistent rates of reward. Each line is, in effect, an additional game, so that players who play more lines tend to receive more frequent rewards than those who bet on a fewer lines. This contrasts with the situation that would arise if a player were to choose

fewer lines, but bet more per line. In this circumstance, larger, but less frequent rewards would be obtained. It is clear that this latter option (reward magnitude > reward frequency) is less preferred than the former (reward frequency > reward magnitude), assuming a constant bet total per spin.

Walker's other finding is that people tend rarely to use the double-up feature on the machines, particularly when they have just obtained a large win. A double-up feature involves a 50:50 choice of two cards (red or black) and players either lose all their money if they guess wrongly, or double their money if they are correct. Walker proposes that this is a useful strategy because it gives the player even odds of obtaining an outcome; however, this view was disputed by Toneguzzo (1996, 2001) on the grounds that choosing double-up increases the volatility of the game and, therefore increases the return to the industry (see Toneguzzo, 1995 for mathematical proof). Walker's evidence in support of his view arose from two studies of EGM gamblers and gaming machines in NSW (Walker, Matarese, Blaszczynski, & Sharpe, 2004). In one study, Walker *et al.* interviewed 120 EGM players and asked them how often and under what circumstances they would be willing to use the gamble button. Only 29% players ever reporting using double-up features, and there was no evidence that heavy gamblers or problem gamblers were any more likely to do so. A second study extracted data from 241 machines to examine the relationship between the denomination of the machine and the use of the feature. The results consistently showed that people were very reluctant to double up wins, unless they were quite small and on lower denomination machines.

Walker's explanation for people's reluctance to use double up relates to Kahneman and Tversky's (1984) prospect theory, a well known theorem in cognitive psychology. This theory is based on the observation that people tend to be very reluctant to take risks (risk adverse) when they have money in hand (as would be the case here), and are more likely to take risks when facing a certain loss. For example, if a person were about to go home with a loss of $100, additional money will usually be risked in the slim hope of recouping this money. By contrast, given the same chance, people are less likely to risk $100 in hand in order to get an additional $100.

Another study along similar lines was undertaken by Haw (2000) as part of a Ph.D. investigation. This work was conducted with the support of Aristocrat Leisure Industries who provided access to data from 700 machines in NSW clubs. These machines differed in terms of their structural characteristics, in particular, the availability of note acceptors, and in the maximum number of lines on which people could bet. These data, combined with observations of players' behaviour indicated that players preferred a *maximin* strategy. The results also indicated that the availability of multiple-line betting options and note acceptors significantly increased the amount of turnover on the machines. Thus, consistent with the conclusions reached by the Productivity Commission, it was concluded that the removal of note acceptors, as well as the number of lines available, would significantly reduce the amount lost on machines. However, as with Walker's study, Haw did not provide any indication as to whether these features differentially influence the behaviour of problem gamblers as opposed to non-problem players.

Another study investigating the preferences of EGM players was undertaken by Delfabbro, Falzon and Ingram (2005) in the laboratory using a simulated gaming machine. Three separate studies were conducted each with 24 players. In each of these experiments, players were given the choice of gambling on simulated EGMs with different configurations. Machines were configured in terms of the availability of sound (available or not available), the level of illumination (low, high), play speed (5 second vs. 3.5 seconds between spins), in the number of play lines available (1 vs. 3 lines) and the number of credits that could be bet per line (1 vs. 3 credits). Two factors were orthogonally manipulated in each experiment so that it was possible to separate out the effects of each individual factor. Players were required to gamble on each machine for 3 minutes in a random order, and then were free to choose a machine for the next 30 minutes. In this way, it was possible to determine consumer preferences based upon the relative amount of time spent on each machine. The results showed that the availability of sound, the play speed and number of lines, and number of bets all influenced player preferences. Players preferred faster machines, particularly disliked the absence of sound, preferred to play maximum lines rather than 1 line with maximum credits, but were indifferent between machines with varying levels of illumination.

A more recent study by Svetieva, Walker, Blaszczynski and Sharpe (2006) examined the playing habits of 102 EGM players in NSW clubs whose gambling was tracked electronically using membership cards. The particular focus of this investigation was to examine whether problem gamblers had any distinctive playing styles that set them apart, e.g., did they change machines more often, play more intensively or continuously, and did they have longer sessions? The results showed that problem gamblers (defined as those who scored 5+ on the SOGS) spent significantly longer playing EGMs in a given week then non-problem players (280 minutes vs. 192 minutes), played more days per week (2.28 vs. 1.79), and lost significantly more ($65 vs. $26). The two groups did not, however, differ in many other aspects of play, including how often they changed machines, stayed on the same machine, or gambled continuously. The authors concluded that the principal difference between problem and non-problem players was the duration of sessions rather than the intensity of playing.

The same university of Sydney team (Sharpe, Blaszczynski, & Walker, 2005) have also investigated the role of near misses on gaming machines and whether these influence the way in which people gamble. A near miss is a gaming machine outcome that is very close to the desired or winning combination (e.g., 3 out of 4 winning symbols in a row, or the winning symbols appearing on a machine line that is not played). Some limited overseas research has suggested that players are attuned to these outcomes and that they play some role in the maintenance of gambling. However, the researchers were sceptical about the generalisability of these findings to Australian machines because of the greater complexity of the games and the contrived nature of the experiments used to investigate the effects. To investigate the role of near misses on Australian machines, Sharpe *et al.* conducted two experiments. In the first experiment, involving 59 problem gamblers (scoring 3+ on the SOGS), a group of 57 social gamblers and a sample of university students, players were presented with a series of 200 photos of wins, losses and near misses on the popular Queen of the Nile machine. In one condition, a 1-line machine was

displayed. A second condition used a 5-line machine and a third (20 lines). Participants were asked to indicate which outcomes indicated a win, loss or near miss. The results showed that very few near misses were identified, and that gamblers were even less likely to identify near misses than students. The more complex the machine (i.e., 20 lines), the lower the likelihood of any near misses being identified.

In a second study, 149 student gamblers were asked to play one of three different machines. In one condition, they obtained mixed losses and near misses; a second condition had all losses, and a third had all near misses. All participants were given $10 worth of credits to play with and were asked to rate their satisfaction at the end. Play rates and betting patterns were recorded throughout. The results showed that the proportion of near misses had no influence on play-rates, bet amounts, or player satisfaction.

The researchers concluded that near misses do not appear to play a major role in modern EGM gambling. Modern machines are so complex that players often find it difficult to discern the presence of near misses, and there are many other features of modern games, including the graphics and bonus sequences that play a much more important role in maintaining behaviour. At the same time, the authors conceded that their studies were subject to a number of caveats; including the use of students in Study 2, some demographic differences between the samples in Study 1, and a lack of realism due to the fact that players were not gambling with their own money.

5.3.4 Sydney University machine reconfiguration study

The most extensive research into how machine characteristics might influence both behaviour and gambling expenditure on EGM was undertaken by Blaszczynski, Sharpe and Walker (2001) (also summarised in Blaszczynski, Sharpe, & Walker, 2003). This series of studies was undertaken in conjunction with NSW clubs and hotels, and using gaming machines that had been modified so as to remove certain key characteristics. The game chosen was Pirates, a popular Aristocrat machine, that has a reel spin speed of 3.5 seconds, note acceptors for cash notes up to $100, and a maximum bet size of $10 per spin as based upon the maximum 20 lines and 25 credits per line (2 cent credits). These machines were modified so as to reduce the spin speed down to 5 seconds, to restrict the maximum bet to $1, and/or reconfigure the note acceptors so that they only accepted $5, $10 and $20 notes. In the hotels, one machine with all 3 modifications was placed next to an unmodified machine, whereas in clubs, machines with every possible combination of modifications were provided (see below).

No change to bill acceptor

	Maximum bet = $1	Maximum bet = $10
Play speed (fast, 3.5 seconds)	A	B (unmodified machine)
Play speed (slow, 5 seconds)	C	D

Change to bill acceptor (Maximum $10)

	Maximum bet = $1	Maximum bet = $10
Play speed (fast, 3.5 seconds)	E	F
Play speed (slow, 5 seconds)	G	H

Players who were present in the clubs and hotels were invited to participate in the study, and asked to respond to some brief questions concerning their gambling habits, as well as the SOGS. Thus, it was possible to compare the responses of problem vs. non-problem gamblers on each of the machines. The analysis conducted in clubs is arguably the most interesting because players were exposed to all 8 machines, so it is possible to determine how individual modifications affected responses. A total of 110 participants played all 8 machines, and 175–188 players played the unmodified machine and at least one other modified machine. This allowed comparisons across all machines as well as pair-wise comparisons involving machine B (see above) vs. each of the others individually.

In the first study, players were asked to rate their satisfaction with each machine, as well as how exciting it was. The analyses conducted by Blaszczynski *et al*. (2001) revealed that play speed significantly influenced both measures. Machines with slower play speed were perceived as less exciting and less enjoyable, although this effect was not particularly large (less than 0.5 points on a 5–point rating scale). Ratings typically decreased from around 2.9–2.0 out of 5 to around 2.6–2.7. Players also found the restriction to maximum bet size reduced their enjoyment, but this did not affect their satisfaction. Modification to the note acceptors did not influence either rating. When asked if they had detected the nature of the modification, most players had no trouble identifying the reduction in reel speed, but very few, if any, noticed the other modifications. Nevertheless, when asked which machine they most preferred, 23% rated the control machine as most preferred compared with only 7.5–15% who preferred the other machines. All of these effects did not differ depending upon whether a person was a problem vs. non-problem gambler.

In a second study, 779 players from 4 clubs and 7 hotels were invited to participate in the research using announcements and advertisements during peak periods. The same experimental design was used, except that observers were placed in the clubs for 10 hours a day for 5 consecutive days to observe the behaviour of all players who chose to gamble on the experimental machines. Only experimental patrons were allowed to use these machines. Players were told that the payout rates were exactly the same as on regular machines (which was true).

The results of Study 2 indicated that problem gamblers were more likely to use note acceptors of greater than $20 (22% vs. 10% of recreational gamblers); problem gamblers were more likely to bet more than $1 per spin (7.5% vs. 2.3% for recreational gamblers), but there was no significant difference in rates of play, i.e., problem gamblers were no more likely to play faster than other gamblers. However, problem gamblers (in clubs) were found to play longer than recreational gamblers (42 minutes vs. 29 minutes), to bet more on each spin (3.7 credits per line vs. 1.8), and to lose more in the session ($54 vs.

$17). They also consumed more cigarettes and alcohol. There was no significant difference in relation to the average number of lines selected per spin, or in the usage of ATMs in venues.

Blaszczynski *et al*. (2001) also conducted a series of regression analyses to determine what factors influenced performance. Unfortunately, as the authors themselves conceded, these analyses were difficult to interpret given the significant overlap between many of the variables analysed. For example, although persistence (time spent playing) was predicted by the amount wagered, SOGS scores, and the amount drunk or smoked, these factors are themselves a function of persistence, and so the relationship is probably circular. That is, the longer the session of gambling, the greater the losses, and the more cigarettes and alcohol that would be consumed. It is not therefore possible to conclude that these factors influenced persistence.

Another potentially problematic conclusion concerns the reported relationship between play speed and persistence. According to the authors, these two factors were inversely related, so that slower play speed would be associated with greater persistence. However, the difficulty here is that the play speed of each player was based upon the length of the person's session divided by the number of plays. Once again, this analysis is potentially circular, in that there may have been other factors that contributed to longer sessions in problem gamblers. For example, if problem gamblers playing the slower machines had compensated for the reduced rate of reinforcement by betting on more lines, or betting more per line, they would have obtained larger wins and (on average) longer payout sequences (music sequences), and probably more free-spins. These factors alone would have accounted for the lower play-speed estimate.

As Delfabbro and Winefield (1999) pointed out, it is a fundamental rule in operant research to distinguish inter-response intervals from post-reinforcement pauses or events. This is because it is possible to observe no significant differences in the former, but significant differences in the latter. Variations in response rates can only be validly measured by directly recording each response and the time intervening, and removing the delays caused by reinforcement sequences. Further work could, therefore, be conducted using Blaszczynski *et al*.'s (2001) methodology, but with direct recording of response rates to sort out these two effects. Furthermore, in future modifications to machines, it would be useful to control for the potentially confounding effects of other features. If play-rate variations are examined, this should be done with betting options held constant, so that those on slower machines do not, consciously or unconsciously, increase the number of lines to maintain a higher rate of reinforcement.

Nonetheless, despite these potential problems, Blaszczynski *et al*.'s (2001) argument that modifications could be circumvented by playing longer is still valid. Indeed, this was confirmed in a third study that tracked the amount spent by a sub-sample of gamblers on the different machines, and how often they played. This study confirmed Haw's (2000) finding that modifications to machines of this nature significantly influence the turnover of machines. Revenue was lower on machines with slower play speed, lower maximum bet sizes, and also lower value note acceptors. The decrease in the money inserted into

the machine was 34% indicating that people were less likely to play the machines, but the decrease in cash in-cash out was even greater (48%). Cash in-cash out refers to the amount earned by the machines as based upon the amount inserted and the winning removed. When players persist longer, the amount lost (X) gets increasingly larger as a result of cumulative effect of the negative rate of return on the amount put through the machine. The fact that problem gamblers were found to stay longer at venues (even if they did not gamble any more frequently) (around 8 hours vs. 4–5 hours) on each visit suggests that even subtle differences in the amount of money played through the machine could have a significant influence on the expenditure of problem gamblers.

In 2003, Blaszczynski *et al.*'s (2001) study was subject to a detailed review and critique by researchers from the New Zealand Centre for Gambling Studies (Tse, Brown, & Adams, 2003). On the whole, the reviewers were impressed with the quality of the work undertaken by the Sydney University team, but drew frequent attention to a number of ambiguities in statistical and methodological reporting. In their view, the only principal limitation of the report was that there were several inconsistencies in reporting between the Executive Summary and the body of the report, which made it difficult for the reader to decide whether specific machine modifications were likely to be effective or ineffective in harm minimisation. For example, inspection of the results indicated that reducing the maximum bet size and removing note acceptors appeared to be the most promising strategies to reduce losses on EGMs and that slowing reel speed appeared less effective. However, in other parts of the Executive Summary, it was pointed out that relatively few gamblers bet any more than the reduced bet amount of $1 anyway, so that restricting the maximum bet size to $1 would only influence the behaviour of relatively few gamblers. The New Zealand team believed this to be an unnecessarily pessimistic conclusion and argued this potential harm minimisation measure showed "strong potential as a machine-based modification to minimise harm associated with problem gambling." (Tse *et al.*, p. 6).

The New Zealand review also provided a detailed critique of the Sydney University's analysis of the financial impacts of the modifications and subsequent analyses conducted as part of a report prepared by the Centre for International Economics (CIE) (2002). Although raising some concerns about the presentation of some of the statistical information in the Sydney University report, the reviewers were generally satisfied with most of the analyses. On the other hand, they were generally dissatisfied with many of the analyses presented in the CIE report, particularly those relating to the projected venue and state-wide revenue impacts of specific machine modifications. According to the CIE, full introduction of the three machine modifications investigated by the Sydney University team to NSW EGMs would lead to a 20% reduction in club gaming revenue and a 40% reduction in hotel gaming revenue.

- **In conclusion, Blaszczynski *et al.*'s (2001) first two studies provide further convincing evidence that reducing the number of credits that can be bet per line would be a useful harm-minimisation strategy for problem gambling. Slowing the reel speed would also be useful, except that this would only be effective if this coincided with controls over other betting options. As a stand-alone modification, these features would have little effect because players could compensate by gambling more intensively, or by gambling longer. The removal of high-denomination note acceptors may also be of limited value. Although problem gamblers are more likely to use these facilities, and this appears to increase the turnover on machines (Haw, 2000), problem gamblers have the option of inserting smaller notes more frequently if the high denomination option were unavailable.**
- **The central problem is that problem gamblers spend longer at venues and find ways to gamble more intensively. Ideally, minimising these harms requires the simultaneous reduction of play speed, number of credits allowed per line, and the number of line options. Individual players would have to be tracked (perhaps using smart-card technology), and prevented from gambling once a certain time limit or expenditure amount had been exceeded.**

5.3.5 Reviews of EGM technology

In addition to the research projects described above, there have also been several major reviews of electronic gaming machines and possible harm minimisation strategies. One of these has been produced by the Australian Institute for Primary Care's (AIPC) (based at LaTrobe University). An initial review was undertaken to summarise the changing nature of the gaming machine and the nature of the gaming machines industry, and this was followed by a full report that also contained empirical findings including a more detailed analysis of the impact of gaming machine technology on the behaviour and beliefs of problem EGM gamblers (AIPC, 2006). Another major report was produced by the Independent Pricing and Regulatory Tribunal (IPART) (NSW) 2003 as part of its review into harm minimisation strategies for problem gambling.

Research by the Australian Institute for Primary Care (AIPC)

Commissioned by the Victorian Gambling Research Panel, the Livingstone review provides a comprehensive review of technological, psychological and geographical issues relating to EGMs in Australia (the vast majority of the material is covered in the current review). The first part of the report provides a description of the mechanics of the EGMs and their historical development from the late 19th Century. A second section describes the technology involved in the networking of EGMs across venues. A third section describes the geography of EGMs in Australia. A fourth section describes monitoring procedures. A fifth describes some of the psychological theories advanced to explain the attraction of EGMs as well as Australian and international research that has been conducted to investigate these different hypotheses arising from different

theoretical models. Much of the material contained in the AIPC review is summarised in many of the sections of this literature review (e.g., studies investigating the effects of modifying gaming machines, psychological theories of gambling behaviour).

Two separate studies were also conducted to investigate the effects of gaming machine technology on the self-perceived behaviour of problem gamblers. One study involved detailed focus groups conducted with 62 problem gamblers who had sought assistance from counselling agencies in Melbourne, whereas the second involved a survey of almost 100 problem gamblers being tracked as part of an ongoing longitudinal study being conducted in conjunction with New Focus Research (Victoria), and funded by the Victorian Department of Justice. In the focus group study, gamblers were asked to discuss what factors influenced their choice of gaming venue, the type of gaming machine they preferred, and what harm minimisation strategies they thought might be effective in reducing problem gambling. In relation to questions about gaming venues, it was found that gamblers differed in their preferences. Although most drew attention to the importance of proximity in the choice of venue, the preferred layout or size of the venue varied from one gambler to the next. Some liked larger, more glamorous venues because of the size of the jackpots, the lights and colours, and the prizes, whereas others reporting preferring smaller, more intimate or secluded gambling venues. Some enjoyed venues where it was possible to converse with staff on a frequent basis, whereas others preferred to gamble with little social interaction. However, many indicated that they generally did not like a great deal of social interaction and that this was indeed one of the obvious ways in which one could identify problem gamblers within venues.

In terms of the characteristics of machines preferred by players, it was found that sounds, lights and graphics were very important in the choice of machine, although players did not appear to identify any specific characteristics that attracted them. Most reported having their favourite machines, but it was not clear from the findings presented whether this preference had arisen because of the inherent characteristics of the machine itself, or because the player happened to have had greater success (wins) on the machine. The vast majority of respondents indicated that the denomination of the machine was important and that 1c, 2c and 5c machines were typically preferable because one could obtain greater play time as well as greater opportunities to win bonus prizes by betting on the maximum number of lines (i.e., it was cheaper to do this on lower denomination machines). Free spin features were also considered particularly important. Being able to obtain bonus games and to trigger subsequent sequences (i.e., a bonus within a bonus) was very attractive to players, and many reported that was a strong incentive to keep playing.

When asked whether there were any features of the gambling environment and venue or the machines that were considered influential in the maintenance of problematic behaviour, many gamblers drew attention to the availability of bill note acceptors and ATMs Note acceptors were considered a problem because they allowed people to gamble silently without inserting coins and drawing attention to the amount they were spending. It reduced the need for interaction with venue staff such as cashiers, and allowed very large amounts of money to be inserted into the machine very quickly.

ATMs were similarly regarded with considerable concern. The presence of ATMs made it possible to stay at the same venue and gamble larger amounts of money within a single session because one did not have to leave the venue to seek other sources of money- a journey that may have helped to reconsider the decision to continue gambling. Other features such as clocks on the walls, promotions, advertising were considered less important, although some gamblers reported that being sent promotional material made it more difficult for them to maintain control over their gambling behaviour during times when they were actively trying to counter the urge to gamble.

The sample was also asked whether they utilised any strategies, engaged in certain behaviours, or had certain thoughts when they gambled on EGMs Many gamblers reported having a number of beliefs about how to, and when, to play the machines in order to increase their chances of winning. Most common was the belief that there were certain times (e.g., at the end the day or at lunch-times) when machines were more likely to pay out because they were 'due for a win' or full of money. Players also reported rubbing the machines and engaging in superstitious rituals. Personalisation of the machine and the gambling experience were also important. Some reported talking to machines, swearing at them, trying to cajole them into paying out, or tricking them. All of the behaviours and beliefs reported were generally consistent with previous EGM research undertaken in Australia (e.g., Delfabbro & Winefield, 2000; Walker, 1992b, 2000).

This first AIPC study is useful in that it provides detailed insights into the perceptions of a representative sample of problem gamblers which allowed for an open exploration of different issues relevant to both venue design and technology. However, several methodological limitations of the research should be noted. First, the study was based only on self-reported behaviour, so that it is possible that there may be patterns of behaviour which are common in this sample, but which are not easily understood or described by the players themselves. Second, the sample was heavily weighted towards the views of problem gamblers in treatment and contained a significant over-representation of older, female players (74% were female), so that the findings might not reflect the views and behaviours of other problem gamblers within the community. Finally, and perhaps most importantly, the study only sought views of problem gamblers. For this reason, it is not possible to determine whether the same, or different, responses might have been obtained from regular EGM gamblers without gambling problems. Previous studies by Delfabbro and Winefield (1999, 2000) and Walker (2001), for example, have shown that many of the machine preferences, behaviours and irrational beliefs are also observed in regular players without gambling problems. Thus, it remains unclear whether this study undertaken by the AIPC describes characteristics which are unique to problem gamblers, or regular EGM players in general. Nevertheless, the reader is directed to other sections of the present literature review (in particular, the summary of cognitive research) that has shown that irrational beliefs (although common to both regular non-problem and problem gamblers) tend to be more common and strongly endorsed by the latter.

A second study conducted by the AIPC involved an analysis of some questions included in a Victorian telephone survey of almost 100 regular EGM gamblers. Respondents (of whom around 70% were women) were asked to describe the nature of their EGM gambling. The results showed that:

- 52% of people always spent all the money they had available when they gambled on EGMs;
- 82% preferred 1, 2 or 5 cent machines;
- most liked to gamble at venues close to where they lived;
- 76% did not like to gamble at venues where they were well known to staff;
- 60% utilised a gambling strategy based on maximum lines and minimum bet and only 13% chose maximum lines and maximum bet, and 6% chose maximum bet, minimum lines;
- 87% did not agree with the view that skilful play could influence the chance of winning;
- 55% believed that it was possible to affect the amount that the machine paid out;
- 52% believed that machines paid out more at certain times of the day.

Again, none of these findings are new or inconsistent with previous studies conducted within Australia (e.g., Walker, 1992b, 2001). People tend to prefer machines and playing styles that give them greater playing time, more opportunities to win (e.g., by betting smaller amounts on multiple lines). People also like to gamble close to where they live, but like to maintain a relatively low profile. Only a minority of problem gamblers like to interact with venue staff and become well known to them. Although most EGM players do not believe that skill can influence outcomes (in psychology, this is commonly referred to as primary illusory control), they nonetheless believe that they have some predictive control over the outcomes. In other words, people believe that there are certain ways to increase one's chance of winning, and much of this involves beliefs relating to so-called "hot periods" or the belief that one can influence or trick the machine using certain strategies or playing styles (see Delfabbro & Winefield, 1999, 2000; Walker, 1992b).

IPART Review

The IPART review was conducted at the request of the Minister for Gaming and Racing in NSW and was designed to develop possible harm minimisation strategies to reduce problem gambling. A particular focus of the review was on modifications to gaming machines and technological approaches to harm minimisation. These different forms of harm minimisation strategy were classified into six major groups:

(1) Circuit breakers, (2) Information for gamblers, (3) Liquidity controls, (4) Restricted promotion of gambling (e.g., via advertising, promotional schemes), (5) Community counselling services, and (6) Technical measures. Most of these terms are self-

explanatory, except for "circuit breakers" which refers to measures that break the pattern of gambling behaviour (e.g., machine or venue shut-downs), and "liquidity controls" which refers to measures designed to limit gamblers' access to money in gambling venues. "Technical controls" refer to the physical operation and design of machines and gaming venues.

As pointed out by the Australian Institute for Primary Care (2006), a number of harm minimisation measures are already in place in NSW.

Circuit breakers: Compulsory shutdowns of gambling venues (circuit breakers)

Information for gamblers: Signage; clocks in gaming areas; brochures; counselling services; advertisements relating to problem gambling

Liquidity Controls: Payouts not to be paid in cash; credit not to be provided for gambling at venues; ATMs to be located away from gambling areas

Restricted Promotion: Controls on advertising and player reward schemes or other inducements to gamble

Community/Counselling Services: Gambling operators must enter agreements with counselling services; training of staff in gaming machine venues

Technical Measures: Human intervention in any large payouts on gaming machines

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The IPART review also considered a number of additional technical modifications to the operation of gaming machines and gaming venues. These included: slower reel speeds, removal of visual and sound stimuli; requirement of natural light in gaming areas; pop up reminders on machines and on-screen clocks; for patrons to be visible to people outside the gambling venue; limits on maximum bet levels or note acceptors; and possible controls on music and other stimuli introduced when wins are paid out on gaming machines. IPART's approach was to maintain, introduce, repeal or improve these measures only if there were broad stakeholder consensus that they were likely to be effective, or to seek further research and evaluation if there was little clear supporting evidence or consensual stakeholder opinion available.

In making recommendations, IPART acknowledged that there was generally **very little research based evidence** in relation to the measures it was asked to examine. Nevertheless, in its final report, IPART came out in support of some of these changes, including the introduction of clocks on machine displays and pop-up messages to alert players if they had been gambling continuously for 60 minutes. There were also changes that were prioritised for further investigation, including: modification to maximum bet levels, note acceptors and the positioning of ATM facilities. On the other hand, other

modifications such as to reel speed, EGM artwork, natural lighting, sound effects, and the number of double-ups were not recommended.

Queensland Research

In 2001, the Queensland Government imposed an upper limit of $20 on the bank notes that could be fed into Queensland gaming machines. No longer was it possible for players to insert $50 and $100 into machines. Instead, if players wanted to insert $100, they had to insert five separate $20 notes. To investigate the effectiveness of this change, the Office of the Government Statistician conducted two studies (Brodie, Honeyfield, & Whitehead, 2003). The first involved a survey of 359 people (all previous participants in the Queensland Household gambling survey) who had gambled on EGMs at least once in the previous twelve months. Participants were asked to indicate the extent to which the modification had influenced their behaviour. The results showed that 61% of respondents approved of the $20 limit. A further 28% believed that the limit should be restricted even further. Although most people reported no change to their gambling behaviour, around 15–20% of the total sample indicated that they had reduced the amount they spent on EGMs, as based on both the amount bet per game, time spent, and their overall expenditure. Importantly, the results showed that these reductions were significantly stronger in those identified as high risk or problem gamblers. Within this problematic group, it was found that 30–40% had reduced their expenditure and reported having gambled less frequently since the measures had been introduced.

A second study was conducted to examine changes in net gaming revenue from 1997 to 2002 to determine the revenue effects of these modifications. The results showed no clear evidence that imposing a limit on note acceptors had influenced total gaming revenue. In other words, the authors found that there was a disparity between what survey respondents had indicated and what was evident through the analysis of objective data. However, as they pointed out, it may be that there are other factors that contributed to the changes in the perceived behaviour of problem gamblers during this period, or that the decrease in gaming expenditure in this group was not sufficient to have a discernable effect on overall gambling revenue. The authors concluded that imposing limits on note acceptors was a potentially useful strategy to reduce expenditure among problem gamblers.

5.3.6 The role of classical conditioning

Another convincing explanation for gambling behaviour is derived from Pavlov's classical conditioning theory. According to Sharpe and Tarrier (1993), gamblers come to associate gambling with specific psychological and physiological effects. For some, gambling is a way of reducing anxiety. For others, it is a way of increasing arousal. This conditioning effect comes about as a result of the experience of gambling. As a result, when gamblers are exposed to any situation or stimulus associated with gambling, they respond by becoming more autonomically aroused. If this arousal occurs in conjunction with negative mood states (as is often the case), the result will be a strong feeling of anxiety that (from the gambler's viewpoint) can only be reduced by gambling. There are

two reasons why these people choose gambling rather than some other activity to vent their anxiety. The first is because of the established conditioning described above. The second is because they lack the coping skills to deal with their problems in any other way. In this sense, Sharpe and Tarrier's view of problem gamblers is very similar to that described by Blaszczynski and Nower (2002) in his Pathway 2 model of problem gambling. According this view, gambling is a maladaptive coping strategy, or means of emotional regulation.

There is very little recent Australian research that has investigated the extent to which gambling stimuli influence the onset of gambling sessions. However, it is clear that these stimuli play a significant role. The Impaired Control Scale developed by Baron *et al*. (1995) contains a number of items relating to gamblers' inability to resist the temptation to gamble when they pass by gambling venues, and it is known that problem gamblers (as measured by the SOGS) score significantly higher on this scale. There is also unpublished data from the Anxiety Disorders Unit (Flinders University), which suggest that problem gamblers become more cortically aroused when presented with gambling-related stimuli, such as the musical jingles used in EGMs

The only significant limitation of this theory is that the mechanisms leading to the development of associations between the urge to gamble and gambling stimuli are somewhat unclear. Although there is no difficulty in explaining why people might gamble in order to reduce anxiety, or to increase arousal, and how gambling stimuli can come to be associated with certain responses, it is unclear why exposure to gambling stimuli might generate anxiety to start with. Furthermore, the evidence supporting a link between arousal and gambling is not well established, particularly in relation to EGMs

5.4 Cognitive research into regular gambling in Australia

The basic premise of the so-called cognitive approach to gambling is that people are not entirely rational in their understanding of the odds of gambling, the concept of randomness, and skilled versus chance-determined events. Instead, as a result of inefficiencies or inaccuracies in the processing of information, people over-estimate the extent to which they can predict and influence outcomes based upon their own knowledge and skills, and this leads to a subjective expectation of success that is higher than the objective odds would dictate. Evidence to suggest that this kind of over-estimation occurs in gambling has been derived from a number of sources, including surveys in which people are administered scales requiring them to indicate how skilful they are as gamblers. These latter types of studies (e.g., Delfabbro, 1998) have indicated that a small proportion of gamblers believe that it is possible to use strategies to improve performance on a number of chance-based activities (e.g., roulette, two-up and Keno).

More convincing evidence has, however, emerged from observational studies in which people are asked to provide feedback while they are gambling. For example, Walker (1992b) conducted an observational analysis of 9 slot-machine players who were gambling with their own money in a NSW club. In this study, Walker utilised a

technique developed by the Canadian researcher, Ladouceur. This was the so-called 'speaking-aloud method', in which gamblers were required to speak aloud their thoughts while they gambled. The results confirmed other findings by indicating that 80% of machine-related statements could be classed as 'irrational' (in that they implied that factors other than chance were involved in slot-machine gambling). Similar results were obtained by Delfabbro and Winefield (2000) in a larger study involving 20 regular slot-machine players who were gambling in an Adelaide hotel. This study also recorded behavioural and outcome data so that it was possible to examine the relationship between 'irrational' thinking and other components of the game. Once again, over 70% of gamblers' verbalisations could be classified as irrational. The study also indicated, however, that the degree of irrationality was related to the degree of risk-taking, with larger bets having been placed by those who produced a higher proportion of what were classified as irrational statements. The studies of Walker (1992b) and of Delfabbro and Winefield (2000), and also the earlier study by Delfabbro (1998), have confirmed the existence of many informational biases, fallacies, or behaviours that have also been commonly observed in overseas studies. Some of these are as follows:

1. *Gambler's fallacy or representation heuristic*: People believe that short-term sequences of events should reflect the qualities of long-term sequences. For example, a machine that is supposed to pay out a certain rate of return should provide this return at all times, so that a long series of losses should, according to the law of averages, correct itself by providing a large win. Based upon this logic, gamblers search for machines that have not paid out for a long time ('hot' machines), and avoid those that have recently paid out ('cold' machines). They get angry if others commence playing on a machine that they have been playing for a long time without success. Much the same process is observed in other forms of gambling, for example, in lotteries, roulette and Keno, in which players believe that certain numbers are more likely if they haven't occurred for some time. A sequence such as RRRRR (five reds) in roulette, for example, leads to the expectation that black is more probable.

2. *Personalisation of the machine*: People ascribe person qualities to machines and treat them as electronic rivals against which they are playing. Machines may be described as being unfair and unpleasant if they do not pay out, and it may be assumed that machines have a 'memory' for players. Some players believe, for example, that if one has won a disproportionately large amount on a particular machine, then this machine will take this money away. Strategies such as changing one's betting strategy or leaving the machine and returning are used to 'convince' the machine that one is a different player. Delfabbro and Winefield (2000) found that men are more likely to attempt to 'convince' machines in these ways, whereas women are more likely to question the fairness of the outcomes.

3. *Availability heuristic*: People's perception of the likelihood of a particular event is often strongly influenced by salient examples, even when there is no objective chance in the odds. Thus, if wins are accompanied by an array of stimuli, or it is well publicised that people have won large amounts while gambling, these events give rise to the impression that such events are more likely. It is well documented that slot-

machines are designed so as to provide very colourful payout sequences that increase the saliency of reinforcement, which may lead people to believe that they are winning more often than they are losing.

4. *Illusion of control*: This very common illusion refers to the fact that people falsely believe that it is possible to increase the probability of winning on purely chance-determined activities, using skilful play. People believe, for example, that changing one's betting strategy on slot-machines or roulette, or tossing coins in a certain way in two-up, or dice in craps, can influence the outcomes.

5. *Focus on absolute frequencies*: People also tend to focus on the absolute frequency of events as opposed to their relative frequency. Thus, people tend to feel that they are doing well when a larger number of wins is occurring, but may ignore the fact that they are losing more than they are winning. Modern slot-machines encourage this bias by paying back very small wins that are often of less value (in credits) than the amount staked on a particular spin. In this sense, recording this event as a 'win' is potentially misleading.

6. *Belief in personal luck*: Gamblers may also believe that they are different or luckier than other people. Thus, even if they are told that the objective odds of winning lotto is 1 in 8 million, this may not counter their personal belief that the objective odds do not apply to them because of a special quality that they possess. This suggestion was confirmed amongst young adult gamblers in Melbourne by Moore and Ohtsuka (1997) who showed that problem gamblers were significantly more likely to believe that they could 'will their numbers to come up', 'by thinking positively', or 'by using one's lucky numbers'.

7. *False linking of cause and effect*: It is well documented in the animal behaviour literature that events that occur in close proximity to reinforcement will often become conditioned and then be repeated, superstitiously, under the same circumstances in the hope of a reward. This behaviour is also frequently observed in gamblers who develop odd rituals and strategies to influence the outcomes. Slot-machines players can be observed rubbing machines, tapping them, and talking to them, all because this behaviour happened to be produced earlier during the occurrence of a winning sequence.

8. *Optimism bias*: This bias refers to people's belief that they are more likely to experience positive events, and less likely to experience negative events relative to their peers (Weinstein, 1980). This bias was investigated in some detail by Lo and Anjoul (2001) in NSW using student gamblers. When asked to rate their level of skill relative to other players, how likely they were to lose, and their general expectation of winning various games of skill and chance, gamblers rated themselves significantly more favourably than did non-gamblers.

As Delfabbro (2004) has pointed out, a limitation with much of this research into gambling-related cognitions is that overseas studies have frequently found high levels of

irrationality in student samples or non-gamblers. Thus, it is unclear whether greater irrationality necessarily covaries with a heavier involvement in gambling. To investigate this issue in more detail, Joukhador, Blaszczynski and MacCallum (2004) developed a short 8–item measure of gambling-related superstition and administered it to 56 problem gamblers seeking treatment and 74 non-gamblers recruited from various sources, including from amongst colleagues at the investigators' workplace. The scale included items such as: "I often get hunches which I must follow", "I'm superstitious about the way I gamble.", "I often think I am psychic when I gamble", "Sometimes I get spiritual help when gambling.". For each item, participants were asked to rate the strength of their beliefs on a 5–point scale ranging from 0 = Not all, to 5 = Very much). As predicted, the results showed that the problem gamblers scored significantly higher than the non-gambles on the scale, and that scores on the superstition measure were positively correlated with SOGS scores and other measures of gambling involvement, e.g., years spent gambling, frequency of participation, weekly losses (correlations in the range 0.30–0.40) (see also Joukhador, MacCallum, & Blaszczynski, 2003).

As the authors concede, a possible limitation of this study was that some items referred to prayer and physic abilities, which are beliefs that are common to only a certain proportion of the population at large. It would have been far better to include items that were not so strongly influenced by pre-existing differences in personal philosophy, because there is the danger that variations across the two groups may have been due to religious differences rather than differences in the frequency of gambling (e.g., if the problem gamblers found religion after they had got into trouble or were generally more superstitious to begin with). Another more serious problem is that the control group may not have been an ideal comparison group for the problem gambling group. Instead, a better test would have been to determine whether there was a difference in beliefs between regular problem gamblers and regular non-problem gamblers to confirm whether gambling experience (i.e., how long, or how frequently one had played) or the person's problem gambler status (i.e., the existence of a disorder) most strongly influenced the strength of superstitious beliefs. In the absence of any more complex analyses than correlations and difference tests, there is no way to determine whether gambling experience or problem gambling was the strongest predictor of the extent to which people endorsed the various belief statements.

Another study along similar lines was conducted by Raylu and Oei (2004). In their study, a series of over 50 questions relating to gambling-related cognitions were administered to 968 volunteers drawn from the general community and from the Psychology 1 class at the University of Queensland. The data were subject to various validation procedures including item analysis to remove redundant items; confirmatory factor analysis to determine the dimensional structure of the scale; discriminant analysis to determine whether the scale could differentiate between people with different SOGS scores; and multiple regression to determine what proportion of problem gambling scores could be accounted for by the gambling-related cognition scale (GRCS). The factor analysis showed that the 23 non-redundant items formed five internally reliable subscales. These related to: Gambling expectancies, Illusion of Control, Predictive Control, Inability to Stop gambling, and Interpretive Bias.

Consistent with Joukadour *et al.*'s (2004) findings, the results showed that people who scored higher on the SOGS tended to score higher on almost all of the subscales, but that the subscales only explained 16% in total variance in SOGS scores. However, discriminant analysis showed that the cognitive bias subscales were very effective in being able to classify people into groups based on their SOGS scores, in this case, those who scored 0 vs. those who scored 4 or more.

Superficially, these results appear impressive until one recognises that the group who scored 0 probably contained many people who did not gamble very much at all, so that it is not surprising that their scores would have differed substantially from the other group. In addition, as with the study above, some concerns need to be raised about the choice of some items. Although ostensibly a study of gambling-related cognitions, Raylu and Oei's (2004) scale contains many items that relate more strongly to motivation or impaired control (e.g., "I can't function without gambling", "Gambling makes things seem better", "I will never be able to stop gambling"). Moreover, it is often difficult to discern the conceptual difference between items relating to predictive control and an illusion of control (e.g., "If I keep changing my numbers, I have less chances of winning…"). It would have been more useful if the entire scale had been only designed to investigate gambling-related cognitions that relate to false beliefs concerning the likelihood of successful outcomes and the extent to which one can predict or control these outcomes.

In a follow-up study Oei and Raylu (2004) investigated the relationship between young people's gambling-related cognitions and the behaviour and cognitions of their parents. The results confirmed much of what is known from the literature above; namely, that there is a relationship between parental gambling-behaviour and young people's likelihood of gambling. The results also showed that there was a modest association between parental scores on the GRCS and those of their children, but that there was no direct relationship between parental gambling cognitions and their children's gambling behaviour. Instead, an indirect relationship was observed. Higher parental cognition scores were associated with higher cognition scores in children, and these scores were in turn related to a higher SOGS scores. In other words, these results appear to show that young people's understanding of gambling is influenced by their parents' views and that this may ultimately influence the strength of their involvement in gambling.

The existence of these sorts of 'irrational' beliefs has led to the suggestion that problem gambling could potentially be alleviated by teaching gamblers about the true nature of gambling, and by drawing their attention to the inappropriateness or inaccuracy of these many beliefs and behaviours. Such a strategy has been used with some success, for example, in the treatment of depression (Walker, 1992a). A further suggestion is that the introduction of consumer information in gambling venues would provide people with a more realistic and informed view of gambling activities, or that such information could be introduced to school curricula (e.g., as part of mathematics or social studies) so that young people would be in a better position to make informed choices about whether to gamble when the opportunity arose.

These issues will be considered in more detail below. However, it is worthwhile pointing out that these conclusions about gamblers' cognitions have not gone without criticism. Dickerson *et al*. (1992) and Dickerson (1993), for example, have criticised these sorts of explanations on the grounds that there is little evidence that verbalisations actually influence behaviour, and that these statements are little more than *ad hoc* descriptions of behaviour. This criticism was partially countered by Delfabbro and Winefield (2000), who observed that verbalisations would often precede the behaviour described, but Delfabbro (2004) and other commentators such as Milac (1999) have drawn attention to other problems. One difficulty is that very high rates of verbalisations that are classified as irrational are also observed in people who do not gamble regularly (e.g., student gamblers), suggesting that cognitive biases do not allow one to distinguish between problem and other gamblers. The fact that problem gamblers might sometimes be found to have more irrational beliefs may only be due to experience, and to the fact that they have more colourful ways of describing their experiences. In addition, these biases and heuristics do not appear to be used by gamblers in any systematic way, so that it not possible to determine under what circumstances a gambler will act irrationally. The same behaviour can often be observed in conjunction with two quite different cognitions. As pointed out below, problems such as these mean that a great deal of care is necessary when attempting to apply these explanations to consumer protection initiatives.

6. Harm minimisation and consumer protection

6.1 Overview

In both Australia and New Zealand, there has been an increasing recognition that gambling is a public health concern (Korn & Shaffer, 1999). A public health perspective involves regulation of people's behaviour on the grounds that authorities have responsibility to protect them from potential harms that may arise from various activities. Such regulation can take the form of individual prevention and treatment strategies, as well as large-scale interventions. These broader strategies are probably best considered within the context of 'harm minimisation'. This approach assumes that a large proportion of the population will be exposed to a potentially harmful activity, and that people have a choice as to whether they wish to participate in it. Within this context, the emphasis is on the development of practical and achievable solutions, so there is no necessary assumption (as is often the case in organisations such as AA or GA) that abstinence is the only solution.

From a policy viewpoint, it is considered that achievable objectives are better attained via the development of what are termed 'responsible gambling' strategies. The term 'responsible' implies that gambling is an issue that needs to be addressed at multiple levels, with each stakeholder (Government, industry, service provider, and even gamblers themselves) assumed to play a co-ordinated role in bringing about change. This terminology is also often used in conjunction with phrases such as 'whole, or Government, approach', implying that different parts of Government must work together to ensure common goals.

Much of this philosophy is summarised in a number of recent documents, including Blaszczynski's paper 'Harm minimisation strategies in gambling' (2001); Hing and Dickerson's report (2002) prepared for the Australian Gambling Council; the Productivity Commission report (1999); three reports published in New Zealand, 'Harm Minimisation' by Brown (2001), 'Public health/ health promotion: Towards healthy gambling' by Raeburn (2001), and 'Gambling, Harm and Health' by Brown and Raeburn (2001); The Queensland Treasury's Responsible Gambling Program (2002); and the Clubs NSW Responsible Gambling Code of Practice (2000). Each of these reports differs in its emphasis. Some focus more upon the framework for policy (New Zealand), whereas others focus on specific strategies.

According to Blaszczynksi (2001), there are three broad strategies that can be used to bring about change: (1) Influencing the behaviour and attitudes of society as a whole, or the population of gamblers, to encourage and develop safer gambling practices, (2) Reducing the risks associated with gambling by modifying gambling products so that the potential for harm is minimised, and (3) Having government authorities change policies and practices in order to regulate the industry, not merely by the recommendation of

mandatory codes, but through the legislation of changes that must be adhered to at the risk of legal action.

In addition, as with any initiative of this nature, it is possible to identify different levels of intervention. *Primary interventions* are those that attempt to protect people from harm before it develops. *Secondary interventions* are those that limit the potential for harm once such harm exists. *Tertiary interventions* are those that attempt to treat those who are already seriously affected by the problem. The following section summarises many of the strategies that have been recommended and/or implemented at each of these three levels. For the most part, this summary is descriptive, given that very little, if any, research has been conducted in Australia to investigate the effectiveness of these various intervention strategies.

6.2 Primary interventions to reduce gambling-related harm

6.2.1 School education programs

A number of school-based programs have been developed in Australia to educate children and adolescents about the potential problems associated with gambling. The 'Don't bet on it!' strategy was developed in several Southern Area schools in Adelaide. It involves a board game that teaches children about the experience of losing money in gambling. The 'Is it worth the gamble?' course was developed by the South Australian Secondary Schools Board to educate children about gambling as part of the subject, Australian Studies. The South Australian Department of Education and Children's Services (DECS) program 'Dicey Dealings' was launched in 2003 (see Glass, 2003), and proposed strategies to promote awareness of gambling in school. These included the trialling of different curriculum materials in pilot schools and the development of innovative response projects, in which schools would be awarded grants of approximately $10,000 to develop innovative and educational projects relating to young people and gambling. In 2004, these curriculum materials were trialled in twelve pilot schools (over 1,500 students) across South Australia (including in regional areas) and an evaluation based upon feedback from students and teachers was completed in 2005. The evaluation, based on a series of pilot schools exposed to specific curriculum materials, showed that the education campaign had improved students' knowledge of the odds of gambling, given them a greater understanding of randomness and chance, and enhanced student awareness of the risks of gambling, as compared with a group of control schools that had not been exposed to the curriculum materials (Department of Education and Children's Services, 2005). Even with instruction, students still found it difficult to understand the differences between gambling and other risk-taking activities; for example, the fact that gambling entails an inevitable element of risk and that gambling games were designed so as to make it difficult, if not impossible, to make money over the longer term.

In Victoria, a program called 'You figure it out - Know the odds' program consists of a video, some classroom activities designed to raise awareness, and also some software to

illustrate the notion of randomness and other concepts that are often not well understood by gamblers. The 'Responsible Gambling Curriculum', developed by Families, Youth and Community Care Queensland, includes curriculum resources, a CD-Rom, and web-based activities designed to raise awareness about problem gambling, as well as teaching children about the nature of gambling, and how it works (Smith, 2001). Preliminary trials of this program were undertaken in 2002 as part of the Lighthouse project with the support of the Queensland Treasury's Responsible Gambling Strategy (Curtin & Honeyfield, 2002), and is being more fully developed and implemented in 2005. In NSW, 'Betsafe' education modules have been designed for students in Years 10 to 12 to enhance student knowledge about gambling odds and dangers of excessive gambling.

A recent survey of 418 EGM gamblers in Victorian venues conducted by Rodda and Cowie (2005) showed that over 80% of players were in support of greater education in schools, and that this would be an effective problem gambling measure.

6.2.2 Public awareness campaigns / safe gambling messages

The idea that the community should be made aware of the potential dangers of problem gambling is a sensible one, but evidence suggests that awareness of the existence of these dangers is unlikely to have a significant effect upon people's knowledge. In a series of studies conducted by the Victorian Casino and Gaming Authority (summarised by Western, Boreham & Johnston, 2001), it was reported that the public is generally very aware that problem gambling is a significant issue in the community. Community attitude studies conducted by various consultants, including Morgan Research, KPMG, and DBM Consultants has indicated that over 80% of the population report that they believe gambling-related problems have become worse in the community. Many respondents were also able to describe many of the impacts of gambling, including the effects on financial well-being, families, and psychological health.

Much the same arguments apply to smoking and alcoholism (Mills, 2002; Productivity Commission, 1999). The critical point is not so much whether people are aware of the general existence of problems, but whether they are able to recognise the onset or existence of problems in specific individuals, or in themselves. Problem gambling, because it generally has few physiological symptoms, is often very difficult to detect in others, and so strategies designed to help people deal with problem gamblers would be useful. These strategies could be targeted at partners, employers, and also teachers. They could be developed by counsellors and others with significant experience working with problem gamblers. Possible warning signs might include rapid reductions in work performance, increases in private phone usage, restlessness or anxiety, extended lunch breaks, or frequent contacts from banks and other financial institutions.

In terms of educating gamblers, the central aim would be to make problem gamblers more aware of the potential harms associated with their own gambling, and the sorts of behaviours indicative of gambling problems. At present, the usual strategy in Australia and New Zealand is to provide gambling slogans or pamphlets that remind gamblers about the dangers of gambling. Many of these are summarised in the Productivity

Commission report (1999) and include 'Have fun, but play it safe' (Tattersalls), 'Bet with your head, not above it' (Star City), 'You bet your life?' (New Zealand Racing Board), but the potential effectiveness of these slogans has not, so far, been evaluated in Australia. Nevertheless, Mills (2002) of Relationships Australia (QLD) has produced a detailed review of the smoking literature that provides many recommendations for appropriate ways to make warning signs and labelling more effective. As he points out (following the basic principles of marketing and advertising), these messages need to attract the attention of gamblers, hold attention long enough so that they are remembered, and be recalled so that there is a possibility that they will influence decision-making and behaviour.

The issue of attention is related to the placement of warning signs (in clear places next to machines, on machines as part of game-play, in venues, near ATMs), the lettering, the colour, and the use of graphics that attract attention (e.g., by using distinctive imagery or messages), the use of variations to avoid habituation to the message. There is a need to consider images and messages that engage people's cognitive, emotional, and motivational faculties. The message will have more effect if it makes people think about their gambling and its consequences, if it engages them emotionally, and is consistent with their desires (e.g., being free of gambling-related problems is something that may be very appealing to a person). As discussed above, factual information is usually not enough in these campaigns, because many gamblers are aware of the odds of gambling, but do not believe that these odds apply to them because of beliefs about personal luck. In addition, people do not always gamble with the specific intention of maximising profits. Many are aware that they have lost more than they have won, but look to achieve short-term goals, such as a win of a given amount on a given day, or in a given session. This means that appeals to 'good sense' are unlikely to work, and that 'emotionally impactful' messages referring to the potential harms of gambling may be more effective. As with smoking, these messages work best when the impacts are made personally relevant and immediate (e.g., smoking can harm others, or your baby, it reduces your health) as opposed to using very strong messages that refer only to the most extreme and longer-term possibilities (financial ruin or death, in the case of smoking). The Productivity Commission believes the NZ Racing Industry model to be a very good one, in that it provides clear details of what problem gambling is, as well as providing useful tips concerning how to avoid getting into trouble.

Over 40% of problem gamblers in the Commission's counselling survey indicated that they believed that warning signs of this nature would be effective. However, it needs to be borne in mind, once again, that these problem gamblers were people who had already sought help, and so they probably differ in many ways from those who remain in the community. Furthermore, as pointed out by Mills (2002), if one is talking about 'effectiveness', it is important to state what this means in terms of the goals and purposes of the interventions. Is the purpose of the information to change attitudes, behaviour, or both? Presumably, in most cases, both objectives are important, but evaluation research needs to be undertaken to determine whether this is indeed the case. Such research would involve, at minimum: (1) A baseline assessment of attitudes and behaviours prior to the introduction of the promotional material; (2) A short-term follow-up assessment of

attitudes, current behaviour, and gambling intentions, as well as prompted and unprompted recall of promotional material, and (3). A longer-term assessment, similar to (2), perhaps after 6 months.

6.2.3 Providing information at venues

In light of many of the cognitive findings described above, it has frequently been suggested that information concerning the true odds of gambling activities be introduced to gambling venues, or at other clearly accessible locations. For example, as pointed out by the Productivity Commission, there have been calls for players to be made aware of the price of gambling activities, so that they are aware of approximately how much of their money they should expect to be returned. In lotteries, people should be told how likely it is to win the 1st division lottery prize (around 1 in 8 million), whereas EGM players should be told what percentage return applies on each machine (e.g., 87%).

Current evidence suggests that telling players that they will get back 87% of the amount they insert into slot-machines is unlikely to be informative, because this is a long-run expected return, and is unlikely to be relevant for a given gambling session. Although gamblers can obtain short-term profits if outcomes go in their favour, the most probable outcome when people gamble on slot-machines and reinvest their returns is for them to lose all their money, or obtain a small profit. This fact should be emphasised so that people do not enter venues in the mistaken belief that they will consistently lose around 13%. This view was also endorsed by the Australian Gaming Machine Manufacturers Association (AGMMA), who point out that providing odds might only serve to confuse players, or lead them into the false expectation that this return will be maintained consistently, and that the machine will constantly self-correct in order to maintain the required return. This seems a very likely possibility given people's tendency to fall victim to the gamblers' fallacy.

Much the same problem would occur if venues were required to provide information concerning the money that has gone in, and been paid out of, individual machines over a particular period. People may look for machines that appear to be under-paying. Even worse, Delfabbro (1998) also observed that attempts to explain how machines worked, for example, that they were monitored by a computer to ensure appropriate returns, was ineffective in that this information only confirmed the perception that the machine was keeping track of their performance, and adjusting the payouts accordingly.

In addition, there is the problem of determining what odds to provide. If a popular slot-machine in Australia has 1 jackpot symbol on each of 5 reels with 25 symbols, it is a simple task to determine that the odds of winning are 1 in 25, or 1 in just over 9 million. However, these odds are assuming that the gambler is playing just one payout line. For every additional line played, the odds are reduced to O / N, where O = the base-odds and N= the number of lines. Gamblers vary in the number of lines played, so saying that the odds are 1 in 9 million is potentially misleading for most players. At the same time, telling gamblers that the odds are significantly increased by playing more lines is a potential inducement for heavier gambling, and is also undesirable. Educators are thus

left with a dilemma. A possible solution is to give jackpot odds for the total number of lines played (i.e., 1 in X for 1 line, 2 lines, and so on), but also to emphasise that potential losses will be higher if the person gambles on more lines. Such information could be provided on the machine itself, or in an informational window that is programmed into the machine, and which appears as the default screen after a certain period without any play.

A further recommendation is for gamblers to be told that gambling events are entirely random. This is indeed true for most forms of gambling, and most notably, for Australian slot-machines. On Australian machines, each event is statistically independent so it is quite possible to obtain two jackpots in a row. However, if this statement is made without qualification, it is arguably subject to challenge. Not all events have an equal probability of occurring. Furthermore, not all reels on the machines will have the same number of symbols. The machine might, in fact, be programmed so that certain outcomes, or certain combination of symbols (e.g., those which lead to near misses) are more likely to occur than other outcomes. If this is so, not all outcomes have an equal probability of occurring, and so they are not random, for example, as might be the case for individual numbers resulting from the throw of a die. The randomness of the process is inherent only in the unpredictability of outcomes from one trial or spin to the next (Delfabbro, 2004).

As Delfabbro (2004) noted, a worse problem occurs when one has to convince a gambler that a certain short-term sequence of events is merely due to chance. A good example is 10 reds in a row in roulette, or a player who throws ten tails in a row in the Australian game of Two Up (where gamblers bet on the fall of two coins). Trying to explain that this outcome occurs on some occasions, due to chance, and is not unexpected in a random process, could be very challenging. Research has consistently shown that people find it very difficult to conceptualise random sequences (Kahneman, Slovic & Tversky, 1982). In addition, it might be very hard to convince the gambler that the gambler's fallacy is invalid. Wins will, just by chance, eventually occur no matter how long the losing sequence, so the belief that persistence will be rewarded will be continuously reinforced. Thus, the irrationality lays not so much in the belief that persistence will lead to a win. Instead, it lies in the belief that the probability of this happening in the next X trials has somehow changed as a result of previous experience. As these ideas are difficult for even non-gamblers to understand, it is not surprising that gamblers fail to understand the conceptual differences, and are resistant to information that contradicts their understanding.

Another conceptual issue that is often ignored in this research is the difference between normative and subjective rationality. In almost all studies, irrationality has been defined in terms of variations between subjective and objective estimations of success. Walker (1992a, b), for example, argues that gamblers are irrational because no rational consumer should undertake an activity where the long-run return is negative. However, as argued by Delfabbro and Winefield (1999), gamblers might not necessarily think in terms of long-term goals. Instead, gamblers might have more short-term goals, such as obtaining one satisfactory win of a given size, winning back the money from the day before,

obtaining enough money to buy something which the gambler desires, or staying on the machine as long as possible because of enjoyment of the experience of gambling. Little consideration might be given to how much money has been lost in previous outings. In other words, the goal might not be one of profit maximisation, as is assumed by normative decision-making models.

In summary, it is likely that proposed educational strategies, such as displaying the odds or return or emphasising the randomness of events, is probably going to have little impact upon heavy gambling. The best that educators can hope to do is to draw attention to the average number of gambles required to obtain each jackpot (in spins, dollars or years). Such information will probably be most useful for those who are relatively new to gambling, or do not have a strong emotional involvement in the activity, and who remain conscious of setting limits. For problem gamblers, a better strategy, once again, would be to concentrate on messages that emphasise the problems associated with excessive gambling, and the warning signs that indicate that a problem might exist. This view is supported by overseas researchers such as Ladouceur who draws a clear distinction between 'cold' cognitions and 'hot' cognitions. The former refers to statistical information concerning the odds, whereas the latter refers to personally important, or idiosyncratic, beliefs that drive the behaviour of individual gamblers. It is very difficult to influence the latter simply by the presentation of facts. If problem gamblers, for example, believe that they are somehow luckier than other people who gamble, then stating the odds, or highlighting the infrequency of wins is unlikely to make a lot of difference to their beliefs and behaviours.

Data concerning the effectiveness of gambling messages or information in venues has been obtained in a recent study by Hing (2004) that was more broadly designed to ascertain the effectiveness of responsible gambling measures in NSW clubs. Hing sent mail out surveys to 6000 members of four Sydney clubs and conducted on-site interviews in six clubs and obtained 954 completed surveys. The purpose of the survey was to ascertain people's awareness of responsible gambling initiatives, their perceived effectiveness in being able to protect consumers from gambling-related harm, and whether they had changed their behaviour as a result of the changes. One set of questions related to gambling information in venues.

The results showed that the vast majority of patrons were aware of signage and information. For example, 86% were aware of information concerning the risks of gambling, 70% were aware of the venue's responsible gambling policy, and 67% had noticed the information concerning the odds of winning large prizes on poker machines. However, when asked whether they saw this information as a useful harm minimisation strategy, their responses were generally unequivocal (a rating of 3.5 out of 5, where 5 = very effective). Many argued that the signs were not sufficiently confrontational. Others said that signs were easily ignored, especially when gamblers were in a state of denial. It would be better, some argued, if signs were placed on machines so that they were visible during game-play. Very few of the gamblers interviewed indicated that they had made any changes to their behaviour as a result of the information that was provided.

More recent research by Rodda and Cowie (2005) in Victoria asked 418 EGM players to indicate the extent to which they were aware of various forms of signage in venues and whether it was an effective problem gambling measure. The vast majority (around 60%) were often or always aware of the presence of most of the major forms of signage, and 80% believed that this information was useful to problem gamblers. No information was, however, provided as to whether this information had influenced the behaviour of individual gamblers. On the whole, problem gamblers appeared to be just as aware of the signage as any other gamblers.

In another study by Monaghan and Blaszczynski (2007), 92 undergraduate psychology students (half of whom played EGMs) were asked to play an exact replica of a commercially available gaming machine. Students were provided with credits and asked to play for 10 minutes. One half the machines, a standard message concerning the odds of winning was provided on one side of the display (static message), whereas the other half featured the same message, but in a dynamic form. In this second condition, the message scrolled across the screen every 3 minutes for 15 seconds. After gambling, all participants were asked to remember information about the machine and the screen in both a free and cued recall format (i.e., question prompts were used). The results showed that 85% of people remembered the message when it was in a dynamic format as compared with only 24% who had only been exposed to it in a fixed or standard format. The researchers concluded that dynamic information presentation is a much more effective in conveying information to gamblers than static formats, and that this had implications for the responsible provision of information in venues.

Despite its elegant design, the principal limitation of the study was that students with relatively little gambling experience were used, so it is unclear how well these findings can be generalised to problem gamblers. The study also did not investigate the extent to which the provision of information influenced people's beliefs about gambling, or whether it would have any influence on their behaviour.

> ♣ **Presentation of information concerning the odds, randomness, and frequency of wins, is unlikely to reduce problem gambling, but could be a useful preventative strategy to help non-problem gamblers maintain their gambling at safe levels.**

6.2.4 Providing details of expenditure

Another suggestion considered by the Productivity Commission (1999) and which is discussed in the recent IPART report in NSW is to provide gamblers with details of how much money they have spent while gambling. Once again, EGMs have been singled out for particular attention because of the very rapid rate of turnover, and also because EGM venues are perhaps more amenable to the provision of this sort of statistical information. One possibility includes pop-up dialogue boxes that tell the gambler how long they have been playing, and how much they have won and lost. Another is for gamblers with loyalty cards to be sent a periodic statement indicating how much they have won and lost over a certain period. Both of these ideas have merit, but they also have limitations. Pop-

up notifications of expenditure will only work if the same person stays on the same machine long enough to allow a calculation to be made. This system will not work for players who keep on withdrawing their money and reinserting it, because each of these reinsertion points will be taken as the start of a new session. Similarly, although sending out financial statements would appear to be a useful idea, this would only be possible for those who gambled using cards, or other identifying devices. Moreover, it is unclear how many problem gamblers use such technology, and whether they use it consistently. Nevertheless, this remains, in principle, a suggestion that might have considerable merit in the future.

Some empirical evidence in support of these measures was obtained by Rodda and Cowie (2005) in their survey of 418 EGM players in Victorian venues. Their results showed that 65% of players believed that showing information about total wins and losses for a session would be a useful problem gambling measure. They also believed that it would be useful to tell gamblers how long they had been gambling (54%), and the total cumulative losses for the session (68%). Similarly, in a study of over 150 problem gamblers and their loved ones in Victoria (New Focus Research, 2005), it was found that displaying the amount won or lost per play, or cumulative amount lost or won, was, on average, rated 4 out of 5 on a scale of importance by both groups, However, no evidence is available from their study to indicate the extent to which gambling behaviour would be influenced by the actual introduction of these features, or the extent to which socially desirable responding may have influenced these responses. In other words, although it may be hard to question the good sense of providing accurate information in venues, it is likely to be a another matter as to whether this information has any genuine impact on problem gambling.

6.2.5 Removal of questionable advertising

Although little information is available concerning the specific effects of gambling advertising on individuals, it is likely that this form of promotion has significant effects at a community level. Marketing surveys conducted in Victoria, for example, have shown that people are very sensitive to the availability of new gambling products and venues (AGB McNair, 1992; DBM Consultants, 1995), and that people have good knowledge and recall of popular gambling commercials (e.g., the ‘Break Free’ lottery advertisements in South Australia). The Productivity Commission (1999) found little convincing evidence to suggest that gambling advertisements in Australia had been deliberately misleading or dishonest, but criticised the lack of useful consumer information provided (e.g., the odds of winning), and the possibility that some messages might only serve to reinforce existing misperceptions. They provided few actual illustrations of this, but some recent examples might include the following:

- lottery segments that refer to the amount of time since certain numbers came up;
- Keno and scratch ticket advertisements that refer to ‘different ways of playing’, that almost imply that there is skill, or an element of control, involved;

- advertisements for high-return poker machines where only 1 (or very few machines) have the high rate of return at the venue;
- advertisements that describe players as 'winners' when this was very unlikely to be so in the long-run;
- advertisements that create guilt and regret for missing out on gambling opportunities (e.g., not buying a ticket).

A greater concern, however, that was not raised by the Productivity Commission (1999) is the extent to which the appearance and positioning of gambling-related advertisements may influence people's decisions to gamble. According to Sharpe and Tarrier's (1993) model of gambling described above (Section 5.3.5), one of the factors that leads to the onset of a gambling session is the gambler's exposure to a triggering event or stimulus. Those who experience considerable anxiety in relation to gambling (those who Blaszczynski & Nower, 2002, have referred to as 'Pathway 2 Gamblers') are often drawn into gambling by the desire to reduce tension or anxiety. If this is so, then any industry practice that increases the likelihood of gamblers being exposed to gambling-related stimuli could be problematic in terms of its impact on problem gambling. Such practices include the display of gambling advertisements on signage at the front of gambling venues, widely promoted gambling deals, musical jingles played on TV or radio stations, or large billboard displays. At the present time, there is no work available to determine the most significant triggers for the onset of a gambling session, and whether the removal of these triggers would significantly affect gamblers' capacity to resist the urge to gamble.

Nevertheless, limitations on the extent and nature of advertising are key features of many responsible gambling codes around the country. For example, The Queensland Responsible Gambling Code (2000) section 6.1–6.12 sets out a series of appropriate standards for gambling advertising. These includes the prohibition of advertising that is deceptive, misrepresents the probability of winning, gives the impression that gambling is a reasonable strategy for financial betterment, or does not target disadvantaged groups or minors. Similar provisions are contained in the NSW Responsible Gambling ACT 1999 and the South Australian Advertising Code of Practice (2004).

6.2.6 The role of inducements

Many gambling venues offer gambling patrons inducements to gamble. These include cheap meals, snack foods, free coffee or alcohol, or raffle tickets. Others have bonus prizes associated with the process of gambling itself, including gifts that are awarded when people reach a certain number of points on loyalty cards, or jackpot nights where the first person to reach a certain number of points or obtain a certain outcome, gets a cash prize. At some venues, people receive raffle tickets based upon the number of points awarded. Others provide coupons that can be converted into credits on the machines. In some cases, these coupons can be cut out of newspapers, or provided to patrons who visit the venue for other reasons, such as to have meals. Although there is no convincing evidence to suggest that inducements increase problem gambling, there is

concern about any inducement that: (a) provides individuals with a reason for visiting a venue to gamble, or (b) provides a justification for individuals to play longer, or (c) potentially reduces a gambler's capacity to maintain control over his/her behaviour (Productivity Commission, 1999). Inducements such as prizes and promotions provided in a social context, and free food, are less likely to be of concern. On the other hand, coupons, loyalty cards, and alcohol on the gaming-floor, are more likely to be problematic.

An analysis of focus group data collected from problem gamblers in South Australia (Delfabbro & Panozzo, 2004) suggested that problem gamblers tend to be aware of loyalty schemes, but that these are only secondary to the process of gambling. Although some reported continuing to gamble in order to obtain prizes and win something back from the venue, most did not consider loyalty schemes to be a major cause of their excessive gambling. Similar views were expressed by problem gamblers interviewed by the Australian Institute for Primary Care (2006) in a study of the features of gaming venues that attract players. Problem gamblers did not feel that incentives had contributed to their gambling problems, but some saw these schemes as ways in which their time at the venue was extended. A number said that being mailed out information about gambling was not helpful during times when they were trying to control their gambling. Such information evoked thoughts of gambling and made the process of control and abstinence more difficult. Similarly, in a recent New Focus (2005) study of problem gamblers and their loved ones in Victoria, the reduction of incentives to go venues was only considered moderately important as compared to other possible strategies.

6.3 Secondary intervention strategies

Secondary interventions refer to strategies that can be introduced to gambling venues to minimise the harms experienced by those who already have well established gambling habits. As indicated below, there are five general forms of secondary intervention strategy:

- restricting people's access to gambling at gambling venues;
- encouraging gamblers to concentrate on their playing and not lose track of how much time or money has been spent;
- denying venue entry to problem gamblers;
- modifications to gambling products (e.g., EGMs);
- interventions involving staff assistance for those who might show signs of having a gambling problem.

6.3.1 Restricting access to money at venues

Although the provision of credit to gamblers is prohibited in Australian gambling venues (Productivity Commission, 1999), there are numerous reports of these regulations being

violated in some venues, and suggestions that stronger penalties be imposed on venues that fail to comply. As indicated above, there is no question that problem gamblers are significantly more likely than others who gamble to have borrowed money in order to gamble. As such, the availability of credit facilities at gambling venues would have a significant potential to exacerbate losses. Much the same argument has been raised concerning the availability of ATM facilities at gambling venues, or in the vicinity of gambling venues (Blaszczynski, Sharpe, & Walker, 2003; Hing, 2004; IPART, 2003; AIPC, 2006). Findings from the Productivity Commission's (1999) national report clearly showed that almost 60% of problem gamblers scoring 10+ on the SOGS 'often' or 'always' used ATMs at gambling venues, compared with only 4% of non-problem players. Of those problem gamblers in the counselling survey, 75% responded that the removal of ATMs from venues would be a highly effective strategy.

Based upon this finding, the Commission strongly recommended the removal of ATMs from gambling venues. This strategy would enhance the capacity of gamblers to pre-commit themselves to a specified budget; reduce the likelihood of chasing behaviour, and encourage them to gamble more conservatively. The Commission conceded that the strategy would also have the potential to inconvenience regular patrons, but pointed out that other patrons could obtain money earlier in the knowledge that money could not be withdrawn at the venue. The Commission also drew attention to the fact that compromise solutions could be developed such as, for example, limits on the amount that could be withdrawn at a time or in a single day, limits on the number of withdrawals, or the repositioning of ATMs (for example, only in areas well away from gaming areas, and/or in combination with strong safe-gambling messages). The Commission also drew attention to the need to ensure that gamblers could not cash cheques at gambling venues, although it was pointed out that some exceptions would probably have to be made in regional areas that have been deprived of adequate banking facilities.

As pointed out by McMillen, Marshall and Murphy (2004), most Australian jurisdictions have already placed limits on the use of ATMs, EFTPOS or credit facilities in gaming venues. Tasmania is the only State that prohibits ATMs from gambling venues. All other States or Territories place limits on the location of ATM facilities within venues. Typically, this means that ATMs cannot be located either inside of, or in the vicinity of, gaming areas. Both Victoria and South Australia have imposed limits on the maximum amount that can be drawn out in any one transaction ($200), although no limits are placed on the number of transactions. Although EFTPOS facilities are available in venues everywhere in Australia, South Australia and Victoria have imposed a $200 limit, whereas Tasmania limits patrons to one transaction per day if the venue staff are convinced that the money for the second transaction is going to be used for gambling. Credit will not be provided in New South Wales, Queensland, Northern Territory, or Victoria (for a full review of all jurisdictional differences see McMillen *et al.*, 2004).

Despite all these regulations, a question remains as to whether restrictions on financial transactions are an effective harm minimisation strategy. In Hing's (2004) evaluation study of NSW clubs, two thirds of respondents indicated that ATM and EFTPOS facilities do not encourage responsible gambling and many argued that these facilities

were "obvious facilitators of overspending on gambling" (p. 40). Another study that examined the potential value of limiting access to ATMs was undertaken by McMillen, Marshall and Murphy (2004) in the ACT. In this study, over 700 Canberra residents were contacted via a telephone survey and asked to indicate: (1) The extent to which they used cash facilities in gambling venues, (2) How often they gambled, and (3) Their views about the effects of placing restrictions on ATMs in venues. A second component of the project involved a subset of gamblers (n = 9) who were asked to keep diaries and to record their use of ATMs over a two week period. A third component was a series of focus groups involving problem gamblers, industry representatives, and other relevant stakeholders to gauge their views concerning the role of ATMs in harm minimisation.

McMillen *et al.*'s results showed that a substantial proportion of the sample visited Canberra clubs (84%) and that many had gone there to gamble. Eighty-nine percent of those people who had visited clubs had withdrawn money from an ATM, and 63% had used EFTPOS during the previous 12 months. There was clear evidence that gamblers used cash facilities more than other patrons. Regular gamblers were significantly more likely to access ATMs at gaming venues than recreational and non-gamblers, and gamblers in general were more likely to use cash facilities (either EFTPOS or ATMs) on a regular basis and to draw out larger amounts. In addition, interviews with problem gamblers and their families showed that both supported the removal of ATMs from venues, and argued that these facilities were a "significant factor in the development and persistence of gambling problems" (p. 14).

Based on these findings, it would appear clear that removing ATMs would appear a very obvious strategy for reducing problem gambling, especially given that many respondents were able to identify other ATMs in reasonable proximity to the venue that could be used to draw out cash. However, McMillen *et al.* are more guarded in their conclusions. In their view, the fact that only a relatively small proportion of the Canberra population are problem gamblers indicated to them that the impact of any removal of ATMs would only affect a relatively small number of people. In addition, because only 6% of their sample were self-confessed problem gamblers, it was argued that they had only "limited evidence to support the removal of ATMs from gaming venues in the ACT." (p. 15)

On the whole, this conclusion seems justified given the limited scope of their project and the short time-frame. However, when one considers the substantial amount of evidence in their report suggesting a link between the degree of gambling involvement and the use of ATMs, this conclusion may also be somewhat premature. At no stage do they produce any evidence to support the absence of a link between problem gambling and the use of ATMs On the contrary, what limited evidence they were able to collect from their sample of problem gamblers appeared to suggest that problem gamblers were very much in support of the removal of ATMs Thus, despite their conclusions, McMillen *et al.*'s study provides preliminary data suggesting that further investigation of the links between problem gambling the ATM usage may be justified.

One such study that has examined gamblers' views of ATMs is a review of Victoria's harm minimisation strategies undertaken by Rodda and Cowie (2005). As part of a

survey of 418 EGM players (over 100 of whom scored in the problematic range on the CPGI), it was found that:

- 56% of players supported the removal of ATMs from venues;
- 77% believed that the removal of ATMs would be an effective or highly effective strategy to reduce problem gambling;
- 72% believed that limiting withdrawals from ATMs would be effective or highly effective in reducing problem gambling;
- 60% believed that limiting access to ATMs or EFTPOS would be effective or highly effective as a problem gambling measure.

Their research also showed that ATM usage increased as a linear function of scores on the CPGI. Those who scored in the problematic range on the CPGI were six times more likely to use ATMs than non-problem players. Further analysis showed that 47% of cash withdrawals undertaken at venues were for gambling. Similar findings were obtained by New Focus (2005) in their study of 142 problem gamblers and 77 of their loved ones in Victoria. Banning ATMs in venues was rated the most useful strategy to reduce problem gamblers (scored 4.7 out of 5), whereas limiting the value of notes that could be fed into note acceptors was given a score of 4.1.

6.3.2 Reality checks: lighting and clocks in venues

As discussed above, there is considerable evidence that people use gambling as a form of emotional escape. It has also been suggested that people can often develop symptoms of dissociation while they are gambling. Dissociation refers to an altered state of reality where people lose track of reality. They become less conscious of time, and often feel that their actions are governed by forces beyond themselves, or that their behaviour is no longer under their control (Coman *et al*., 1997). For these reasons, it has been argued that the introduction of environmental cues that may help re-establish a sense of reality would be a useful harm-minimisation strategy. In almost all discussions of this topic, recommendations have usually taken the form of calls for increased lighting in gambling venues, as well as the installation of clocks.

The Productivity Commission is generally skeptical about the benefits of these possibilities, largely because of the absence of evidence to support their effectiveness. Industry submissions to the Inquiry questioned whether providing clocks on walls would be any more effective than wrist-watches, which are presumably owned by most gamblers, and they drew attention to the enormous cost associated with renovating venues so as to provide greater exposure to natural light. There is some evidence in the general psychological literature that people who become immersed in activities come to experience time as passing more slowly. Fewer units of time are counted off on the person's internal mental 'clock', presumably because of the mobilisation of cognitive resources for other tasks. Thus, subjective time tends to be under-estimated in comparison to objective time. For this reason, the installation of clocks on walls, perhaps in conjunction with pop-up reminders of the time on EGMs, may be a sensible strategy,

although, once again, this policy is probably going to be more useful in helping to maintain safe levels of gambling in regular non-problem gamblers, rather than assisting problem gamblers.

It is possible there would be benefits associated with the provision of increased lighting. This strategy could be considered in new gambling venues, in conjunction with other design features that might encourage a greater awareness of the outside world. Machines could be located in areas where people are able to see outside, and where there is a clearly identified 'Exit' sign to allow gamblers to leave quickly, if they so choose.

As indicated previously, some of these modifications to gambling environments have been recommended in the NSW IPART (2003) review and evaluated in Hing's (2004) study of NSW clubs. On the whole Hing obtained mixed results. When asked, most patrons were unaware of any modifications that had been undertaken to venues, but most were generally in support of these changes, particularly the addition of clocks and natural lighting.

Rodda and Cowie's (2005) recent review of Victorian harm minimisation strategies (a survey study of 418 EGM players at venues) showed that just under half of all players were often or always aware of the presence of a clock on the wall (56% only occasionally or never noticed one). Around 54% of EGM players believed that having a clock on the wall was a potentially useful harm minimisation measure. When asked whether the lighting in venues was appropriate, around 75% were generally satisfied, but 45% indicated that the addition of more natural light to gaming areas would be an effective problem gambling measure. Similar issues were investigated by New Focus (2005) in Victoria in a sample of 142 problem gamblers and 77 of their loved ones. Both measures generally only attracted modest ratings of importance (scores of 3.1 or 3.7 out of 5) as compared with scores of over 4 for most measures involving the modification of machines or limitations imposed on gamblers' access to money within venues.

6.3.3 Machine shut-downs

For a number of years, it has been suggested that gaming machines should be shut down at certain times in order to reduce the available playing time. The Productivity Commission was, in general, reluctant to endorse this strategy for two reasons. The first was that it would unduly affect recreational gamblers. The second was that it could encourage gamblers to gamble more intensely during the periods when the machines were available. Such a strategy would not prevent problem gamblers from rescheduling their visits to gambling venues so that they could maintain the same number of visits, but at different hours. It also ignores the fact that gamblers do not need very long in order to lose large amounts of money on poker machines. If a typical problem gambler spent $250 per week, or around $60 in each of 4 visits per week, there would be situations when all of this money could be lost in less than an hour. As indicated above, on modern EGMs it is possible to wager $10 per spin, and each spin only takes around 3.5 to 4.0 seconds. It is thus possible to achieve a turnover of at least $60 per minute.

There is currently little evidence available to support the effectiveness of this strategy, although it has already been introduced in some Australian States, including NSW and Victoria where venues are required to shutdown machines for specified periods of time (AIPC, 2006; McMillen & Pitt, 2005). In a summary of focus groups conducted by the Independent Gambling Authority of South Australia, Delfabbro and Panozzo (2004) found that problem gamblers were generally sceptical about the value of machine shutdowns unless they were of a sufficiently long duration. If machines only stopped for five to ten minutes, this would be enough time for gamblers to visit the toilet or have a cigarette or return to gambling, whereas a 25–30 minute shutdown would be more effective in persuading them to leave the venue and perhaps reconsider whether they wanted to continue gambling.

Specific questions about the effectiveness of shutdowns were also included in a survey of 418 EGM players at Victorian gaming venues (Rodda & Cowie, 2005). Most gamblers (64%) believed that restricting 24–hour operation of EGMs at venues and shutting machines down for a minimum of four hours per day (55%) were effective problem gambling measures. These figures were generally consistent with a larger study conducted by AC Nielsen in 2003 in NSW. On the whole, the AC Nielsen study showed that problem gamblers, families, counsellors and members of the general community were in support of three–hour shutdowns of EGMs, but argued that the practice of implementing these shutdowns in the early hours of the morning largely negated their effectiveness. It was argued that shutdowns would have to be implemented during the day or early evening in order for them to have a noticeable influence on problem gambling.

Some support for the potential value of restricting the hours of venue operation is provided in the recent SACES (2005b) review of regional caps in Victoria. As described later in this report, this study investigated the revenue effects of the introduction of various regulatory changes in specified regional areas of Victoria where there had been concerns about the density of EGMs and their effect on the community. The study showed that those venues which had had restrictions in their hours of operation had experienced smaller growth in revenue than those which had not been subject to this policy. Similarly, in a study of 119 problem gamblers and their loved ones tracked over time, New Focus (2005) found that a reduction in venue operating hours was considered a potentially effective measure to reduce problem gambling (rated 4.1 out of 5, where 5 = highly effective).

At the same, evidence and support for shut-down measures is not always consistently obtained. In a very similar study conducted in the ACT by McMillen and Pitt (2005), a series of 16 interviews were conducted with problem gamblers and their families, 60 interviews were completed with venue managers, and 45 interviews with EGM players. Although there was some limited support for this measure (48% of club managers and 78% of recreational EGM players), only 12% of club managers and 40% of recreational EGM players considered it an effective harm minimisation strategy. A number of problem gamblers said that it was potentially useful measure, but that their gambling had been largely unaffected because the shut-downs had usually been imposed during times

when they were not usually gambling. McMillen and Pitt also showed, using analyses of general trends in gaming revenue, that there was no evidence that the introduction of this measure had any meaningful effect on gaming revenue since it had been introduced. Nevertheless, there were a number of clubs which reported approximately 3–10% reductions in revenue and some loss of patronage (mainly recreational players) as a result of being unable to operate machines for 24 hours in each day.

Similar results and review were reported in the NSW IPART review. Some clubs claimed to have experienced losses of revenue (around a 12% decrease), lost patronage to other venues (usually to casinos), and reduced staff hours due to the 6 hour shut-down in machine operations. In some studies, information has been sought via interviews with gamblers themselves as to what they do when shutdowns occur. Approximately 70% indicate that they go home, 26% go to another club or hotel, and only 4% go to a casino (Rodda & Cowie, 2005). In other words, the vast majority of patrons do not appear to transfer their business to other venues when shutdowns occur, as some club owners had claimed was the case. As in the ACT, the introduction of this measure has not appeared to have had any long-term effect on gaming revenue in either NSW or VIC (AC Nielsen, 2003; SACES, 2005b). In both NSW and VIC, revenue levels have generally returned to the levels observed before the shutdowns were introduced. As the SACES (2005) points out: this very likely occurs because the industry develops strategic ways to counteract the effects of the loss of revenue to regulatory provisions; including, alterations to the "mix" of machines at venues. One such strategy might include the introduction of more popular, lower denomination models (e.g., 1 or 2c machines) to raise the average revenue per machine.

6.3.4 Modifications to gaming machines

Much of this discussion has already been provided above in the section on behavioural analyses (Section 5). In summary, it was suggested that reductions in the number of payout lines, the maximum credits allowed per line, and a ban on note acceptors would be potentially very useful harm-minimisation strategies. It was also pointed out that slowing play speed would be of limited value unless it were combined with these other modifications and did not lead to longer sessions of play. A number of other possible design modifications are summarised in the sections below.

More recently a number of self-report studies have been conducted to ask EGM players whether various modifications to machines would be effective in reducing problem gambling (AIPC, 2006; New Focus, 2005; Rodda & Cowie, 2005). All three of these studies showed that almost all the modifications described above: limiting the number of lines, maximum bets, and slowing play speed, were rated as potentially effective or very effective by over 50% of problem gamblers, counsellors, or loved ones of the gamblers. In the New Focus study conducted in Victoria, for example, all of these modifications attracted ratings of around 4 out of 5 on a 5–point scale, where 5 = highly effective. Once again, as has been pointed out previously in this report, a difficulty with these findings is that it is unclear as to the extent to which these responses were influenced by socially desirable responding. Although these modifications may be intuitively appealing as harm

minimisation measures, it is not clear whether there is any evidence that they work in practice, or whether problem gamblers would alter their behaviour in the face of such modifications.

Another recent study by McMillen and Pitt (2005) examined the effectiveness of the $10 maximum bet limit legislated for all gaming machines in the ACT. In addition to analysis of overall ACT gaming revenue, a series of 16 interviews were conducted with problem gamblers and their families, 60 interviews were completed with venue managers, and 45 interviews with EGM players. On the whole, most respondents supported this measure (63% of club managers and 87% of recreational EGM players), and many thought it was an effective way to reduce problem gambling (44% of club managers and 60% of recreational players). However, analysis of revenue trends before and after the introduction of this measure showed little evidence that it had influenced overall gambling revenue, or whether it had reduced problem gambling. When asked, most problem gamblers did not believe that this measure was effective because very few ever gambled this amount on a single game. These views are generally supported by the findings of the Productivity Commission (1999) that showed that the average bet size, even for problem gamblers, was less than $2 per spin.

6.3.5 Introducing short-term forced breaks after wins

One recommendation is for machines to shut down, or stop operating, after players have obtained very large wins. The rationale underlying this suggestion is that this time would give gamblers an opportunity to think over their decisions before immediately returning to gambling. This view is supported, for example, by the research of O'Connor and Dickerson (2003), who showed a strong relationship between measures of impaired control and the extent to which gamblers were influenced or 'destabilised' by the occurrence of large wins. Such wins, it was argued, contributed to a greater likelihood of gamblers being unable to leave the gambling venue, and created an irresistible urge for them to continue gambling.

Unfortunately, as both Dickerson *et al*. (1992) and Delfabbro and Winefield (1999) showed in their observational studies of gaming venues, many gamblers pause anyway after obtaining large wins, so it is difficult to understand why a forced pause would make any difference to normal game-play. Moreover, the fact that many gamblers change machines after very large wins, because of a belief in the gambler's fallacy, suggests that this feature is unlikely to influence gambling behaviour, apart from creating frustration. As with machine shutdowns, the breaks would need to be of a longer duration before they would be likely to have any impact on problem gambling behaviour.

6.3.6 Lights and sounds on machines

There is little information currently available concerning the effects of light and sound features on machines. However, anecdotal reports from clinical treatment programs (e.g., South Australian Flinders Medical Centre) suggest that sound features are probably the more important features on gaming machines, and are most likely to contribute to the

process of classical conditioning described above. Payout sequences are designed to be very appealing to players and, on some machines, tones of varying frequency are used in conjunction with different betting options. Placement of low bets is associated with low tone frequencies; higher tones accompany larger bet selections. According to some researchers (Griffiths, personal communication), this design feature may create a sense of 'perceived urgency', because people are conditioned (e.g., by exposure to alarm signals) to become more alert and aroused when presented with higher frequency tones. Sounds also provide the main source of vicarious reinforcement in venues, in that payout sequences activated on one machine are heard by other players. Manufacturers also use metal trays to amplify the sound of falling coins to strengthen this effect. For these reasons, modifications to machine sound-effects may have some value as a harm-minimisation strategy because of the potential role of sound-effects in increasing the likelihood of conditioned responses, as well as encouraging a false perception of how much is being won. Delfabbro *et al.* (2003) found, for example, that the removal of sound was likely to significant reduce the attractiveness of EGMs to players. Similarly, in self-report studies conducted by Rodda and Cowie (2005) and New Focus (2005) in Victoria, the removal of sound effects or colours on machines was generally rated as less important by problem gamblers as compared with other more tangible measures that physically limited gamblers' access to money at the venue (e.g., the removal of ATMs).

6.3.7 Tokenisation

One of the principal factors that contribute to the profitability of modern slot-machines is their capacity to use credits, rather than money, in the process of gambling. This creates the possibility for significantly more rapid play, and for variable betting options, and has also allowed manufacturers to introduce machines with very low denominations (1c and 2c). This latter feature allows players to gamble with very large credit totals representing very small dollar amounts. On some very new machines, for example those manufactured by IGT, there are modules that allow this process to be extended to its logical extreme with players being awarded 1,000 credits for every $1 inserted into the machine.

From a consumer ethics perspective, tokenisation is not misleading in that gamblers are generally able to convert credit totals into their dollar amounts (indeed the new IGT machines have both a dollar and credit display). However, tokenisation is problematic in that it is the basis of all the problematic features known to be associated with problem gambling, including multiple lines and credit betting. If players had to insert coins on every spin, this would significantly reduce the rate at which they could lose money, and would significantly reduce gambling turnover. In addition, since wins are also paid back in credits rather than in coins falling into a tray, there are no restrictions on the nature of the win. Players can place bets worth $1 (e.g., five 1–cent credits on 20 lines) and be awarded a win equal to 10 credits (in effect, a net loss). Wins can also consist of both odd and even credit amounts, so that player balances are reduced in such a way that they are left with amounts (e.g., 87 credits) that cannot be paid out from the machine, and which are therefore usually re-gambled.

It seems very likely that the use of tokenisation (credits) rather than coins in the current generation of modern machines plays a significant role in creating machines that provide a greater risk of harm to problem gamblers. However, tokenisation is now a commonplace feature of almost all modern gaming platforms, so that is difficult to understand how this feature might be removed without other substantial alterations to machines. One way in which tokenisation might be reduced is to make the nature of the gambling transaction more tangible by requiring people to gamble only using coins and remove note acceptors (as has always been so in South Australia). This would certainly not prevent problem gambling - as would be clearly evident from the problem gambling prevalence figures for South Australia- but it would possibly make people more aware of how much money is being fed into the machine during the course of a session.

6.3.8 Bonus jackpot features

As pointed out above, Williamson and Walker (2000) and Walker (2003) and Australian Institute for Primary Care (2006) provide evidence to suggest that bonus sequences, in particular, free games, are very potent reinforcers for regular EGM players. Indeed, the tendency of players to select a greater number of lines appears to be strongly motivated by the fact that this strategy increases the likelihood of them obtaining the required symbols to trigger bonus sequences. This, in itself, suggests that it could be possible to reduce gamblers' tendency to choose more expensive multi-line betting options if these bonus sequences were reconfigured so that they could be more consistently triggered by playing fewer lines. However, at the present time, Walker's and the AIPC's research does not indicate whether these features have a differential effect upon problem gamblers.

Other potentially problematic features on modern gaming machines are linked and progressive jackpots. Linked jackpots are collective pools of money that accumulate steadily across a number of different machines. Any person playing one of the machines linked together in this fashion is eligible for winning very large amounts if they happen to obtain the combination of symbols that triggers the jackpot. Such jackpots are very common at casinos and often involve additional prizes such as cars and holidays. In this sense, linked jackpots form a separate game that operates in conjunction, or concurrently, with normal game-play. The primary concern with this feature is that it enhances the perception that large (or life-changing) amounts of money can be won from gambling on EGMs, when this is usually not the case. For this reason, linked jackpots may further exacerbate gamblers' tendency to chase losses, and may give rise to false expectations of success based upon a belief in the gambler's fallacy. Evidence from the fifth Community Gambling Patterns survey conduced for the VCGA in 1997 suggested that over 30% of problem gamblers specifically went to venues in order to play linked jackpot machines, compared with only 3% of non-problem gamblers (cited by the Productivity Commission, 1999). However, as the Commission pointed out, this does not necessarily mean that the removal of these machines would reduce expenditure amongst problem gamblers.

Potentially the most problematic features on modern gaming machines are what are termed 'progressive jackpot' features. These are stand-alone features that are positioned above the normal gaming screen, and consist of a digital display (e.g., $45.05 or $221.45) that gradually increases during game-play. On the IGT version of this feature, a randomly determined trigger-point occurs within a particular range (e.g., between $25 and $50). A very small percentage of each stake placed per spin is added to this total, and gamblers know that the closer that the balance gets to the maximum possible trigger point ($50), the more certain the outcome. There are a number of reasons why this feature is problematic. The first is that it further encourages gamblers to spend more per spin in order to increase the accumulation rate. The second is that it provides a very strong justification for chasing and continued gambling. Gamblers often display a strong motivation to achieve specific goals of this nature, either out of a desire to complete the task that they began (often termed 'a behaviour completion mechanism'), or because they cannot bear giving up the jackpot to someone else. This feature also may serve to reinforce the view that one is more likely to obtain a jackpot the longer one persists; and, in this case, this is true. Thus, this feature has the potential to undermine many of the public education and safe-gambling messages discussed earlier.

One obvious counter-argument to this view is that most people would not be willing to spend many of hundreds of dollars in order to obtain small jackpots of this nature. However, this view ignores the fact that gamblers may not often engage in rational 'weighing-up' of the costs and benefits involved, and also that gamblers often expect jackpots to occur earlier rather than later (i.e., before they have spent a large amount of money). It also fails to consider that the progressive jackpot feature could be easily modified so as to pertain to a much larger jackpot (e.g., $250) where the reward would be more enticing.

A second form of the progressive jackpot feature is one where the jackpot balance accumulates based upon randomly occurring game outcomes. An example of this is the Super-Eight game on the largely superseded VLC Touch-machines. In Super Eight, players have the option of betting the maximum number of lines in the hope of obtaining triple-bar combinations. If these occur, money is added to a cumulative jackpot meter. The jackpot is awarded when players get a full screen of triple-bar symbols (9 of them), or when the jackpot meter reaches $10,000 based on outcomes from chance-determined outcomes. This feature is not nearly as problematic as the one described above because the accumulation is only indirectly related to the amount bet on each spin and, more importantly, because the outcome does not have to occur within any predetermined interval. Players have to await the occurrence of chance events in order to increase the jackpot amount and to trigger it, and these may take a long time to occur.

- **One of the most concerning innovations in modern EGM technology is the development of progressive jackpot features. These have the potential to undermine safe gambling messages as well as to exacerbate chasing behaviour. The effects of the features need to be carefully monitored and researched.**

6.3.9 Smart-card technology

Another innovation in modern gambling technology is the possibility of EGM gamblers being able to gamble only using smart-cards. These are pre-paid cards containing a certain quantum of monetary value that can be purchased either at, or outside, the gambling venue, and which can be inserted into gaming machines. As pointed out by the Productivity Commission, this innovation could have many advantages and be capable of imposing discretionary limits on gambling expenditures. Cards could carry individually identifying information so that it would be possible to monitor the expenditure of individual gamblers as well as provide them with periodic statements of their expenditure. Gamblers who bar themselves (or were barred by others) from specific venues or from gambling in general could ensure that this exclusion was enforced by not allowing the card to be accepted by machines in all, or any, venues. Alternatively, limits could be imposed on the amount that could be put onto the card in any specific interval of time, so that gamblers could pre-commit themselves only certain expenditure, or duration of play. All this would be achieved by a central computer capable of matching up the individual information contained on the card with the activity being undertaken on individual machines.

The Productivity Commission conceded, however, that the shift to smart-card technology would be expensive given that modifications would have to be made to many thousands of machines Australia-wide, but argued that this option could be considered by any jurisdiction in the process of introducing machines for the first time. Another potential problem with the card system is that it further distances gamblers from the fact that they are dealing with money when they gamble, and that it could make gambling faster and more efficient. If cards activate very rapidly when placed into machines, (i.e., faster than coins could be withdrawn, collected, and reinserted into another machine), this would enable gamblers to transfer their play from one machine to another more quickly. It would also make impulse gambling a lot faster. Gamblers passing by venues would not need to visit the cashier to obtain coins, but could insert their card straight into the machine and start playing. This problem would be particularly compounded if the smart-cards were not gambling-specific, that is, if they could be purchased outside gambling venues and used for other purposes. This would increase the likelihood of adolescents being able to access gambling venues. Cards could be obtained using false identification or with the assistance of older friends or siblings, and machines could be accessed and played without any interaction with venue staff.

The potential advantages and disadvantages of smart card technology has also been examined in research conducted by the Centre for Gambling Education and Research based at Southern Cross University in NSW (Nisbet, 2003, 2004). Nisbet argues that the most common model for cashless gambling in EGM venues would involve the use of a card or tag which is loaded with a specific cash balance and then swiped or touched against a reader on machines to upload or download cash amounts. Cash would be charged to the card either at an ATM or at the cashier's window, and winnings would only be paid by presenting the card to the cashier. Cards would only be available in gambling venues and could only be used for gambling in EGMs Limits could be placed on the amount that could be loaded onto the card at any one time, or during a specific

time interval, and the expenditure associated with specific cards could be tracked across time and across different machines. In compliance with the Privacy Act, this tracking process could potentially be undertaken without having to identify specific individuals by name (e.g., if the information concerning those signing up to receive cards was maintained on a different computer system or by a different organization from the one tracking the expenditure patterns for specific cards).

The purpose of Nisbet's (2003, 2004) research was to canvass the views of manufacturers and suppliers, gaming machine managers, and social welfare agencies concerning the potential benefits or problems associated with the introduction of cashless gambling. A series of qualitative interviews were conducted and content analysed to identify principal themes, including: the perceived security of the system, privacy, convenience, installation costs and maintenance, and the potential role of cashless gambling as a harm minimisation strategy. On the whole, most respondents were confident about the potential security of the system and believed that most issues of privacy could be relatively easily overcome. However, they were doubtful whether many gamblers would be entirely receptive to the new technology because it was unfamiliar and required the provision of personal information to obtain a card. Problem gamblers were considered less likely to do this, especially if the system was only voluntary, and if it were still possible to gamble using conventional methods. Many venue managers admitted that the system might have the potential to reduce labour costs because it would reduce the amount of cash management required on the gaming floor (e.g., taking money out of machines), but were concerned about the significant installation costs that would be required at a State level, if the technology were introduced on every machine. It was felt that these additional costs would disproportionately disadvantage smaller venues.

In Stage 2 of her research, Nisbet (2004) conducted more detailed analyses of player perceptions of the convenience and potential effectiveness of cashless gaming technology. The results showed that most players were generally sceptical about the potential value of voluntary schemes, and felt that it failed to offer "significant protection to gambling consumers relative to that offered by other responsible gambling measures" (p. 18). However, as Livingstone (2004) pointed out, this conclusion was tempered by the fact that only 29% had ever used cashless gambling, and that there was a significant correlation between the uptake of cashless gaming and people's views concerning the effectiveness of the technology in helping them to manage their expenditure. Those who had used the technology appeared more likely to perceive its benefits. These findings suggest that the actual benefits of cashless gambling may be greater than people's current perceptions, and that it may be may be very difficult to determine the effectiveness of this technology until it is formally trialled by a significant number of gamblers.

A formal review of the benefits and costs of the introduction of various forms of smartcard technology was undertaken by the Independent Gambling Authority of South Australia (IGA) in 2005, and summarised in a report to the Minister. Evidence for this inquiry was obtained via written submissions and oral testimony provided by industry groups, technology providers and service agencies. Several different technological models were considered, including those that were based on cards, or chargeable tags

that could be read by data readers on the machines. All of these shared many similarities and different 'levels of operation'. For example, the cards could allow:

- The operation of machines with or without formal identification of the individual gambler by the venue or monitoring network;
- Multiple forms of machine activation or card-only operation;
- Voluntary or involuntary access to the machine;
- Varying limits could be imposed based on both monetary value or play time.

The installation cost of the technology per machine varied from one technology supplier to the next, but tended to be in the region of $1500, although it was recognised that only newer EGMs could be modified to include the new card technology. Almost all industry groups, apart from the manufacturers themselves, were very negatively disposed towards card technology because of the costs of installation and the potential inconvenience caused to recreational and interstate players. Doubts were also raised about the effectiveness of card systems as harm minimisation strategies, especially given that very few evaluations had been conducted to determine whether the technology assisted problem gamblers. Despite this, the IGA expressed positive views about the long-term potential of the technology and believed that there was some capacity for it to be introduced as older machines were replaced over time.

The most recent published study of smart-card technology was undertaken by McDonnell-Phillips, an Australian marketing firm, who conducted a telephone interview with 240 regular (monthly) EGM players. Gamblers were asked to express their views about the nature and potential effectiveness of smart-card technology and whether they would use it. The degree of endorsement was found to vary significantly depending upon the type of card scheme and how was structured. Sixty–one percent of all gamblers interviewed supported the scheme if it were introduced on a voluntary basis, but only 26% supported a compulsory scheme. When asked if the scheme would influence their enjoyment of gambling, 55% said that voluntary scheme would make no difference, and 14% said it would reduce their enjoyment. If compulsory, 52% said it would make no difference, but the percentage reporting that they would find gambling less enjoyable increased to 33%. Respondents also believed that most other players would not like it as well (53%). Players were also asked on what basis limits should be set, whether they would use the cards, and how concerned they were about privacy issues. The results showed that:

- 53% would choose their own limit, 40% said that it should be based on people's ability to pay;
- 47% said that they would try the cards, and 27% said they would not use them;
- only 27% had significant concerns about privacy issues.

Responses to these questions were also analysed in relation to a person's problem gambler status. Among those classified as high risk gamblers or problem gamblers (PGs) on the CPGI, it was found that:

- 67% supported a voluntary scheme, but only 17% supported a compulsory card scheme;
- Limits should be based on what people choose (52%) or their ability to pay (38%);
- For 35% of PGs, a voluntary scheme would have no effect on enjoyment, whereas almost half (48%) said that their enjoyment would be increased;
- For 33% of PGs, a compulsory scheme would have no effect on their enjoyment, 31% would find gambling less enjoyable, and 36% would find it more enjoyable;
- 38% would try using cards and 27% would not;
- 33% of PGs were significantly worried about privacy issues.

Almost all of the respondents indicated that the cards would work most effectively for poker machines or EGMs (90%). If limits were to be set, there was a preference for monetary expenditure limits (93% liked this option) as compared with limits on the number of visits to the machines, or the amount of time that could be spent gambling. The sample also preferred cards that imposed limits either on a weekly or monthly basis, rather than more frequently (e.g., daily) or very infrequently (e.g., annually). These views did not differ significantly depending upon a person's problem gambler status (i.e., different risk groups gave similar responses).

> ♣ **Smart-card technology is generally supported by a substantial proportion of EGM players and also by the concerned sector, although around half of all players believe that compulsory schemes could place a potentially unpopular incumbrance on players. Players clearly have a preference for cards that allow expenditure limits to set at relatively frequent intervals (e.g., weekly or monthly) and that players should be allowed to set their own expenditure limits. Although most industry groups are opposed to this technology because of its potential costs both to implement and possible impacts on recreational players, there is already the capacity for this technology to be gradually introduced to Australian machines.**

6.3.10 Exclusion strategies

In South Australia (SA) as in most other jurisdictions in Australia, gamblers can be banned from gambling venues. In SA this can occur voluntarily (i.e., at their own request by making a request at individual venues or by contacting the Independent Gambling Authority), or involuntarily at the discretion of licensees, the Liquor and Gambling Commissioner, or as a result of the application by a family member to the Independent Gambling Authority via a Problem Gambling Family Protection Order. The exclusion procedures involved vary somewhat from one State to another, but similar procedures are

involved. Venues can be provided with photographs of the individual problem gambler, and are directed to enforce the exclusion contracts to the best of their ability. Violations of the contract mean that the gambler can be subjected to a penalty. Gambling providers can also be penalised, although this varies depending upon the particular gambling code (e.g., EGMs vs. lotteries), the nature of the violation, and the legislative framework under which it falls.

Irrespective of the exact nature of the scheme, the obvious disadvantage of all these measures is that, if gamblers only exclude themselves from particular venues, there is always the possibility that they can gamble elsewhere. In addition, there is the problem of venues being willing and able to enforce the exclusions. As the Productivity Commission pointed out, this may be much easier in casinos where gamblers are very visible, but more difficult in some EGM venues where gambling is undertaken under more secluded conditions.

Nevertheless, as indicated in a number of submissions to the national inquiry, the availability of these schemes remains very important in that they provide problem gamblers with a proactive strategy to assist them in the process of recovery. The effectiveness of exclusion could also be greatly enhanced by incorporating it into counselling, so that ongoing treatment and therapy could help support the gambler to maintain the exclusion. Currently, depending upon the jurisdiction, it is possible for people to have themselves banned for specific periods such as 6 months or 2 years (Productivity Commission, 1999), or for indefinite periods, or as based upon negotiation between patrons and gambling venues, or at the discretion of licensees. In South Australia, the Independent Gambling Authority barring is indefinite but, at a minimum, it must remain in place for 12 months, after which the barred person can apply to have it revoked (Chappell, 2002). The IGA scheme enables a person to bar themselves from one or more gaming machine venues, and does not apply to other gambling forms. Similar systems also operate in other States or Territories, although with some variations in the number of venues from which one can be excluded, and the time that must elapse before the order is revoked. One distinctive feature of current South Australian provisions is that it is also possible (under separate legislation) for third parties (e.g., close family members) to seek exclusion orders in the absence of the problem gambler so as to protect their household or family well-being in situations where the gambler is unwilling to seek help.

On the whole, there has been relatively little research conducted to assess the effectiveness of exclusion schemes. Previous Canadian research by Ladouceur *et al*. (2000) involved a survey of 220 problem gamblers who had excluded themselves from the Montreal Casino. Of this total, 66% had maintained the exclusion for 6 months, and 25% for 5 years (the maximum possible period). At the same time, a quarter of the total reported having failed to maintain their first exclusion and had to seek exclusion for a second time, and 30% claimed that they had been able to stop gambling altogether as a result of the exclusion.

In Australia, a study by the South Australian Centre for Economic Studies (O'Neil, Whetton, Dolman, Herbert, Giannopolous, O'Neil, & Wordley, 2003) provided an extensive critical analysis of current exclusion programs operating across Australia. The project involved:

- A detailed summary of existing programs;
- Secondary analysis of data collected by the Crown Casino in Melbourne and Australian Hotel's Association (AHA) across Victoria;
- A series of consultations with stakeholders including industry representatives, local Government, problem gambling counselling services and State Government regulators;
- A mail-out survey to almost 100 managers of gaming venues in Victoria concerning their views about the effectiveness of exclusion programs.

The first component of the secondary data analysis involved summarising the results of two data-sets obtained from the Victorian AHA. The first data-set, maintained on the AHA website, described the results of 4083 interviews conducted by the Victorian Hotel's Association with gamblers between 1997 and 2002. The results showed that approximately half of these people (56%, n = 2248) had been excluded from gambling venues (Mean = 16.4) for an average period of 1.7 years. Of those who had been excluded, it was found that up to 30% had sought more than one deed of exclusion. The report also summarised the results of a second Victorian Hotel's Association survey involving 671 self-excluded patrons and showed that 69% were female, that 55% reported an income of under $25,000, and that the vast majority (over 60%) were 25 to 50 years old. Unfortunately, no data were available to indicate how many people had breached their deeds.

A second series of data analyses examined self-exclusion data obtained from the Crown Casino (1996–2002). A total of 933 people had been excluded and, of these, 15% had been found to have breached their exclusion deeds with a mean of 3.2 breaches per person. The results further showed that one-fifth (21%) of those who had breached their deeds had done so on more than one occasion.

These findings were criticised in a recent review produced by the Australian Gaming Council (Blaszczynski, Ladouceur, & Nower, 2004) on the grounds that the survey conducted by the Centre "provided insufficient information on the data collection procedures and sample recruited…" (p. 7). However, these conclusions are perhaps unfair in that it is clear that the Centre did not collect these data and was merely reporting the findings obtained by other organizations. Nevertheless, Blaszczynski *et al.* were correct in their assessment of the quality of the data received. Very little concerning the efficacy of exclusion programs can be drawn from these data alone because it is unclear how many excluded gamblers remained undetected during the periods of data collection.

A perhaps more useful indication of the success of the programs was derived from the Centre's consultations with venues. On the whole, venues were very pessimistic about the effectiveness of the programs and believed that they had little effect on problem gambling. Although most respondents agreed that the programs were reasonably visible and accessible to problem gamblers, they were highly critical of the resources available to administer the program. Most managers argued that it was very difficult to identify problem gamblers from the photographs that had been provided, and highly unlikely that venue staff would have the time or capacity to detect excluded gamblers when there were many hundreds of them out in the community and often 60–90 barred per venue. Photographs were generally only taken once so that if a person changed their appearance during the enforcement of the deed, or wore a disguise, it would be almost impossible for staff to identify gamblers unless they were well known to particular venues. In light of this, the report concluded that there was a need for more regular high quality photos to be produced and distributed to venues perhaps via the Internet and the support of high-quality colour printers located in each venue.

Another concern was the lack of training and support available for venue staff in how to administer the program, identify program gamblers, and report an official breach of the deed of exclusion. Each venue should be given clear guidelines in how the program worked, assistance with data management and compliance, and display information concerning the programs more prominently in multiple languages. There was also felt to be a need to forge stronger links between the industry and support services. In line with this suggestion, the Australian Gaming Council (Blaszczynski *et al.*, 2004) proposed the development of a new self-exclusion model that included specially trained self-exclusion officers to whom gamblers could be referred. These officers would provide gamblers with extensive counselling, advice about treatment options, and assistance with the self-exclusion process and how to make it work most effectively. Much of this sort of system is currently in place in a number of jurisdictions and included in both voluntary and mandatory codes of practice (e.g., Skycity Adelaide's Host-responsibility co-ordinators, AHA-SA's GamingCare officers).

6.3.11 Codes of practice, staff training and in-venue interventions

Codes of practice

Almost all of the commercial gambling industry in both Australia and New Zealand professes to operate according to a set of principles that encourage people to gamble responsibly, or in a way that minimises the possibility of serious harms developing as a result of their involvement. Responsible gambling principles can be articulated in different ways and at different levels ranging from legislated mandatory codes of practice that apply to all of the industry, co-regulatory arrangements developed by the industry in conjunction with governments, voluntary codes of practice developed and enforced by the industry itself, to statements of business and consumer ethics. All of these sets of principles recognise that the industry has a duty of care towards its patrons by providing gambling services in a responsible manner. The term code of practice refers to a set of principles involving individual organizations or sets of organizations who

comply to a set of practices that are thought to influence or control behaviour, and where there is some intention for this process of adherence to be undertaken in a consistent manner over time (for reviews of State legislation and the nature of the different codes and the regulatory frameworks see Australian Gaming Council, 2006; Delfabbro, McMillen, & Nevile, 2006; McMillen & Doherty, 1999, 2001; McMillen, 2006; McMillen & Toms, 1997; McMillen, Doherty, & Laker, 2001; McMillen & Martin, 2001; O'Neil *et al.*, 2003).

In some States of Australia (e.g., SA, ACT and the NT) and in New Zealand, mandatory codes of practice are enforced by legislation, so that there are penalties for industries that fail to provide gambling services in a manner consistent with the code. In Queensland, the arrangement could be described as co-regulatory in that the Responsible Gambling Code of Practice developed in that State was developed through collaboration between industry and the Government. Ongoing reviews and audits are conducted, but there is greater flexibility in the form of compliance than is the case in jurisdictions where mandatory codes are in force (a 'command and control' style of regulation) (McMillen *et al.*, 2001; McMillen & Martin, 2001; Queensland Government, 2000; Queensland Treasury, 2002). On the other hand, industry in other States such as Victoria and New South Wales are largely governed by industry codes that are formulated and administered by peak industry bodies such as the Victorian Gaming Machine Industry (VGMI). Although there are staff who work with venues to increase compliance, there are few strict penalties, and not all venues necessarily comply with the guidelines, or even belong to the peak bodies that attempt to enforce the voluntary codes.

The content of these codes of practice varies from one jurisdiction to the next, but there are many elements that are common to most, if not all, of the codes. These elements include:

- Staff training in responsible gambling (e.g., how to recognise signs of distress in gamblers and how to provide assistance);
- The provision of information about safe gambling, gambling odds, or help-seeking;
- Payment of large wins only by cheque or bank transfers;
- Refusals to provide credit or cash cheques at venues;
- Appropriate and non-misleading advertising of gambling products;
- Provision of venue specific or general exclusion programs for problem gamblers;
- Limitations on the provision of alcohol in gaming areas.

There is no question that the development of codes of practice have been a very positive development within the Australian gambling industry and that there is (at least within some industry groups) a recognition that problem gambling can be detrimental to business operations or considered undesirable on consumer protection and ethical grounds. However, it is important to determine the extent to which the principles stated

in various codes of practice have been put into practice. Several research studies have been conducted to investigate the effectiveness of various codes of practice in several Australian States. For example, Hing and Dickerson's (2002) review summarised the results of a survey of 33 organisations across Australia that asked each to indicate the extent of the mandatory and voluntary codes or practices to which they adhered. These organisations included 9 casinos, 5 hotel sectors, 5 club sectors, 7 TABs, and 6 lottery commissions. When asked about the extent to which they had adhered to mandatory codes, the results showed that only a third had restricted access to ATMs or EFTPOS; fewer than a quarter prohibited gambling by intoxicated persons; only 20% had exclusion programs, and only 15% restricted cheque cashing, had responsible advertising policies, and provided responsible gambling information. Admittedly, these figures are potentially misleading in that it is difficult to understand how lottery commissions could engage in some of these practices, but the results nonetheless show that there is considerable scope for further enhancements in the provision of mandatory responsible gambling practices in Australia.

Similar and separate statistics were presented to describe the extent to which operators were adhering to voluntary initiatives and codes, and these percentages were generally higher. Approximately 80% of operators have displays of problem-gambling information, responsible gambling information; around 60% have exclusion policies, and around half restrict access to ATMs, and pay large wins in cheques. Hing and Dickerson also provided information concerning the stewardship of these practices, and showed that most voluntary responsible gambling initiatives were put in place via staff training, advisory panels or committees, or by the production of signs and pamphlets that are made available to players in the venues. However, it was also found that almost all of these practices are not conducted in the context of any sort of evaluation framework, and have not been systematically researched.

Most evaluations of voluntary codes of practice have produced far from impressive or encouraging results. For example, in a recent study by Hing (2001), 213 club managers in NSW were interviewed concerning their support for responsible gaming strategies. The study showed that, whereas 88% reported supporting industry-level initiatives such as training programs for staff, only around 50% indicated that they had implemented strategies at a venue level. Such strategies were generally confined to such things as payments of large wins by cheque rather than by cash, providing an avenue for complaints, and referral information for problem gamblers. Only 28% had trained staff to recognise the symptoms of problem gambling, only 21% had prohibited ATMs in gaming areas, and less than 10% were found to contribute money to problem-gambling services.

Similar results were obtained by Hing (2004) in a survey of over 1,000 gamblers from club gamblers in NSW to assess their opinions on the adequacy of their club's responsible gambling practices, and the effectiveness of these practices in terms of their own behaviour. Most gamblers expressed a lack of confidence in the current measures being implemented in NSW clubs, and were sceptical about whether clubs were genuinely embracing responsible gambling principles. Particular concerns were

expressed about the availability of ATMs in venues and dimly lit and windowless gaming areas, and that these were the principal problems to be addressed. Most gamblers argued that the measures introduced (e.g., providing information in venues and controlling gambling advertising) had relatively little impact on problem gambling and had had not influence their behaviour at all.

Since 2002, reviews relating to the implementation of the Queensland Code of Practice have been undertaken (Queensland Treasury, 2002, 2003). This investigation was designed to gauge both the industry and public's awareness of the Codes, their commitment to the provision of responsible gambling services and the extent to which industry groups were providing training to their staff. The results of a survey mailed out to gambling providers showed that 70% expressed a commitment to the Codes, and that (depending on the sector of the industry and the size of the gambling provider) between half to three quarters had implemented changes to the physical environment (e.g., addition of clocks and greater visible light), practice changes (e.g., the purchase and sale of food, change, or alcohol separated from the gaming machine). There was also some commitment to training (75%), although two-thirds of this had been conducted in-house with some training taking the form of discussions and information sessions rather than formal training conducted according to the national competency standard. Many impediments to training were noted including the inability to find time to do it, the cost of travel, and the lack of availability of suitable courses or staff to conduct training. These problems were most strongly observed in smaller and remote venues. A similar evaluation was undertaken by Breen, Bultjens and Hing (2003) in Queensland in a study of venue managers and staff in three regional areas of Queensland (Longreach, Townsville and in the south east). The results showed that many venues had not completed formal training in the responsible gambling measures. Some doubts were expressed about the ability for industry staff to find time to undertake training and whether such training was readily available in some regional areas.

The most comprehensive and methodologically rigorous evaluative research about codes of practice that has been undertaken in Australia was undertaken by the National Institute of Labour Studies (NILS) in Adelaide during 2004–05 (NILS, 2007). NILS was commissioned to research the impact of the mandatory Advertising and Responsible Gambling Codes of Practice introduced by the Independent Gambling Authority of South Australia in April 2004. While there are some differences, both codes of practice are basically uniform across all industry providers. The responsible gambling code required venues to provide responsible gambling information in venues, to assist problem gamblers gain access to help services, required venue staff to undergo responsible gambling training and then refresher training every two years, prohibited the serving of alcohol to patrons seated or standing at a gaming machine, and placed restrictions on the use of EGMs (e.g., not able to use more than one machine at once). The Advertising Code of Practice limited the media promotion of gambling (e.g., avoid promotions during early morning and peak evening periods), no sounds of EGMs in advertising on TV or radio, no advertising directed towards minors or disadvantaged groups, and no advertising that glorified winnings or mislead the public about the chances of winning.

NILS research involved two principal components. The first, and arguably most significant component, involved interviews with recreational and problem gamblers. The second component involved detailed structured interviews with venue owners/ managers, venue staff, people from the Concern sector, and regulatory bodies. The project was therefore designed to consider not only the views of the industry concerning the impact of the Codes, but also their potential impact on gamblers and gambling activity.

The survey of gamblers was based on a random telephone survey conducted by a marketing company in Adelaide. Residents were contacted and interviewed if they reported having gambled at least once within the previous 12 months. Three items from the Victorian Gambling Screen (VGS) were used as screening tests and, based on the responses, people were classified as recreational or problem gamblers. This methodology yielded 500 recreational gamblers and 50 problem gamblers. All respondents were interviewed about their gambling habits just prior to the implementation of the Codes (March-April 2004), 3 months later (August-October 2004), 9 months after implementation (February-March 2005), and 15 months after implementation (August-October 2005). At each measurement point, the respondents were asked to describe their gambling habits, including type of gambling participation, frequency of gambling, amount of time spent, and expenditure (amount brought along and amount outlaid). The aim was to examine changes in objective behaviour over time.

The results for the recreational gamblers showed very little evidence of any systematic changes in the frequency of gambling, amount taken along, or outlaid, during the period in which these gamblers were interviewed, although there was some limited evidence of a slight increase in EGM expenditure over time. By contrast, the results for the problem gamblers showed some systematic changes. There was some evidence that problem gamblers were less likely to gamble more than once per week during the course of the study, and gamblers were more likely to report having decreased their expenditure (when one examined changes in expenditure reported from one time point to another for those gamblers who were available at two consecutive time-points). These changes seemed to occur most dramatically between the first and two measurement points (i.e., before and immediately after the implementation of the Codes of Practice). On this basis, NILS concluded that the behaviour of problem gamblers appeared to have changed since the Codes were implemented, although they cautioned that one cannot necessarily infer that the two were causally related.

In terms of its design, this study of gamblers was impressive in that it obtained baseline and follow-up data from gamblers over an extended period. However, it is important to recognise that the study was affected by a number of significant logistical difficulties particularly in relation to the recruitment, retention and classification of gamblers that need to be taken into account in the interpretation of the results.

First, the NILS study experienced significant difficulties in retaining participants over time. Only 112 or the original 504 recreational gamblers stayed in the study for 15 months (22.2% retention rate) and only 6 of the 50 problem gamblers (12%). Particularly problematic was the loss of 64% of the problem gamblers within the first 3

months, so that there were only 18 problem gamblers where there was baseline data before and after the implementation of the Codes. To compensate for this problem NILS recruited additional participants at each follow-up point (e.g., an extra 29 problem gamblers at the 3 month point), 19 at 9 months, 10 at 15 months. The inclusion of new cohorts in a design of this nature is a commonly used practice, except that the actual statistical comparisons subsequently conducted across time periods were based on different samples of people. The study was not, therefore a true longitudinal study as had been intended, but almost a cross-sectional study. Although NILS acknowledges this early in its report, many of the analyses that are conducted appear to have been interpreted as longitudinal. As a result, it is possible that observed differences between time points could be due to differences in the composition of the samples (sampling differences) at each time point rather than changes in the same people measured over time. This issue is particularly relevant to the comparison of Time 1 and Time 2. The new 29 problem gamblers who entered the survey at Time 2 to replace the ones that were lost from Time 1 may have gambled a lot less, so one cannot rule out the possibility that the overall Time 2 results only look lower than Time 1 because of this sampling difference rather than any within-sample change.

A second difficulty is the classification of problem gamblers. Instead of the widely used CPGI, the Flinders team used the Flinders-developed VGS. However, only 3 items from this validated scale were included and information concerning how this method of classification was used to validate the shortened scale against the full-scale is not provided. Despite assurances from the designers that the three questions were sufficient, only 66% of those who scored above a nominal cut-off on the 3 items were classified as problem gamblers on the full-scale. A further problem is that the full-scale items listed in the NILS survey was not just the Harm to Self Scale (used in scoring), but also included Enjoyment scale items as well which are not included in the usual VGS scoring. It is not clear, therefore, that the people classified as problem gamblers were all genuine problem gamblers, although they were clearly more 'at risk' than the recreational gamblers and would remain a useful comparison group.

A third difficulty is in the analysis of transitions in behaviour. To compensate for the fact that so few people remained in the study for all 4 measurement points, NILS calculated 2 point transitions. If frequency or expenditure data were available for any gambler at two successive points, one would count that as a transition, and these could be classified as increases, decreases and no change. This method is entirely logical and sensible, but when one examines the number of cases potentially available at each measurement point, it appears that the researchers may have included multiple transitions from the same individuals, e.g., people who stayed in the study for 3 time periods (T1, T2, T3) got included twice (T1-T2, T2-T3). If so, this means that some data are non-independent and so the overall percentage of decreases and increases could be misleading. For example, a relatively higher number of decease responses might have come from a small number of gamblers, or most decreases might have occurred long after the Codes were introduced, e.g., T3-T4. Such lack of independence calls into question the use of chi-squared tests which assume that all cases should be independent, but NILS (personal communication, April 2008) has indicated that only a relatively small proportion of the transition data

was non-independent because relatively few gamblers stayed in the study long enough to allow the collection of multiple transitions from the same participants. NILS also points out that similar decreases in gambling behaviour were detected using multivariate panel analyses that allowed for the inclusion of non-independent data.

With these limitations taken into account, the results from the gambler component of the study alone do not confidently lead to the conclusion stated by NILS, that the "problem gamblers' behaviour almost certainly changed" (Executive Summary) following the implementation of the Codes of Practice. However, the balance of evidence (as based upon several different analyses) appears to provide some tentative support for the view that the behaviour of gamblers showed some change over time. In other words, although the NILS study provides a very good template for future evaluations of changes in gambling behaviour, there would be a need to obtain larger samples of problem gamblers from a variety of sources from the outset so as to allow a genuine longitudinal analysis and to avoid interpretation difficulties associated with the replacement of cases over time.

The second component of the study involved structured or unstructured interviews with 32 venue managers, a small number of venue staff (8), 9 staff from the Casino, and people working in the Concern sector. These interviews showed that most industry groups had made significant steps towards implementing the Codes, although the responses to the Codes varied between industry groups, individual providers, and across time, or depending upon the particular aspect of the Codes under consideration. The provision of information and training was usually considered unproblematic by most providers, but the extent to which venues had a responsibility to assist problem gamblers (how far their responsibility extended) was less clear. Most hotels generally supported the spirit of the provisions, although there were others that were more resistant. Other industry groups such as lottery providers were unclear about the extent to which the Codes applied to their products because they were seldom implicated in problem gambling. The Concern sector was generally very sceptical about the value of the Codes of Practice and only considered them one small part of a wider range of responsible gambling measures that would be required to reduce problem gambling.

Staff training

Although the exact nature of staff training can differ between different jurisdictions, most States attempt (or are compelled by legislation and their associated peak regulatory body) to adopt the responsible gambling principles set out nationally by the Ministerial Council on Gambling. Courses are usually expected to conform to a national competency unit entitled *Provide Responsible Gambling* Services (Code: THHADG03B) that has been developed and taught by a number of organisations around Australia, including TAFE colleges in a number of states. Courses usually comprise a single day or evening program of instruction comprising a 4+ hour series of mini-lectures, exercises and tutorial-style discussions relating to different gambling-related issues. As summarised by Delfabbro *et al.* (2006), these courses usually contain material relating to the following content areas:

- The nature of mandatory and voluntary regulatory requirements for the specific gambling providers in that particular State or Territory. This usually also includes some detailed analysis of relevant codes or practice.
- There is some discussion of the nature of gambling and problem gambling, and how it can be defined and diagnosed.
- Some discussion of the benefits of the gambling industry to economic growth and community development is often included.
- Specific training relating to the provision of responsible gambling services are provided (e.g., the importance of helping gamblers find appropriate supports or help services, the operation of relevant self-exclusion schemes, the provision of accurate information about the odds or nature of gambling).
- How to communicate with gamblers who show signs of distress, e.g., learning how to create opportunities to assist people, how to speak to them in a non-threatening or judgemental way, and how to be empathic.

Comprehensive staff training procedures along these lines have been developed in a number of jurisdictions around Australia and in New Zealand. One example is the course provided by the William Angliss Institute of TAFE in Victoria, or the Betsafe Program provided by Paul Symond Consultancy developed in NSW in a number of registered clubs and subjected to a brief evaluation by Synaval in 2001[7]. Betsafe includes, amongst other things, twice yearly training for all staff, information provided via brochures, signs at venues, exclusion policies, and counselling assistance. Although such training activities are encouraging, the Productivity Commission suggested that any voluntary code must be treated with caution because there is no guarantee that the code will be adhered to by all venues, and at all times. For example, a challenge for the Betsafe Program is that it requires considerable time and resources, and so it is probably only going to be adopted by very large venues that can afford to do so.

Other training programs provided in Australia and New Zealand are summarised in Delfabbro *et al.* (2006) and include StarCity's e-learning package Accenture, Skycity's Responsibile Host program, AHA (SA)'s GamingCare scheme, the program provided by Abacus Consulting to Skycity Auckland, and the detailed program provided by Christchurch Casino. The Abacus Consulting program, as well as that provided by Christchurch Casino, is noteworthy in that both place a considerably greater emphasis on training staff to identify problem gamblers within the venue (i.e., to be proactive in their interventions), whereas most other voluntary programs only emphasise that one should take action when patrons show obvious signs of distress (such interventions would of course be provided even if gambling were not involved, e.g., a person who was intoxicated or disturbed for any other reason).

[7] The Synaval evaluation showed that most staff who completed the program believed that it had increased their knowledge, but there was no indication as to whether it had any impact on long-term behaviour.

Identifying problem gamblers

The mandatory codes of practice that apply in the ACT and South Australia both emphasise the importance of recognising the warning signs of problem gambling within venues. For example, under the ACT legislation (Gambling and Racing Control (Code of Practice) Regulation 2002) staff are expected to intervene if people express concerns about their expenditure or their ability to control their gambling, or ask for credit. The onus, therefore, is upon staff to take appropriate pre-emptive action. Unfortunately, only now is research being undertaken to determine whether it is possible to identify problem gamblers within the venue with any degree of reliability.

These issues were discussed, for example, in some detail in 2001 in a report produced by the Australian Gaming Council (AGC). A number of experienced researchers and clinicians were brought together to discuss the feasibility of this objective. The overall conclusion of the AGC was that this process would be very difficult and should not be attempted, and that little consensus existed about the factors likely to be indicative of problem gambling. However, a careful reading of the submissions suggests that there are some grounds for optimism. Some clinicians argued that a number of indicative warning signs could be identified. These included frequent visits to ATMs; requests for credit in order to gamble; playing for excessively long periods (5–6 hours or longer) or until gamblers fell asleep; family members looking for gamblers at the venue; people who appeared agitated, angry, or distressed while gambling; people who tried to sell property at the venue, or who enquired about ways to dispose of property or to obtain quick money. At the same time, some submissions were careful to point out that these signs were only indicative, and that more formal assessments using established measures, and administered by appropriately trained people, would be required in order to verify the gambler's status. [8]

A similar lack of optimism has been previously expressed by the Productivity Commission who drew attention to three principal limitations of this sort of initiative. First, they reiterated the concern that it would be very difficult to identify problem gamblers, and that approaching people at venues and offering them advice would potentially cause great offence even if someone were, indeed, a problem gambler. Second, they argued that such provisions could allow scope for vexatious and opportunistic legal claims from patrons who could argue that the venue knowingly allowed them to continue gambling in the presence of evidence suggesting that they had a gambling problem. Third, they pointed out that staff interventions would not prevent gamblers from visiting other venues to continue gambling.

An important point omitted in much of this discussion is that staff interventions do not have to be of the form that cause offense, require the termination of gambling, or the exclusion of gamblers. There is nothing to prevent staff members from providing information, advice, or support to patrons in an informal way, e.g., information packs could be provided to all gamblers in the venue whether they are showing warning signs

[8] A number of submissions to the discussion offered little more than textbook repetitions of potential methodological obstacles with little consideration of the potential face validity of the many warning signs identified above.

or not, or the staff members could post promotional information on notice boards that draws attention to the warning signs identified above (as is done by the Racing Board in New Zealand). Such information packs could include short gambling checklists such as the 8 Screen or SOGS, and counselling referral information, including the availability of counselling services on-site. Such information could be provided to patrons, for example, at promotional nights along with other materials, so that particular gamblers do not feel that they have been singled out for attention. More broadly, staff members could conduct themselves in a manner that encouraged safe gambling, by refusing to sell drinks to gamblers who appear intoxicated, or by not engaging in gambling activities while on duty.

Another consideration (based on recent developments in Switzerland) is that it should be possible to identify a range of indicators or behaviour that tend to be produced by problem gamblers and keep a register over time. When a certain number of these behaviours have been recorded for particular individual gamblers, it might then be possible to be more confident that the person is a problem gambler and in need of additional assistance. The requirement to keep incident registers is specified in a number of existing codes of practice, including the code currently in place in Queensland (Delfabbro *et al.*, 2006).

- ♣ **Although responsible gambling codes are available in most Australian States or Territories, these are largely voluntary, not consistently applied, and have not been subject to any form of independent research or evaluation.**

6.3.12 Smoking bans in venues

Although smoking bans in venues have largely been introduced because of broader public health concerns, they have also been identified as a possible strategy for reducing problem gambling. If many problem gamblers smoked, as indicated earlier, it was argued that a useful way to reduce gambling would be to force them to leave the gaming area and go outside whenever they wanted to have a cigarette. In this way, gamblers would spend less time in the gaming area and, once outside, have greater opportunities to reconsider their decision to continue gambling. Smoking bans were introduced to all Victorian gaming venues in 2002 and immediately led to a 9% drop in net gaming revenue (Marshall, 2003), suggesting that this was a highly effective way in which to reduce people's gambling expenditure. Unfortunately, as Marshall points out, it is unclear what proportion of this decrease is due to changes in the expenditure patterns of problem gamblers, and whether this initial decline in expenditure will be maintained over time. In Marshall's view, there were signs, even by late 2003, that expenditure on EGMs in Victoria was again beginning to recover towards the levels present prior to the smoking ban.

Similar conclusions were reached by a study of regional caps undertaken by the South Australian Centre for Economic Studies (SACES) (2005b). Using time-based regression analyses, this study showed that there was a positive relationship between the existence

of the smoking bans and a decrease in revenue over time. In other words, one tended to observe a decline in EGM revenue in those years in which the smoking ban had been introduced, after having statistically controlled for other factors that influenced gaming revenue.

6.4 Tertiary strategies: help for problem gamblers

Tertiary interventions are those that are developed to assist problem gamblers at the point where they require external assistance. This includes not only the intervention itself, but also referral services that enable the gambler to make contact with the agency that is required. Thus, in order to encompass this area of the literature effectively, a number of different stages of help-seeking need to be considered. The first of these is the circumstance or factors that brought about the desire to seek help. For example, what personal or circumstantial factors, or agency characteristics made it easier for gamblers to seek help, and what factors acted as obstacles or barriers? The second issue is the nature of the treatment itself. What types of services are available to assist problem gamblers? The third issue concerns the outcome of the intervention. To what extent was it successful in addressing the gambling problem? Finally, a fourth consideration is whether there are any strategies that gamblers can employ to overcome their problems without very expensive and formal interventions (i.e., self-help strategies). Each of these issues is considered in the sections that follow.

6.4.1 Help-seeking in problem gamblers

The Productivity Commission undertook a number of analyses to determine what proportion of problem gamblers identified in their national survey had thought about, or had actually sought formal help for their problem. The Commission's analyses showed that 0.78% of adults in their survey had thought about seeking help, 0.32% had tried to get help, and that 0.20% had received formal support to address gambling-related problems. When these data were analysed in terms of SOGS scores, it was found that 1 in 5 gamblers with SOGS scores of 10+ had sought help, compared with only 1 in 14 gamblers with scores in the 5–9 range. Taken together, these results suggested that around 10% of those identified as having a gambling problem (SOGS 5+) (n = 28,000) had obtained formal assistance from counselling services.

The Commission noted, however, that this figure is much higher than that obtained from analyses of the actual number of clients seeking help at agencies around Australia. The Commission's survey of counselling agencies (the main networks in each State) revealed that around 12,000 people had sought help in the 12 months prior to the national survey (i.e., less than half). However, the Commission pointed out that their figures did not include Gambler's Anonymous meetings, or gamblers who sought help outside the main, or funded, networks. They also drew attention to the fact that recording techniques in many agencies are often incomplete or haphazard and, therefore, are likely to underestimate the true numbers. A further point is that not all those identified in the national survey had severe gambling problems. Although a SOGS score of 5 was

officially recognised as the cut-off score, only those with scores of 10+ or higher (or in the upper part of the 5–9 range) probably have problems sufficiently severe to warrant any formal intervention.

In South Australia, the Commission found that 2,533 people had sought help from the surveyed agencies and that 1,952 (77%) were the gamblers themselves, and 581 (23%) were family members. When compared with the most recent estimate of the number of problem gamblers in South Australia (around 22,000) from the South Australian Department of Human Services prevalence study (2001), this once again suggests a help-seeking rate of close to 10% (i.e., 1,952 / 22,000 = 8.9%). When the 123 identified problem gamblers in the survey were asked whether they had sought help, only 9 /123 or 7.3% said they had done so, a figure that, again, is not substantially different from the 10% reported by the Commission.

> ♣ **Approximately 10% of those identified as problem gamblers in a given 12–month period will seek formal assistance for their problems. In South Australia, this means that agencies should expect at least 2,000 individual clients per year, and at least 600–700 family members to make contact. The total number of telephone calls received will be substantially higher.**

In terms of how gamblers came to contact service agencies in the Productivity Commission Survey of problem gambling clients (1999) many (37%) indicated that they had used listed numbers (e.g., G–Lines) in the telephone directory, 16% had used information provided in pamphlets at gambling venues, 16% had consulted health professionals, 27% had reacted to advertisements in the media or press. Unfortunately, these figures are not additive so it not possible to determine what gamblers did first, but they suggest that the availability and/or promotion of a helpline number have been the most effective strategy. After making contact, 32% had been referred to an agency such as Break Even, 26% had gone to Gamblers Anonymous and an agency, and 11% had gone to Gamblers Anonymous only. Only 35–40% indicated having turned to friends or to their partner (37%) for help prior to seeking formal assistance.

Despite the fact that only 10% of problem gamblers seek help, relatively little research has been undertaken to understand why this might be the case. The general view expressed by agency submissions to the National Inquiry is that this occurs because gamblers do not seek help until they have reached ‘rock bottom’. There is a stigma or embarrassment associated with seeking help so that people may only be moved to take action when their problems have gotten so severe that they have no other choice. Actions are therefore often motivated by crises such as suicide attempts, court charges or arrests, imminent financial ruin, or relationship conflicts. Another possibility is that gamblers believe that they can gamble their way out of trouble, or believe that they have their own informal ways of dealing with problems. There may also be some reluctance to seek help from agencies that often have an ostensibly religious background (as is the case in Adelaide), although this issue has not been formally investigated.

To investigate these issues, Evans and Delfabbro (2002) surveyed 70 problem gamblers from the general community in South Australia. All of these people had a significant lifetime scores of 5 or more on the SOGS, and had sought either formal or self-help methods to address their problems. The survey asked people to indicate their primary motivations for seeking help, and the principal obstacles to help-seeking. The results indicated that concerns about physical and mental health, financial pressure, and relationship difficulties were by far the most common reasons for seeking assistance, and that perceptions of the agencies, or any other factors, were relatively unimportant for most of the sample. More detailed analysis of items relating to these domains showed that severe depression and an inability to pay bills or to repay borrowed money, were the principal sources of problems. In terms of the principal barriers to help-seeking, the sample consistently endorsed two issues. The first was that they were in denial, or were embarrassed if friends or family found out; the second was that they believed that they would eventually regain control on their own, or would be able to gamble their way out of difficulties. The researchers also demonstrated that the help-seeking process was not often based upon one factor alone, and that over half of the problem gamblers cited four or more reasons for seeking help.

Two other recent studies have examined similar issues, although with much smaller samples of problem gamblers. The first of these, Rockloff and Schofield (2004), involved a telephone survey in Queensland that asked over 1100 adults to indicate what factors would make them reluctant to seek help if they had a gambling problem. A factor analysis of the results identified five principal factors: (1) The availability of services and their perceived effectiveness, (2) The stigma of accepting blame for one's problems, (3) The cost of treatment, (4) Uncertainty about the nature of treatments, and (5) Avoidance (this is not clearly defined by the authors). The authors provide little theoretical explanation for any of their findings, and found little relationship between any of these factors and problem gambling (correlations were very small).

A second recent study conducted by McMillen, Marshall, Murphy, Lorenzen, and Waugh (2004) comprised interviews with representatives from a variety of cultural communities in the ACT as well qualitative interviews with a very small sample of problem gamblers and their families (9 problem gamblers and 7 family members). The results were generally consistent with the results of Evans and Delfabbro (2002). Gamblers indicated that they had sought help from a variety of sources and with varying degrees of success. Many expressed dissatisfaction with existing services in the ACT because the counsellors appeared poorly trained, lacking in empathy, and did not employ treatment methods that were effective for those who had sought help. Interviews with representatives from various cultural communities reported many of the same views already described in this review; namely, that people from many other cultures tend to be reluctant to seek assistance out of fear of losing face in the community and because of the lack of cultural and linguistic skills in existing services.

Similar issues were also considered in a recent study of 119 problem gamblers in Victoria conducted by New Focus (2005). The study asked problem gamblers to indicate why they had sought formal help. 'Hitting rock bottom' was again the highest rated

category (51%), followed by family / partner pressure to seek help (17%). All other factors were generally endorsed by relatively few people. When asked why they failed to seek help, around 40% said that they wanted to work the problem out for themselves, 23% said that they had tried treatment before and it had not worked, and 11% said that they stopped on their own. For those who entered treatment but later withdrew, a quarter indicated that they did so because they did not like the treatment; 18% said they had been successfully treated, and 11% said that they did not "connect" with the counsellor. Around 30% indicated that they had previously sought some form of formal treatment.

Although various obstacles or barriers may exist to discourage gamblers from seeking help, it is also important to be aware of another possibility, namely, that many problem gamblers probably experience some degree of spontaneous recovery. Many do not remain problem gamblers all the time, and only score 5 or more on the SOGS within the specific time frame identified in the survey. This view is entirely consistent with modern conceptualisations of problem gambling as lying on a continuum where regular gamblers drift in and out of problem gambling over time, perhaps as a result of their own ability to regain control over their behaviour, because gambling is used only for a short period to deal with stress, or because they experience some change in their life (e.g., new job, partner, activity) that takes the place of the gambling. There is, again, little information available to determine to what extent, and how this occurs, but it is clear from longitudinal data (e.g., Abbott's work in NZ, described in section 4, above) that a substantial proportion of problem gamblers do not remain this way forever. This would also appear to be an issue worthy of further research given its obvious implications for understanding how people alleviate problems without formal assistance.

> ♣ **Problem gamblers usually only seek formal assistance when there is no other choice. Psychological distress, financial and relationship breakdowns appear to be the primary motivating factors. The principal obstacles are reported to be shame and embarrassment, and a false hope in the ability to regain control, or win back losses.**

6.4.2 Self-help strategies including pre-commitment

In recent years, a number of publications and guides have been developed to assist gamblers in the process of overcoming their gambling problems without formal intervention. One of the most well known of these is Dickerson's self-guide written in the early 1970s and recently revised (Allcock & Dickerson, 1990). This self-guide includes a number of elements common to many manuals developed in the addiction fields. Gamblers are given checklists that allow them to assess the extent of their own gambling problems, and then a series of tasks, exercises, and scorecards to help them develop a plan for changing their behaviour. This includes:

- keeping a diary of gambling expenditure and occasions;
- setting goals on what degree of change they want to achieve;
- advice on how to set budgets to limit expenditure;

- information on the nature of gambling activities and the common fallacies;
- theoretical explanations relating to why people gamble excessively;
- other leisure activities that can take the place of gambling;
- rewarding oneself for achievements and/or progress;
- being prepared for relapses;
- where to seek formal help.

Other self-help manuals have been developed by Coman, Singer, Burrow and Singer (1996), Paul Symond (1998) of Paul Symond Consultancy, and also by Simon Milton from the University of Sydney (2001). The Symond book provides practical advice for gamblers and loved ones, as well as information concerning the causes of gambling, details of available treatments, how to recognise problem gambling in oneself and other people. Clinicians argue that these manuals have their place in the treatment of problem gambling and may be useful to some people, although research conducted by Allcock and Dickerson (1990) suggested that the efficacy of manuals on their own was probably limited. People appear to desire structured interventions that provide an ongoing process of support and advice. In short, manuals are probably better used as additional tools in the treatment process, rather than as a means in themselves.

One of the few investigations[9] of self-help in Australia was undertaken by the National Centre for Education and Training on Addiction (NCETA, 1998). This study involved interviews with a number of key informants (e.g., counsellors, researchers, psychologists) and also interviews with 30 problem gamblers recruited from the public and treatment agencies. These interviews revealed a number of useful insights into the strategies and factors that assisted in reducing the extent of gambling. Most respondents indicated that they gambled because of stress and boredom, so that dealing with the cause of their gambling was often one of the most successful strategies. Some reported having reduced their workload to reduce stress, whereas others sought new activities to take the place of gambling. Many also took practical steps such as avoiding friends who gambled, or getting supportive friends to accompany them whenever they came into contact with money, for example, while shopping, paying bills, or going to the bank. Some also asked friends to handle money on their behalf. Those who continued gambling at a reduced level also reported setting aside specific money for gambling, and not gambling unless other essential financial commitments had already been fulfilled.

In terms of specific forms of assistance, respondents expressed very positive views about support groups because they provided the opportunity to talk to others with similar experiences, and helped to place their problems in perspective. They were, however, less optimistic about the use of self-help manuals because they said the compulsion and pre-occupation was often so strong as to render them incapable of concentrating or reading.

[9] Jackson *et al*. (2002) undertook a study of 'natural recovery' that involved 12 problem gamblers recruited in Melbourne. Very little useful information was obtained from this study. Gamblers reported not seeking help because they were embarrassed, but no consistent trends emerged in the analysis of self-help strategies.

They also argued that providing information was only moderately useful because most were aware of their own problems, but did not know how to stop gambling. Information was also gained concerning respondents' experiences of formal counselling services. These views were very mixed, suggesting that different services are probably suitable for different people. A consistent theme, however, was that services should provide ongoing support and contact in order to maintain any reductions in gambling. Sessions should also be more interactive and sociable, and less focused upon the repetition of negative experiences.

Central to many of these recommendations is the view that gamblers can potentially gain control over their gambling, or avoid excessive expenditure, by planning their gambling sessions and finances more carefully by using pre-commitment strategies. A pre-commitment strategy is a form of pre-emptive action undertaken by gamblers to anticipate and avoid the potential situations where they might spend more time or money than they intended. A detailed study of precommitment strategies was undertaken by McDonnell-Phillips (2005) for Gambling Research Australia. In this study, 482 monthly EGM or racing gamblers completed a telephone interview that asked an extensive set of questions relating to setting limits prior to gambling. The results showed that most gamblers (even problem gamblers) make active attempts to limit the extent of their involvement in gambling, and that limiting expenditure rather than the frequency of gambling was considered the most important consideration. Most gamblers (70%) had sessions or weekly expenditure limits, but very few (8% of EGM players and 2% of TAB gamblers) imposed long-term limits (e.g., monthly limits). Limits were usually established just prior to the person gambling (e.g., either on the day or in the days preceding the gambling session), and most gamblers (over 70%) indicated that they financed gambling out of residual money in their household budget. Problem gamblers were much more likely to borrow from household saving or from amounts set aside for other purposes (NB. These findings are entirely consistent with dozens of previous studies undertaken using the SOGS).

The survey also asked both EGM and TAB gamblers to identify the principal triggers for over-expenditure. EGM players tended to refer to the access to cash (e.g., via ATMs), the potential for large jackpots, and feelings or loneliness or boredom, whereas TAB gamblers referred to the availability of ATMs at venues, feeling happy before gambling, and the ready access to cash. All of these motivational factors or triggers were found to be more influential in problem gamblers than in other groups.

Another section of the survey asked gamblers to describe the strategies they used to control their gambling. These findings are somewhat hard to interpret in that practical strategies are mixed up with internal psychological processes. For example, among EGM players, the most commonly reported strategies reported as being 'always' used by gamblers were: using willpower (66%), avoiding large bets (47%), making oneself feel guilty (36%), only taking what one intends to spend (38%), avoiding ATMs (34%), and doing something else (25%). For TAB gamblers, the most important factors were: reading the form guide (67%), only taking what one plans to spend (64%), using

willpower (65%), avoiding large bets (46%), watching the race at home after placing the bet at the TAB (37%), avoiding ATMs (35%).

> ♣ **Behavioural changes are more likely to be maintained when the intervention provides both structure and ongoing support (e.g., follow-up contacts and appointments). This refers both to informal and formal interventions. Practical and active support involving interaction with other people, rather than a reliance on information alone, appears to be a key element in reducing problem gambling. Teaching gamblers how to pre-commit to a consistent and manageable budget should be a critical part of any self-directed intervention strategy.**

6.4.3 Counselling services: a brief overview

In every State of Australia, agencies provide a wide range of services to assist problem gamblers and their families. Some specialise in particular services, whereas others are funded to provide a range of services. The most common services provided to gamblers include financial counselling, legal advice, relationship counselling, and treatments for gambling behaviour. Financial counselling usually involves debt management, liaison with creditors and banks to establish repayment schedules, management of day-to-day living expenses, budgeting skills, cancellation of credit cards, and sometimes direct financial support to assist in the payment of pressing bills (e.g., utilities). Counsellors also help clients to prepare for legal proceedings, liaise with the courts, and provide evidence to courts. Relationship counselling takes many forms, but the basic function is generally the same. Couples are brought together to create awareness of the problem, are given advice concerning how to deal with the problem (e.g., the non-gambling partner takes control of the household finances), and other broader issues (e.g., tensions in the relationship possibility precipitating the gambling) are addressed through a process of mediation and discussion.

Treatment programs are very eclectic, and some are difficult to categorise. Some involve one-on-one counselling, others occur in groups (e.g., Gamblers Anonymous). There are those that involve a multi-disciplinary approach if there are issues of co-morbidity, and others that remain predominantly in the field of social work. Many programs do not take the view that any single intervention is likely to be successful on its own, and so the treatment is a multi-stage process involving a combination of many forms of treatment combined with counselling (Jackson, Thomas, & Blaszczynski, 2003). Some specific components may include:

- group sessions in which gamblers describe their experiences to each other;
- take-home tapes with recorded advice by therapists;
- recorded descriptions of the gamblers' beliefs, spoken in the gamblers' own words, that have to be taken home and listened to several times per week;
- instruction concerning the nature of gambling and the true odds;

- assertiveness training to teach gamblers how to resist the temptation to gamble;
- instructional videos;
- telephone or Internet counselling and advice;
- self-help manuals, diaries, and checklists;
- counselling to deal with grief, trauma, loss, depression, or any other symptom that is thought to be giving rise to the desire to gamble;
- relaxation training or hypnosis to help the gambler control urges and deal with the anxiety associated with gambling;
- hobby classes, social networking, support groups;
- motivational training in which gamblers are allowed to describe all the advantages and disadvantages of gambling so that they reach the conclusion that it is more rational not to gamble excessively;
- narrative therapies involving the development of a coherent chronological understanding of how the problem came about.

There is very little information concerning the effectiveness of counselling services. Even less is known about the effectiveness of individual treatments because these are applied in many different ways and often in conjunction with many other interventions, for differing periods of time. However, some limited outcome data are available from those States or Territories that have recorded case-closure or outcome data as part of their funding agreements. Jackson *et al*. (1997), for example, were asked to evaluate the minimum data-set maintained by Victoria's Break Even networks. Although these data are limited by the fact that many gamblers dropped out of the service before case-closure information was recorded, the information nonetheless provides useful insights into how services were faring.

Taken together, the results showed that counselling was generally effective in dealing with legal issues, physical symptoms arising from gambling, and also appeared useful in reducing excessive gambling. However, over a third of respondents reported that interpersonal, family problems, employment, and leisure issues were unresolved even after the treatment. For these issues, only around 20% believed that these problems had been fully resolved. Similar figures were described by the Productivity Commission (1999) in their counselling survey, based upon data collected from across Australia. Even after excluding those who drop-out of treatment and whose outcomes were unknown, the overall number of successful cases was around 57%, but this was usually only 1–3 months after the treatment had been completed. It was not clear that these changes were sustained across time. Nor was there was any indication of which component of the intervention had been most effective.

To address these problems, Jackson, Holt, Thomas and Crisp (2003) have developed a standardised instrument that makes it possible to categorise and profile the tasks or

services undertaken by different agencies (The Counsellor Task Analysis Scale or CTA). This scale describes the different tasks that counsellors perform, and allows one to examine the relationship between the frequency with which each task is performed and the counsellor's beliefs about the importance of the tasks performed. The 121- item scale was validated using a sample of 49 problem gambling counsellors from 18 different agencies in Melbourne. Nine different task types were identified, including: conducting assessments; the development of treatment goals; general counselling interventions; interventions for problem gambling; family interventions; interventions for related problems; referral processes; education about problem gambling; and conducting research and policy work.

6.4.4 Psychological interventions

There are a number of reports that have summarised the various forms of medical or psychological interventions that have been utilised around the world, and in Australia. These include O'Connor, Ashenden, Raven and Allsops' (1999) summary of interventions prepared for the Department of Human Services Victoria; Yaxley's (1996) report for Anglicare Tasmania; the position paper prepared by Blaszczynski, Walker, Sagris and Dickerson (1997) for the Australian Psychological Society; Ryder, Jeffcote, Walker and Fowler's (1999) report from Edith Cowan University (WA); Walker's (1992a) text, 'The Psychology of Gambling'; and Blaszczynski's (1998) book on cognitive-behavioural techniques.

As with counselling, these interventions are also often eclectic in nature, and combine individual with group therapy, self-help techniques with formal therapy, and involve both inpatient and outpatient settings. The following section provides an overview of some of the mostly clearly identifiable approaches, and the evidence currently available concerning their efficacy.

Behavioural / Cue-exposure techniques

As discussed above, one explanation for problem gambling is that gamblers become conditioned to the experience of gambling. In some cases, this comes about as a result of a pre-occupation with the thrill of playing or winning money, whereas others come to regard gambling as a way of reducing anxiety and tension. The basic premise underlying this approach is that gamblers develop an urge to gamble as a result of exposure to trigger factors. Such factors could include thoughts about gambling, a visible stimulus object, or a gambling-related stimulus presented via the media. These trigger factors generate tension and discomfort, and a strong compulsion to gamble, because these are associated with gambling via a process of classical conditioning. Accordingly, in order to reduce this urge, the aim of the therapeutic intervention is to teach gamblers how to reduce or eliminate tension or anxiety associated when gambling-related thoughts or stimuli are present (see Blaszczynski & Silove, 1995).

The process begins by teaching gamblers how to relax. This is achieved using a variety of techniques including tapes, spoken-aloud instructions, or via hypnosis. Once a

gambler has the skills to relax whenever this is required, they are in a position to regain control over their emotions and urges. To ensure that they achieve control over gambling-related urges, gambling-related stimuli are presented while the patients are in a state of relaxation. The clinic-bound version of this technique is called imaginal desensitisation and involves the mental simulation of gambling while in this relaxed state. For example, the gambler might be asked to imagine visiting their favourite venue, to describe it, and then imagine walking up to a machine and playing. If, under these controlled conditions, the person is able to stay calm, then this is the first step towards being able to resist the urge to gamble and achieving greater behavioural control.

The major exponent of this technique is Alex Blaszczynski in NSW. An example of this work is provided in Blaszczynski, MacCallum and Joukhador (2000), which describes a 3–group comparison of imaginal desensitisation (ID), cognitive therapy (CT) (described below) and both therapies combined (ID + CT). The ID group attended two treatment sessions at a hospital-based clinic, and was given an audiotape with instructions. They were asked to listen to the tape and practise the recommended techniques 3 times per day for five days. A total of 11 people undertook the ID treatment, and 12 received ID + CT and 12 received CT only. Outcomes were based upon comparisons of gambling behaviour before treatment and one month afterwards. The results showed that 40% of those exposed to ID were abstinent from gambling after 1 month, 17% reported having control over their gambling, 22% reported having gambled only once or twice without control, and that 22% reported not having control. Moreover, clinical assessments indicated that over 80% had experienced moderate to significant improvements in their capacity to control urges and expenditure. In other words, home-based ID was found to be as effective as the more labour-intensive sessions of CT and the combination of ID and CT.

A similar technique is currently employed in the treatment program at the South Australian Flinders Medical Centre, except that cue exposure is undertaken *in vivo*, or by exposing gamblers to very realistic stimuli (e.g., machine jingles recorded on tape). After baseline assessments and relaxation training, gamblers are instructed to begin recording their gambling urges, and to commence a process of systematic cue exposure. In the initial stages, this might involve being able to sit in a car outside a venue without having an urge to gamble. This might then progress to being able to enter a venue, and being able to sit in the venue with machines in the background. This then leads up to the final challenge of being able to walk through a gaming area, or sit in front of a machine, without feeling a strong urge to gamble. The strength of this technique is that the person is forced to confront the actual situation that is causing the problem, rather than merely having to imagine it within the relaxed context of a consulting room. In some cases, this method of live exposure is used in conjunction with imaginal exposure to determine the relative effectiveness of each method. Progress on this program is ascertained by analyzing ratings and gambling urges 4 weeks after the initial consultation period, and then at intervals of 1, 3, and 6 months.

Published results from this program appear to be very promising, although it is important to recognise that the selection of clients into this program is based (at least to some

degree) upon the perceived needs and characteristics of the problem gambler. Unsuitable candidates are probably excluded during the initial referral and assessment process. Battersby and Tolchard (1996) summarised the results of 135 referrals and reported that 63% completed the treatment successfully, 23% dropped out at the assessment point, and 14% dropped out during treatment. Those who stayed in the program perceived themselves as having experienced a significant reduction in the urge to gamble (a mean rating of 8 out of 10 was reduced to almost 0 after 6 months), with almost all the change occurring during the treatment period. This coincided with significant decreases in symptoms of depressive affect. These effects were obtained for both men and women and for both racing and EGM gamblers. The results also confirmed Blaszczynski *et al*.'s (2000) finding that imaginal desensitisation was almost as effective as the more intensive live-exposure method.

Cognitive therapy

The strongest advocate of cognitive therapy in Australia is Michael Walker, who has overseen an intervention program using these techniques in Sydney. Unfortunately, in the absence of any published material concerning the effectiveness of this program, it is not possible to determine how successful this has been. Nevertheless, there are other studies that indicate that these techniques are useful. Cognitive interventions are based on the idea that excessive gambling results from a pre-occupation with winning, and that gamblers over-estimate their chances of winning as a result of irrational beliefs concerning the odds and the nature of randomness (see section 5, above). The role of therapy, therefore, is to identify these beliefs, and address them via discussions with the gambler and the provision of factual information (Blaszczynski & Silove, 1995). Blaszczynski *et al*. (2000), for example, conducted group sessions involving 4–6 individuals who met for 1.5 hours every week for 6 weeks. In these sessions, discussions revolved around the issue of losing control, the false notion that gambling is a way to make income, superstitious beliefs, and the nature of probability. As indicated above, this treatment was no more, nor less, effective in reducing gambling urges than imaginal desensitisation conducted using minimal therapist involvement.

Cognitive-Behavioural Therapy (CBT)

CBT involves a combination of both the cognitive and behavioural methods described above. Problem gamblers are usually given a variety of interventions, including information concerning the odds of training, the nature of randomness, how to identify and address irrational thoughts, and some form of cue exposure or imaginal desensitisation procedure. Such a combination of methods was used, for example, by Dowling, Smith and Thomas (2006) in an evaluation of a CBT intervention for female pathological gamblers in Melbourne. The treatment outcomes for 19 clients was compared with a waiting list control group of a similar size. The results showed that 89% of the treatment sample had achieved abstinence or controlled gambling by the end of treatment (24 sessions) and that 72% were still either abstinent or controlled 6 months post-treatment. At this follow-up point, problem gambling scores were in the clinical range and scores on standardised measures of psychological functioning (eg., self-esteem

and anxiety) were normal for those who reported successfully overcoming their gambling problems.

This study had many strengths. The study included a control group, included a follow-up, used standardised measures of pathological gambling, assessed co-morbidity, and also provided accurate drop-out and treatment outcome data. However, since 39 women initially responded to the advertised treatment, the true success rate is arguably much lower than reported, i.e, .89 success = 17/ 19 becomes 17/39 = 44%. In addition, there is a need to determine how well the women were faring 12–14 months post-treatment. Despite this, this study was successful in showing how CBT can be used to reduce gambling amongst gamblers who are amenable to remaining in treatment programs.

Motivational techniques

A critical issue that was identified by Allcock (1996) and also by O'Connor *et al*. (1999) is that motivational factors play a critical role in achieving change. Unless gamblers are willing to recognise that they have a problem and genuinely want to change, it does not matter what sort of treatment is used. For these reasons, motivational counselling has become a key component of many treatment programs. This counselling involves non-judgemental, and open, discussions with the client to explore the various advantages and disadvantages of gambling, and the person's future goals. Through these discussions, it becomes possible to identify the discrepancy between the person's current circumstances and where they would like to be in the future. This discrepancy is gradually related to gambling, so that the person begins to see the potential long-term rewards of reducing gambling, as well as the current costs. In effect, the therapist tries to create dissonance or ambivalence, so that gamblers come to the realisation that changing their behaviour would be in their best interests. Once this realisation has been made, the therapist will be in the position to offer support and advice to help the gambler to undertake any of the decisions or steps that he or she is now considering.

Critiques of Intervention Studies

Despite the existence of a number of treatment interventions in Australia and in other countries, not all of these necessarily conform to best practice standards either in their implementation or evaluation. Many of these issues are discussed in a recent paper by Blaszczynski (2005) who draws attention to a number of conceptual and methodological issues that need to be addressed in future outcome evaluations.

- *Clearer definition of the disorder*: Some researchers refer to 'pathological' gambling, whereas others refer to problem gambling. In Blaszczynski's view, pathological gambling is a more specific psychiatric term that requires the presence of a clinically significant behaviour (namely, impaired control), whereas problem gambling is a broader term which refers to people who may have suffered harm from gambling, but who do not necessarily have a clinical disorder.

- *Appropriate Co-morbidity Data*: Researchers need to provide clearer information concerning other factors that may have contributed to referrals into treatment, e.g., other psychiatric disorders, substance abuse problems.

- *Specifying Treatment Outcomes*: There is a need to specify what constitutes a treatment outcome (e.g., reduction in symptomology), abstinence vs. controlled gambling. This issue was, for example, examined in some detail by Dowling (2007) in a study of 85 pathological gamblers seeking treatment from an outpatient clinic in Melbourne. Around one third reported that controlled gambling was their desired treatment goal, whereas two-thirds wanted to stop gambling altogether. The principal reasons for choosing controlled gambling was that gambling still provided them with some enjoyment (45%), abstinence was too over-whelming (35%), whereas 31% felt that they could achieve control by managing their social environment more effectively. Those who chose controlled gambling tended to be older and were less likely to see it as a pathology or disease.

- *Mechanism for Change*: It is also necessary to specify the type of intervention that is used and what component of the intervention (if there are multiple components) is responsible for the outcomes obtained.

- *Attrition rates*: Many studies do not specify how many people failed to complete treatment, or dropped out after the initial screening interview. It is highly likely that many published studies of treatment intervention (both national and international) overstate the success rate because they fail to indicate how many people (possibly eligible for treatment) did not successfully complete the program.

- *Follow*-up Periods: Very few studies provide sufficiently long follow-up periods to determine whether the treatment has been successful over a clinically significant period (e.g., beyond 12 months).

- *Relapse*: There also needs to be a clearer definition of relapse.

Blaszczynski's critique mirrors many of the same complaints that have been made internationally about the quality of evaluations of gambling treatments. Very few meet the gold standard criteria set out by the American Psychological Association; namely, the use of a randomised design with a control group, and few comply fully with the specifications outlined above. Much of this is unquestionably due to the limited scale of outcome studies in Australia both in terms of the resources available (time, staffing and funding), the limited role of clinical psychologists in mainstream gambling intervention services, and the difficulties associated with conducting this research from a logistical perspective (e.g., it may be difficult to withhold treatment from control groups for extended periods of time because of ethical concerns about their wellbeing).

Many of the same points are made in a similar paper by Walker (2005), although Walker's critique focuses more strongly on conceptual difficulties in defining specific types of psychological intervention. Walker's particular concern is with the use of term 'cognitive behavioural therapy' or CBT. There are many therapists and agencies that profess to using CBT as part of their treatment programs, but it is not entirely clear that all of these are necessarily the same thing. In Walker's review, there are two possible forms of CBT. The first, which he refers to as the "synthesis" approach is very close in definition to the description of cognitive therapy described above in this review. Cognitive therapy or "synthesis models" of CBT assume that cognitions or thoughts drive behaviour. Gambling is influenced by how people understand the nature of gambling, how they plan their behaviour, rationalise their decisions, or assess risks. A second version of CBT, which Walker terms the "components approach" assumes that gambling is influenced by both cognitive and behavioural processes. In addition to the cognitive processes just described, gambling is also influenced by conditioning and learning processes (i.e., how people respond to stimuli, situations, wins and losses). The aim of therapy will, therefore, be to address both the cognitions as well as the stimulus-response, or stimulus-stimulus associations that underline the behaviour. Treatments will involve both the cue-exposure and imaginal desensitisation processes described above, as well as cognitive therapy.

Walker also summarises a number of difficulties associated with assessing CBT interventions.

- *Specifying the Nature of the Therapy*: There needs to be a clear differentiation between cognitive therapy ("synthesis approach") and CBT that includes a behavioural component. Even when this difference is described, it is also important to highlight the specific nature of the therapy being used. As Walker points out, cognitive therapy can take different forms. Some therapists focus on the identification of irrational cognitions, whereas others provide information about the true nature of randomness and its implications for gambling. Similar differences occur in therapies that include behavioural elements (the "components approach"). Some include social skills training, some use cue exposure (in vivo or imaginal), whereas others place differing emphases on the achievement of controlled reactions to stimuli (stimulus control) as opposed to controlled behaviour (response prevention).

- *Therapist Training*: It is important to ensure that similar therapies are being conducted by people with appropriate training and using a standard methodology.

- *The Use of Control Groups*: Walker is particularly critical of the use of waiting list controls because many people with gambling problems experience spontaneous recovery. If these changes are significant, then it may be difficult to infer substantial difference between treatment and control groups over time. However, it should be pointed out that such problems could be overcome by comparing follow-up and baseline scores using reliable change indices for each individual person in the two groups.

- *Drop Out Rates*: As with Blaszczynski (2005), Walker emphasises the importance of considering the significant of drop-outs from treatment. He points out such drop-outs can occur at different points: at initial referral, when assessments are undertaken and the person is assigned to treatment, at the point the treatment begins, during treatment, and before the follow-up point(s).

- *Length of Treatment*: There is a need to determine the optimal length of treatment. Many treatments may be too short to allow meaningful change, but it may be inefficient to have very long periods of treatment because there may be diminishing marginal returns beyond a certain point. The study by Dowling (2007) is a case in point (see section on CBT). Treatment was provided for an extended period (24 sessions), but it is clear that the most dramatic changes occurred almost immediately after treatment began, and that there is no clear linear rate of improvement thereafter. Such findings lead to the suspicion that other factors (e.g., motivation, a sense of being 'cared for' – the Hawthorne effect, good relationship with the therapist) may have influenced the results rather than the therapy itself.

- *Follow-up Periods*: Walker supports the use of longer follow-up periods of at least 2 years to determine the long-term effectiveness of treatment.

> ♣ **The most well-known Australian psychological treatments for problem gambling involve behavioural / cue-exposure techniques, cognitive therapy, or a combination of both. Some promising evidence is available, but there is a need for longer term follow-up studies. Greater attention needs to be directed towards the effect of drop-out rates and client selection procedures in program evaluations.**

6.4.5 Problem gambler's views of counselling services

There is generally relatively little information available concerning people's satisfaction with the quality of counselling services. However, a recent study by New focus (2005) of problem gamblers in Victoria showed that those people who had sought help from counsellors generally spoke very highly of the services provided. Of 58 problem gamblers who had sought formal help, it was found that over 90% were satisfied with the service, and that between 95–88% had been satisfied with the ease of contacting the service, the frequency of contact provided, the waiting time, the length of sessions and treatment. When asked what factors had made the service effective, almost every factor identified in the survey was given strong endorsement. These factors included: the availability of group and individual counselling, the ease with which the counsellor could be contacted in an emergency, and the quality of the relationship with the counsellor. An obvious limitation of this study is that the sample who answered the question were entirely self-selected and were very likely predisposed towards formal services because they had already chosen to utilise them. It is important to recognise that the majority of the sample had not sought formal assistance, and that there was no evidence provided to

indicate whether all of these qualities of the intervention had been successful in reducing problem gambling.

7. Economic and regional impact analysis

7.1 Overview

Although gambling is very clearly a psychological and sociological phenomenon relating to the behaviours, attitudes, and preferences of individuals (or groups of individuals), gambling is also a commercial enterprise that forms a very significant component of Australia's economy. For this reason, it is important to acknowledge the contribution of economic analyses to understanding the nature and effects of gambling, in particular, the extent to which gambling has influenced the economic well-being of Australia as a whole, or specific local economies. In general, this issue has been approached in one of two ways. The first has been to been to examine the impact of gambling in terms of well established economic indicators. For example, to what extent has investment or development in this industry enhanced the financial security of Australians, in terms of their capacity to find jobs, obtain a satisfactory income, or gain access to resources and services? The second approach has been to determine the overall effects of gambling on the community as a whole, by comparing the relative magnitude of the identified costs and benefits, and by broadening these categories to include social, psychological, and community effects not usually included in conventional economic analyses.

The following sections summarise the analyses and findings from a number of recent economic studies conducted in Australia, with a particular focus on the work of the Productivity Commission (1999). As will be evident, these analyses need to be treated with some caution because they rely more upon extrapolation, assumptions, incomplete archival data, and hypothetical constructs. Nevertheless, they provide a useful conceptual framework in which to bring together and reconcile the often competing views concerning the effects of gambling on the economy and community as a whole.

7.1.1 The costs and benefits of gambling: an overview

As will be evident from the discussion above, there is no question that the gambling industry provides many benefits. People enjoy gambling; it provides them with a distracting past-time, and a focal point for social interactions, as well as a source of relaxation and escape. Gambling is also a major component of Australia's tourism industry, and generates income from overseas visitors. Gambling revenue also helps to subsidise other forms of entertainment including dining facilities, live entertainment, and many others. The industry also makes voluntary or involuntary donations to charitable organisations, and supports community initiatives and welfare programs. From an economic perspective, it also gives rise to new employment opportunities, investment in new infrastructure (e.g., new entertainment facilities), and generates wealth through encouraging greater consumer expenditure and by generating greater taxation revenue.

At the same time, gambling generates many costs. Gambling diverts expenditure and consumption away from other sectors of the economy. For example, if people switch their expenditure from non-gambling venues to gambling venues, or if they spend less on other goods, or give less money to charities as a result of gambling, a cost will be incurred by these sectors. In addition, as would be clear from the above discussion, gambling also gives rise to significant social costs (or negative externalities) because of the significant numbers of people who develop problems as a result of gambling. The financial losses, psychological distress, breakdown in relationships, loss of productivity and employment, and the legal consequences of gambling-related crime (see section 4 above) are all significant costs that are borne by the Australian community, the Government, and the economy.

Although researchers do not disagree about the existence of these costs and benefits, a problem arises when trying to quantify them. How does one place a dollar value on what, in many cases, may be largely intangible, or which cannot be neatly broken down into its constituent parts?

7.1.2 The Productivity Commission's analysis of benefits

The first few chapters of Volume 3 of the Productivity Commission's report are devoted largely to an analysis of the costs and benefits of gambling for individual gamblers. A summary of how the Commission estimated costs is provided below, and so the present section is confined to a discussion of benefits. The Commission's approach to estimating the benefits of gambling involves the estimation of what is termed 'consumer surplus'. Consumer surplus is a hypothetical construct that arises as a consequence of the mathematical characteristics of demand curves. A demand curve (a function that expresses how much people are willing to pay for a quantum of goods or services at different prices) is downward sloping, indicating that people are willing to demand more at lower prices. Economists assume that because people were willing to have paid more for the same volume of goods, they gain a benefit or advantage from getting them at a discount. Thus, the area under the curve represents a saving or benefit to consumers, their 'consumer surplus'. This effect is illustrated below (Figure 4):

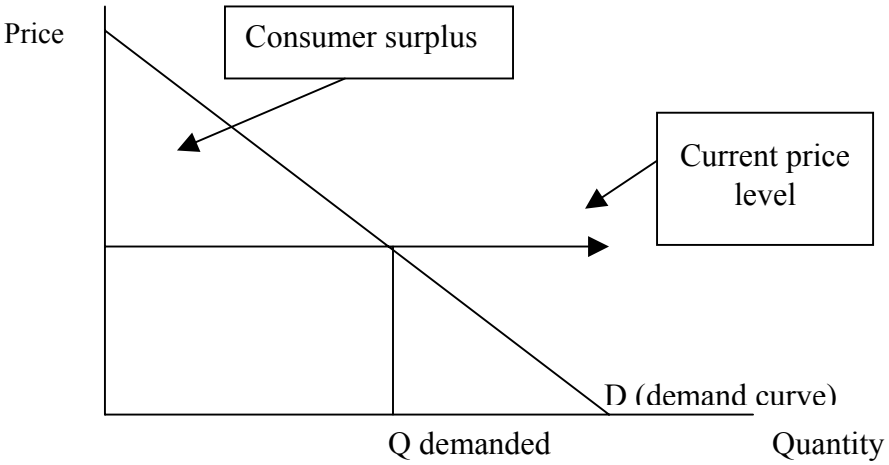

Figure 4
Calculation of consumer surplus

Although this concept appears superficially elegant, the obvious conceptual difficulty is that none of this monetary benefit is actually received by gamblers. It is arguably only a hypothetical saving, and this would not have been obtained unless money had already been expended. In much the same way that people attending post-Christmas sales claim to have made a saving as a consequence of purchasing goods at a cheaper price, there is only a true saving if they always intended to have made the purchases anyway at a higher price. Clearly, this is not always so, in that people will very often purchase something only because it is cheaper, rather than because it was a necessary purchase. Thus, for the concept of consumer surplus to be valid, it has to be assumed that all consumers would have purchased the good or service anyway, and would be willing to pay the maximum possible price to avoid having to forgo the activity altogether.

Indeed, these concerns are most strongly brought to light in the Commission's subsequent analyses that compare these benefits to the estimated costs of gambling. In its comparisons, the benefits of gambling are defined entirely in terms of this hypothetical concept of consumer surplus, yet the costs are not hypothetical in the same way. On the contrary, they refer to real and tangible costs such as financial losses, the costs of crime, losses of productivity, loss of jobs, costs of counselling services, and so forth, many of which have a clear dollar value (e.g., debt amounts, expenditure on problem gambling services). Accordingly, the idea that benefits and costs such as those identified can be meaningfully compared in the same analysis is arguably subject to some debate. [10]

[10] If the consumption of gambling gives rise to benefits such as excitement, enjoyment, and relaxation, then this relates more strongly to the economic concept of utility. It might, therefore, be possible to show that gamblers choose additional 'units' of gambling because the margin utility of doing so is greater than what would be obtained based upon spending the same time doing something else. However, since utility is also a subjective construct, and notoriously difficult to quantify, it is unlikely that this sort of analysis would add a great deal to what is already known.

A further problem concerns the demand curve itself. How does one determine what demand curve applies to gambling products in order to conduct a consumer surplus calculation? To do this, one needs to determine the slope of the function and/or the price elasticity of demand. Price elasticity refers to how responsive consumers are to unit changes in price. The greater the price elasticity (i.e., the flatter the slope of the curve), the more responsive demand is to small changes in price, and thus the smaller the consumer surplus. Unfortunately, as the Productivity Commission conceded, one cannot directly measure the price elasticity of demand unless there are longitudinal data showing how the quantity of gambling demanded had changed as a result of changes in price. Moreover, even if one had these data, it would be very difficult to disentangle the effects of changes in the quantity demanded as a result of price changes from changes in demand brought about by changes in people's attitudes towards gambling, greater accessibility, and other unspecified factors.

The Commission also pointed out that most gamblers probably do not have a clear idea of the price of gambling products. For example, what is the price of an EGM, the cost of a single spin, the odds, or a certain amount of game-play? The Commission appears to define price very much in terms of the odds of gambling products (i.e., how much the gambler gets back on average), but this amount is likely to be highly variable given the volatility of returns from some specific gambling activities. A gambler might make a very large loss on one occasion, but win on another. Indeed, a further difficulty is how to establish any standard unit of gambling consumption. Although this would appear to be relatively easy to determine for lottery products (e.g., number of tickets purchased), it is more difficult for EGMs, because quantity could be defined in various ways, for example, the number of games played, time spent on the machine, or number of credits played in a specified time interval.

The Productivity Commission cited a number of industry estimates suggesting that the demand for gambling products is generally quite elastic; that is, people are willing to substitute in other products if the price of gambling changes. However, the Commission was more guarded in its view. On the one hand, demand can be seen as inelastic because of the lack of knowledge about gambling prices, and the apparently low level of substitution between gambling products. On the other hand, it was conceded that demand could also be elastic because of the considerable popularity of gambling amongst recreational players, who make up approximately two–thirds of the market. For these people, gambling is not a compulsion, but one of many entertainment options, so that it is very possible that gambling could be substituted for other activities if the per-unit cost of gambling were to increase. By contrast, if the behaviour of problem gamblers is driven by compulsion, it is likely that the demand for gambling products amongst this group is considerably more inelastic. Problem gamblers will tend to demand a very similar quantum of the product irrespective of the price and, therefore, will obtain less consumer surplus.

The Commission's solution to this problem was to assume that the true value of price elasticity falls somewhere in a hypothetical range. For recreational gamblers, this range extended from –0.80 (slightly inelastic) to –1.30 (highly elastic), suggesting (at the upper

end of the range) that unit decreases in price would be associated with disproportionately greater increases in the quantity demanded. For moderate problem gamblers, the range extended from –0.6 (moderately inelastic) to –1.0 (neither elastic nor inelastic), and for problem gamblers from –0.3 (very inelastic) to –1.0 (neither elastic nor inelastic). The use of different values such as these meant that the Commission was forced to make six separate consumer surplus calculations based upon these three groups, and the upper and lower range limits applicable to each. These values were then applied equally to all forms of gambling.

A complex series of analyses was then undertaken (see Appendix C of the Commission's report) to determine the overall net-benefit of gambling to consumers. The results suggested that recreational gamblers receive a consumer surplus benefit of between $2.75 billion to $4.46 billion. The Government received $4.31 billion in tax revenue, and problem gamblers incurred a consumer loss of between $2.69 billion to $2.70 billion. The overall benefit was thus determined by adding the benefits to recreational players and the taxation revenue, and subtracting the loss to problem gamblers. The overall benefit was estimated to lie in the range of $4.37 billion to $6.08 billion, although it was pointed out that the distribution of the benefits and losses probably differed across different forms of gambling. For example, whereas lotteries were thought to give rise to considerable benefits and few costs to consumers, EGMs were recognised as generating substantial costs as well as benefits, and were considered particularly harmful to problem gamblers.

Once again, it is important to recognise that much of this is a hypothetical gain (consumer surplus) based upon hypothetical demand curves and generalising across different forms of gambling that are assumed to have similar price elasticities. Nevertheless, as the Commission pointed out, the value of this calculation is that it shows that the benefits of gambling are likely to be substantial, even if it is not possible to obtain a satisfactory estimate of their specific magnitude.

7.1.3 The Productivity Commission's analysis of costs

Many of the same problems are associated with attempting to place a monetary value on the costs of problem gambling to the community. The Commission's approach to this issue was to examine the prevalence of various gambling-related impacts in both its national prevalence survey, and also in its survey of counselling agencies. This dual approach was necessary because (as indicated above) the prevalence of harms was likely to be considerably higher among those seeking help from service agencies, and lower amongst problem gamblers in the community. These prevalence figures were then multiplied by the total adult population of Australia to estimate the actual number of people affected. The final stage was to quantify the cost of harm in terms of typical debt-levels, costs of relationship breakdowns, psychological treatments, counselling services, and so on.

The Commission undertook calculations for each of the harms described earlier in this report (see Appendix J of the Commission's report), but admitted that many of the costs

were very difficult to quantify, or estimate with any accuracy. For example, the cost of legal proceedings was estimated by determining the estimated number of gambling-related court appearances per year, multiplied by the average cost per case. A similar process was repeated for estimating the costs of separation. For intangible problems such as depression or emotional distress, a range of possible costs was used, but these ranges were very large (e.g., $5,000 to $15,000 per gambler), and were based upon typical victim compensation payments awarded in NSW and Victorian courts. These figures were also adjusted to take into account the prevalence of these impacts amongst problem gamblers, as well as their duration.

The Commission's main justification for undertaking this analysis was to show how large the potential costs could be, and to set some reasonable lower limit on the range specified. Their analysis showed that the per-annum cost of gambling to the Australian community was probably at least $1.8 billion, and maybe as high as $5.59 billion (based upon 1997–1998 figures). However, as they conceded, there were numerous problems associated with these estimates and, for this reason, absolute estimates should be treated with considerable caution.

One of the fundamental problems with this analysis is that the incidence of the cost is not treated consistently. Whereas consumer surplus is, from a conceptual standpoint, a benefit received by individuals, many of the costs do not fall into this category. For example, the costs incurred by individual gamblers are combined with estimates of the cost of providing counselling services, administering the courts, maintaining prisons, and other Government expenses. However, these are not, strictly speaking, costs that are usually incurred by the problem gamblers themselves. A conceptually more meaningful approach would have been to conduct analyses that were confined to gamblers. For example, a representative sample of problem gamblers could have been interviewed (as was done in the original Abbott and Volberg (1996) study in New Zealand) to ascertain the specific nature of the problems experienced, and their duration. Estimates of how many assets and how much cash had been lost could be obtained with greater precision. In addition, individual gamblers could be asked to identify what other expenses had been incurred as a result of their gambling (e.g., professional services, court fees, fines, loss of income). It would also be possible to identify service pathways, and to determine whether involvement in the service was likely to have entailed additional costs to the agency or organisation involved. This analysis could then be extended to others affected by the gambler's actions (e.g., partners, employers), as well as to the Government. For example, the revenue obtained from income taxes paid by individual gamblers could be compared with the loss of revenue resulting from the loss of paid employment, and the gamblers' families becoming dependent on welfare.

A further point worth considering, particularly in relation to the costs of divorces, counselling services, prisons, and other Government services, is the extent to which the additional demand for services is covered by fixed, as opposed to variable, costs. In many Government services, people will be paid a salary to work as court officers, counsellors, and other professionals, and this will occur irrespective of the number of cases or clients that are processed. Thus, it may be potentially misleading to argue that

the cost of providing services to problem gamblers is necessarily in proportion to the prevalence rate. Unless the Government makes a concerted effort to increase the budget allocation to services to meet increased demand, extra demand will otherwise be met by existing resources being used more intensively (e.g., counsellors working longer-hours, devoting less time per client, and so forth).

This argument also applies to estimates of the loss of productivity resulting from employee involvement in gambling. It does not always follow that spending time gambling during work necessarily leads to a decline in work output. The same employees might compensate for this lost time by working more quickly or intensively, perhaps after hours. Alternatively, there may be others in the workplace who compensate for a colleague who does not appear to be happy or productive at work. This view is supported by the observation that gambling in the workplace often remains hidden, and is often only detected when criminal activities are involved. In such cases, it does not appear that employers were aware of any appreciable decline in productivity. Moreover, even if gambling does lead to the dismissal of employees, the organisation could replace the person, so that the only costs may be in advertising the new position, and in recruitment and training. These costs will only be substantial if the job requires specialised expertise or knowledge of complex recruitment procedures.

A further complexity partially taken into account by the Commission is that many problem gamblers tend to experience multiple problems, so that it may be misleading to consider each problem separately. For example, severe psychological distress would also be expected to give rise to a loss of productivity, increase the likelihood of divorce, as well as increase the likelihood of suicide. This means that it may not be possible to extrapolate each individual cost to the general population on the assumption that each impact is being experienced by different individuals. Similarly, when examining the cost of interventions for different problems, it is important to recognise that the same service will usually assist with multiple problems, so that the costs of this intervention would not have to be counted separately for each individual, or each separate issue addressed.

> ♣ **There are many problems associated with the Commission's estimates of the costs and benefits of gambling. However, the main point of their analysis is to indicate how significant these benefits and costs are likely to be (even if we do not exactly know what they are). Their current estimate of the overall effect of the industry ranges from a net loss of $1.2 billion to a net gain of $4.3 billion.**

7.2 Economic impact studies

The second type of economic analysis that has been undertaken has involved a focus upon the economic and social effect of an introduction of gaming machines to specified areas in Australia. Almost all of these studies have been conducted in Victoria by the former Victorian Casino and Gaming Authority, and have been recently summarised in a

review by Western *et al*. (2001). These reports can generally be divided into two main groups. One type of study examines the effect of gaming on State economies as a whole. A second group examines the effects of EGMs on specific local areas either in metropolitan or non-metropolitan areas. The following sections provide a summary of the techniques used in these studies, and the general findings obtained, as well as some discussion of the conceptual and methodological limitations.

7.2.1 Statewide impact studies

One of the most significant of these impact projects was the study entitled 'The Economic Impact of Gambling' produced by the National Institute of Economic and Industry Research (NEIR) in Victoria in (2000). This study was based upon an analysis of data from the Household Expenditure Survey (HES), a venue survey (see below), as well as micro-economic simulations. Its aim was to determine the likely effects of EGM expenditure on employment and economic growth in Victoria as a whole, as well as in specified local government areas. The study showed that gambling had brought about considerable benefits to the local economy. There were significant increases in State employment as a result of the creation of new jobs, as well as new jobs created by the broader effects of increased consumer spending in local economies. The report also drew attention to the fact that an increased expenditure on gambling appeared to give rise to multiplier effects, in the form of greater expenditures on alcohol, tobacco, restaurant, and take-away food. Presumably, this was because many of these products and services were preferred by gamblers, or available at gambling venues.

Unfortunately, largely because of its primary focus on economic benefits and costs, this report does not provide in-depth discussion of the potential costs of problem gambling, and so the conclusion of the report is generally more positive than others (e.g., Productivity Commission, 1999) that have focused more extensively on social costs. Gambling was found to have given rise to an overall net benefit to local economies. It was also concluded that most people who gambled could afford to gamble, in that many gamblers had either high incomes, or substantial financial reserves. This view was bolstered by their finding that there did not appear to be any clear association between gambling expenditure and the socio-economic status of individuals, suggesting that gambling was consistently popular throughout the community irrespective of people's incomes.

A possible limitation of this report, however, is that much of the analysis hinges very strongly on one principal assumption; namely, that recent expenditure on gambling had been financed from savings. In other words, the reason gambling was assumed to have contributed to increased wealth was because unused financial resources (in the form of asset and cash reserves) had been brought into the economy. These resources had made it possible for local businesses to generate new jobs because the greater availability of cash meant that people would spend more on goods and services available in the local economy. Moreover, since expenditure on gambling was being derived from savings, this meant that people could maintain existing expenditures on other goods and services (e.g., retail spending).

This study has been subject to a number of criticisms (Pinge, 2001). The first of these is that the Household Expenditure data utilised by the NEIR were unlikely to be of a particularly high quality. Expenditure estimates tend to be very understated (in some instance, only 25% of the amount that was actually spent). Second, a lot of the people who spend very large amounts on gambling tend to be people with very little, or no, savings. A third concern relating to the same assumption is that the gradual decrease in the savings ratio that occurred during the period documented by the NEIR could be due to other factors. Savings levels have been decreasing in Australia for some time, and this could be due to any number of factors, including changes in interest rates or in consumer confidence. As Pinge points out, if interest rates are low, people have less motivation to maintain larger saving balances. People also tend to spend more when they are more confident about the state of the economy, or when there has been a substantial change in the cost of living or general expenditure levels; for example, as might occur if more people attempt to purchase housing in the presence of lower interest rates.

> ♣ **The impacts of gambling will be seen as more positive if analysts rely upon the 'savings hypothesis'. This is an assumption that a substantial proportion of recent gambling expenditure has been financed out of cash or asset reserves rather than being directed away from other established consumption patterns.**

The NEIR study was followed up by a survey of hotels and clubs (Market Solutions, 1999). A total of 698 venues responded to the survey along with 454 patrons who had visited a venue during the previous 6 months. This latter group was selected using a random telephone interview. Interviews were also conducted with entertainers and community organisations that had benefited from contributions made by the gambling industry. The findings of this study showed that people's views were generally consistent with their interests. Owners of gambling establishments reported that gambling had generated employment, given rise to the development of new infrastructure and facilities, created new entertainment opportunities, and also enhanced local tourism. By contrast, owners of establishments without gambling reported decreases in revenue, and less growth in employment and revenue. Positive views were also expressed by entertainers, who reported greater opportunities for live performances, but no mention was made of whether this also applied to live bands, and innovative music. Similarly, although welfare agencies expressed their gratitude for the significant funding that had been generated for them via the statewide Community Benefit Fund supported by the gambling industry, little mention was made of the potential effects of gambling on donations to charities, or to problem gambling.

7.2.2 VCGA (Victorian Casino and Gaming Authority) and Victorian Gambling Research Panel studies of specific regions

There are several studies that are difficult to classify because they combine analyses of community perceptions with general analyses of economic impacts. Some examples include the VCGA reports entitled: 'The impact of gaming venues on inner-city municipalities' (1997a), 'Impact of EGMs on small rural communities' (1997b), and

'Social and economic effects of EGMS on non-metropolitan communities' (1997c), and also the KPMG report: 'Longitudinal community impact study' (1999). The inner-city and small rural community reports were based on focus-group discussions with local stakeholders, as well as economic modelling, and a telephone survey of local residents. As with the survey described in the previous section, the conclusions showed that views varied depending upon the population that was surveyed. Owners of gaming establishments drew attention to the positive effects of gambling on the local community, whereas members of the community expressed concerns about the potentially negative effects of gambling. The inner-city report also referred to the 'savings hypothesis' argument advanced in the NEIR report, and concluded that there had been a net benefit to these areas.

The KPMG study was conducted as part of a series of studies designed to examine the social and economic effects of gambling in six semi-urban areas, including Mildura, the Dandenong area, and Greater Geelong. The study involved the utilisation of ABS data to develop demographic profiles for each region, stakeholder meetings, and a telephone survey of 1,000 residents (around 170 from each region) to assess people's attitudes towards gambling. People were asked to indicate the extent of their gambling behaviour, complete the SOGS, as well as answer a series of questions relating to the social and economic costs and benefits of gambling. Once again, the results followed a similar pattern to those described above. Survey respondents drew attention to the benefits of gambling, such as its role in providing entertainment and an escape for people, and in generating new employment. They also reported being aware of significant renovations and improvements in local gambling venues, but recognised that this may have been at the expense of non-gambling venues. Welfare agencies drew attention to the increased demand for problem gambling services, whereas the industry endorsed the benefits of gambling. In terms of economic analysis, it was found that most gambling was being done locally, so that there was little apparent growth in local tourism due to gambling. New employment opportunities in the new industry were also identified.

Although providing a useful summary of community and industry views, this study did not contain a comprehensive analysis that could allow comparisons to be drawn between the net inflows and outflows from the local economy, or whether the economic gains outweighed the losses. For example, to what extent was the leakage of taxation revenue reinvested in the local economy by the State Government? Instead, the analyses were largely confined to people's perceptions and common-sense understanding of the issues (Western *et al.*, 2001). As with the studies above, the reader is left without a clearly defined economic or conceptual framework in which to integrate the different views and findings.

A similar methodology was employed in the study of EGMs in non-Metropolitan communities (Victorian Casino and Gaming Authority, 1997c). This study involved a series of stakeholder meetings followed by a telephone survey in five regional areas, including Ballarat, Bendigo, and Geelong, and the shires of La Trobe and Baw Baw. The study showed that EGM gambling was associated with 760 jobs representing 0.40% of regional employment, and that there was some evidence that gambling had redirected

expenditure that might otherwise have been spent elsewhere. Attention was also drawn to the leakage of money in the form of taxation, and it was questioned whether this would necessarily benefit the local economy or be repatriated in Melbourne. The study also asked people to express their views about gambling. The results showed that, although people strongly endorsed the importance of gambling as a form of entertainment, 80% believed that gambling did more harm than good. These negative perceptions were clearly related to concerns about problem gambling.

Another very recent project that has focused on specific regional areas was a comparative study undertaken by the South Australian Centre for Economic Studies (SACES) in 2005 (SACES, 2005a). Commissioned by the former Victorian Gambling Research Panel, the aim of this study was to examine the social and economic impacts of the presence of EGMs in specific regional areas of Victoria as compared with a similar group of areas in Western Australia, where gaming machines are only available in the capital city of Perth. The study and final report was divided into many different parts. The first part of the report provides a very detailed analysis of trends in aggregate gambling expenditure, gambling participation rates, and the nature and extent of the gambling industry in both States. A second part of the report summarises the findings of a mail-out community attitudes survey to households in the different regions. A third part provides a summary of various secondary analyses conducted using archival data sources to gauge the social and health impacts of gambling in the respective communities.

Much of the analysis described in this very comprehensive report has been reported previously, for example, in the Productivity Commission (1999) report and in prevalence studies conducted in Victoria (McMillen *et al.*, 2003). However, this is the first report which provides a very detailed comparison of Western Australia and another State (Victoria) as based on the differential availability of EGM gambling. Figures summarised by SACES confirm very convincingly that the growth of gambling revenue in Victoria has increased very substantially since the introduction of EGMs in 1991. In 1983–1984, Victorians spent 1.3% of household disposable income on gambling as compared with 1.48% in Western Australia. By 2002–2003, the Victorian figure had increased to 3.58% whereas the WA figure had remained almost the same (1.6%). Consistent with the figures in Table 2 described earlier in this review, the SACES report showed that a significantly greater proportion of net gambling expenditure in Western Australia was spent on racing and lotteries as compared with EGMs

A number of differences in gambling patterns are also highlighted. For example, reference is also made to the Productivity Commission's (1999) findings that there are considerable differences in the percentage of the populations in the two States reporting having gambled on EGMS during the previous 12 months (45% in Victoria vs. 16% in Western Australia). The report also draws attention to the much higher prevalence of problem gambling in Victoria as opposed to Western Australia as based on the same 1999 survey. The prevalence of problem gambling in Western Australia as based on telephone surveys of adults has always been found to be below 1% (0.56 and 0.70), whereas Victorian figures have always been found to be over 1% or 2% in at least two

studies using the SOGS and a cut-off score of 5 or more, the same measure used in the two Western Australian studies (Table 11).

Another substantial section of the SACES report is devoted to the analysis of community attitudes towards gambling in the two States. The report draws attention to the findings of the most recent Community Attitudes survey conducted in Victoria in 2003 (McMillen *et al.*, 2003) that showed that the vast majority of Victorians had many reservations about gambling in their communities. Eighty–five percent believed that gambling was a serious social problem in Victoria, 76% believed that it was too widely accessible, and only 13% said that it did more good than harm. To investigate these issues more thoroughly and comparatively, SACES researchers conducted a mail-out survey in seven regions of Victoria (Metropolitan, Metropolitan fringe and regional) and in seven "matched" areas in Western Australia. Comparison areas were based on the similarity of the demographic and economic profile of the community and its geographical similarity (i.e., whether it was metropolitan or regional). A total of 7000 mail surveys were sent to a random sample of residents in all of these areas (with a range of 50 to 1210 by region), and 1813 were returned (overall response rate of 25.95, range 20.4 to 33.2). The survey asked people to provide demographic information, to describe the nature and frequency of their gambling and other leisure activities, and to respond to a series of attitudinal questions relating to gambling in their community.

Although the response rate was quite low and the sample was therefore likely to be affected by sampling bias (i.e., more conscientious and literate people with the time to complete surveys are more likely to have responded), the results encouragingly showed that the participation rates for EGM gambling were relatively similar to the most recent surveys conducted in both States (e.g., the Victorian figure was similar to the 2003 prevalence figure obtained by McMillen *et al.*, 2003). The results very strongly confirmed the hypothesis that people in Victoria were much more likely than Western Australians to express reservations about gambling. Despite believing that gambling was generally "accepted in the community" (54%), they were more likely to believe that gambling was too accessible (67% vs. 36%), less likely to believe that the level of gambling was appropriate (26% vs. 44%), and more likely to see gambling as a problem in the community (60% vs. 33%). The survey showed that the participation rates for lottery and racing were generally higher in Western Australia than in Victoria. When asked about specific leisure activities, it was found that Western Australians were much more likely to report an involvement in outdoor activities such as fishing and going to the beach, whereas Victorians were more likely to report going to hotels and clubs to have meals, very likely because this was incidental or a corollary of EGM gambling. Despite this, the survey provided little evidence that the greater availability of EGMs in the Victorian community had influenced people's interest in sporting clubs or other community activities.

Another series of secondary analyses were based on data obtained from counselling agencies in both States (Department of Human Services, Break Even) and the Australian Medical Association. This archival data showed that: (a) A significantly greater number and proportion of the population seeks help for gambling problems in Victoria as

compared with Western Australia, (b) The demographic profile of people seeking help for gambling problems in Western Australia is different, and (c) The patterns of gambling involvement are different. The profile of people seeking assistance in Western Australia appears to be more similar to the profiles described by agencies in various States prior to the introduction of EGMs (Productivity Commission, 1999). In Western Australia, gamblers are more likely to be male (69% in WA vs. 50% in Victoria) and more likely to report problems with racing (36% in WA vs. 12% in Victoria). In Victoria, around 50% of problem gamblers seeking assistance are women and EGMs are much more likely to be identified as the dominant form of gambling. Data collected from general practices around the two States also revealed similar trends, with GPs in Victoria four times more likely than their counterparts in Western Australia to have identified problem gambling as a disorder present in their patients.

A final aim or component of the SACES report was to gauge the broader social and economic impacts of EGMS on the Victorian community (e.g., the impacts on employment, crime rates, suicide rates and other social indicators). The results from this part of the report are more speculative because, as the researchers concede, relatively little systematic data is available. For example, as indicated previously in this review, most courts do not maintain consistent records concerning the extent to which problem gambling has played a role in various offences. Similarly, most suicide and health-related data does not usually indicate the cause of the problem or disorders, only that they exist. However, the SACES draws a number of reasonable conclusions about the role of EGM gambling in stimulating employment. On the whole, it was concluded that EGM gambling had given rise to an initial increase in employment in Victoria, dropped slightly as a result of the recent introduction of smoking bans, but that this growth had not increased as a linear function of the growth in gambling revenue. In other words, greater expenditure on EGMs had not equated to a proportionate increase in employment within the industry. In fact, the rate of jobs per $m expenditure on EGMs was quite low as compared with other related economic sectors such the food and beverage industry. In this sense, the results were very consistent with the study described below in Bendigo which specifically focuses on the extent to which EGM gambling stimulates economic development and employment within a specific regional community.

7.2.3 Pinge's Bendigo study

By far the most rigorous regional impact study undertaken in Australia was that of Pinge in Bendigo (2001). This study did not have access to any more data than other studies, but was based upon a much more carefully designed analytical framework that focused more specifically on the incremental benefits and costs of gambling to the local Bendigo economy. To conduct his analyses, Pinge used several sources of data. These included regional gambling statistics (total expenditure, number of machines, venues, and gambling-related employment figures), as well as data drawn from 3 of 9 gambling establishments in the region. Instead of simply adding up the various contributions of the gambling industry to the local economy (an aggregate approach), Pinge used a regional input-output model that examined the effect of gambling-related transactions on total regional output (i.e., amount of money changing hands), income (how much people

retained in their pockets), and employment growth. The idea was to work out whether the inflows of wealth into a regional area were greater or less than the outflows.

A further important element in this study was the inclusion of linkage and multiplier analyses. Linkage analysis relates to the inter-relationships between one industry and another at different levels. In situations where the output of an industry is used as the input for another industry, the term 'forward linkage' is used. If, on the other hand, an industry purchases capital and labour inputs (i.e., hires local people, purchases locally made goods and services) as part of its core business, then the industry is said to have established 'backward linkages'. The term multiplier refers to the extent to which commercial activity gives rise to additional employment or income growth. In simple terms, a multiplier is simply a figure that is multiplied by an existing economic statistic (e.g., number of people employed, per capita income) to determine the overall degree of growth. Figures greater than 1.0 indicate positive growth, whereas figures less than 1.0 indicate negative growth.

Pinge pointed out that little was known about the input-output structure of the local Bendigo economy, so national figures were used and then modified to represent the mix of industries in the local economy. Essentially, this involved adapting pre-established models and equations relating to the 'typical' inter-relationships between industries, and how much employment and income is generated by these industries (e.g., how much new income, how many new jobs does an extra dollar in retailing or tourism generate?). The point of the venue survey was to obtain specific details concerning the linkages between the gaming industry and the local economy; for example, the extent to which it was hiring local labour, buying local services, or making other inputs.

The results of this initial input-output analysis showed that the local gaming industry had little influence on other local industry sectors. Of the total inputs used by the industry, two–thirds came from outside the local economy. In terms of income, one third went to Tattersalls or Tabcorp and another third to the State Government, leaving only one third in the local economy (in the hands of the owners of gaming venues). Gaming represented 1.1% of total consumer spending in the region, but generated only 0.3% of wages and 0.4% of all regional jobs, but 5.1% of regional imports. Despite $32 million in consumer spending on gaming in the local economy, there was not a lot of growth locally because only a third of the money was staying in the economy. In effect, Bendigo people were not substantially wealthier. Their capacity to spend more on other locally available goods and services had changed relatively little, so that there was little likelihood of employment growth due to greater consumer spending. In addition, the industry was found to be very capital intensive. It relied strongly on imported gaming technology and was not very labour intensive, so relatively few local people were needed to operate the gaming venues.

Pinge also showed that the gaming industry had established very few forward and backward linkages. It was buying very few inputs from the local economy, and its output was generally not being used as the input for other businesses. In fact, of all industries in the local region, gambling had almost the weakest connections. Local spending by

gaming machine operators to cover services and maintenance was estimated to be around $2 million per annum. It was not surprising, therefore, that the income and employment multipliers for gaming were estimated to be much lower than in other industries.

In another series of analyses, Pinge utilised what is termed an extraction model. This involved the hypothetical removal of the gaming industry from the local Bendigo economy, and the development of simulations based upon the assumption that the total expenditure on EGMs was on other goods and services. The aim was to determine how the economy would have fared in comparison to the current situation where EGMs were present. To do this, the amount otherwise spent on EGMs was allocated to different sectors of the economy based upon the patterns of expenditure identified in the ABS's household expenditure figures for the region. The model showed that the flow-on effects of this redirected expenditure would be greater if the money had not been spent on gambling. More money would have stayed in the local economy, more jobs would have been created, and greater income growth would have occurred. This is because other industries have stronger forward and backward linkages with the local economy. From these calculations, Pinge estimated that gaming had given rise to an opportunity cost of $5.33 million in lost revenue, $7.48 million in lost household income, and 237 fewer jobs.

Pinge's final analysis attempted to estimate the overall net loss or gain to the local economy, bringing together a broader range of costs and benefits including the costs of problem gambling and the tourist benefits of gambling. Pinge came to the conclusion that EGMs had resulted in a loss of $11.57 million to the Bendigo region. This was based upon comparing the losses to the region:

- $5.3 million in lost output;
- $5.6 million representing the cost of problem gambling;
- $6.86 million in lost productivity due to gambling (based upon the extrapolation of Productivity Commission figures);

to the benefits:

- $6.2 million attributable to the retention of tourism money, increased demand for accommodation, conferences, and other venue-related services.

However, as the discussion above would suggest, this final analysis has to be interpreted with great caution because many of the cost estimates probably do not stand up to close scrutiny. It is very difficult to determine whether gambling has led to a genuine loss of productivity, and the costs of welfare workers and other professionals who have come in contact with problem gamblers would probably have occurred anyway as part of fixed salary costs. Another possible criticism of this study is that it assumes that gambling expenditure has not been funded from savings, when this might partially have been the case. In addition, the study does not consider Government re-investment of taxation revenue in the local area, or contributions made by gaming venues to local community projects, or more broadly, to the statewide Community Benefit Fund. The only general

point regarding taxation made by Pinge was that there had been no obvious increase in State Government spending in Bendigo during this period, and that the trend, if any existed, had been towards cut-backs in regional areas. This partially allayed some concerns about the omission of re-injected Government spending from the overall cost-benefit analysis.

> ♣ **Despite the fact that Pinge's estimates of overall benefit and cost need to be treated with caution, he provides a convincing case that EGMs appear to have a negative economic impact on a local regional economy.**

7.2.4 The South Australian Provincial City Study

Another substantial regional impact study is the Provincial City project undertaken by the South Australian Centre for Economic Studies (O'Neil *et al*., 2001). This study included an extensive literature review, a survey of stakeholders, and also economic analysis of the social and economic impacts of EGMs on the provincial cities in South Australia. These centres included Mt. Gambier, Port Lincoln, Port Augusta, Port Pirie, Port Lincoln, Whyalla, Berri, and Barmera.

The report showed that gambling was more prevalent in regional areas than in metropolitan Adelaide. The provincial cities contain only 9% of the State's population, but they contain 14.9% of all gaming machines. This represents approximately 18 machines per 1,000 people compared with a statewide average of 11. Approximately $539 is spent per capita on EGMs in the regional areas compared with only $425 state-wide (based upon 1999–2000 figures). Similarly, whereas EGM–generated tax revenue per capita is $217 in the provincial cities, it is only $185 for the whole of South Australia.

The Centre's economic analysis was based upon a similar methodology to that used by Pinge. National input-output tables were adapted to reflect the make-up of the local economies, and the amount otherwise spent on gambling was allocated to other areas of household expenditure. From the input-output tables, it was possible to estimate how many extra jobs would have been created if non-gambling industries had increased their turnover by the amount otherwise spent on gambling. The results showed that approximately 128 jobs would have been created if the gambling money had been spent elsewhere; that is, that 128 full-time jobs had been lost. This compared with an estimate of 128–155 jobs having been created by the gambling industry. Thus, the overall conclusion was that EGMs had probably contributed very little to employment in the region. Similar analyses were also planned to determine the likely effect of EGMs on regional output and investment. However, since this information was not forthcoming from the industry, the Centre could not undertake these calculations.

Despite this, the Centre made a concerted attempt to address a number of issues that were believed to be problematic in Pinge's analysis. The first of these was the allocation of expenditure as part of the input-output analysis. Whereas Pinge allocated gambling expenditure based upon the established pattern of household expenditures in the region,

the Centre allocated this more carefully to those spending areas that appeared more likely to be substitutes for gambling (e.g., recreation and leisure activities). The second issue they addressed was the return of taxation revenue to the region. The authors pointed out that Pinge's analysis was potentially misleading when generalised to a South Australian context because Victoria's gaming-machine industry has a duopoly structure in which 33% of revenue is lost to the region via Tabcorp and Tattersalls. This does not occur in South Australia so that over 50% of revenue remains in the region compared with only 33% in Victoria.

The authors also attempted to estimate the amount of Government spending that was directed back to the regional economies via the various charitable funds, and via direct spending. They considered the Charity and Social Welfare Fund, the Sports and Recreation Fund and also the Community Development Fund. This analysis led to the general conclusion that the return from the charitable funds was generally very small, e.g., only $2 million had been allocated from the Charitable and Social Welfare Fund, as compared to $94.7 million in taxation revenue collected during the same period. Thus, their results did not substantially vitiate the conclusions drawn by Pinge concerning the limited role of Government spending.

The final section of this report attempted to replicate the cost-benefit analysis developed by the Productivity Commission. This included a calculation of consumer surplus as well as estimates of the cost of problem gambling in the region. As the Centre points out, the issue of consumer surplus was not considered in the Pinge report and, therefore, it potentially underestimates the benefits of gambling to the region.

The only problem for the Centre, however, was that they needed an estimate of the number of problem gamblers in the regional areas. Although such estimates were available from a South Australian Department of Human Services prevalence study (1.5% for the regional area), and nationally (2.0%, Productivity Commission, 1999), the Centre argued that the figures should have been higher because of the relatively greater expenditure in the provincial cities as compared with the metropolitan area of Adelaide. For this reason, the Centre developed its own estimate.

The Centre's method of estimation was relatively simple and logical, but open to criticism. Total gambling expenditure in the region was assumed to be the sum of total expenditure by non-problem and problem gamblers (Total R = npgR + pgR). Gambling expenditure for each group was calculated by multiplying average incomes in each region (Y) by the relative proportion of total income spent on gambling by each group. For example, for non-problem gamblers (NPG), this equalled, a = Total revenue from npgs / Total number of NPGs to get an average expenditure for each NPG. This was then divided by average income Y to get the proportion of income spent on gambling. The same process was repeated for PGs (to yield a 'b' coefficient). The Centre thus estimated that total revenue in the region (R, a known figure) = a.NPGs. Y + b.PGs.Y. The number of regular gamblers was known from the South Australian Department of Human Services Survey, average income was known from ABS figures, so one only had to solve for PG to obtain the number of problem gamblers. A figure of 3,097 was obtained giving

a prevalence rate of 2.81%, much higher than the statewide figure of 2.0%. The Centre justified this figure on the grounds that the provincial cities had a higher prevalence of people at greater demographic risk of problem gambling (e.g., low income earners and Indigenous people). Although there is no evidence to dispute this estimate, the assumptions underlying the analysis remain questionable. It is unlikely, for example, that all gambling expenditure comes from income alone, especially in the case of PGs. Nor it is likely that PGs and NPGs would have comparable incomes, especially if the gambling problem had existed for some time.

Using this prevalence figure, the Centre estimated the total social costs of gambling following the same methods as the Productivity Commission. This was based upon a combination of direct social cost calculations (health impacts, relationship breakdowns, crime), and estimations of the excess losses incurred by problem gamblers. This second figure was, in essence, the difference between the actual amount spent by problem gamblers and the amount they would have spent had they gambled at non-problem levels. For 1997–1998, the direct social cost for the provincial cities was estimated to lie in the range of $16 million to $52 million, whereas the excess loss to problem gamblers was estimated to equal $26 million. Total taxation revenue in the regions was $22 million, but only a fraction of this was actually spent there. The final stage of the analysis involved a replication of the consumer surplus calculations undertaken by the Productivity Commission, and the extrapolation of these to the number of non-problem and problem gamblers living in the provincial cities. The results showed a net benefit in the range of –$0.60 million to –$43.6 million. Thus, when combined with the cost figures above, it appears that the net effect of EGMs on the provincial cities was more likely to be negative than positive. This contrasted with the figures estimated for South Australia as a whole that ranged from –$280 million to +$54 million, suggesting a greater likelihood of an overall positive impact.[11]

7.2.5 The South Australian Economic Impact Study

In 2005–06, the South Australian Centre for Economic Studies (SACES) was commissioned by the Independent Gambling Authority of South Australia to undertake a detailed assessment of the economic impacts of gambling on South Australia. The report resulting from this project is presented in two volumes. The first provides an extensive profile of the gambling industry in South Australia both currently and over time, whereas the second (the research component of the project) includes a number of secondary analyses based on existing data sets. A number of different analytical approaches are used to investigate the economic benefits and costs of gambling and the degree to which gambling has influenced other areas of household expenditure. Most of these analyses are based on techniques used by the Productivity Commission (1999) and refined in

[11] Another recent Ballarat study along these lines has been produced by ACIL for Tattersalls. This study purports to show a net gain to Ballarat of $98 million to $277 million as based upon consumer surplus calculations. This study has, however, been criticised by the Productivity Commission as being highly misleading because it assumed that problem gamblers obtain full consumer surplus, and because it also made inappropriate assumptions about the demand elasticities that applied (Banks, 2002). When the Commission recalculated the figures, the net gain was reduced to a range of -$19 million to + $8 million.

previous research undertaken by the Centre (e.g., the Provincial Cities Study, described above in Section 7.2.4).

Much of the analysis for the study is based on the 1998–99 ABS Household Expenditure survey. This survey, based on detailed records maintained by South Australian households over a standardised recording period, provide details of household demographics, as well as expenditure in a variety of categories, including leisure and recreation (which includes gambling). Other sources include national account data for the period preceding and following the introduction of EGMs to South Australian venues in 1994, to examine the composition of total consumer demand and gambling expenditure data compiled by the Queensland Treasury.

This principal economic analyses focus on: (a) The demographic characteristics and expenditure patterns of households with high and low levels of expenditure on gambling (as based on the ABS survey), (b) Changes in aggregate demand during the period when EGMs were introduced, and (c) The relationship between expenditure on gambling and expenditure on other consumer goods and services.

On the whole, the results from most of these analyses were often difficult to interpret because the gambling expenditure data were under-stated and therefore potentially inaccurate, and because it was often difficult to infer causation because of the cross-sectional nature of the data. Caution therefore needs to be applied when interpreting many of the findings. Despite this, there were a number of consistent trends that emerged from the analyses. Households which had higher levels of gambling consumption tended to have moderate incomes, tended to come from areas of greater socio-economic disadvantage, and spent significantly more on cigarettes.

There was very little evidence that the introduction of EGMs had significantly affected overall consumer demand because expenditure represented only 2.91% of disposable household income. There was also little convincing evidence that EGMs had led to any substantial changes in consumer spending patterns, except that people appeared more likely to have switched their expenditure towards hotels with gaming machines (i.e., away from conventional cafes and restaurants).

Similar effects appeared to have occurred on the supply side. Employment growth had increased in venues where EGMs had been introduced and at the expense of venues without machines. Hotels had generally been more successful in taking advantage of the introduction of EGMs in terms of employment and revenue growth than licensed clubs.

As in the Provincial Cities Study, the Centre also attempted to estimate the prevalence of problem gambling using the imputation formula described in the previous section. The formula, once again, was based on the assumption that there is a systematic relationship between total gambling expenditure and problem gambling rates, i.e., that problem gambling rates will be higher when total expenditure on gambling is higher. Based on this new set of calculations, the Centre estimated that 2.8% of the adult population in South Australia were problem gamblers, a figure that is considerably higher than the

0.4% estimate provided by the South Australian Department for Families and Communities in its 2005 prevalence study.

The Centre provides a very clear and coherent logic to justify the use of a formula to infer the number of problem gamblers; however, as they concede, the figure is very much influenced by the attendant assumptions underlying the analysis. It is very clear from the problem gambling prevalence figures presented earlier in this review that problem gambling rates do not directly covary with changes in expenditure over time. In each State gambling revenue has increased over the last decade, but there is little evidence that problem gambling rates have increased in line with the growth in revenue. For example, Queensland net gambling revenue increased 19% from $811.67 million in 2000–01 to 967.18 million in 2003–04, but the corresponding prevalence of problem gambling (using the CPGI and a similar sampling methodology) fell from .83% to .55%. Similarly, there was no obvious increase in problem gambling in South Australia from 2001 to 2005 despite increases in total gambling revenue. These findings suggest that it is possible for a greater amount of total revenue to coincide with a similar, or even smaller, proportion of problem gamblers. In effect, a smaller number of problem gamblers may spend just as much as a large number by spending more per capita. For these reasons, it is questionable whether absolute expenditure levels can be used to estimate the number of problem gamblers.

As in the Provincial Cities Study, the Centre estimated the total costs and benefits associated with gaming machines. Total costs comprised the direct social costs associated with problem gaming and disproportionately large losses incurred by problem gamblers. The principal benefits of gaming arose from the consumer surplus associated with gambling and the taxation revenue obtained by the State Government from gaming machines. When costs and benefits were combined, the Centre estimated that the total costs outweighed the benefits by -$319 million (range -$582 million to -$56 million). In other words, even when one reduced the costs to the lowest possible estimate, the overall impact of gaming machines on South Australia was still negative.

7.2.6 Geographical studies of gambling accessibility

One of the most fundamental policy issues for regulators concerns the link between the availability or accessibility of gambling and various negative impacts. If gambling expenditure and problem gambling has dramatically increased in Australia, a question arises as to whether reducing the availability of gambling (most importantly EGMs) in particular regions might be an effective way to minimise the harms associated with excessive gambling. These issues were discussed in some detail by the Productivity Commission (1999) who drew attention to the fact that accessibility is likely to be a multidimensional construct comprising a combination of economic, geographic and sociological factors, including:

- The location of venues;
- Social accessibility (e.g., whether certain forms of gambling are considered acceptable for certain groups as based upon gender, age or culture);

- Initial outlay or cost (how expensive it is to gamble);
- Ease of use (how much knowledge is required to gamble);
- Conditions of entry (who is allowed to enter the premises);
- Venue characteristics (how often venues are open, or the number of gambling opportunities available at each venue).

As the Commission pointed out, the importance of these factors is generally well accepted. Some forms of gambling such as EGMs are highly accessible because they are readily available in the community in many different venues, are easy and cheap to access, and are generally attractive to a wide range of different demographic groups. However, what is less well established is the extent to which variations in accessibility influence expenditure in particular regions, and whether problem gambling rates are higher in areas where there is a greater density of gambling opportunities.

The Commission conducted several analyses to investigate these relationships using State-level EGM density and expenditure data as well as data drawn from its own national gambling survey. In one analysis (see section 8.9 of the Commission's report), the Commission plotted the prevalence rate (SOGS 5+) for different Australian States or Territories against the number of gaming machines per 1000 adults in each State. In another analysis the number of EGMs per 1000 adults was plotted against the estimated amount spent per capita on EGMs Both analyses showed clear positive relationships suggesting that (at a State level) a greater density of EGMs per capita was associated with both higher per capita expenditure and higher problem gambling prevalence rates. A third series of analyses showed that problem gambling prevalence rates were also positively related to the density of EGMs per 1000 people. A third analysis conducted by the Commission examined the relationship between the demand for counselling services and EGM densities per 1000 people using data maintained by the Victorian Department of Human Services for counselling services in different parts of Victoria (Jackson *et al.*, 1998). The results showed that there was a greater demand for problem gambling counselling services in areas with a higher density of EGMs Although this finding was consistent with the view that greater accessibility is associated with greater problem gambling, the causality of the relationship remains unclear, in that it may also be that counselling services are more strongly promoted in areas where there are more machines (Productivity Commission, 1999).

Despite limitations in the data available to the Commssion, other research conducted since then has generally been very consistent with these findings. Livingstone (2001), for example, analysed net expenditure on EGMs in Victorian Local Government Areas (LGAs) and found that it was very strongly correlated with the density of EGMs per 1000 adults (0.86 including the Melbourne CBD and 0.80 excluding it). However, Livingstone found no significant correlation between the density of EGMs and the amount lost per person. Taken together, these findings suggested that adding more machines led to smaller amounts being spent on individual machines, but greater expenditure overall. Very similar findings were obtained in Victoria in a series of

analyses conducted by Marshall and Baker (2001a, b; 2002), although these authors argued that the relationship between density and expenditure is not entirely linear and that more accurate equations can be developed by the inclusion of a small quadratic component in regression equations.

Similar issues were examined in studies conducted by Delfabbro (2002) in metropolitan Adelaide and the South Australian Centre for Economic Studies (SACES) in 2006, but using more refined Statistical Local Area (SLA)-level. In the Delfabbro study, EGM densities and EGM expenditure were found to be highly correlated (0.92). In addition, there were very high correlations between net expenditure and the number of venues per 1000 people in each SLA (0.98), and between net revenue and venue numbers per adult capita (0.86). Similar positive relationships were obtained in the SACES study using all SLAs in South Australia. There was a clear positive relationship between the number of venues per km-squared and the number of machines per 1000 adults and net gaming revenue. Unfortunately, SACES did not provide standardised coefficients in their regression tables so that it is not possible to obtain a clear indication as to the relative magnitude of the relationships obtained.

The Delfabbro study also used data drawn from six successive years (1996–2002) to examine the relationship between existing EGM densities and subsequent growth in revenue. The results showed that growth in net gambling revenue was occurring most strongly in areas with lower EGM densities, but that growth was still occurring very strongly even in areas that were already highly saturated with machines. In other words, although it had often been argued that the rate of revenue growth should be decreasing in areas with a high saturation of machines (i.e., where all venues already had the maximum number of machines), revenue growth was, in fact, still growing in those areas because people were spending more money per machine over time. Whether this was due to changes in machine technology as a result of upgrading or replacing older machines, or people's greater propensity to gamble, remained unclear.

The South Australian study also showed that problem gambling clients seeking help from Break Even services in Adelaide tend to come from areas where there is a higher density of gaming machines. The number of problem gambling clients per 1000 people in SLA and the EGM densities were moderately correlated (0.49), and subsequent analyses conducted at a LGA level found a very strong relationship (0.78). These correlations suggest that a substantial proportion of problem gamblers appear to gamble very close to where they live, so that (all things being equal) areas with a higher concentration of EGMs will tend to provide greater opportunities for people to gamble, and gamble to excess. Similar correlations were calculated by SACES in 2006 using new clients to Break Even services. These analyses showed a 0.5 correlation between the density of Break Even clients per SLA and the net EGM expenditure per adult in those areas, but strangely found no similar relationship when EGM densities (number of EGMs per 1000 adults) were used. This seems somewhat odd given that almost all studies of this nature have found very high correlations between EGM revenue per 1000 adults and the density of gaming machines.

Similar results were reported in submissions by the Adelaide Central Mission and Relationships Australia (SA) made to the Independent Gambling Authority's inquiry into the management of gaming machine numbers that reported its findings in 2003 (Independent Gambling Authority of South Australia, 2003). Both submissions showed that problem gambling clients tended to gamble within five kilometres of where they lived. Similarly, in a study of broader gambling patterns, both KPMG in Victoria in 1999 and Marshall (2002) in New South Wales showed that the proximity of gambling opportunities appeared to be very important. In the KPMG study, it was found that Victorians typically only travel 2.5 kilometres to gamble on EGMs, whereas Marshall (2002) found that people living within 500 metres of a club were more likely to have gambled than those living further away. Other more recent studies have obtained similar results. In a survey of 500 recreational and 50 problem gamblers in South Australia, NILS (2007) found that 72% of problem gamblers and 56% of recreational gamblers typically only travel up to 5 k.m. to gamble. In the 2005 prevalence study conducted in South Australia by the South Australian Department for Families and Communities (2006), 22% of players reported travelling only 1 k.m., 35% travelled up to 5 k.m., as compared with 27% and 43% of moderate and high risk players.

In addition, much of this research has also examined the relationship between the distribution of EGMs and various measures of socio-economic disadvantage. In a study by Livingstone (2001) in Victoria and in the SACES study conducted in South Australia in 2006, net expenditure and EGM densities were found to be significantly and negatively correlated with indices of social disadvantage developed by the Australian Bureau of Statistics (SEIFA index, or Socio-Economic Indicators for Areas). A similar, although less refined analysis, was conducted by Marshall (1999) using EGM expenditure data pooled across clusters of postcode areas in metropolitan Adelaide. Once again, it was found that those areas with a higher density of EGMs and greater net expenditure per capita on EGMs were more likely to score lower on indices of social disadvantage. Much the same conclusion was reached by Delfabbro (2002) in analyses examining the relationship between specific demographic characteristics and EGM densities and expenditure. EGM expenditures and problem gambling rates were higher in areas with more housing trust housing, where there was a greater proportion of Indigenous people, and where people were more likely to be separated or divorced. However, the relationship between EGM densities and demographics was not nearly as convincing. The SACES study in 2006, also undertaken using SEIFA indices, found only a small to moderate correlation between the SEIFA index and the number of EGMs per 1000 adults in South Australian statistical local areas.

Marshall and Baker (2002) have used these data to propose that the relationships form one of the principal cornerstones of the social economy of EGMs They argue that, because EGMs tend to be attractive to people from lower socio-economic areas, the distribution of machines will tend over time to reflect the socio-economic profile of wider regional areas. Machines will, in effect, migrate from less profitable areas (presumably higher socio-economic areas) to lower socio-economic areas over time, or grow more numerous in the latter because they are more likely to profitable in those locations. In support of this view, the authors present regression equations expressing the

relationship between the level of social disadvantage in areas and their EGM densities (1993 to 1998). The results show that the relationship becomes increasingly stronger over time and that social disadvantage becomes an increasingly important and reliable predictor of EGM densities.

The sinister conclusion to be drawn from these findings is that the gambling industry is deliberately locating machines in areas where they are most profitable and, in so doing, drawing an increasing proportion of its revenue from less advantaged quarters of the community. However, this view also fails to take into account the fact that the location of gaming machines is also heavily influenced by the historical location of gaming venues. In South Australia, for example, gaming machines have typically been located in established hotels and clubs so that the potential location was already established even before EGM gambling was introduced. As a result, the fact that machines tend to be more concentrated in areas with greater social disadvantage is only because this is where one tends to find greater concentrations of hotels. In other words, it may also be that the sorts of people who like to play poker machines tend to live in areas where there are more hotels.

Apart from issues of causality, another common criticism directed at many previous geographical studies of gambling patterns is that they were based on aggregate data mapped to specific statistical areas (Local Government areas or Statistical Local Areas). As Marshall, McMillen, Niemeyer, and Doran (2004) and McMillen and Doran, (2006) point out, a weakness of this method is that it assumes that the catchment areas of venues contained within standardised geographical areas do not exactly coincide with these areas. For example, a venue located in one SLA might receive many patrons from a neighbouring SLA, and this in turn might receive patrons from the first area, or many others. In order to overcome this problem, the authors undertook a very detailed study of the gambling patterns of people living in the Canberra suburb of Tuggeranong. A total of 2447 residents were interviewed using a door-knock methodology and asked to describe their gambling habits (frequency, typical expenditure) and at which clubs they gambled. The location of individual houses were located very precisely using geographical mapping software and then patron catchment areas were determined for all the principal clubs in the area. Each catchment area appeared as an area extending around each venue which contained all the residents that indicated that they patronised that club.

The results showed that some clubs had very regular catchment areas that did not extend very far from the club, whereas at least one club had a much less regular area and that it drew in patrons from a variety of areas. The study also confirmed the findings described above, namely, that those who lived closer to venues (< 3.54 km) tended to spend more on gambling than those living further away, but without any measure of problem gambling in the survey, it was not possible to determine whether problem gamblers were more likely to live closer to venues than other gamblers. Another limitation of the Tuggeranong study was that the magnitude of the venues was not considered, so that it was not possible to say anything about different variations in gambling density, or whether larger venues would exert a greater influence on local residents than smaller venues.

The principal regulatory implication of this type of research is that it implies that reductions in the density or numbers of EGMs may be a useful way in which to reduce gambling expenditure and also problem gambling. In Australia, three principal regulatory responses have been made to achieve these objectives. One is the introduction of legislation to freeze the number of gaming machine; a second is the imposition of regional or statewide caps; and a third is an absolute cut in the number of machines. A freeze policy means that no more gaming licenses would be issued after a specified date, whereas a cap usually refers to limits placed on the number of gaming machines that can exist in a specified area (usually expressed in terms of the number of machines per 1000 adults). Both South Australia and Victoria have introduced legislation to manage gaming machines numbers using at least one of these methods. In South Australia, a freeze was placed on the granting of new EGM licenses in December 2000 and, in 2004 (in response to a report from the Independent Gambling Authority), the State Government moved to remove 3000 machines (or 20% of total machines in South Australia) from hotels across the State, with the magnitude of the cuts based upon the number of machines in the venue (venues with more than 20 machines will lose up to 8 machines). In Victoria, five areas identified as having particularly high levels of social disadvantage were identified and the number of machines was capped leading to a loss of approximately 400 machines.

Not surprisingly, the Victorian capping scheme has been subject to considerable criticism because of the relatively small number of machines removed (Marshall, 2003). Analyses of net expenditure figures for the capped regions in Victoria indicates that there has been little decline net expenditure since the cap was introduced and, on this basis it has been concluded that caps are not an effective harm minimisation method. However, it remains unclear whether such pessimism should be applied to capping schemes in general or just the very minimal reduction in machine numbers undertaken by the Victorian Government. Larger reductions in machine numbers (if combined with the ability for venues to trade machines) may lead to some smaller venues selling all of their machines, so that there may be a genuine reduction in the number of venues with gaming machines. If there were fewer gaming venues, then problem gamblers would have greater opportunities to visit hotels and clubs without the temptation arising from the presence of the machines.

7.2.7 Evaluations of measures to reduce gambling accessibility

Two recent studies have been conducted to examine the effects of policies and legislation designed to reduce the accessibility of EGMs The first of these, conducted by the South Australian Centre for Economic Studies (SACES) in 2005 evaluated the effectiveness of the regional cap policy introduced in Victoria during the last five years (SACES, 2005a). As described above, this policy involved the removal and/ or limiting of machine numbers in five economically vulnerable communities in Victoria. The aim of the policy was to reduce the per capita number of EGMs to around 11 per 1000 adults. A total of 406 machines were removed across the five regions. The Centre was asked to determine the extent to which this small reduction in machine numbers had affected gambling expenditure in these regions as compared with other regions, to examine the possible

impacts on gambling behaviour and problem gambling, and to ascertain the competing effects of other measures such as the reduction in the hours of operation of certain venues or smoking bans.

The research used a variety of methodological and statistical techniques. The principal methodology involved the selection of a sample of five control / comparative regions that were reasonably similar to the capped regions in terms of their demographic characteristics and gambling expenditure and the density of gaming machines. Data were also collected from individual venues within all of these areas; these data included the net revenue from machines over several years, the hours of operation, as well as the views of the venue managers about the perceived effectiveness of the various measures that had been introduced in Victoria. For example, to what extent had the reduction in machine numbers, the smoking bans, and reduced hours of operation (at some venues) affected patron behaviour and venue revenue?

Analysis of EGM expenditure data from 2002–2004 showed that both the capped as well as the control regions had experienced a decline in revenue during this period. Moreover, within the capped regions, the percentage reduction in EGM revenue was disproportionately greater than the percentage reduction in machine numbers. More detailed analyses conducted to investigate the effect of specific measures using individual venue data within the capped region showed that venues that lost machines showed some decline in revenue, but that changes due to a reduction in operating hours had generated larger decreases. Based on these findings, the Centre concluded that the effect of the reduction in machine numbers in the capped regions had been almost insignificant. The overall decline in revenue observed across both capped and the control regions appeared to be largely the result of the smoking ban imposed across all venues and some limited effects due to reduction in the hours of operation in some venues in the capped regions.

These findings were largely borne out in a further series of regression analyses that examined changes in net EGM revenue at the venue level. The results again provided little overall evidence that the reduction in machine numbers had influenced net EGM revenue. Although there were two capped regions in which an overall decrease in machine revenue appeared to coincide with an overall reduction in machine numbers, more detailed analyses showed that venues that lost no machines lost just as much revenue as those venues which retained all their machines. In other words, the overall decreases in revenue observed in these two regions appeared to be due to other factors apart from the reduction in gaming machines. The regression equations again showed that reductions in the hours of venue operation as well as the smoking ban were significantly related to decreases in gaming revenue.

The Centre also conducted surveys of counselling agencies to determine whether there had been any change in the number of problem gamblers seeking support during the period in which the measures had been implemented. No evidence was found to support this hypothesis. Similarly, when venue managers were surveyed to gauge their views on the effectiveness of the measures, relatively few believed that the reduction in machine

numbers had influenced patron behaviour. By contrast, 97% believed that the smoking ban had reduced participation rates, but not problem gambling (87% said that it had not reduced problem gambling). The industry indicated that utilisation rates for machines were generally low (only around 20–25%) so that the removal of a small number of machines made little difference to player behaviour. It was also pointed out that it was relatively easy for the industry to counteract the effect of a reduction in machine numbers by changing the mix of machines available to gamblers. For example, an increase in the number of 1–2c machines in venues could often restore lost revenue, because patrons of these venues were generally more disposed towards playing these lower denomination machines than other configurations. More generally, the industry drew attention to the fact that EGM revenue in regions was also strongly determined by other specific machine characteristics and the nature of the players. Some machines, because of the greater availability of multi-line betting, could allow greater gambling intensity than other machines, and there were also variations in the intensity with which people gambled. In some regions, people could choose to gamble more intensively irrespective of the nature and number of the machines because of broader social, economic, and demographic factors.

A very similar project was conducted in South Australia by Harrison Health Research and Delfabbro (2006) to evaluate the reduction of machine numbers legislated in South Australia's Parliament in the *Gaming Machines (Miscellaneous) Amendment Act 2004* This Act gave effect to the recommendations of the Independent Gambling Authority (IGA) of South Australia to reduce the number of gaming machines in South Australia (Independent Gambling Authority of South Australia, 2003). The Act required the removal of 3000 (or 20%) of South Australian gaming machines beginning on the 1st of July 2005 as based on an algorithm or formula. Venues which had 28 or more machines lost 8 machines, venues with 21–27 lost 1–7, and venues with 20 or fewer machines were exempt from the reduction. After this initial compulsory removal of machines, a voluntary trading system aimed to facilitate the removal of the remainder of the 3,000. The IGA originally recommended that machines be removed from both clubs and hotels. However, when the Bill on which the Act was based was finally passed, clubs and/ or not-for-profit venues were exempt, so that all of the reduction had to occur within the hotel industry. As a result, only 2168 machines were initially removed, with ongoing doubts being raised about the capacity of the State Government to remove remaining 800 machines through the trading system.

The evaluation involved both secondary data analysis and primary empirical research. The secondary data analysis involved an examination of the changes in EGM expenditure levels for both clubs and hotels that lost varying numbers of machines before and after the machines were removed, whereas the primary empirical research involved focus groups with problem gamblers and interviews with 400 regular EGM players at venues. All types of venue (both profit and non-for-profit) were included and care was taken to sample players from venues that had lost different numbers of machines. The analysis of EGM data showed very clearly that there had been little change in net gambling revenue as a result of the removal of the machines. Although some larger not-for-profit venues with the maximum number of machines showed greater revenue growth

across time than similar revenues not subject to the cuts, the data as a whole did not support the view that a reduction in machine numbers had been successful in reducing revenue. When comparisons were made of the net gambling revenue (NGR) obtained by for-profit venues before and after the machine removals, it was generally found that the NGR per machine had increased. People appeared to be willing to continue to spend the same overall amount on EGM gambling at these venues as before, even though there were fewer machines. Consultations with venue managers and the Office of the Liquor and Gambling Commissioner confirmed that venues had tended to remove less profitable machines, so that it was therefore not surprising to find that the average revenue of the retained machines was higher than before.

In the surveys of 400 regular venue patrons (11% problem gamblers and 28% moderately at risk) undertaken by Harrison Health Research, respondents were asked to complete the Canadian Problem Gambling Index, various questions relating to the nature and frequency of their gambling, and were asked to indicate whether the reduction in gambling machine numbers had influenced their gambling. Most patrons reported being aware of the changes, and this effect was found to be even stronger if the person had been frequenting a particular venue for a longer period. However, very few gamblers believed that the removal of the machines had influenced the amount of time or money spent on gambling, or their ability to control their gambling. Moreover, over 80% of patrons did not believe that the removal of machines was an effective way in which to reduce problem gambling. Respondents argued that it was still relatively easy to find a machine, and that there was little to prevent problem gamblers from continuing to gamble as they had done before.

Despite this, there was some evidence to support the broader view that reducing gambling opportunities may still remain a very useful policy initiative. Problem gamblers reported that reducing the number of venues would be a more useful measure than simply removing a small number of machines. Gamblers also supported previous findings relating to the geographical accessibility of venues; namely, that people tend to gamble relatively close to where they live. Two thirds of gamblers indicated that the proximity of venues to their homes was the most decisive factor in selecting EGM venues. Around 90% of people who gambled on almost a daily basis on EGMs reported that they travelled less than 4 km from their home or were able to walk to their preferred venue.

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