

A Review of Australian Gambling Research
Implications for inter-jurisdictional public policy and regulation
2nd Update Version

January 2010

GRA Logo

Commissioned by Gambling Research Australia for the
Ministerial Council on Gambling

The Ministerial Council on Gambling is comprised of the Ministers responsible for gambling in each State and Territory Government and the Australian Government. The objective of the Council is to minimise the adverse consequences of problem gambling via the exchange of information on responsible gambling measures and by acting as a forum for discussion and facilitation of the development of an effective interventions framework.

The Ministerial Council on Gambling established Gambling Research Australia (GRA) to administer its research program. The Secretariat is provided by the Office of Gaming and Racing, Department of Justice, Victoria. Further information about the national research program may be obtained from www.gamblingresearch.org.au

Gambling Research Australia commissioned Associate professor Paul Delfabbro, School of Psychology, University of Adelaide, South Australia to undertake an analysis of Australian gambling research

This project has been funded as part of the Research Program of the Ministerial Council on Gambling

Acknowledgement of jurisdictional funding to the Research Program:

Australian Capital Territory: ACT Government through the ACT Gambling and Racing Commission

Australian Government: The Australian Government Department of Families, Housing, Community Services and Indigenous Affairs

New South Wales: NSW Government through the Responsible Gambling Fund

Northern Territory: Northern Territory Government through the Community Benefit Fund

Queensland: Queensland Treasury

South Australia: Government of South Australia

Tasmania: Tasmanian Government through the Community Support Levy

Victoria: Victorian Government through the Community Support Fund

Western Australia: Government of Western Australia through the Gaming Community Trust

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Printing authorised by: Gambling Research Australia

ISBN: 978-1-921627-12-5

Printed by:

A Review of Australian Gambling Research

Implications for inter-jurisdictional public policy and regulation

2nd Update Version

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January 2010

Report prepared for Gambling Research Australia

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Executive Summary

Project Summary

- This project was commissioned by the Victorian Department of Justice on behalf of Gambling Research Australia (GRA) and completed by the University of Adelaide, South Australia.
- The aim of this project was to provide: (a) A critical review of recent Australian gambling research and the extent to which this can be used to inform inter-jurisdictional and national public health policy, and (b) Inform the currently identified national research priorities identified by Gambling Research Australia.
- Material for the review was drawn from the most recent edition of the Australasian Gambling Review (AGR) produced annually by Delfabbro and LeCouteur (2009) for the Independent Gambling Authority of South Australia.
- The material reviewed in this report is derived from the period 1992 to June 2008 with an emphasis, wherever possible, on material produced in the period 2003-2008.

Analytical Framework

- In analyzing the utility of research in terms of its ability to inform national and inter-jurisdictional policies, several criteria or factors were examined. These included: (1) The scientific quality of research, (2) Its methodological comparability, (3) The role of contextual factors, and (4) The needs of final users.
- The term scientific quality referred to the reliability and validity of research findings. To what extent did the research satisfy the principal qualities of sound scientific research?
- Methodological comparability related to the extent to which findings could be compared as based on variations in research methodologies, measures, and sampling strategies.
- Important contextual factors taken into account included the nature and range of products available in a particular State or Territory, its regulatory environment, as well as the prevailing social and geographical landscape.

- The utility of research was analysed in terms of the extent to which the findings meet the needs of different stakeholders, e.g., policy-makers, regulators, treatment service providers, and researchers.

Analysis of Prevalence Research (Chapter 2)

- A full chapter is devoted to a review of gambling prevalence studies and patterns of gambling within particular population groups, including younger and older people, as well as indigenous and culturally diverse populations.
- Current community prevalence studies appear capable of providing useful comparative data concerning gambling patterns in different jurisdictions. Most estimates of overall participation rates and rates for specific activities appear both valid and reliable.
- Consistent adoption of the Canadian Problem Gambling Index (CPGI) by different jurisdictions has led to greater comparability in estimates of the prevalence of problem gambling. However, there remain, within these surveys, some variations in the sub-sampling of regular gamblers to whom this instrument is administered. Some surveys administer the CPGI only to weekly gamblers, some use fortnightly gamblers, whereas other jurisdictions have developed their own idiosyncratic sampling strategies.
- Problem gambling prevalence estimates have varied considerably and inconsistently across time within some jurisdictions, so that it is difficult to use these rates as an effective means of assessing the impact of policies to reduce problem gambling.
- The probable under-sampling of the more severe cases of problem gambling remains an ongoing threat to the validity of telephone survey methodologies. However, in terms of measuring prevalence in random samples of adult populations, random digit dialling via a call-assisted telephone interview and applying the population screen (CPGI) is currently the best method currently available.
- Current research appears to provide valid and reliable descriptions of demographic differences in gambling in Australia.

- Overall participation rates for males and females remain very similar, although males are more likely to gamble on a wider range of activities, including on sports, racing, casino tables games, and keno. Males are also more likely to experience gambling-related problems.
- A number of explanations for gender differences are reviewed, including the view that women remain reluctant to gamble on activities that attract predominantly male patrons, which require knowledge not previously obtained during adolescence (e.g., rules of card games, race-betting). Several studies have shown that women also appear more likely to gamble to escape problems and for relaxation (a coping strategy), whereas men are more focused on finding strategies to win money.
- Gambling participation rates are negatively associated with age. Older people (55+ years) are less likely to gamble and to experience gambling-related problems as compared with younger age groups. The 18-24 year old age group is most likely to experience problems with gambling.
- A review of current adolescent gambling research showed that over 50% of Australian teenagers gamble at least once per year, and that around 3-4% experience problems with gambling. Pathological gambling appears to coincide with other high risk behaviours and poorer psychosocial functioning. Concerns were, however, raised about the exact interpretation of the adolescent pathological gambling measures.
- Estimates of pathological gambling in adolescents appear to be lower when obtained using a telephone survey methodology as opposed to school-based surveys.
- It was found that research into indigenous and CALD populations remains very undeveloped. It is known that both of these communities are negatively affected by gambling, and that many are reluctant to seek help because of shame, social stigma and the lack of appropriate services, but there are currently no national comparative data concerning these populations.

- Research findings relevant to the principal impacts of problem gambling were reviewed using the impact domains identified by the Productivity Commission (1999): personal, interpersonal, financial, vocational, and legal.
- It was emphasised that the prevalence of all gambling-related impacts tends to be considerably higher in help-seeking populations than in prevalence surveys. This was attributed to the fact that the most severe cases of problem gambling are often omitted from telephone surveys, whereas only the most desperate or problematic cases tend to seek formal assistance.
- The prevalence of negative psychological symptomology, including clinical depression, anxiety, and suicidal ideation is around 15-20% within problem gamblers identified in community surveys, but can be higher than 50% in help-seeking populations. The need to determine the direction of causality, or the direction of the relationship between these symptoms and problem gambling, was identified as an important research objective.
- Substance abuse and smoking rates are significantly higher in problem gambler populations. Some recent studies have suggested that 20% of problem gamblers experience substance abuse problems, and that up to 60% smoke regularly. However, there is a clear need for greater consistency in how substance intake is measured. Few studies have employed internationally recognised and validated measures.
- There is no question, however, that smoking rates are particularly high in EGM gamblers, as reflected by recent declines in gaming revenue in States where venue smoking bans were introduced.
- The important social impacts to arise from problem gambling include the breakdown and loss of relationships, and neglect of family duties. The review points to the importance of including additional validated measures of family functioning in future studies of social impact as well as a greater emphasis of the effects of problem gambling on children.
- The principal vocational impacts include a loss of productivity, job changes, and a loss of employment. Further analysis of the links between gambling and job

performance needs to be assessed using validated measure of job stress and work satisfaction.

- The Productivity Commission's (1999) findings as well as the current national definition of problem gambling suggest, all things being equal, that problem gambling is usually (although not in every instance) associated with a higher expenditure on gambling.
- The review identifies the significant problems associated with using survey data to obtain accurate estimates of gambling expenditure. Particular concerns are expressed about research that has relied upon data drawn from household expenditure surveys of gambling information collected by the Australian Bureau of Statistics.
- Studies of the legal impacts of problem gambling have included studies of court records, interviews with problem gamblers within treatment, and studies of correctional populations.
- The estimated rates of gambling-related crime tend to be very low if based on prevalence surveys (1%), but much higher (at least a third) in treatment samples. The prevalence of such behaviour is difficult to estimate because of concealment and because the cause of many crimes is not consistently listed in court records.
- Current data suggest that problem gambling rates are considerably higher in correctional populations (around 10+ times higher) as compared with the general population. However, there is a need for this research to be extended to all Australian jurisdictions and to be undertaken using consistent sampling methodologies and measures.
- A final section of the impact section of the report reviews research that has examined the effects of venue environments on venue staff. Although based on convenience samples and relatively low response rates, this research shows that venue staff may be particularly at risk of developing problems with their gambling because of the nature of the workplace environment. The important implications of this work for informing responsible gambling provisions and staff training procedures are considered.

EGMs and Their Role in Gambling and Problem Gambling (Chapter 4)

- Most studies have identified very high levels of participation in EGM gambling in samples of problem gamblers (70%+) and that EGMs are almost the exclusive cause of problems for women. However, few studies have included specific questions about the forms of gambling that are causing difficulties so that the relationship between specific forms of gambling and problem gambling often has to be inferred.
- Information concerning people's principal motivation for gambling on EGMs is inconsistent. People gamble with the intention to win money, but do not usually expect to win. For this reason, general questions relating to motivations are often not useful because the responses are heavily influenced by how the questions are interpreted.
- Several useful studies have been recently completed to examine the features of EGMs that people find most attractive. The results show that the number of play-lines, bonus features, and low cost (1,2 or 5 cent machines) are the most influential features in people's choice of machines. Unfortunately, these studies have often not included a comparison sample of non-problematic players to determine what preferences are unique to problem gamblers.
- There is some reliable and valid evidence to suggest that problem gamblers spend more per spin than other gamblers as a result of betting more credits per line, and that problem gamblers also play for longer each session.
- Useful observational work undertaken in New South Wales has also shown that gamblers prefer a maximum line and minimum bet per line strategy of play because of a desire to obtain bonus features. Such work could usefully be extended to allow longer sampling periods, a comparison of gamblers with varying degrees of risk on the CPGI, and the inclusion of other jurisdictions.
- The findings from machine modification studies have shown that limits on note-acceptors and maximum bet size may play a useful role in reducing excessive expenditure, but limits on play-speed may not be as effective.
- The review highlights the limitations and strengths of the existing machine modification research and how it might be extended to include more detailed

- observations of individual player behaviour, full control over all in venue gambling, and comparisons of popular machines with and without bonus features.
- A review of psychological studies of EGM gambling have showed some evidence of a link between gambling behaviour and the pattern of machine events and also irrational or erroneous beliefs about chance, randomness and how machines operate. The implications of this work for interventions are discussed subsequently in the report.
 - Evidence from research conducted in South Australia shows that a relatively small number of machines or games attract a very high proportion of total expenditure. Such machines include Shogun and Shogun II. This is been attributable to the \$1 per credit cost of these machines. Other popular, but lower denomination machines, such as Indian Dreaming and Dolphin Treasure, are considered successful because they encourage multiple line betting.
 - There is consistent evidence that many problem gamblers use EGMs as a form of avoidant or emotion-based coping, which suggests some element of psychological addiction. This trend suggests that EGMs appear to be particularly problematic for psychologically vulnerable people with histories of anxiety, trauma and depression.
 - The review also highlighted the potential value of further analyses involving the concept of ‘impaired control’, with a particular focus on the development of mechanisms and theories to explain why people develop an inability to avoid gambling, or to stop gambling once they have commenced a session.

Harm Minimisation Strategies, Interventions, and Services (Chapter 5)

- Interventions and strategies are classified according to the well-established categories developed in public health research: primary, secondary, and tertiary.
- Primary strategies are those that attempt to address problems before they develop. The review examines the nature and effectiveness of school education campaigns, community education, and in-venue information. All of these strategies were considered useful, but there is insufficient research evidence currently available to support their long-term effectiveness.

- Secondary interventions relate to strategies that try to minimise risks once they have started to develop. An analysis of many venue modifications was provided, including a discussion of schemes to change venue lighting, to add clocks, to remove ATMs, to shut down machines at certain intervals, as well as the potential use of smart-card technology.
- The existing research evidence provides empirical support for changes to lighting or the addition of clocks, or other similar features, but suggests that further research involving active trials needs to be conducted to investigate the more promising initiatives such as the removal of ATMs and the use of smart-card technology.
- Research in NSW has supported the potential value of machine shutdowns as a way to reduce all-night gambling, but that this strategy will not be effective in reducing problem gambling because people can gamble at other times. The research has important implications for the timing of shutdown periods.
- Research in South Australia and the ACT has shown that venue staff are theoretically able to identify problem gamblers in venues and appear aware of the factors that one might indicate problematic behaviour. The study showed, however, that the process of identifying unfamiliar players in the venue is likely to be very difficult in practice due to staff having other commitments.
- The review of tertiary interventions was largely concerned with the nature and effectiveness of current treatment services. It was pointed out that, although there have been many descriptive analyses of clients seeking help from services, very few systematic evaluations of services have currently been undertaken. Only a few small-sample clinical evaluations of specific psychological interventions have been completed.
- Few, if any, studies published in Australia during the last decade meet the standards required for formal clinical evaluations, including the appropriate use of randomisation, control groups, longer-term follow-ups and a consistent treatment of drop-out rates. The review therefore sets out some of the requirements for effective future evaluations and suggests the need for the development of

consistent national evaluation requirements and the use of multi-site trials to increase sample sizes.

- At the same time, the review indicates that most of the interventions currently being funded (e.g., cognitive-behavioural therapy, financial and other counselling) are considered to be best-practice strategies given all currently available evidence.

Economic and Geographical Impact Studies (Chapter 6)

- At present, there is no consistently agreed-upon conceptual framework for undertaking economic impact research in Australia. Instead, researchers have tended to employ different economic approaches and sources for data for their analyses.
- There is also a significant dearth of information relating to many aspects of the gambling industry, including the exact price of gambling to consumers, the elasticity of demand, and the nature and extent of linkages between the gambling industry and other sectors of the economy.
- The review includes a summary of a number of retrospective economic analyses of regions, with a focus on the effects on EGMs on regional communities.
- The most effective evaluations have involved the use of input-output analysis in specific cities or regions and have examined the economic contribution of EGMs to local economics by considering the magnitude of multiplier effects, as well as forwards and backward linkages.
- Existing studies suggest that EGMs make a negative contribution to local economies because the multiplier for the industry are generally smaller than other potential industries, and few backward and forwards linkages are established because of the highly specialised nature of the technology. Revenue is also lost to local economies because of the high tax-rates applied to EGM revenue. It is also unclear how much is reinvested via community benefit funds developed to assist problem gamblers.
- The review suggests the need for further studies of this nature, but based on a stronger body of primary data collected from the regions concerned.

- Geographical studies have predominantly focused on the links between the accessibility of EGMs, revenue, and problem gambling.
- Most studies, based on data collected Local Government and Statistical Local Areas have revealed higher expenditures (and in some cases, higher problem gambling rates) in areas with a higher concentration of EGMs.
- EGMs also tend to be located in areas with greater social disadvantage.
- At least half of the population who gambles on EGMs travels only a short distance from their homes to gamble.
- The review suggests the need for more refined studies that collect primary data from the community (gambling habits, problem gambling, venues frequented) and then examines these data in relation to the concentration of gambling opportunities as based on number and size of venues within specific areas.

Chapter 1: Introduction and Analytical Approach

1.1 Introduction

Over the last two decades, a significant number of research projects have been undertaken in Australia to obtain greater knowledge concerning the nature of gambling and problem gambling within Australia. Such research has emerged from universities, specialist research centres or marketing firms, industry groups, and from various State and Federal Government organizations or Departments. Although the specific focus of research has varied from one study to the next, the majority of studies have been undertaken with a common purpose; namely, to understand how gambling influences the financial, social, cultural and economic well-being of individual Australians and the broader community. A strong reflection of this central theme is to be found, for example, in the detailed inquiry and report undertaken by the Federal Productivity Commission in 1999. The Commission's report provided by far the most comprehensive summary of the Australian gambling industry ever undertaken. Included in the Commission's three-volume report was a comprehensive national review and analysis of available research and statistics as well as its own national survey study to determine the extent of gambling in different States and Territories, and the impacts of gambling on the broad economy, related industries, individuals, families, and communities.

Since 1999, the rate of gambling research funded in Australia has steadily increased. Although some of this is due to a gradual increase in the number of researchers working in the field, it has also been influenced by establishment of dedicated regulatory bodies at a State and Federal level with a mandated requirement to support and fund gambling research. Moreover, in most States and Territories, there are now Government Departments overseen by a Minister for gambling that support research into the social and economic impacts of gambling. These organisations have forged very productive relationships with numerous university-based gambling researchers and research centres, and led to stronger links between academic gambling research and broader policy and regulatory interests. On the positive side, there is no question that such State and Territory support for research in Australia has facilitated the development of active,

varied, and relevant research agendas. However, a downside to these developments is that it becomes increasingly difficult to integrate and compare research findings from different jurisdictions if there are variations in the focus, methodological approach, and target audience. Accordingly, until the Productivity Commission or similar organisation undertakes another detailed consolidation of more recent research findings (Banks, 2002), it may be difficult for national research to be used effectively because of a lack of awareness of what has been done, how it can be compared, and how it should be assessed in terms of its quality and relevance to different potential users.

In light of this situation, there is therefore a need to conduct detailed national reviews of Australian research to maintain awareness of the current state of knowledge in gambling research for different users who may not have access to individual research findings on an ongoing basis. Such reviews of research can usually be undertaken using three major approaches: (1) *Narrative reviews*, (2) *Systematic Reviews*, and (3) *Meta-analyses*. *Narrative reviews* are the most traditional and widely used form of literature review. Such reviews involve the collection of all material relevant to a particular topic, including books, journal articles, book chapters, and other relevant publications. Material is combined into meaningful groupings or topic areas and critically evaluated and described. Narrative reviews usually combine different types of material, including findings drawn from qualitative and quantitative studies), but also other critical reviews. By contrast, a *systematic review* is a focused piece of analysis that is designed to ascertain the strength of certain outcomes or effects (e.g., the effectiveness of a specific drug, treatment or clinical trial). In *systematic review*, the method of selecting and combining literature is made very explicit and can be replicated by other researchers. Only material (usually peer-reviewed journal articles) that meets certain selection criteria or standards is included in the review. For example, one might only include studies that have good sample sizes, which have used appropriate scientific methods (e.g, have included a control group), or which provide sufficient statistical information to allow the results to be studied in more detail.

Systematic reviews usually include some element of meta-analysis when comparing the results of different studies. Meta-analysis involves the use of statistical and mathematical techniques to work out the typical outcome or “effect” observed across many different studies. An “effect size” indicates how big the effect is in the study, e.g., how much a clinical group’s scores improved as a result of receiving treatment. Even if different studies use different statistical analyses to present the results (e.g., differences between mean scores or correlations), it is still possible to compare studies. Effect sizes are usually expressed in standard units. Values of around 0.2 are usually considered small, 0.3-0.6 moderate, and 0.7 and greater large. Systematic review and meta-analysis is usually only possible when there are a significant number of methodologically rigorous studies available for consolidation.

Ideally, it would be useful if systematic reviews of existing gambling research to be conducted in Australia to allow one to develop national effect size averages or a systematic process for combining research findings. However, such an enterprise remains largely unfeasible at present due to the limited number of studies relating to specific topics, and the varying methodologies that have been used. For this reason, the present report is based on a narrative approach. Material for this report is adopted from the Australasian Gambling Review (AGR), an annual review supported by the Independent Gambling Authority of South Australia. This review was first completed in 2003 as a review of all relevant gambling research in Australia and New Zealand from 1992-2002 (Delfabbro & LeCouteur, 2006, 2007) and has been updated in four subsequent editions. The most recently published edition covers material from 1992 up until the end of June 2008. The AGR provides a detailed coverage of research into the prevalence of gambling; problem gambling and its impacts; the effects of technology on gambling; harm minimisation, consumer protection and regulatory strategies; and economic and regional impact analyses.

The strength of the narrative approach adopted by the AGR is that it allows many different topics relevant to gambling to be combined in the same review. It also does not restrict its analysis only to quantitative studies. All types of research are included on the

assumption that policy makers need to draw upon the best available evidence, and that there is a need to consider both successful and unsuccessful studies in order to determine the best directions for future search.

However, despite providing a comprehensive coverage of existing research studies and their strengths and weaknesses, the AGR remains primarily a critical review of research in its right rather than an analysis of the underlying value of the research. In other words, the AGR does not specifically examine the extent to which various research findings might be utilised by potential end users (e.g., policy-makers, treatment providers, regulators, other researchers), and what factors might influence the extent to which research can be used to inform the work of those who read it. Accordingly, to address this issue, Gambling Research Australia commissioned the production of a series of annual reports with an intention to reframe the existing national reviews of gambling research so as to consider this broader perspective. The aim was to examine the extent to which existing knowledge (as consolidated in the AGR) is capable of informing public policy at a national level and informing future research directions. Its focus would be to examine how, and if, research could be utilised by different end users, and whether national reviews such as those provided by the annual AGRs fulfill this objective. By inference, a central element of this analysis would be to examine the mechanics of the research itself and the various contextual factors (e.g., variations between locations or jurisdictions) that might influence the extent to which findings could be meaningfully compared or consolidated so as to assist in the development of effective policy.

1.2 The Role of Gambling Research Australia

The rationale for this project arises logically from the principal organisational function of Gambling Research Australia (GRA). GRA is an initiative of the Ministerial Council on Gambling (MCG), which is made up of the different Ministers for Gambling from each State and Territory, the Federal Minister for Family and Community Services and a Minister representing the Community and Disability Services Minister's Conference. In July 2004, a National Framework on Problem Gambling was released and this acts as a guide for the activities of the MCG and GRA. The central mission of the

national framework is to generate national strategies and research information to minimise the negative consequences of problem gambling to individuals, their families, and the community. To do this, GRA performs several important research functions and works towards several key objectives. These include:

- To increase understanding of the nature and extent of problem gambling in Australia;
- To identify effective intervention strategies in Australia for preventing the development of problem gambling;
- To provide a national clearinghouse for gambling research via its website (www.gamblingresearch.org.au)

As a review project rather than a primary research investigation, the aim of the current project is not necessarily to generate new knowledge concerning the nature and extent of problem gambling. Instead, the aim is to enhance the potential utilisation of knowledge at a national level. Such information may assist in the broader objective of minimizing the impact of problem gambling by identifying the existing research information most capable of informing policy, regulation and service delivery. At the same time, it also will assist GRA in its primary role as a clearinghouse for gambling research within Australia.

1.3 Terms of Reference for Current Project

The University of Adelaide was commissioned by Gambling Research Australia to produce three review reports: one in 2007, 2008, and 2009. Each of these reports was to be informed by the most up-to-date edition of the Australasian Gambling Review, as produced for the Independent Gambling Authority of South Australia on an annual basis. In this report, information already produced by Delfabbro and LeCouteur (2009) in the 4th Edition of their review would be reassessed using established principles of scientific inquiry to provide to GRA:

- Advice about the utility of the review and its findings from an inter-jurisdictional policy and Australian public information perspective;
- Opinions on how the review results may feed into future research under the research priorities of the National Gambling Research Framework.

Included in this review would be a summary of the different areas of gambling research that have been undertaken, an assessment of each area of the review and its contents in terms of its value to policy and public information, and some analysis of how current research findings might be used to inform specific areas identified in the National Gambling Research Framework (NGRF) (see list of priorities below). The consultants were asked to focus specifically on current research findings (2003-June 2008) that have emerged within Australia.

1.4 National Gambling Research Framework: Priorities.

At the present time, the NGRF has identified six principal research priorities. These include:

1. A national approach to definitions of problem gambling and consistent data collection;
2. Feasibility and consequences of changes to gaming machine operation such as pre-commitment of loss limits, phasing out note-acceptors, impositions of mandatory breaks in play and the impact of linked jackpots;
3. Best approaches to early intervention and prevention to avoid problem gambling;
4. Major study of problem gamblers, including their profile, attitudes, gambling behaviour, and the impact of proposed policy measures on them;
5. Benchmarks and on-going monitoring studies to measure the impact and effectiveness of strategies introduced to reduce the extent and impact of problem gambling, including studies of services that assist problem gamblers and how effective these services are;
6. To research the patterns of gambling, the impacts of gambling and consider strategies for harm reduction among rural and remote communities among

Australian Indigenous communities and populations, such as Indigenous, rural, remote or culturally and linguistically diverse communities, young people or older people.

As will be evident, a number of these numbered items encompass many different research areas, many of which do not necessarily coincide with the AGR. To address this difficulty, the report has selected material from the AGR and organised it into chapters so as to provide an integrated coverage of specific issues or areas identified above.

1.5 Methodology and Sourcing of Material

All material utilised in this review was obtained from the Delfabbro and LeCouteur (2009) Australasian Gambling Review (4th Edition) as well as primary and secondary research material obtained to complete this review. The AGR sourced material from a variety of sources. The first strategy was a comprehensive 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 (1992-2008) and keywords (Gambling Problem, Gambling, Gamblers, Pathological gambling). A second strategy involved a search of university-based research centres, including the Australian Centre for Gambling Research (University of Western Sydney / Australian National University), 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), University of Melbourne Problem Gambling Research Program, Centre for Gambling Education and Research (Southern Cross University), and Australian Institute for Primary Care (LaTrobe University, Victoria). A third source of material was Government websites. This 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 was proceedings from national conferences, including those of The National Association for Gambling Studies and other related conferences. 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.

1.6 Analytical Strategy: How the Value of Research is Assessed

A number of important principles were used to assess the quality and utility of Australian gambling research. Some of these principles apply to all research studies, irrespective of the context or potential users, whereas others are specifically relevant to gambling research in Australia and how it can be utilised and compared across different Australian jurisdictions. In the first chapter, four principal areas were identified as having an important influence on the potential utility and quality of research findings.

- (1) *Scientific Quality*: To what extent are findings reliable and valid? This area of analysis examines the degree to which the research satisfies the principal qualities of sound scientific research.
- (2) *Methodological Comparability*: Even with the best scientific rigour, research findings can still be difficult to compare if they have been conducted using different methodologies. This section highlights some of the key aspects of methodology that can influence the compatibility of different research findings.
- (3) *Contextual Factors*: This section is concerned with a range of contextual factors that are specific to the inter-jurisdictional study of gambling and which can influence the comparability of findings. These include the nature and range of gambling products available in a particular State or Territory, its regulatory environment, as well as the prevailing social and geographical landscape.
- (4) *Utility of Research*: This final section provides a brief examination of the factors that influence the utility of research for different stakeholders. Central to this section is a recognition of the fact that not all research conducted in Australia is necessarily undertaken to meet the needs of every stakeholder. In this section, there is some discussion of the particular needs of specific users of research

findings, and how research might be best conducted to maximise its potential value to these different stakeholders.

1.6.1 Scientific Credibility: The Issue of Reliability and Validity

For research to be of value to potential users, it needs to be both reliable and valid. Reliability refers to the extent to which a particular finding or result is consistently obtained when a similar measure, methodology, or strategy is employed to collect the data or generate the results under consideration. By contrast, validity refers to the extent to which data reflect objective reality, or the intentions of the investigator. Validity is usually divided into two types: internal and external. Internal validity refers to the extent to which the results of a study, experiment, or measure (e.g., score on a psychometric scale, behavioural effect, physiological response) reflects what it intended to measure. An internally valid measure of problem gambling, for example, would be one that truly measures problem gambling and not some other construct. Similarly, one might refer to a behavioural measure such as expenditure as a valid indicator of problem gambling if it were found that problem gamblers spent significantly more than other gamblers and if expenditure was a strong predictor of problem gambling status assessed using some independent strategy. In social science research, the internal validity of measures and tests is often inferred by searching for evidence of specific types of validity, including construct, predictive, or concurrent validity. Does the measure or test appear to capture the concept under investigation (construct validity), does it predict future outcomes (predictive validity), and do scores tend to correlate with other similar, or conceptually related, measures (concurrent validity) (see Neal, Delfabbro, & O'Neil, 2005 for a comprehensive review).

Internal validity is an essential scientific quality of research and has implications for all potential users of research, but there are several ways in which the internal validity of a study can be compromised. For a start, the measures used in a study might not be well-established or truly reflective of the construct under investigation, e.g., problem gambling. They may yield inconsistent results (an unreliable test is always invalid), not measure the correct quality, or be unable to capture the construct. Alternatively, the results of the study, supposedly related to one factor, might in fact be due to some other

unaccounted for, or uncontrolled, factor. For example, as pointed out by Delfabbro (1998) and the Productivity Commission (1999), a common mistake in many survey studies of gambling prevalence is to conduct demographic comparisons of gamblers without controlling for the age of participants. People who are single, looking for work, in rental accommodation, or with lower incomes are often found to have more significant gambling problems. However, since such factors are strongly associated with young people (usually aged 18-24 years) who also tend to experience more significant problems with gambling, one finds that all of the other associations usually disappear when age is statistically controlled.

Alternatively, studies may fail to apply the 'method of difference' in investigating an effect. This problem occurs when qualities or results that are observed in a specific population are assumed to be particular to that population without any examination of whether similar effects can be obtained in other populations. For example, in studies of women, older people, or Indigenous people, it may be tempting to conclude that depression, isolation, or boredom are characteristically strong predictors of problem gambling in these populations. However, such a conclusion can only be drawn by showing that similar effects are absent or weaker in male, younger, or non-Indigenous samples. In a similar vein, if one is undertaking a clinical trial and shows significant improvements in outcomes (e.g., a reduction in problem gambling behaviour), it is important to incorporate a control sample to determine whether such effects might be obtained anyway just through the passage of time.

The other form of validity that needs to be taken into account is external validity. External validity refers to the extent to which findings from an individual study, experiment, or trial be generalised to other contexts. Increases in internal validity often occur at the expense of external validity. In very controlled experimental studies where one carefully manipulates specific variables in order to examine very particular effects, internal validity will be high in that the results can be more easily related to a particular cause. However, it may difficult to generalise the findings to the wider world where multiple influences might have a bearing on how people behave. In gambling research,

external validity is threatened when studies are based on situations, tasks, or samples that are not representative of real gambling. For example, studies based on students samples where participants have relatively little gambling experience, or studies involving artificial tasks involving points rather than money, could not be easily generalised to real-life gambling. The limited external or ecological validity of laboratory gambling tasks (particularly those involving studies of arousal or risk-taking) has been confirmed in studies by Anderson and Brown (1984), although Ladouceur et al. (1991) have shown that allowing players to keep their winnings can enhance the realism of laboratory experiments. To capture both types of validity usually requires field or accurate simulation studies involving real gamblers (or problem gamblers) playing for money which they can keep (as is the case in real-life gambling).

A summary of the purported trade-off between external and internal validity is provided in Table 1.1. As indicated in Table 1.1, the poorest form of research is that which cannot be generalised beyond the context in which the data were collected, and where there are doubts whether the views expressed, or behaviour observed, genuinely reflects the true nature of real-life gambling behaviour. Highly realistic simulations involving gamblers playing for money, or field studies are possibly the best, along with ‘gold-standard’ clinical trials that investigate the effectiveness of a particular intervention strategy. Other worthy research designs are described in the top-right and bottom left quadrants, although each of these is relatively stronger in terms of one particular type of validity. Survey or correlational studies (even those involving longitudinal analyses) involving valid measures usually have good internal validity if people are asked to state attitudes or beliefs, or describe behavioural patterns which they can remember (e.g, how often they gamble), but studies of this nature do not capture behaviour *in situ*. Indeed, such studies but can fall in the upper-left quadrant if self-report methods are used inappropriately to capture behaviours which are not easily gauged through self-report, (e.g., gambling expenditure, see Blaszczynski, Dumlao, & Langer, 1997), or by using methods (e.g., telephone surveys) that do not allow people sufficient time to consider their answers to complex questions (e.g., On what other goods or services would you have spent the money that you currently spend on poker machines?).

Table 1.1 The Validity of Different Research Designs

	Internal Validity	
	Low	High
Low External Validity	<ul style="list-style-type: none"> • Poorly controlled laboratory research • Surveys with poorly validated measures • Biased self-report studies based on highly selective or unrepresentative samples (e.g., students) 	<ul style="list-style-type: none"> • Well controlled, but artificial laboratory research • Good quality self-report studies based on representative samples or genuine samples of regular/ problem gamblers
High External Validity	<ul style="list-style-type: none"> • Good quality observational or interview studies with regular/ problem gamblers 	<ul style="list-style-type: none"> • Well designed field or simulation studies involving regular / problem gamblers • Double-blind, control group clinical trials

Such elements of external validity influence the scientific integrity of all gambling research. However, when further examining the value of research from an inter-jurisdictional or policy perspective, there is need to consider a wider range of contextual factors that influence the extent to which one can generalise findings from one jurisdiction to another.

1.6.2 Variations in Research Methodology

Even when research studies are conducted so that their findings are valid and reliable, there are nonetheless several methodological factors that can influence the extent to which findings can be reconciled, combined, or compared across jurisdictions.

(a). Variations in Measures

Although there has, more recently, been attempts to bring greater consistency to Australian gambling research by encouraging the use of consistent measures across different studies (Neal, Delfabbro, & O'Neil, 2005), it is nevertheless still the case that there is some variation in the measures of gambling used in different studies. Most current prevalence studies in Australia now utilise the Canadian Problem Gambling Index (CPGI) to measure problem gambling. However, other studies still use other measures such as the South Oaks Gambling Screen (SOGS), Victorian Gambling Screen (VGS), or DSM-IV in their assessments. As a result of these variations, it may not always be possible to draw exact comparisons between problem gamblers identified in different studies. For example, it is known that the classification 'pathological gambler' obtained using the SOGS is a less severe classification than a similar classification obtained using the DSM-IV, or a problem gambler classification obtained using the CPGI.

Additional problems occur when a life-time, as opposed to 'last 12 months' version of the measure is used, or where specific items of the measures are modified or omitted. Moreover, it is possible to administer the SOGS with a Yes/ No format as well as one which asks how often the particular behaviour occurred. The 20-item SOGS has also been used with three separate cut-offs: 3-4 for problem gambler, 5+ for probable pathological gambler, and 10+ for problem gambler, depending upon the study.

(b) Sampling Method

Studies also differ in their method of sampling. In some studies, problem gamblers are identified using random community surveys. Very large samples are interviewed in order to identify regular gamblers (either weekly or fortnightly) and a small proportion of these are identified via psychometric screening as problem gamblers. In such studies, the number of problem gamblers is relatively small. If only 1% of the population were problem gamblers in a given community, one would need a very large sample to obtain as many as 50 gamblers ($50 / .01 = 5000$). Other studies recruit problem gamblers more selectively by interviewing regular gamblers at venues, or via advertisements in the community. Such methods typically obtain much higher

proportions of problem gamblers (10-40%) because regular gamblers have a higher probability of being problem gamblers. Purposive samples of problem gamblers can also be obtained from counselling services.

Both of these methods have their strengths and limitations. Recruiting problem gamblers via random sampling methods is considered best practice because findings can be generalised back to the broader community. However, such methods are very expensive and typically yield only small samples of problem gamblers and may not capture people who spend a lot of time outside their homes. Purposive selection of regular gamblers from venues or from the community is an effective way to select problem gamblers, but it is more difficult to generalize the findings back to the entire community. Such methods are better suited for comparisons of gamblers with varying degrees of risk rather than prevalence because those who respond to advertisements may be systematically different from those who do not. Similarly, while problem gamblers recruited from problem gambling counselling services will unquestionably be genuine problem gamblers, these people are likely to differ in some systematic way from those who do not seek help.

(c) Sample Composition

A related difficulty in many studies of gambling is that sample compositions can differ considerably across studies. Some studies base their results on problem gamblers or regular gamblers, whereas others may use all gamblers, or all people contacted. There are even some studies that have included university students and gamblers within the same group for the purposes of analysis. In studies of youth gambling, there are studies that have confined analyses to 15-17 year olds, others which have examined 13-17 year olds, and others which have combined adolescents and adults in the same sample. In such situations, it becomes very difficult to compare results and to know to which population the results should be generalised.

(d) Type of Research

There are also differences in the type of research approach employed. Some studies have drawn conclusions from quantitative or statistical analyses based on moderate to large samples of gamblers, whereas others have adopted qualitative approaches in which only a relatively small and selective sample of gamblers has been interviewed, e.g., in a focus group context. Although there is inherently no difficulty with either of these approaches, it is important to recognise that the findings obtained using many qualitative methods are more exploratory or indicative rather than conclusive. The results do not indicate how many, or how strongly particular results emerged, and such studies often do not allow comparisons between different types of gambler. For these reasons, it is much more difficult to draw meaningful comparisons between studies based on more exploratory and qualitative methodologies, and to make any valid comparisons between these findings and those obtained using formal quantitative sampling techniques.

(e) Data Analysis Methods

A final issue concerns the nature of the data analysis used to examine the results. For results to be compared or consolidated across different studies it is necessary for a certain body of critical information to be made available. This includes the sample size, response rates, mean and standard deviation, and results from relevant statistical tests. Without this information, it is not possible to determine the relative size of effects, or conduct any more formal statistical tests. Unfortunately, not all reports contain this information. Moreover, there are situations where important or relevant analyses are absent from the report (e.g., a failure to report gender differences, or to consider the confounding effect of a particular variable) so that it is not possible to draw any meaningful or complete conclusions until further data analysis is conducted.

(f) Primary Data Collection vs. Modelling Approaches

In most studies conducted within the major social sciences (e.g., psychology or psychiatry), conclusions are based usually on primary data collected specifically for the purposes of the investigation. Theories, hypotheses or predictions are developed and a methodology is developed to collect relevant data that is capable of investigating, confirming, or disconfirming these conjectures. For example, if one wished to examine the relationship between problem gambling and another construct (e.g., suicidality or substance abuse), validated measures of problem gambling, suicidality and substance abuse would be developed or utilised from other studies. Assuming that the measures were indeed sound, it would be possible to determine the prevalence of all of these constructs or phenomena and the relationships between them based on the data collected from groups of individuals. Such an approach assumes complete information on all the constructs being investigated.

In contrast to this type of research are economic or econometric investigations that are more strongly reliant on archival or secondary sources of information. In economic research, it is often not possible to collect primary data on many phenomena because such information is either not available or only exists in aggregate form. Economists therefore have to estimate or make assumptions about the information that is not available for individuals, and make extrapolations using data obtained at a higher level (e.g., for regions, cities, or suburbs). Such analyses are often referred to as research, but are often more akin to modelling in that no new data is usually being generated. Instead, the aim is to examine the relationship between key variables and to infer the likely value of other variables using statistics. Examples of this type of work include estimates of the prevalence of problem gambling based on income and expenditure, or estimates of the economic and social impacts of gambling on certain jurisdictions.

Although comparisons can be made between models developed for different regions if the methodology remains the same, the analysis is very much subject to the quality and availability of archival data sources which may or may not exist. Moreover, the findings can only be considered estimates because of the necessity to make many

assumptions about the likely range of values for variables that were not available, or collected from individuals, as part of the research.

These very substantial differences between the methods often utilised in economic research and other disciplines in the social sciences also create some difficulties in being able to compare findings relating to a similar topic, but which have been collected using different disciplinary approaches.

1.6.3 Contextual Factors in the Inter-jurisdictional Comparison of Findings

No two jurisdictions in Australia are entirely alike. They differ to varying degrees in terms of the nature of the gambling industry, the regulatory framework governing the operation of the industry, the type of features or games available in venues, and the type of venues (size, number of machines that are allowed). Moreover, different States vary in terms of their geographical and demographic characteristics. For example, in some States, there are a number of major regional centres so that it is possible to examine specific nodes or concentrations of gambling, whereas other States have high concentrations of gambling only in the major metropolitan areas. Similarly, as will be documented below, some States and Territories have higher concentrations of Indigenous people, or people from culturally and linguistically diverse populations, often living in very remote locations so that they are never, or seldom, captured by conventional research studies.

Any or all of these factors can play a role in limiting the extent to which findings obtained in one State or Territory can be translated to other jurisdictions. However, such variations can, in some circumstances, work in favour of researchers by allowing useful comparisons between jurisdictions that differ in terms of the availability or accessibility of gambling. For example, if a particular form of gambling were available in one location, but not in another, it would be possible to conduct a natural ‘experiment’ to examine the differential effects of this difference, e.g., in terms of its effects on gambling expenditure, social and economic impacts, or the prevalence of problem gambling. To do so would, of course, require researchers to control for other factors that might potentially influence the differences between the two areas (e.g., demographics, population size).

(a) Variability in the Legalisation of Different Forms of Gambling

Almost every major form of gambling is available in each Australian State and Territory, except that Western Australia does not have Keno or electronic gaming machines in its clubs and hotels. For this reason, it is generally possible to examine the prevalence of various forms of gambling and problem gambling across every State and Territory, although it would be expected that expenditure on EGMs, overall gambling expenditure, and problem gambling in WA would always be lower than elsewhere because of the confinement of EGMs only to the central Burswood Casino in Perth. WA therefore provides a natural comparison point, or control, against which one can compare the impacts of club and hotel-based EGMs. Similarly, South Australia provides a natural comparison point for any analyses involving the effects on note acceptors on gaming machines because such devices are not permitted. Another example is Tasmania, where ATMs are not permitted in clubs and hotels. Such venues could be compared with other similar venues in Australia where ATMs are allowed.

(b) Metropolitan vs. Regional and Remote Comparisons

A similar issue applies to comparisons between larger metropolitan and regional areas. For example, in Australia, casinos are only located in medium to large metropolitan areas, so that the range of gambling forms available in regional and remote areas is usually more limited. As a result, it becomes somewhat meaningless or misleading to compare the prevalence of casino gambling between regional and metropolitan areas, or between jurisdictions with varying degrees of access to these types of gambling. For example, in Tasmania and the Northern Territory, casinos are located in both major urban locations (Hobart and Launceston, Darwin and Alice Springs) whereas, in Victoria, South Australia, New South Wales, and Western Australia, major regional cities do not have their own casinos. This means that any comparison of the gambling patterns observed across jurisdictions will need to take into account the fact that a greater proportion of the population in some States or Territories have access to casino gambling than in others.

(c) Variations in Gambling Features

Although there may be considerable similarity in the types of gambling available in different jurisdictions, there are some differences in terms of the specific nature and form of the activities. For example, as documented by the Australian Institute for Primary Care (AIPC) in an extensive review of Australian gaming technology, jurisdictions differ in terms of the availability of certain gaming machine features. Note acceptors are permitted on gaming machines in almost every State and Territory, except South Australia. In addition, there are also variations in the maximum prizes available on machines. In South Australian clubs and hotels, the largest prize that can usually be won on a gaming machine is \$10,000, whereas some States allow linked jackpots and progressive prizes that pay out many hundreds of thousands of dollars. In Queensland, the maximum bet on clubs and hotel-based machines is \$5, whereas it is usually \$10 in other States and Territories. These variations, most notably the absence of note-acceptors in South Australia, can create some challenges in generalising the findings of studies conducted in other States or Territories to South Australia, and vice versa. Any significant findings relating to the potential benefits of modifying or removing note-acceptors would have little relevance for South Australia.

(c) Venue size

A further factor that can influence the ability to generalize findings from one jurisdiction to another is the size of venues. Clubs and casinos differ considerably in size across the nation. In South Australia and Tasmania venues are restricted to a maximum of only 40 EGMs, whereas Victoria can have 105 per venue, and Queensland 280. In the Australian Capital Territory and New South Wales, clubs can have an almost unlimited number subject to an overall State-wide limit (Australian Gaming Council, 2006). Not surprisingly, larger venues tend to have much larger floor-space, staffing numbers, and turnover compared with smaller venues. Such differences in size can have a significant influence on the nature of gambling activity at the venues. Larger venues may be better able to afford newer machines; to have a greater number of progressive or linked jackpot machines; a greater capacity to develop and implement staff training policies relating to responsible gambling, but may find it difficult to keep track of the activity of individual patrons on the gaming floor.

(d) Venue distribution / Historical Location

Jurisdictions also differ in terms of the historical location of venues. In some States such as South Australia, EGMs licenses were issued to hotels and clubs which were historically located in specific locations. As a result, any correspondence that might appear to exist between certain demographic characteristics of local areas and the density of EGMs is, to some degree, coincidental. By contrast, in Victoria, it has been possible until recently for Tabcorp and Tattersalls, the duopoly that own the EGM industry in that State to base the location of machines more strategically. Machines can be located in areas where they are proving to be most lucrative, whereas, in South Australia, the machines follow the venues rather than potentially profitable population areas. Such differences mean that the interpretation of distributional analyses of EGM numbers undertaken in States such as Victoria and South Australia must be compared with caution. It is easier, for example, to argue that operators concentrate venues and EGMs in certain areas of Victoria because of their profitability, but more difficult to argue this in South Australia because many hotels have been in the same location for decades.

(e) Permissible activities

In addition to the types of gambling and machine features, there may also be differences in the range of activities that are permissible according to legislation. Not all jurisdictions (e.g., South Australia), for example, allow Autoplay features on Australian machines, and many do not allow players to gamble on more than one machine. Many jurisdictions do not allow cheques to be cashed at venues, or lines of credit to be extended to patrons. Thus, if one is conducting research into the aspects of venue operation that might influence problem gambling, one might not be able to generalise findings to other jurisdictions where such actions are strictly prohibited and therefore more difficult to perform.

(f) Codes of Practice / Regulatory Framework

States and Territories also differ in terms of relevant legislation relating to responsible gambling as appropriate codes of practice for industry. As reviewed in some

detail by Delfabbro, Nevile and McMillen (2006) and Delfabbro and LeCouteur (2007), some jurisdictions (e.g., South Australia, the Australian Capital Territory and Northern Territory) impose mandatory codes of practice that are enforced by legislation. These codes require gambling providers to conduct their business in a specified way, which usually includes a requirement that staff undergo responsible gambling training; that staff take some active role in assisting problem gamblers in venues; and that certain information about the product and help services is made available on site. Other states such as Victoria, New South Wales, Tasmania and Western Australia operate under voluntary or industry codes that are not subject to legislation, although staff in both Tasmania and New South Wales are required to undergo compulsory training. Queensland operates under a co-regulatory system in which appropriate responsible gambling measures are negotiated between industry groups, the non-Government sector and Government and then subjected to periodic audit and review.

These differences in responsible gambling provisions have several implications. The first implication is that jurisdictions differ in terms of the extent to which the government or regulatory bodies can enforce compliance with guidelines, and make changes to responsible gambling provisions. Mandatory codes can be altered by the regulator through legislative changes and then applied to the whole of industry, whereas voluntary codes will only change on the instigation of industry, the co-operation of members of peak industry bodies. A further issue is that industry codes will also only be effective if all gambling providers are members of the relevant peak industry body. Compliance with voluntary codes will often be more variable, so that it may be more difficult to generalise the findings based on one set of providers to the whole industry in that jurisdiction.

These factors have relevance to policy makers and researchers at a national level. If one jurisdiction, for example, develops a particular responsible gambling measure that proves to be highly effective, it may be easier to observe the effectiveness of the measure in jurisdictions with mandatory codes because all industry groups are required to comply with the measure. If a similar measure were attempted elsewhere where no similar code

existed, there is less guarantee that the industry would (a) Support the measure, and (b) Enforce it, and (c) Ensure that all members applied it consistently.

(g) Geographical Factors

Differences in the social and physical geography of different States and Territories can also have a significant impact on the findings and implications arising from gambling research. A number of studies have considered models for service delivery based on the development of specialist problem gambling treatment services, largely based in metropolitan regions. Such findings are likely to have little bearing on the experiences of people living in rural and remote locations (e.g., far north Queensland, or northern South Australia).

There are also variations in urban geography that need to be taken into account when attempting to translate research from one metropolitan area to the next. Although it might be possible to study gambling accessibility using similar methodologies in different parts of Australia, some cities differ from others in quite significant ways. For example, Canberra differs from other capital cities in that it is based around a series of urban nodes rather than a continuous urban sprawl as is the case in other cities. In contrast with a city such as Adelaide which has smaller clubs and hotels located in each of its districts, Canberra has a smaller number of very large membership based clubs located in particular urban nodes. Thus, although most patrons may come from local areas, there may also be a tendency for venues to be seen as destinations for gamblers living in other areas of Canberra. It may, therefore, be more difficult to draw clear associations between the residential location of patrons and the location of gambling venues.

1.6.4 Enhancing the Utility of Research

Although many different stakeholders make use of research findings, it is also the case that each has a particular focus or interest in the research. Those issues or considerations that might be important for one stakeholder may not necessarily be a principal consideration for another. Thus, it is useful to reflect on the principal needs of

different potential users of gambling research and how research might be best designed so as to be of greatest utility to each of them.

(a) Researchers

For researchers, the quality of scientific information is assessed in terms of three principal qualities: the quality of the research, the contribution to knowledge, and the replicability of findings. The first of these, research quality, refers to the extent to which the research adheres to the principles of validity and reliability described above, but also to the extent to which it influences other research activity. The degree of influence is often referred to as 'impact' and is reflected in the quality of the journal that publishes the paper, the number of times the article is cited or referred to by other authors, and by how much it influences the work undertaken by others. The second term, contribution to knowledge, refers to the extent to which the research builds upon, or advances, the ideas of others. Research that merely replicates findings that have been obtained many times before is generally regarded as less valuable than research that provides new insights, uses novel methodologies, or which provides new theoretical understanding of ideas. Some of this research is considered 'pure research' in that it is designed to enhance the theoretical or abstract status of knowledge, whereas other studies (often termed applied) are designed to generate findings that have some practical implication for the outside world. The final term, 'replicability' refers to the consistency of the research methodology used to generate the findings. Good scientific practice arises from the use of consistent methodologies which can be replicated by researchers elsewhere in the world, and which are written up and presented in such a way so as to make this possible.

(b) Policy-Makers

For policy-makers, it is also important that decisions are based on valid and reliable research. However, a much greater emphasis is placed on the external validity of findings; in particular, the extent to which they can be used to guide decision-making at a broader level. Policy-makers are less interested in theories, abstract findings, or studies that merely contribute to academic knowledge for its own sake. Instead, the principal interest lies in obtaining information that can be used to determine the nature and extent

of gambling problems in the community, e.g., How many people are affected? Who is most at risk? How many and what type of services are required to provide people with assistance? In what areas should such services be provided? What sort of interventions, regulations or changes should be brought about to assist people with gambling problems? Answers to these questions may come from large-scale prevalence studies, social and economic impact studies, geographical analyses, or community attitude surveys. In many cases, these studies may be nothing more than replications of similar work that has been undertaken in other jurisdiction. However, for this work to be useful, it must be representative of the different population groups that may be affected by gambling, and be of a sufficient scale to allow accurate estimates of the prevalence of problem gambling and its impacts.

(c) Counsellors and Service Providers

The needs of service providers are generally quite similar to policy-makers in that funding for services is often based on recognition of the broad nature of the problem as it exists in society. However, for findings to be useful to service providers, it is important that samples be representative of the types of people who are likely to seek assistance at agencies. Academic research that merely focuses on regular gamblers, students, or others who seldom gamble is of less use to counsellors. At the same time, service providers have a strong interest in research findings that provide insights into the social, psychological and cultural factors that give rise to gambling problems. Any theory or research study that provides insights into the causes of problem gambling may have important implications for the nature of treatments or interventions. For example, as will be described later in this report, many counsellors in Australia employ methods described from cognitive theory. The finding, for example, that problem gamblers hold more irrational views of gambling than others who gamble has led to the development of interventions involving the presentation of factual information relating to gambling odds, as well as information about biases, fallacies, and superstitious beliefs.

(d) Regulators

All of the above considerations are also relevant to regulators. As with policy-makers, regulatory organisations require research findings that can be generalised to diverse range of population groups, and which are practical and useful for decision-making. Gambling regulators are concerned with the nature and conduct of the industry and how this influences the well-being of the community. To what extent does the nature of gambling products, their availability, as well as the way what are provided to consumers effect gamblers and those around them? To answer these questions, regulators are interested in research that shows how specific decisions (e.g., changes in the nature of availability of gambling products) influence gambling behaviour and the related social and economic impacts. Regulators have to maintain a non-partisan position that takes into account the needs of different stakeholders, including gamblers, the industry, and service providers. Research therefore needs to be balanced. It should take into account the role of different gambling providers, provide insights into the specific impacts on problem gamblers, but also examine how policies, regulations, and industry practices influence all gamblers. Not all industry practices necessarily affect all gamblers or the industry in a consistent way. Some policies may reduce problem gambling, but also be excessively costly to industry, or significantly reduce the ‘consumer value’ of gambling to other patrons who may have no problems with their gambling. Thus, regulators are interested in findings that accommodate multiple perspectives, examine the effects of policies on different types of gambler, and which provide specific guidance concerning the appropriate regulatory response. Comparative studies undertaken either before and after a change is introduced, or which allow comparisons across jurisdictions with different industry and regulatory frameworks are considered particularly valuable because they allow the effects of variations in industry or regulatory activity to be compared.

1.7 Structure of this Report and Research Areas Considered

In this report, the analytical framework described above will be applied wherever appropriate to Australian gambling research as summarised in the Australasian review provided by Delfabbro and LeCouteur (2009) with a particular emphasis given to empirical studies that have appeared in the period 2003-2008. Less emphasis will be given to discussion papers and reviews, and attempts will be made to limit replication of

material provided in recent GRA reviews (e.g., on codes on practice, responsible gambling principles, and the identification of problem gamblers) (see Allcock et al, 2002; Delfabbro, McMillen, & Nevile, 2006; McMillen, 2006; McMillen & Toms, 1997; McMillen & Doherty, 1999, 2001; McMillen & Martin, 2001; McMillen, Doherty & Laker, 2001).

The analysis will be divided into several research categories based on the original ordering of material in the Australasian review, but with reference to material that is directly relevant to the National Research Priorities.

- **Chapter 2:** The prevalence of gambling and problem gambling in the general population and within specific population groups, including young and older people, Indigenous and culturally and linguistically diverse populations (Research Priority 1 and 6)
- **Chapter 3:** The characteristics of problem gamblers (demographics, behaviour, attitudes), including the impacts of problem on them and the broader community and theories used to explain problem gambling (Research Priority 4)
- **Chapter 4:** EGM technology and its effects on gambling and problem gambling (Research Priority 2)
- **Chapter 5:** Early intervention strategies and help-seeking behaviour (Research Priority 3; The nature of interventions and services and their effectiveness in reducing problem gambling (Research Priority 5)
- **Chapter 6:** Economic, social and geographical impact studies (Research Priorities 3 and 4)

A final chapter (Chapter 7) will then consider the extent to which the existing research base can be used to inform the current National Research Priorities. It will

examine what information is currently available in relation to each identified area of research, and to what extent is this material capable of informing these issues at a national, or inter-jurisdictional level. Based on a review of the current available level of knowledge, the report will then examine: (a) The nature and range of issues that need to be taken into account in designing and selecting suitable projects to address the National Research Priorities and (b) How future research projects might be designed so as to be scientifically credible, comparable across jurisdictions, and useful to different stakeholders within each of these identified areas.

Chapter 2: The Prevalence of Gambling and Problem Gambling Within Australia

2.1 Overview

The purpose of this chapter is to summarise the findings from a variety of national and State-based studies that have examined the prevalence of gambling and problem gambling within the broader community. The second part of the chapter examines these issues in relation to specific groups within the community, including young people, the elderly, Indigenous people, and other culturally and linguistically diverse communities.

2.2 Prevalence Studies in Australia: Methodology

Almost everything that is known about the prevalence of gambling in Australia is derived from community prevalence studies. In the early 1990s, these studies used either one of two techniques; namely, randomized door knock sampling or telephone surveys, whereas almost all surveys since 1995 have been telephone-based. The methodology used in these surveys has been very consistent. Large samples of residents aged 18 or more years who have White Pages listings have been conducted and asked to respond to a series of questions relating to “leisure activities”, “health-related behaviours” or gambling. Sampling within households has usually been truly random (based on a random number generator to identify the *i*th oldest adult) or based on pseudo-random methods such as the last-birthday sampling technique. All respondents are asked a series of general questions about gambling. Those who gamble are asked a more specific series of questions about their gambling, whereas regular gamblers (defined as those who gamble sufficiently frequently on a designated range of activities) are administered a series of questions relating to their gambling habits.

A summary of the major studies is provided in Table 2.1. Table 2.1 shows that prevalence studies have been conducted in all Australian jurisdictions at some point in time. All States and Territories were included in the national telephone survey conducted by the Productivity Commission in 1999, whereas individual jurisdictions have differed in terms of the frequency, scale and timing of their own individual surveys. A careful scrutiny of Table 2.1 gives rise to several important observations about Australian

prevalence research and the extent to which it can be used to conduct inter-jurisdictional or longitudinal comparisons.

- Since the early and mid-1990s, there has been a transition from a combination of door-knock and telephone surveys to an exclusive use of telephone surveys.
- The general scale or quality of surveys has gradually improved over time. In the 1990s, most surveys had sample sizes of only 1000-2000, whereas most recent surveys have obtained very large samples (e.g., 30,000 in Queensland in 2003-2004). This means that one can probably be much more confident about the accuracy of the estimates of prevalence and gambling participation provided by more recent surveys. In samples of over 10,000 adults, the standard errors around prevalence estimates will be relatively small compared to those obtained in earlier surveys.
- A lot more is known about prevalence in some jurisdictions than others. Surveys have been conducted in Tasmania for around 15 years, whereas there is relatively little recent prevalence information for Western Australia. No survey has been conducted in WA since the Productivity Commission in 1999.
- Queensland and South Australia have conducted the largest surveys with the lowest standard errors, but only Queensland and Tasmania (because of the repeated use of the CPGI) have the capacity to compare prevalence estimates at different points in time.

Table 2.1 Summary of Australian inter-jurisdictional prevalence research

Jurisdiction	Year	Sample Size	Method	Measure of Problem Gambling	Author / Organisation
NSW	1995	1390	Door-knock	SOGS	AIGR
	1997	1209	Door-knock	SOGS	AIGR
	1999	n.a.	Telephone	SOGS	PC
	2006	5029	Telephone	CPGI	AC Nielsen
VIC	1997	2000	Telephone	SOGS	Market Solutions & Dickerson
	1999	n.a.	Telephone	SOGS	PC
	2003	8479	Telephone	SOGS CPGI	McMillen et al. (2004)
QLD	1999	n.a.	Telephone	SOGS	PC
	2001	13,082	Telephone	CPGI	Queensland Treasury
	2003	30,000	Telephone	CPGI	Queensland Treasury
	2007	30,000	Telephone	CPGI	Queensland Treasury
SA	1996	1206	Telephone	SOGS	Delfabbro & Winefield
	1999	n.a.	Telephone	SOGS	PC
	2001	6045	Telephone	SOGS	DHS (SA)
	2005	17,140	Telephone	CPGI	Dept Health
TAS	1994	1220	Door-knock	SOGS	AIGR

	1996	1211	Telephone	SOGS	AIGR
	1999	n.a.	Telephone	SOGS	PC
	2001	1223	Telephone	SOGS	Roy Morgan
	2005	6048	Telephone	SOGS CPGI	Roy Morgan
	2007	4051	Telephone	CPGI	University of Adelaide/ SACES
WA	1994	1253	Door Knock	SOGS	AIGR
	1999	n.a.	Telephone	SOGS	PC
NT	1999	n.a.	Telephone	SOGS	PC
	2005	1873	Telephone	SOGS CPGI	Young et al.

Notes: AIGR = Australian Institute for Gambling Research (Dickerson et al.), PC = Productivity Commission, SOGS rate = Scores 5+, CPGI = Scores 3-7 (moderate risk) / 8+ (problem gambling)

Summary of Data Sources [Publication dates]:

1. *National*: National: Productivity Commission (1999)
2. *New South Wales*: Dickerson, Allcock & Baron *et al.* (1996), Dickerson, Blaszczyński, Nicholls, Williams, Maddern (1998), ACNielsen (2007).
3. *Victoria*: Market Solutions & Dickerson (1997); McMillen, Marshall, Ahmed, & Wenzel (2003)
4. *Queensland*: Queensland Government (Treasury) (2002, 2007)
5. *South Australia*: Delfabbro & Winefield (1996), S.A. Department of Human Services (2001), S.A. Department for Families and Communities (2006)
6. *Tasmania*: Dickerson, Walker & Baron (1994), Dickerson & Maddern (1997), Roy Morgan Research (2001, 2005), SACES and the University of Adelaide (2008)

7. *Western Australia*: Dickerson, Baron & O'Connor (1994)
8. *ACT*: McMillen, Tremayne, & Masterman-Smith (2001)

All survey data are usually post-weighted by a variety of factors including the gender, age and area composition of the sample, as well as the probability of selection within the household. Any segment of the population that is harder to recruit (e.g., males, or people aged 18-24 years) are, in effect, treated as more important in final analyses by counting them as more than one person or 'case'. For example, a male aged 18-24 years might be treated as 3-4 'cases', whereas older females (easy to recruit) might be treated as only .3 cases. Some surveys also weight the data according to the probability of completing the survey after the initial screening questions have been conducted to reduce potential biases caused by the selective loss of regular gamblers from the latter parts of the survey (McMillen et al., 2003); however, such more complex weighting methods are used rarely.

Table 2.2 summarises the results from a number of recent prevalence studies. These studies have shown that around 70-90% of Australian adults gamble at least once per year, although more recent studies appear to be obtaining figures closer to 70% rather than over 80% as indicated by the Productivity Commission. Participation rates for individual activities vary significantly depending upon the type of activity and the jurisdiction. Around two-thirds of people in Queensland gamble on lotteries, as compared with only just over a half in SA and in the NT. EGM participation rates appear to be generally similar across the country, but appear to be lower than in the Productivity Commission survey (closer to 30% than 40%). The rates of horse-racing and casino game participation also tend to be similar across jurisdictions, although figures again appear to be somewhat lower than in the Productivity Commission survey. The NT has the highest rate of casino participation (10%) and this may be due to the fact that a very high proportion of the population lives in proximity to two urban centres (Darwin and Alice Springs) that both have their own casinos.

Table 2.2. Comparative participation rates in different jurisdictions [Source: Delfabbro, 2007)

	PC (1999)	QLD (2007)	NSW (2006)	SA (2005)	NT (2006)
Overall	82	75	69	70	73
Lotteries*	60	62	56	52	53
EGMs	39	30	31	30	27
Scratchies*	46	25	n.a.	24	29
Horse Racing	24	16	20	19	19
Keno	16	16	11	8	23
Sports	6	5	8	4	5
Casino games	10	5	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.

In terms of regular gambling (usually defined as weekly or more often), studies show that around a quarter of the population buys lottery tickets, around 4-5% gamble on EGMs, but that relatively few gamble (1-3%) on any other single activity at this frequency. Only around 10% of people gamble at least once per week on anything other than lotteries or scratch tickets. The findings therefore suggest that the vast majority of regular gambling is being undertaken by only a relatively small proportion of the population.

Although some obvious variations exist across jurisdictions (e.g., no EGM gambling is available outside the Burswood Casino in Perth), the consistency of these estimates across the country suggest that State-based prevalence studies of gambling behaviour are quite comparable at a national level. As discussed above, an important

reason for this is that all recent surveys have been of a sufficient magnitude so as to provide only a limited margin of error (standard error) around the estimated proportions. All major prevalence surveys conducted since 2000 have involved samples of over 6000 cases with many having more than 15,000. Even if the sample were only 5000, the margin of error around proportion estimates would usually only be slightly more than 1%, so that users of this research can be reasonably confident that the vast majority of these figures provide valid and reliable estimates of the number of people gambling in Australia.

The only area in which one must express caution is in relation to gambling on very uncommon activities (e.g., the Internet, mahjong), or estimates of very regular gambling (e.g., how many people are gambling more than once per week) on less “popular” activities. Such figures are likely to be reliable when they apply to lotteries or EGM gambling, but less reliable when applied to activities such as sports-betting, casino games, or other activities with overall participation rates that are 10% or lower. If only 2-3% of the population gambles this frequently, a 1% margin of error can lead to a 33%-50% change in the estimated numbers of gamblers, and this is may not be sufficiently accurate to allow decision-making, or comparisons across time, e.g., If a casino added additional tables, or expanded its operations, one would find it difficult to determine to what extent this would influence regular casino gambling. One should not therefore place too much emphasis on very refined participation figures in relation to activities of this nature. A more effective strategy might be to undertake a pre- and post-survey of a substantial and established sample of regular casino patrons to determine whether changes in casino operation had led to any changes in their behaviour.

A similar caveat applies to attempts to compare or breakdown frequency data across very refined demographic categories (e.g., 8 age groups, marital status, employment type, ethnicity), geographical areas, or other similar variables. Such analyses should be undertaken with great caution because of the lack of statistical power, and the potential influence of only a few cases in comparative percentages. For example, if the

base sample size for comparisons is around 10 cases, a difference of three cases will yield a 30% difference in percentages.

2.3 Variations in Sub-sampling

In Australian prevalence surveys it is rare for all respondents to complete the entire survey. Instead, only those who are identified as regular gamblers (usually non-lottery) will complete specific questions about problems related to gambling. The justification for this methodology arose from studies in the early and mid 1990s which showed that the prevalence of problem gambling is quite low in non-regular gamblers, and especially in those whose only gambling might involve the purchase of a lottery ticket on a weekly basis (see Productivity Commission, 1999 for a review). Accordingly, to reduce costs and enhance the efficiency of surveys, it was seen necessary to focus attention on that subset of the total sample who were *most likely* to be problem gamblers.

In most surveys conducted during the 1990s, the term regular gambler referred to anyone who gambled at least once per week on any single activity other than lottery products and bingo. In 1999, the Productivity Commission in its national survey, extended this methodology to include, within the sample of 'regular gamblers', anyone whose total non-lottery gambling added up to 52 or more times per year. Such methods have been used in studies conducted within the ACT (McMillen, Tremayne, & Masterman-Smith, 2001), Victoria (McMillen et al., 2003), and Tasmania (Roy Morgan Research, 2001, 2005). By contrast, studies undertaken in South Australia and Queensland have followed a different methodology (Queensland Government (Treasury), 2002, 2007; S.A. Department of Human Services, 2001; S.A. Department for Families and Communities, 2006). In South Australia, all fortnightly gamblers were treated as regular gamblers on the grounds that many problem gamblers are likely to spend their money on the fortnightly basis because this usually corresponds with pay-days for pensions, salaries, and other Government allowances (S.A. Department of Human Services, 2001). In Queensland, all gamblers (irrespective of the type of gambling) were administered the CPGI, whereas impact questions were only administered to 'high risk' gamblers, defined as those with a CPGI score of five or greater (Queensland Government

(Treasury), 2002). This cut-off score did not correspond with the recognised cut-offs on the CPGI (3-7 for moderate risk, and 8+ for problem or high risk).

It is unclear to what extent this variation in sampling influenced problem gambling rates in the two surveys. In the 2001 South Australian study, for example, there is no breakdown of problem gambling rates by gambler status (weekly vs. fortnightly gambler), but it would be likely that at least some fortnightly gamblers would be problem gamblers and this would increase South Australian prevalence estimates. At the same time, the lack of inclusion of any 'regular gamblers' classified based on having gambled 52 or more times per year (i.e., those who were not at least fortnightly on non-lottery products) may have reduced the prevalence rate if any of these people had problems with their gambling. Similar issues apply to the Queensland survey.

Accordingly, further analysis or inspection of the South Australian and 2001 Queensland survey data needs to be undertaken to determine the extent to which these competing factors may have influenced the prevalence rate as compared with other States. One would need to examine: (a) The prevalence rate only among weekly gamblers, and (b) Determine how many 52+ times per year non-lottery gamblers were not included in the regular sample based on fortnightly selection. Such analyses would need to be undertaken before comparing South Australian and Queensland results with recent surveys conducted in other jurisdictions. Although other surveys are generally comparable, caution nonetheless needs to be applied in comparing studies conducted at different points in time, or which use different measures (see below).

2.4 Conceptualisation of Problem Gambling

In the late 1990s, several attempts were made to define problem gambling for the purposes of research and policy within Australia. One of these was provided in a review by Dickerson, McMillen, Hallebone, Volberg, and Wooley (1997), and the other by the Productivity Commission (1999). Both of these research teams defined problem gambling in terms of the degree of harm caused by gambling. In other words, a person could only be described as a problem gambler when it gave rise to significant harm to the

person, those around them, or the broader community. On the whole, this harm-based definition is consistent with a public health approach to gambling because it recognises that the purpose of policy is to reduce the harmful impact of a disorder on individuals and the community. By contrast, in other countries, most notably the United States, researchers have often preferred the term ‘pathological gambling’ because many researchers subscribe to a more ‘traditional’ / medical or addiction-based approach to gambling research. According to this definition, pathological gambling is seen as a disorder associated with cravings, withdrawal, uncontrollable urges as well as difficulties in achieving impulse control. Most measures and methods (e.g., DSM-IV SOGS, CPGI) that have been developed to diagnose or screen for the disorder are based on the pathology model, although one of these, namely the SOGS (Lesieur & Blume, 1987), has contributed to confusion in the literature by also including a definition of ‘problem gambling’. Rather than conceptualising ‘problem gambling’ as a harm-based concept, the SOGS treats it as a lesser form of pathological gambling. Those who score above a certain level on the scale are ‘pathological gamblers’, while those who score lower are only ‘problem gamblers’. This situation has led to a lack of clarity concerning the appropriate terminology that might be used in Australia to conceptualise people who experienced difficulties with their gambling.

To explore this argument in more detail, Gambling Research Australia commissioned a critical analysis of definitions and measures of problem and pathological gambling (Neal, Delfabbro, & O’Neil, 2005). In this review, different theoretical and operational conceptualisations of problem gambling were examined along with the current measures available to assess problem gambling within the community. The authors concluded that harm was an essential element of problem gambling, although pointed out that a purely harm-based definition was also not entirely satisfactory in that it did not necessarily capture all problem gamblers. If harm was the sole criterion, then any person who was gambling in a way that might be harmful to them in the near future would not be classified as a problem gambler, even though the person’s behaviour might indicate otherwise. A person could have a pathological desire to gamble, be unable to control their expenditure, be consistently preoccupied with gambling, and spending all their time

gambling, but not be classified as a problem gambler until their behaviour came to cause harm. For this reason, Neal et al. (2005) proposed a broader definition that incorporated the broad antecedents to problem gambling as well as harm:

“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).

The focus of this definition is on problem gambling as an activity that arises from the actions of individuals, but it is important to recognise that this does not necessarily imply that the causes of problem gambling lies with the individual. Problem gambling can just as easily be conceptualised as a phenomenon that arises from the interaction between people and communities and a range of products that create opportunities for excessive expenditure and the development of various forms of harm. However, it is recognised that industry products do not of themselves cause problem gambling because most people who gamble do not experience any difficulties with gambling. Instead, problem gambling arises because certain people come to spend an excessive amount of time and money gambling. The extent to which this occurs can be influenced by a variety of industry factors including the accessibility of gambling, characteristics of gambling products and venues, cultural acceptability, affordability (e.g., a person’s disposable income), and the prevailing nature of government policy and regulatory provisions as shown in the diagram below (Figure 2.1).

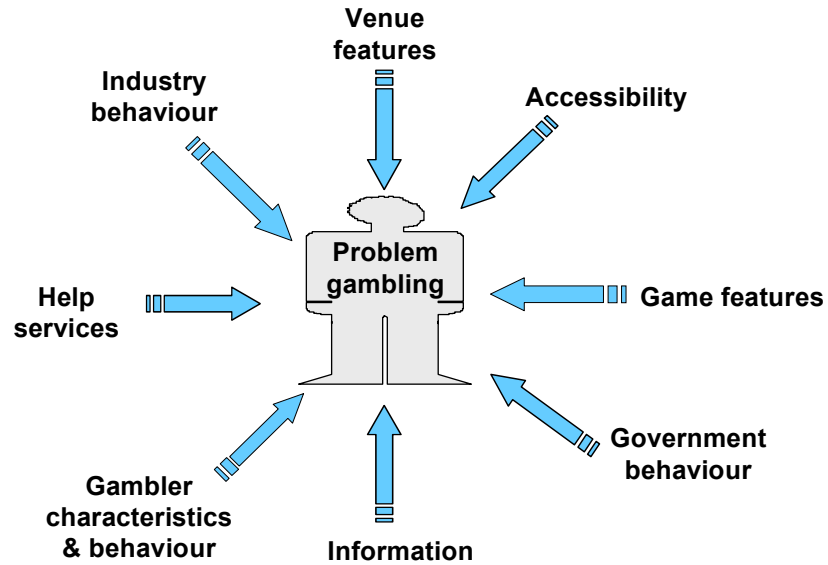


Figure 2.1 Factors that influence problem gambling (Productivity Commission, 1999)

From an inter-jurisdictional point of view, this definition encourages a focus on both the causes and effects, but maintains harm as a central element in the conceptualisation of problem gambling. The principal causes of problem gambling include the factors listed above (policy, regulatory provisions, the nature of gambling products and venues), but also the actions of the gambler as well: how often the person gambles, how they gamble, in what context, what types of gambling, and using what strategies? In this sense, this definition accords with the needs of different users identified in Chapter 1:

- Researchers who attempt to understand the causes and effects of problem gambling;
- Regulators who attempt to minimize harm by addressing the factors that contribute to patterns of gambling activity that are, in turn, linked to harm (e.g., easy access to cash facilities, credit at venues, playing two machines at once, bill acceptors);

- Policy makers who try to draw links between changes in the accessibility of gambling, gambling behavior and the prevalence of problem gambling;
- Service providers who try to address the harms caused by gambling and also alter the sorts of behaviours, circumstances or dispositional states that lead to harm (e.g., strong urges to gamble, anxiety, depression).

2.5 Measurement of Problem Gambling

The Australasian gambling review provides a comprehensive review of a range of psychometric measures that have been developed both nationally and internationally to screen or diagnose people as problem or pathological gamblers. These measures include the DSM-IV diagnostic criteria for pathological gambling, the South Oaks Gambling Screen (SOGS) (Lesieur & Blume, 1987), Victorian Gambling Screen (VGS) (Ben-Tovim, Esterman, Tolchard, & Battersby, 2001), Canadian Problem Gambling Index (CPGI) (Ferris & Wynne, 2001) and other shorter screening methods. The review also makes reference to the comprehensive critical appraisal of psychometric measures undertaken by Neal, Delfabbro and O'Neil (2005) which examines the validity and reliability of measures as well as their utility from the perspective of different potential users.

As emphasized in the Neal et al. report, the choice and use of psychometric instruments has very important implications for the validity and comparability of research conducted using different samples, in different contexts, and in different jurisdictions. If some measures have questionable psychometric properties when used in specific contexts, it is difficult to rely upon those figures as estimates of the population or sample with gambling-related problems. Similarly, if measures differ from one study to another, it is unclear whether prevalence rates can be compared, even if one is confident about the psychometric properties of the instruments.

The Neal et al. report reviewed a range of Australian articles and studies that have examined the validity and reliability of the most commonly available instruments (e.g., Battersby, Thomas, Tolchard, & Esterman, 2002; Jackson, Thomas, Blaszczynski, &

McMillen, 2003; Wenzel, McMillen, Marshall, & Ahmed, 2004). It concluded that only the SOGS, CPGI, VGS and DSM-IV have been sufficiently validated for use in research studies within Australia, but that each should be used in a manner consistent with the purpose for which it was developed. The CPGI (see Table 2.2), for example, was developed in Canada for use in community prevalence surveys and provides a continuum of risk scores ranging from problem gambler (scores of 8 out of 27 and higher), moderate risk (scores of 3-7), low risk (scores of 1-2) and no risk (a score of 0). These characteristics have led to greater confidence that, unlike the DSM-IV or SOGS, the CPGI is an appropriate measure of problem gambling as might be conceptualised by a public health approach to the disorder. However, recent critiques by Svetieva and Walker (2008) suggest that such a conclusion needs to be drawn with caution. Although the CPGI has been validated in population samples, its conceptual basis was the addiction/impulse control model described in the DSM-IV. The CPGI contains several items that refer to 'addiction processes' including tolerance and withdrawal and only two items specifically refer to harm. For this reason, Svigney and Walker argue that there is a conceptual mismatch between the national definition and the CPGI. Whereas the national definition refers to harm and tries to avoid reference to any particular clinical model of problem gambling (e.g., by avoiding terms such as compulsive or control), the CPGI is very much framed around a theoretical framework that is not entirely accepted in Australia.

The important policy implication of Svigney and Walker's argument is that existing estimates of problem gambling obtained using the CPGI may be misleading in that they may not capture the type of problem gambler identified under the national definition. That is, prevalence surveys may be estimating the proportion of the population that has a gambling-related pathology, but not necessarily the proportion who are experiencing significant gambling-related harm. Although there may be some truth in this assertion, it is also important to recognise that this is only a hypothesis based on conceptual difficulties with the measure. In reality, it may be that those who experience significant pathology as measured by the CPGI also typically tend to experience harm, so that the CPGI provides a useful adjunct for a true harm-based measure. In other words,

the CPGI may be reasonably successful in identifying which people in the population are most likely to be experiencing harm even if the measure itself does not contain very many harm items. This argument is, to some extent, supported by research into gambling-related co-morbidities. Much of this research has shown that those who score in the problem range on the CPGI also typically experience some form of harm associated with their gambling. For this reason, it is hoped that the recently commissioned Gambling Research Australia project relating to problem gambling and co-morbidities will be capable of providing further evidence supporting the relationship between CPGI classifications and the severity of various forms of harm.

Despite these conceptual concerns, there is little doubt that the CPGI generally performs well as a psychometric instrument. This was demonstrated, for example, in a study conducted by Wenzel et al. (2004) in Victoria. In this study, the performance of the CPGI was compared against the SOGS which had been used in almost all previous prevalence studies in Australia since the early 1990s. The study also included the VGS, the only Australian-based measure, developed in the late 1990s by a team of South Australian researchers (Ben Tovim et al., 2001). Each scale was separately administered to separate samples of regular gamblers and then subjected to psychometric analysis.

All scales were found to have good internal reliability, but the SOGS was rated lower on most other criteria: items were less variable, it was multi-factorial, did not provide a clear distributional cut-off point, and appeared to over-state the prevalence of problem gambling when used with a five point cut-off score. Both the CPGI and VGS performed well on most psychometric testing, although the researchers were of the opinion that the VGS cut-off score was too high and needed to be revised. The CGPI was eventually favoured because it shared all of the positive psychometric features of the VGS, but had a clearly defined cut-off scores, provided a grade series of risk levels, and was very efficient (only 9 items) (Wenzel et al., 2004). Based on these findings and other general assessments of the two scales (Neal et al., 2005), CPGI is now recognised as the measure of choice for all Australian prevalence research. Consistent use of this measure

will strengthen the capacity to conduct longitudinal and well as inter-jurisdictional comparisons of problem gambling prevalence rates.

Several studies have now used this measure in prevalence studies (Queensland Government (Treasury), 2002, 2007; Roy Morgan Research, 2005 in Tasmania; and Wenzel et al., 2004 in Victoria). All of these studies are comparable in that the scale was administered with ‘a last 12 months’ time frame, did not modify the question wording or formats, and administered it to sub-samples of gamblers selected using the same criterion (i.e., weekly or more often gambling on non-lottery forms of gambling and/ or a total participation rate that is equivalent to 52 or more times per year). For these reasons, current prevalence research provides policy-makers and regulators some guide as to how problem gambling varies across the country and how this might be influenced by broader variations in the availability and nature of gambling products in each jurisdiction.

Table 2.2

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.

Now that the CPGI has been recognised as the accepted measure for population surveys in Australia, it is important to recognise that caution needs to be applied when drawing comparisons with previous studies undertaken using the SOGS. On the whole, the SOGS yields estimates of problem gambling that are lower than the CPGI. This conclusion has been borne out in studies that have administered both measures in the same survey. Wenzel et al. (2004) in Victoria administered the scales to samples of regular gamblers. The prevalence of problem gambling obtained using the SOGS was 1.22% (cut-off of 5+ out of 20) as compared with 0.88% obtained for the CPGI (scores of 8+ or problem gambler). Similar results have been obtained in other studies that have employed both the CPGI as well as the SOGS in the same survey (Roy Morgan Research, 2005 in Tasmania, and Young et al., 2005 in the Northern Territory). In Tasmania, 0.73% of regular gamblers were classified as having a gambling problem by the CPGI vs. 1.06 for the SOGS, whereas in the Northern Territory the CPGI rate was 0.64% compared with 1.06 for the SOGS. In other words, it is important when interpreting gambling research findings across time, to understand that differences in problem gambling prevalence rates can be influenced by the measures used as well as variations in the sample. The CPGI generally yields lower estimates of problem gambling than the previously used SOGS. Different surveys may also, just due to change, happen to sample a greater proportion of problem gamblers in some years rather than others. Thus, while prevalence surveys have proved useful ways to examine broad changes in gambling availability, expenditure and regulations over time, there is recognition of the need to supplement these studies by conducting longitudinal analyses. Such studies would involve tracking the same people over time using identical measures so as to obtain a clear sense of the relationship between changes in gambling in the community and self-reported behaviour.

The Neal et al. report also points out that prevalence studies are not the only context in which measures might be applied. In some contexts, for example, it is possible that all four measures (SOGS, CPGI, VGS, DSM-IV) could potentially be used. Both the SOGS and VGS, for example, can be usefully employed in research studies to

differentiate between people with gambling problems and those without these problems, or as full-scale scores to examine the correlation between problem gambling and other constructs. Each was designed as screening tools and are easily completed by respondents in a pencil and paper form. By the same token, if there is interest in determining the extent to which a sample is representative of the general population, the CPGI can also be used for the same purpose, and would have the additional advantage of allowing greater differentiation between varying degrees of risk. By contrast, the DSM-IV differs from other measures in that it is a formal diagnostic tool that should usually be administered by a trained clinician in a treatment setting. Such information may be required for court processes, psychiatric treatment or medical treatments, and in situations involving disruptions from work or study where formal evidence of the pathology may be requested. Although the DSM-IV assessment can be undertaken using several different structural interviews (e.g., one is currently available from the Centre of Gambling Research at the University of Sydney), the same items and principles should apply across all Australian jurisdictions (Walker, Anjoul, Milton, & Shannon, 2006).

2.5.1 Future Directions in Measurement

A general complaint directed at most psychometric measures of problem or pathological gambling is the absence of a clear theoretical or conceptual framework. As indicated above, measures such as the SOGS and CPGI were largely borrowed from the conceptual framework inherent in the DSM-IV, but also contain a number of other miscellaneous items relating to over-involvement or borrowing money. Accordingly, these problems have led some researchers (e.g., Blaszczynski, Ladouceur, & Moodie, 2008) to consider the design of alternative measures which contain items specifically related to the core elements of pathological gambling. In their view, all measures should have the ability to capture three core elements: the presence and severity of harm, impaired control over gambling and the person's need for formal assistance. To investigate this notion, the authors developed a short instrument called the Sydney-Laval Universities Gambling Screen (or SLUGS). The screen comprised only 6 items, each of which was scored on a 0-100 scale where 0 = Never / Minimal up to 100 = Always/ extreme. Four items related to impaired control (unable to resist the urge to gamble,

gambling more money than intended, spending more time / leisure than intended), another asked the person to rate the extent of their problems caused by gambling and a final question asks respondents to indicate to what extent they need help for their gambling. The authors argued that this type of measure is desirable because it avoids having to estimate the presence of harm based on some nominal level of monetary or temporal involvement. Instead, harm is defined in relative terms. Different people are free to provide equally high ratings despite having different objective levels of involvement.

Based on a sample of 2068 staff and students at various Scottish universities, the authors found that SLUGS items were positively (moderately to highly) correlated with SOGS scores suggesting that people who scored highly on one scale also scored higher on the other. Impaired control was found to be a common feature of pathological gambling, but less common in other gamblers. Spending more money and time was common in SOGS classified pathological gamblers (50% had this experience on 50%+ times they gambled) and 44% of pathological gamblers had at least a moderate need to seek help for their gambling problems. Few non-pathological gamblers indicated having problems associated with their gambling. These results are encouraging in that they support the core elements of the current national definition in Australia, but also indicate that impaired control and general indicators of harm should also be included in future prevalence and impact studies. In this sense, this research underscores the importance ascribed to harm in the 1999 Productivity Commission report, but indicate that measures of specific types of harm should be supplemented by general subjective measures that capture the relative nature of this concept.

2.6 Prevalence of Problem Gambling

The Australasian Gambling Review provides a detailed summary of the major prevalence studies conducted since the 1990s in Australia. The results are further categorised according to whether they were undertaken using the SOGS, VGS or CPGI. As shown in Table 2.4 (reproduced from the review), recent research has adopted the CPGI as the principal screening tool for prevalence studies. Scores in the problem or 8+

range on the CPGI are generally lower than 5+ scores on the SOGS, although exact comparisons are difficult to make because of the different years and jurisdictions. On the whole, the findings show that:

- There is no evidence that using telephone surveys yields any lower estimates than more expensive door-knock methodologies. The AIGR conducted both types of survey in Tasmania in the 1990s and found higher estimates of prevalence using a telephone survey methodology. The reverse had been predicted when the survey had been conducted (personal communication).
- Prevalence estimates have tended to be very unstable, particularly in the earlier surveys with the smaller sample sizes. For example, it is difficult to draw any conclusions about trends in problem gambling within Tasmania because the figures differ significantly from one year to the next (even after taking account the differences in measures).
- Current prevalence studies do not indicate strong differences in prevalence rates between jurisdictions. The results suggest that rates are lower in WA (but being mindful of the age of these data), but recent studies do not any clear differentiation of the other jurisdictions, apart from a suggestion that problem gambling rates might be lower in SA than in NSW, QLD and VIC. However, the quality, timing and consistency of recent studies means that the studies are reasonably comparable and could be used to inform inter-jurisdictional comparisons.
- There is also little evidence of a clear linear growth in problem gambling rates in line with increases in gambling expenditure, or that States with the highest per capita expenditures (currently the NT and NSW) have clearly the highest problem gambling rates.

- Comparison of prevalence rates is difficult because of the different measures that have been used. The CPGI 8+ scoring typically yields lower estimates than SOGS 5+. In addition, not all surveys have been conducted in the same years. The Productivity Commission's WA prevalence estimate is now almost 9 years old. It also must be recognised that prevalence surveys are only cross-sectional or point in time estimates. The same participants do not complete the survey in different years. Queensland is the only jurisdiction where some attempt has been made by the State Government to assess the prevalence of problem gambling using the same participants at different points in time (see below).

Table 2.4 (adapted from Delfabbro & LeCouteur, 2009)

Summary of selected State-level prevalence figures across time

	Time 1	Time 2	Time 3
Using SOGS 5+			
NSW	2.59 (1995)	2.89 (1997)	2.55 (PC, 1999)
VIC	0.75 (1997)	2.14 (PC, 1999)	1.22 (2003)
ACT	2.06 (PC, 1999)	1.90 (2001)	-
QLD	1.88 (PC, 1999)	-	-
SA	1.24 (1996)	2.00 (2001)	-
TAS	0.90 (1994)	0.44 (PC, 1999)	0.90 (2000)
WA	0.56 (1994)	0.70 (PC, 1999)	-
NT	1.89 (PC, 1999)		
CPGI Score 3-7/ 8+			
QLD	2.7 / 0.83 (2001)	2.0 / 0.55 (2003)	1.80 / 0.47
VIC	0.91 / 0.88 (2003)		
NSW	1.60 / 0.80 (2006)		
SA	1.20 / 0.40 (2005)		
TAS	1.02 / 0.73 (2005)	0.86 / 0.54 (2007)	
NT	n.a. / 0.64 (2005)		

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).

All prevalence research by its very nature provides only a point in time estimate of the estimated number of problem gamblers within the community. Such surveys do not provide any information concerning the incidence of problem gambling; that is how many develop problems with gambling, or stop being problem gamblers, over a designated period of time. For this reason, some recent findings from the Queensland Household surveys are of particular interest because they provide some unique insights into the changing status of gamblers over time. In 2005, the Queensland Treasury successfully re-contacted 1748 people who had originally been surveyed as part of the 2003-2004 Queensland Household Gambling survey (56% response rate). All of these people had previously been administered the CPGI, so it was possible by administering this instrument again either 12 or 18 months later to determine how stable their 'status' had remained over time. The results showed that 72.6% of people remained in the same CPGI category as in the previous survey, 14.3% had moved into a higher risk group, and 13.1% had moved into a lower risk group. Only 52% of people who had previously been classified as problem gamblers were still problem gamblers at the follow-up point, whereas 14% of the moderate risk group moved into the problem gambling group (Haworth, 2005).

These results have many important policy implications. First, they suggest that prevalence estimates probably do not provide a strong guide to the likely increase in problem gamblers within the community over time and, therefore, the likely number who might seek assistance (assuming this a fixed proportion of the total number of PGs in the community). Second, it casts doubt on the stability of problem gambling estimates as based on using methodologies. Third, it suggests that a substantial proportion of people are either inconsistent in their responding over time, or find ways to overcome their gambling problems, very likely without assistance. These findings may have implications for the importance of natural recovery as a mechanism that explains why so few problem

gamblers seek assistance. It also emphasises the potential importance of studying natural recovery processes in their own right to learn how problem gamblers deal with their problems over time without formal interventions (assuming this is the case for many who changed status).¹

2.7 Assessment of Current Prevalence Research

Almost all current prevalence studies undertaken in Australia are of the highest standard. Sample sizes are generally large (some as high as 30,000 as in Queensland), appropriate statistical and weighting procedures are used, and consistent measurement tools such as the Canadian Problem Gambling Index are used in each study. This means that many of the findings (e.g., relating to gambling prevalence, community attitudes towards gambling, or awareness of services) is likely to be quite accurate and could be generalised to the vast majority of the Australian population. However, despite these many positive features, it is important to be mindful of several challenges that are faced by researchers undertaking these studies.

First, prevalence studies conducted using telephone surveys are very expensive and may not be the most efficient way to recruit large numbers of problem gamblers. To obtain significant samples of problem gamblers for more detailed examination or for tracking over time, one needs to obtain very large samples. For example, if less than 1% of the population are problem gamblers, one would need a sample of 20,000 people to obtain 200 problem gamblers. Second, there is some evidence to suggest that problem gamblers may be less likely to respond to telephone surveys than other people. Surveys conducted by service providers have shown that problem gamblers are more likely to have silent numbers, or are more likely to have their phones disconnected due to unpaid bills. Although random-digit dialling methods can be used (i.e., one rings random phone numbers rather than only those listed in the White-Pages) to circumvent the silent number problem, it is possible that those with silent numbers will resent the intrusion and may not be amenable to responding to the survey even if they were contacted. A third challenge is

¹ The Victorian Government has funded a large-scale longitudinal study into the prevalence and incidence of problem gambling. This project has the potential to provide further information concerning the changing status of problem gamblers over time.

that problem gamblers may not be willing to respond truthfully to surveys. Evidence in support of this view was obtained by the Productivity Commission in 1999 as part of a survey of clients of counselling agencies. Problem gamblers in counselling were asked to indicate how they would have responded to a telephone survey. Only 29% said they would have answered honestly, 24% would have refused, and 33% would have concealed the problem to varying degrees.

Some marketing firms and researchers have used several 'best-practice' strategies to increase the response rate of surveys. These methods include making a greater number of call-backs to each household, use translators, or writing letters to respondents prior to the phone-calls (e.g., S.A. Department of Human Services, 2001; Wenzel et al., 2004 in Victoria). However, even if reasonably good response rates are obtained (60-70% of eligible samples), this overall figure does not indicate how good the response rates were for participants in different ages ranges. For example, the rate might be over 80% for elderly people and only 40% for very young people (those who are more likely to gamble). Moreover, if problem gamblers represent only a very small proportion of the total population, even a quite acceptable overall response rate will not necessarily translate into a high response rate for this group. For all of these reasons, it is likely that all current prevalence studies probably understate the true prevalence of problem gambling across all Australian jurisdictions. Nevertheless, despite these limitations, random telephone surveys remain one of the best methods for establishing the likely prevalence of problem gambling within the community, and the CPGI remains the best evaluated screen for identifying varying levels of risk within the population.

2.8 Gender Differences in Gambling and Problem Gambling

Almost every gambling prevalence survey conducted within Australia has found significant gender differences in relation to gambling participation. In general, men have been found to gamble on a wider range of activities than women and to have a stronger preference for casino table games, sports-betting, keno, and racing, whereas women are often found to prefer bingo or scratch tickets. Participation rates for lotteries and poker machines tend to be quite similar for both men and women. In terms of problem gambling,

most studies continue to show that men are more likely to experience problems than women, although the gap between the two genders has significantly narrowed since the introduction of gaming machines in Australia. As pointed out in the Productivity Commission (1999) report, it was rare for any more than 1 in 10 problem gamblers at counselling services to be women prior to the introduction of gaming machines, but this figure has now increased to 4 to 6 out of 10 depending upon the survey. Prevalence surveys typically indicate that the ratio of male to female problem gamblers is around 60 to 40, whereas much more similar proportions tend to be observed in studies of treatment samples very likely because a greater proportion of female problem gamblers seek help for their problems. In 9 out of 10 cases, EGMs are identified as the cause of the problems for women, whereas this figure is usually only 60-70% for men, depending upon the study.

As outlined in the Australasian Gambling Review, various explanations have been advanced to explain these differences in gambling preferences. One argument is that some forms of gambling are conducted in venues or environments that are not appealing to many women (e.g., off-course racing venues, sports clubs, hotel bars) (Delfabbro, 2000; Walker, 1992a). Another view is that adult gambling preferences reflect activity preferences or 'gender-typing' of activities during adolescence. Thus, if young males traditionally spend time learning how to play card games, how to bet on sports or races during their early years, they grow up with greater interest in, and knowledge of, these activities (Delfabbro, 1998). Other studies have focused on gender differences in gambling motivation. Several studies (e.g., Crisp et al, 1998; Delfabbro, 1998; Quirke, 1996; Hallebone, 1999; Scannel et al., 2000; Thomas & Moore, 2000; Trevorrow & Moore, 1998) have shown that male gamblers are more likely to be motivated to gamble to 'test their skills' and so they choose more competitive, interactive games. By contrast, women prefer luck-based games that allow them to relax or escape from depression and anxiety and other problems. In effect, gambling is used as a form of avoidant or emotion-based coping (Thomas, 1998).

Very few similar studies of this nature has been undertaken in Australian in 2003-2007 (the period covered by the latest edition of the AGR), so that further insights into the nature of gender differences has not been obtained. However, the existing research literature relating to the prevalence of gambling provides a sufficient research base from which to draw several reasonable conclusions: (1) Men and women differ in their preferences for specific gambling activities, (2) Men prefer games of skill and competition more than women because of differences in socialisation experiences and adolescent activities, (3) Men and women may differ in some of their motivations for gambling, with women more likely to gamble to escape from other problems, (4) The prevalence of problem gambling in men is significantly higher than in women, and (5) Women tend to experience problems almost exclusively with EGMs (90%+).

These findings have several implications for public policy and intervention. First, the results suggest that any regulations of legislation relating to the accessibility of EGMs may have a significant influence on female problem gambling, whereas changes in the racing industry, sports betting and casino industry may have a greater impact on male problem gambling. Second, if women often gamble to escape depression and anxiety, this increases the need for psychological services when they seek help from counselling agencies to address their gambling problems. Third, if treatment services provide interventions specifically to address problems caused by EGMs, they need to be aware that around 20-30% of men will also need assistance with other forms of gambling (e.g., racing, sports-betting) that could be available to the gambler at all occasions (e.g., via the phone and Internet). Assistance with exclusion orders and other liaison strategies may not be relevant if problems with these others forms of gambling are present.

Despite the consistency of findings relating to gender and gambling, there are several issues of comparability and validity that need to be considered (Delfabbro, 2000). In some of the studies described above (e.g., Scannell et al., 2000; Thomas & Moore, 2000), only women were included in the sample, and the study focused exclusively on poker machines. Although this would appear to make intuitive sense to focus on women only and the type of gambling that they typically prefer, this choice of methodology has

some conceptual limitations. If men are excluded from the sample, it is not possible to determine whether the findings obtained for women are due to gender differences or problem gambling. Until one conducts the same analyses with men, it is not possible to determine whether the findings are unique to women. Similarly, if one only conducts analyses using EGMs, it is not clear whether the results obtained are due to the type of gambling as opposed to the characteristics of the players. For example, in the two studies described above, the focus of the investigation was on the relationship between negative mood states, coping style and problem gambling in EGMs. Women who gambled on EGMs and had gambling-related problems and were more likely to score higher on measures of avoidant-based coping and negative mood. It was concluded that such mood states appear to underlie women's problem gambling on EGMs. However, it may be that all problem gamblers who gamble on EGMs do so because it is cathartic. One needs to determine whether this trend is a unique characteristic of EGM gambling as opposed to a particular characteristic of female problem gambling. Studies therefore need to compare the motivations of male and female players on EGMs and other forms of gambling to obtain a clear understanding of how gender influences gambling behaviour.

2.9 Age Differences

2.9.1 Adolescent Gambling

Since the late 1990s, a number of studies have been carried out to examine the prevalence of under-aged gambling and gambling-related problems in adolescents (O'Neil, Whetton, & Duerrwald, 2003). As discussed in the Australasian Gambling Review (AGR), interest in adolescent gambling in Australia arose as a result of a combination of factors. One of these was the finding from a number of overseas studies that adolescents tended to experience gambling-related problems at a significantly higher rate than adults. A further factor was the finding from Australian studies that the highest rates of problem gambling were observed in the 18-24 age group, and that many adult problem gamblers reported having developed gambling problems during their teenage years.

The earliest studies into youth gambling commenced in Victoria in 1997 with the work of Moore and Ohsuka, who surveyed over 1000 young people aged 14-25 years. The study included both students drawn from secondary schools and also university students, and included a modified version of the SOGS to assess problem gambling. The results showed how parental and peer gambling and attitudes influenced gambling in young people, and that many young people had gambled on a wide range of activities. Around 3.1% had gambling-related problems, and there were many significant gender differences in gambling preferences that mirrored many of the differences reported earlier in this review. A similar study conducted by Moore and Ohtsuka (2001) in Victorian schools four years later obtained very similar results, although the prevalence of problem gambling was higher (3.8%). A further study by Burnett, Ong and Fuller (1999) interviewed 778 final year high school students and found that regular or weekly gambling was associated with poorer social adjustment and involvement in other taking behaviours. Similarly, Jackson (1999), in a study of 2700 year 8 students, found that young people who gambled on a wider range of activities were more likely to be performing less well at school.

Similar South Australian and ACT school studies were undertaken by Delfabbro and Thrupp (2003) and Delfabbro, Lahn and Grabosky (2005). These studies showed that 60-70% of young people had gambled at least once per year, and that between 10-15% gambled on a weekly basis. Private card games, scratch tickets and lotteries were usually the most popular activities, although the prevalence of lottery gambling was higher in South Australia. Around 3.5% of young people were found to have gambling problems in both studies. Peer and parental factors were found to have a strong influence on young people's gambling. Young problem gamblers were found to hold more optimistic views about the nature of gambling outcomes (SA and ACT), had poorer psychological adjustment (ACT), and engaged in other high-risk behaviours such as substance taking (ACT only). Young problem gamblers were also more likely to have close relatives with gambling problems and to have experienced a big win when they first started gambling.

Almost all of these early studies were conducted in schools and had only modest response rates (around 60%) so it is unclear whether young people who do not attend school at the age of 16-17 years have a similar level of involvement, or whether similar patterns might be observed in the regional areas of Australia. To address this issue, the S.A. Department of Health conducted a telephone survey of 605 16-17 year olds as part of its 2005 prevalence survey. The results of this study were quite different from the previous schools studies and those conducted internationally. Just over 44% were found to have gambled at least once during the previous 12 months and only 5.6% of students were found to gamble on a weekly basis. Only 1% were classified as having experienced problems with gambling. These figures were considerably lower than those obtained in school-based surveys. It is possible that samples obtained using a randomised telephone survey may have been biased towards young people who spend more time at home, and it possible that such young people may be less likely to gamble. However, these results suggest that caution needs to be applied to prevalence rates obtained through school samples because it may be that students who gamble are more likely to participate in these surveys. That is, students take part because they consider the survey to be personally relevant, whereas those with little interest in gambling do not participate. In most school studies, it has been necessary, under NHMRC ethical guidelines for human research, to obtain parental consent for students to participate and this has usually involved students having to return signed consent forms on the day that the survey has been administered. This requirement has resulted in many students not being able to participate and, therefore, has increased the risk of sampling biases. Students with little interest in gambling or those who have families with gambling problems may not have been as likely to have returned their consent forms, so that the samples could have over-estimated the prevalence of gambling in general while also under-sampling students who were most significantly affected by gambling.

For these reasons, the results obtained in the most recent school study of adolescent gambling in South Australia are likely to be instructive. This study, undertaken by Lambos, Delfabbro and Pulgies (2007) with the support the Department for Education and Children's Services was undertaken using the new NHMRC guidelines

for ethical research as well as the guidelines prescribed by DECS. Under these guidelines, a greater emphasis is placed on the developmental status of young people in the design of consent processes. Instead of requiring active consent from parents, an opt-out strategy was utilised. In accordance with DECS guidelines, parents were provided with all relevant information and given the opportunity to withdraw their child from the study. Information sheets with developmentally appropriate wording was provided to students so that they could make their own decisions to participate or not participate. Schools were randomly selected from each of the four main statistical districts of Adelaide and from two representative regional cities. Using this method, 2669 students aged 13-17 years were surveyed from four metropolitan and two regional schools with a 95% response rate. This very high response rate meant that it was less likely that only students with an interest in gambling took part in the survey.

The results showed that 56% of students had gambled at least once in the previous 12 months, a figure that was higher than in the 2005 telephone survey and closer to the overall prevalence figure obtained in 2001 (62%). Scratch tickets were the most popular activity (40%), followed by private card games for money (27%), racing (19%) and sports-betting (15%). Other activities such as lotteries and keno attracted only 9% and 10% respectively. Only 5% of students reported having gambled on gaming machines. As indicated in AGR-4, it is useful to compare these figures obtained in 2007 with those obtained by Delfabbro and Thrupp in 2001 (published as Delfabbro & Thrupp, 2003) because it provides some indication as to how adolescent gambling patterns may have changed during the last decade. A summary of these comparative figures is provided in Figure 2.1.

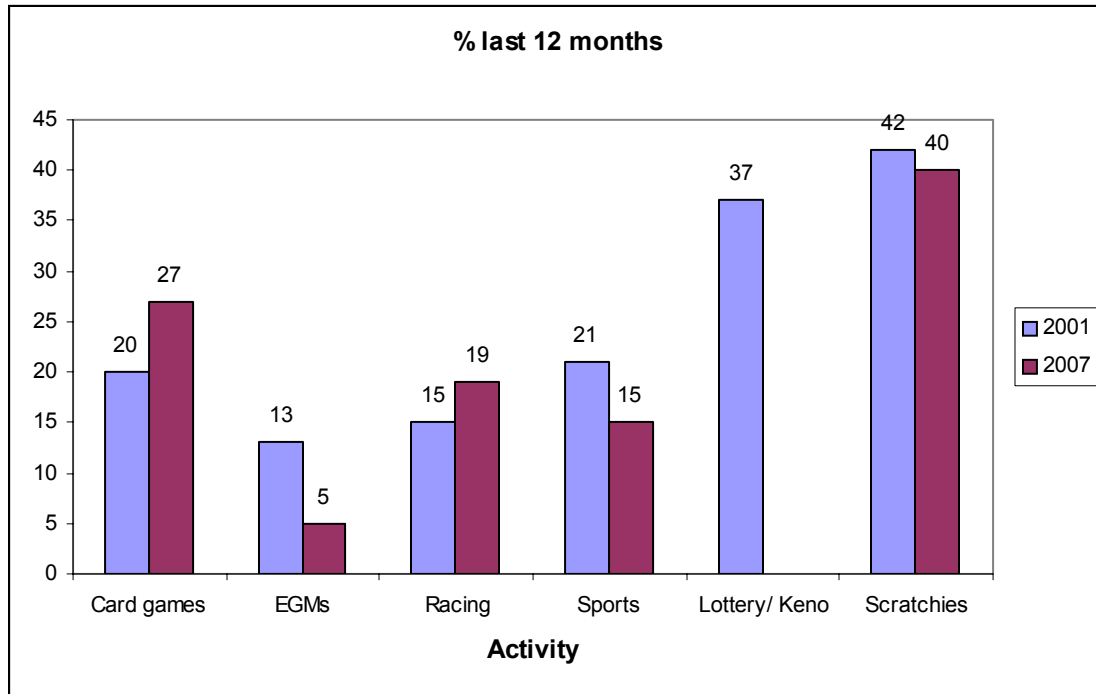


Figure 2.1. Changes in adolescent gambling participation in South Australian school studies

As indicated in Figure 2.1, a comparison of 2001 and 2007 figures showed that gambling on scratch tickets remained relatively stable over time. Participation in card games increased significantly, but there was a sharp fall in the proportion of students who reported having gambled on EGMs. There was also a very large decline in gambling on lottery products, although this is not shown on the chart because of differences in survey format. In 2001, 37% of young people reported gambling on keno or lotteries, but only 9% report lottery gambling and 10% keno gambling in 2007. It is possible that these differences may only be due to sampling differences (e.g., the 2007 sample may have gambled less often on these activities), but other possible explanations should be considered. For example, in 2004, the Independent Gambling Authority of South Australia introduced detailed codes of practice relating to the operation of all forms of gambling. Although these provisions did not alter the status of gambling products in terms of their availability to minors, a greater emphasis was placed on the responsibilities of venues and their duty of care towards patrons. Vendors of lottery tickets and venues with gaming machines may have been more vigilant in their enforcement of age-restrictions in the period during which the 2007 survey was conducted. Another

possibility is that young people may have had less disposable income which to spend on gambling as compared with those who completed the 2001 survey. Between 2001-2007 is well documented that youth expenditure on mobile phones increased substantially due to the introduction of newer model phones with advanced capabilities, the purchase of ring tones and the continuous use of SMS or 'texting'. It is possible (although only hypothesised) that the incremental cost of this technology may have left young people with less money to spend on other incidental purchases such keno and lottery tickets.

As with the other studies in Australia, the 2007 South Australian survey also included a measure of pathological gambling (the DSM-IV-J). This showed that 2.4% of the sample could be classified as pathological gamblers with 3.5% of boys and 1.2% falling into this category. Indigenous students were more than four times more likely than non-indigenous students to score in the pathological range (9% vs. 2.2%). The figures obtained in this study were lower than those obtained in the 2001 survey (3.5%), but higher than the figure of 1% obtained in the telephone survey. Given the very high response rate in this most recent study and the fact that it included large representative schools with students from diverse backgrounds, the findings suggest once again that the telephone survey methodology (as used in the 2005 survey by the S.A. Department for Families and Communities) is likely to under-estimate the prevalence of gambling. On the other hand, it is possible that the 2001 survey, given its lower response rate, may have over-estimated the prevalence of gambling and pathological gambling because a greater proportion of young people with an interest in gambling chose to participate. This phenomenon has been documented in North America in adolescent gambling research (Rachel Volberg, personal communication) and also in studies of adults (see Williams & Volberg, 2009).

To place all of these studies into perspective, a summary of the different studies completed up to June 2008 is provided in Table 2.5. As indicated, it is not easy to compare all of the studies across jurisdictions because the studies used different age ranges, and only the SA and ACT studies used a valid measure of adolescent problem gambling. Not all studies included just adolescents (Moore & Ohtsuka, 1997), and some

included only one year level (Burnett et al., 1999; Jackson, 1999), or used measures with a lifetime time-frame rather than the ‘last 12 months’ (Moore & Ohtsuka, 1997). All of the studies (except the two most recent South Australian surveys) were confined to the metropolitan areas of Adelaide, Canberra or Melbourne and all used school-based sampling. For these reasons, the value of current national research into adolescent gambling research remains limited from an inter-jurisdictional policy perspective. Data are only available for three jurisdictions and these findings can only be generalised (with caution) to metropolitan school populations, or to 16-17 year olds in the South Australian community. It is also evident that the mode of survey administration is influential. Lower rates of participation and prevalence rates for pathological gambling will be obtained if telephone surveys are used. At the same time, there is a need for school based surveys to employ methods that maximise the response rate.

To enhance this area of research at a national level, it would be necessary to conduct inter-jurisdictional research at the same point in time and include both regional as well as metropolitan schools. The study should include a validated measure of problem gambling such as the DSM-IV-J or Multiple response version with a ‘last 12 months time-frame’, include validated measure of psychological well-being and risk-taking and the same activity categories. Years 8 to 12 should be included and all 18 year olds should be removed from the analyses to ensure that one has a genuine under-aged sample. To this end, Gambling Research Australia has currently funded a national study of youth gambling to be conducted in schools across all of Australia. This study will focus specifically on the factors that contribute to the development of youth gambling, young people’s understanding of gambling, and youth people’s level of involvement in gambling.

Table 2.5 Summary of Australian Youth Gambling Studies

Authors	Jurisdiction	Sample Size	Age Range	Measure of Problem Gambling	Problem Gambling Prevalence
Moore & Ohtsuka (1997)	Victoria	1000	14-25 years	Modified SOGS	3.1 %

Moore & Ohtsuka (2001)	Victoria	769	15-18 years	Modified SOGS	3.8%
Burnett, Ong, & Fuller (1999)	Victoria	778	16-18 years	None	n.a.
Jackson (1999)	Victoria	2700	12-13 years	None	n.a.
Delfabbro & Thrupp (2003)	South Australia	505	15-17 years	DSM-IV-J	3.8%
Delfabbro, Lahn, & Grabosky (2005)	ACT	926	13-18 years	DSM-IV-J	3.4%
S.A. Department for Families and Communities	South Australia	605	16-17 years	DSM-IV-J	1.0%
Lambos, Delfabbro, & Pulgies (2007)	South Australia	2669	13-17 years	DSM-IV-J	2.4%

A further important issue of interest in adolescent gambling research is the extent to which adolescent gambling is related to subsequent gambling during adulthood. To date, no study has been published in Australia to investigate this subject. However, there are two ongoing studies in South Australia that may soon provide relevant findings. One is a longitudinal study of school leavers being conducted by the University of South Australia and University of Adelaide. The other study is a series of telephone interviews conducted with young people who originally participated in the 2005 Department for Families and Communities prevalence study. This ongoing South Australian project is being conducted through the S.A. Department for Families and Communities and is being supported by the Independent Gambling Authority of South Australia.

A recently conducted study that provides some insights into the nature of longitudinal patterns of at-risk behaviour was undertaken by the University of Queensland (Haytbakhsch, Najman, Aird, Bor, O'Callaghan, Williams, Shuttlewood, Alati, & Heron, 2006) in conjunction with the Mater Hospital in Brisbane. The project involved long-term follow-ups of 3700 mothers and their children who had been born at the hospital in 1982-1983. In 2002, all of the children were at least 21 years old, so it was

possible to compare their responses to interviews during adulthood with previous responses obtained at 5 and 14 years of age. All 3700 young people were asked questions about their gambling habits and 1023 were also administered the CPGI. The survey of the 21-year-old showed that 41% had gambled in the previous 12 months (a figure very much lower than the figure of 80% obtained in the Queensland household prevalence study conducted at a similar time), and that 1.2% were problem gamblers (a figure similar to the broader Queensland survey).

The principal focus of the analyses described in this report was to determine what factors predicted an involvement in gambling at the age of 21 years and which predicted at-risk gambling (defined as any CPGI score > 0). Predictor variables included demographics, previous and current substance use by both the young person and their mothers as well as psychosocial adjustment scores at the age of 14 years. The results found few links between the mother's health status and demographics and gambling at the age of 21 years. However, if mothers smoked or drank, or if the young people had behavioural problems at the age of 14 years, they were more likely to gamble at the age of 21 and to score > 0 on the CPGI. Similarly, if young people smoked more than 10 cigarettes per day, they were more likely to gamble (53% vs. 36% for non-smokers). All of these results therefore suggested that gambling is more likely to be observed in people who engage in other "at-risk" behaviours and that there is an inter-generational link between parental behaviour and their children's behaviour. These findings were generally consistent with the previously described studies conducted by Delfabbro and Thrupp (2003) and Delfabbro et al. (2005) who found that adolescent problem gamblers were more likely to report gambling problems amongst close family members.

Although the University of Queensland study yielded a number of useful findings, it is important to draw attention to several methodological issues that limit how strongly the findings can be generalised to other jurisdictions. The first issue is that the sample for this study was not randomly drawn from the population as was the case with data obtained in community prevalence studies, so it is not clear that the gambling patterns observed are representative of the broader Queensland population. An overall gambling

participation rate of only 41% would suggest that this sample differs from the general community. The measures of gambling participation and “at-risk” gambling also differed from other prevalence studies. Only a binary response category was used to assess gambling participation (yes/ no) and so neither frequency nor the type of gambling were differentiated. Regular gamblers as well as those who gambled only on lotteries would have been placed into the same group as regular EGM players. Moreover, the researchers did not use the established cut-off scores for classifying varying levels of risk on the CPGI. In effect, by choosing scores greater than 0 to classify people as being “at risk”, the researchers grouped low risk gamblers together with moderate and problem gamblers, and this limits the degree to which one can generalise to other jurisdictions that have used the established 1-2, 3-7, and 8+ classification system.

2.9.2 Gambling in Older Samples

From the many prevalence studies conducted around the country, it has been consistently found that older people are less likely to gamble than younger people, and tend to have a reduced risk of experiencing gambling-related problems. Older people also tend to gamble on a narrowed range of activities. Lottery products, EGMs, bingo and other chance-based activities are usually preferred over racing, sports betting and casino table games (Delfabbro & LeCouteur, 2007).

Only two major studies of older people and gambling have been undertaken. The first of these was a series of focus groups and a telephone survey conducted with people aged 55+ years (Roy Morgan Research, 1997). This survey confirmed many of the findings obtained in previous adult studies; namely, that older people tend to have a lower involvement in gambling than other groups, a lower level of expenditure, and tend to prefer bingo type games and EGMs as opposed to more skilled forms of gambling. In contrast to the findings of other studies, most older people were found to gamble during the day rather than at night. On the whole, their motivations were similar to what has been found in other studies (enjoyment, excitement, to win money, socialisation). As pointed out in the AGR, a weakness of this study is that it does not include a comparison sample of people under the age of 55 years, so that it not possible to draw comparisons between younger and older people.

A comparison of this nature is, however, available in a study by McCormack, Jackson and Thomas (2002). In this study, involving data from Victoria's gambling helpline, comparisons were drawn between the characteristics of those aged over 60 years and young people. The results confirmed that older people gambled less intensely, were less likely to experience gambling-related problems, but showed that women were more likely to be problem gamblers within the older sample. Older people also differed in terms of their source of money for gambling and in their motivations for gambling. In the older group, money was more likely to be drawn from household savings, whereas younger people were more likely to borrow from other people, or to have conducted illegal acts. Older people were more likely to gamble to escape loneliness and isolation. Although these findings were undertaken in Victoria only, it is reasonable to suppose that similar findings may well emerge in other jurisdictions, and that such findings may be useful to problem gambling service providers across Australia. The findings suggest that interventions involving older people may require less legal support, but require a greater need to establish social networks and support because many older people may not have others to help them overcome their gambling problems. Such services would need to be particularly attuned to older women, and be aware that older people may have more limited alternative sources of finance to meet debts arising from excessive expenditure on gambling.

Very similar conclusions were reached in a recent study conducted by Boreham et al. (2006) and funded by the Queensland Government. In this project, the researchers were commissioned to research the motivations and experiences of people aged 60 years or older who played EGMs. Another component of the project was to examine the effectiveness of responsible gambling provisions for older populations. The study involved surveys of 414 EGM gamblers within clubs, semi-structured interviews with providers of help services and some secondary analysis of help-seeking data. Around 65% of the sample were women and 2% were classified as problem gamblers based on their CPGI scores. The results of the gambler survey were generally consistent with the previous study conducted by Roy Morgan Research in Victoria. Older people's principal

motivations for gambling on EGMs were to socialise with others, to escape isolation, to win money, to deal with depression and stress, and to support their local club (over 50% endorsed this motivation). However, the need to escape and to win money was stronger in this study than in the previous Victorian survey. As in the Jackson and Thomas (2002) study in Victoria, service providers also endorsed the view that older people might experience difficulties accessing help services because of social isolation and a reluctance to seek help from younger people.

In summary, when examining these findings from an inter-jurisdictional perspective, it is quite likely that many of these findings can be generalised to other parts of Australia as long as one is mindful of the differences in the methodologies used. The Roy Morgan study in Victoria can be generalised to the broader community, but focuses on all types of gambling rather than EGMs exclusively. It also does not include a comparison sample of younger gamblers to show how gambling motivations and experiences vary by age. The Boreham et al. (2006) study conducted in Queensland provides useful insights, but focuses specifically on regular EGM gamblers in clubs. Regular players may have a stronger desire to escape from problems, or to win money, than other players who visit clubs more frequently. As club players, they may have a particular loyalty to specific venues that is not shared by gamblers who visit hotels, so that these findings might generalise more easily to NSW and the ACT rather than South Australia where hotel-based gambling tends to predominate. Jackson and Thomas' (2002) study is laudable in that it includes a comparison sample, but the findings can only be generalised to help-seeking populations, rather than players in venues or in the community. For this reason, it may be that further studies similar to that undertaken by Roy Morgan Research in 1997 could be usefully undertaken, but strengthened by the inclusion of a formal problem gambling measure, a comparison sample of younger people, or at least the ability to refer to data collected from younger samples (e.g., by including questions from other surveys in a specific larger-scale study of older people).

2.10 Gambling in Indigenous Communities

Knowledge about Indigenous gambling in Australia is generally sparse. With only around 2% of the population of Australia of Indigenous descent in most jurisdictions outside the Northern Territory, it has been rare for prevalence surveys to obtain a sufficiently large sample of Indigenous people to make meaningful statements about Indigenous gambling, let alone problem gambling. For this reason, much of what is known about gambling in this community is derived from studies based on specific Indigenous populations, often in remote locations, or Indigenous people identified in venues (Brady, 1998; Busittil, 2002; Hunter & Spargo, 1998). For example, Foote (1996) conducted an observational study in Darwin Casino to identify the ethnicity of players. A total of 695 Indigenous people were observed over a two week period. The result showed that three quarters played EGMs, 9% gambled on roulette, 7% on keno and 8% of blackjack. Two-thirds of the Indigenous players observed were women. Another venue study was undertaken by the Australian Institute for Gambling Research / LIRU (1995) in Queensland clubs. It was found that Indigenous patrons spent significantly more on gambling than non-Indigenous patrons (around 20% of their weekly incomes. A further study conducted in the regional community of Yarrbah in Queensland found that 50% of Indigenous people gambled on a weekly basis compared with only 4-6% of the general population. In other words, there is some evidence from studies in both Queensland and the Northern Territory to suggest that indigenous people appear to have actively embraced modern forms of gambling and that they their level of involvement (both in terms of time and money) may be higher than non-indigenous people.

Other studies have largely relied on focus group interviews with Indigenous people or those who have contact with them through treatment services, policy work, or other agencies (e.g., Cultural Perspectives, 2005a in Victoria; Scull, Butler, & Mutelzberg, 2003 in far-north Queensland). Most of these studies have yielded very similar findings: (1) Indigenous people are often reluctant to seek help because of the lack of services for Indigenous people, (2) Stigma and shame associated with admitting that one has a gambling problem (Australian Institute for Gambling Research, 1999), (3) The nature of services is not culturally appropriate for Indigenous people because the

communication styles, staffing and operational procedures are intimidating or unfamiliar. Indigenous people are thought to have an interest in they are traditionally accustomed to games where wins and losses are redistributed throughout the community, rather than lost to external parties.

In response to the relatively limited volume of material available concerning indigenous gambling at the present time, there has been an active attempt to develop this area of research more extensively both through specific research projects and wider research programs. One of the principal focal points for growth in this area is the research program established by the School for Social and Policy Research at Charles Darwin University. This research centre has received funding to conduct research relevant to indigenous populations by the Northern Territory Government, has several Ph.D. students under supervision, and has recently obtained funds from Gambling Research Australia to conduct a detailed study into the nature of indigenous gambling (see Chapter 7).

In 2006, the Charles Darwin team commenced this work with a detailed scoping study as well as a broader review of indigenous gambling within the Territory (Morris, Young, Barnes, Marum, & Stevens, 2006; McDonald & Wombo, 2006; Young, Abu-Duhou, Barnes, Creed, Morris, Stevens, & Tyler, 2006). The study involved a series of qualitative interviews with 64 indigenous and non-indigenous people who worked in community-support services in major metropolitan areas or regional towns. The focus of this work was to obtain people's views concerning the nature and extent of gambling and gambling-related problems within the indigenous population and appropriate service responses. Although the information obtained was limited in that the sample was not randomly drawn and base largely on impressions and first-hand experience rather than actual interviews with gamblers, the results indicated strong support for the need to pay greater attention to indigenous gambling. Respondents highlighted the significant personal and social cost of gambling to indigenous communities, and how it had disrupted traditional community games and other forms of social interaction. A number of respondents drew attention to the irony of economic development in some parts of the Territory. They point out that, while economic growth, particularly in the mining sector,

has contributed to greater wealth in many areas where indigenous people lived, this also had contributed to the growth of gambling. The stake sizes, the style of gambling, and the location of gambling had shifted away from its traditional form. Moreover, Young et al. (2007) felt that there has been active attempts by the existing industry to make venues more inclusive and attractive to indigenous gamblers.

At the present time, the Charles Sturt research team are undertaking projects that examine the regional distribution of gambling more carefully using geo-mapping technology, more detailed surveys of indigenous gamblers within specific communities, and through participant observation research. It is likely that these studies will yield considerable insights into the nature of indigenous gambling within Territory. However, the extent to which these findings will be generalisable to other parts of Australia that have smaller indigenous populations or a less evident history of traditional games remains unclear. On the whole, the current literature on Indigenous gambling would appear to provide only a general guide as to appropriate directions in national or inter-jurisdictional policy and research development. Existing studies have been innovative and informative, but the validity of the findings has been limited. For example, while previous observational studies are useful, they need to be supplemented by other sources of data to make them meaningful. Such studies are subject to errors in observation (are all people easily identifiable as Indigenous?), and provide no data on participation rates. All studies conducted in venues are not true prevalence studies in that those who are interviewed may be more likely to be regular gamblers and therefore different from those who are less likely to be encountered at venues. Similarly, although qualitative studies provide insights into the issues affecting Indigenous people, these studies are not, by their very nature, intended to be representative. The data collected or opinions expressed may only reflect the views of particular vocal or articulate members of the Indigenous community or the relevant organisations involved.

To obtain more comprehensive information on the Indigenous community at a national level would require some attempt to triangulate different research methodologies in different jurisdictions. Observational work could be combined with self-report data

collected from venues, whereas surveys could be used in specific community areas to obtain estimates of the number of Indigenous people involved with, or negatively affected by, gambling. Focus groups could then be conducted with those survey participants who are willing to give greater detail concerning their experiences with gambling and how it is affecting the Indigenous community. Whether these separate components could be included in all studies remains unclear because of difficulties associated with obtaining industry permission to conduct surveys at venues, as well as sufficient participation from the Indigenous community. Each of these challenges will be faced and need to be addressed by current Northern Territory research and research currently funded by Gambling Research Australia, but there may be a need for future additional jurisdiction specific research that examines how the Territory experiences generalise to other parts of Australia. For example, the links between economic growth and gambling could also be investigated in mining intensive States such as South Australia and Western Australia (taking into account the absence of EGMs in regional areas of WA). It is very reasonable to assume that previous qualitative findings obtained in Queensland, Victorian and the Territory concerning the need to enhance indigenous people's access to help services could also be generalised to other jurisdictions where indigenous people have been affected by gambling.

2.11 Gambling in Culturally and Linguistically Diverse Communities (CALD)

Almost identical issues apply to Australian research involving CALD communities. Since the mid 1990s, a number of studies have been conducted around Australia to investigate the effects of gambling on specific ethnic communities. Some of these studies have focused on specific ethnic groups such as the Vietnamese (Duong & Ohtsuka, 1999; Tran, 1999; Zysk, 2002) or Chinese (Blaszczynski, Huynh, Dumlao, & Farrell, 1998; Oei & Raylu, 2007), whereas others have considered broader ethnic groups including people from the Greek and Arabic community (Cultural Perspectives, 2005a; McMillen et al. 2004; VCGA, 1997). Most of these studies have utilised mixed methods or a combination of qualitative and quantitative research methodologies. Qualitative data has typically been obtained from key informants in the community, small samples of

gamblers or family members affected by gambling, whereas quantitative data has usually been drawn from the community.

One of the largest of the quantitative studies was undertaken by Oei and Raylu (2007) and involved members of the Chinese community as well as some comparative samples drawn from different populations in Queensland. Oei and Raylu's work was largely psychological in focus and used standardised measures that have been used and validated in other published international studies. In the first substantive project, the researchers surveyed 505 people drawn from the Queensland community about their gambling habits and reasons for gambling. The results showed that Chinese people were more likely to bet on horse and dog races and lottery products. They were also more likely to gamble to receive social approval, whereas non-Chinese people were more likely to report gambling for excitement (to influence physiological states). Another study involving 501 university students (of which 195 were Asian) found that both groups of students who scored higher on a measure of pathological gambling (the SOGS) had higher anxiety and depression scores. In other words, there was little evidence to support the view that Asian gambling was substantially or qualitatively different from Caucasian gambling.

Most findings from qualitative studies have tended to mirror those involving Indigenous people. Many people in CALD communities are thought to be negatively affected by gambling (Ethnic Communities Council of NSW, 1999; Victorian Casino and Gaming Authority, 2000). The motivations for gambling are generally similar to what is observed in the mainstream community, and similar problems occur. However, people from CALD communities find it particularly difficult to seek help because of a fear of 'losing face' in their community, a lack of culturally appropriate or linguistically capable services, or because they are not comfortable seeking help for problems of this nature. Cultural Perspectives (2005a) provides a detailed analysis of the challenges of service delivery for CALD populations in the Victorian community and provides many useful suggestions about how services might be improved. These include:

- Providing CALD populations greater access to services by forging stronger links with the relevant community
- The provision of culturally and linguistically trained staff, and have culturally appropriate protocols to deal with CALD people when they visit the service. Staff should, for example, be aware of important social, economic and cultural sensitivities (e.g., the role of men and women) within the particular culture concerned.
- Making attempts to forge stronger links with existing services for CALD populations and to encourage referrals. A considerable amount can be learned from existing and operational services for CALD populations.
- Making attempts to raise the profile of the service within the local community to make counselling less stigmatised, e.g., by conducting forums, using local radio and TV.

Given the similarity between the findings obtained in different jurisdictions, it is reasonable to suggest that many of the findings described above can be generalised to different parts of Australia. The existing research suggests that conceptual approaches to studying gambling in Caucasian communities can probably be translated to Asian communities, although it is recognised that there are issues of culture, language and differences in activities (e.g., mahjong) that need to be taken into account in the design of measures and procedures. Similarly, although different studies have made similar recommendations concerning the design of services and service delivery systems, there is so far little empirical evidence available to support particular service models or intervention strategies. For example, few, if any, attempts have been made to develop ‘best practice models’ for delivering services in a particular jurisdiction and then replicating these elsewhere. The existing evidence therefore provides a basis for undertaking ongoing discussions concerning the value of developing innovative services for CALD populations and appropriate evaluation strategies.

Chapter 3: The Impacts of Problem Gambling

3.1 Overview

As discussed in some detail by the Productivity Commission (1999) and in the AGR, problem gambling can give rise to significant harm to individuals, those around them, and to the community. At an individual level, problem gambling can give rise to significant psychological distress, give rise to legal and financial problems, and disrupt work and study. At a broader level, it can lead to breakdowns in important relationships, family disruption and neglect, and may contribute to criminal behaviour. All of these potential impacts are a principal concern for policy makers, regulators and service providers whose role is to minimise, prevent, or find suitable service or intervention responses for people who have been adversely affected by problem gambling (Boreham, Dickerson, & Harley, 1995; Dickerson, Boreham, & Harley, 1995; Dickerson, Baxter, Boreham, Harley, & Williams, 1995; Dickerson, Boreham, Harley, Maddern, & Baron, 1995; Productivity Commission, 1999).

Understanding the nature and extent of these problems has been an important objective of Australian gambling research for over a decade. Accordingly, the aim of this chapter is to provide a critical review of what is currently known nationally about the harms caused by problem gambling in Australia, and how this information may inform policy, regulatory and service responses. Many of these findings as well as the questions they raise concerning the effects of gambling on individuals form a background to existing research being funded by Gambling Research Australia concerning the relationship between gambling and other co-morbid disorders. An intention of the GRA project is to examine the prevalence of co-morbidities (e.g., mental and physical health, substance abuse) within populations of problem gamblers. An important element of this project will be to examine the issue of causality; namely, whether these co-morbidities contribute to the development of gambling problems, and/ or whether they arise as a consequence of problem gambling. Another component will be the extent to which, and how, these co-morbid conditions might be addressed by intervention services.

3.2 Personal Impacts of Problem Gambling

3.2.1 Psychological Harm

Although many people who gamble frequently do so in order to obtain relaxation and enjoyment, gambling can also be a focal point for people suffering from significant psychopathology, including depression, anxiety, and suicide ideation (Coman, Burrows, & Evans, 1997). Findings relating to the prevalence of depression have emerged from studies of problem gamblers within the community (Productivity Commission, 1999; S.A. Department of Human Services, 2001; Queensland Government (Treasury), 2002), and also from studies of gamblers in treatment (MacCallum, Blaszczynski, Joukhador, & Beattie 1999). In the Productivity Commission national survey, 22% of problem gamblers reported being 'often' or 'always' depressed on a single item question. In the South Australian study, 59% of problem gamblers scored in the clinical range on the Kessler-10 (a standardized measure of problem gambling). Just over 50% had been depressed in the last 12 months in the Queensland Household survey, whereas in MacCallum's study, the mean score on the Beck Depression Inventory (a well validated international scale) was in the clinical range.

A similar pattern of results has been observed in studies that have examined suicide and suicidal ideation in problem gamblers. In prevalence studies, it has been found that around 15-20% of problem gamblers reported having thought about suicide (Productivity Commission, 1999; S.A. Department of Human Services, 2001), whereas much higher figures have been obtained in studies of problem gamblers within treatment. The Productivity Commission (1999) found that 58% of problem gamblers who had sought assistance at counselling agencies had seriously contemplated suicide, with 15% having often or always done so. Similar studies conducted by Blaszczynski and MacCallum (1999) and MacCallum et al. (1999) found that around 40% of people in treatment had contemplated suicide. Another source of data relating to suicide are Coroners' reports that detail the cause of death. Blaszczynski and Farrell (1998) conducted an analysis of Coroner's reports in Victoria and found that 1.7% of total suicides for the period 1994-1997 could be attributed to gambling. The Productivity

Commission estimated that at least 40 people were committing suicide in Australia each year because of gambling.

Studies have also examined the importance of anxiety-related symptoms in problem gamblers. Battersby and Tolchard (1996) found that 48% of problem gamblers referred for treatment at Flinders Medical Centre in Adelaide had anxiety disorders, whereas Coman, Burrows and Evans (1997) and Rodda, Brown and Phillips (2004) found a positive relationship between problem gambling scores as measured by the SOGS and anxiety scores. All of these findings confirm the view that many problem gamblers use gambling as a way to regulate their emotions. An escape into the gambling environment (particular EGM venues) provides a way to avoid or regulate negative mood states, but this also becomes the source of their dependency. Attempts to avoid gambling or control mood states without gambling becomes increasingly difficult, so that people develop an ongoing urge to gamble when they are away from venues.

In summary, all of these results consistently show that problem gambling is linked to poorer psychological functioning. These disruptions to general mood states are likely to intensify problem gambling and lead to greater reliance upon gambling as a way to deal with the person's problems. From a public point of view, poorer mood states and depression are important in that they are very likely to be contributing factors in higher rates of suicide in problem gamblers. They may also contribute to broader problems such as poorer work performance, family functioning, and poor decision-making. However, at the same time, it is important to recognise that such results do not indicate that gambling is entirely the cause of these problems. Depression and anxiety may be as much a cause of problem gambling as a symptom. Indeed, as pointed out previously, many people with very significant difficulties in their life (marital problems, work problems, and broader psychological problems) will often use gambling as a way to deal with these problems. Thus, while excessive gambling may serve to intensify and exacerbate their problems, this behaviour may also be a symptom of underlying pathology. Such a connection is recognized, for example, in Jacobs (1986) general theory of addictions which suggests that problem or pathological gambling often arises as a result of trauma, and that people

try to 'lose themselves' in gambling by altering their mood and state of awareness to avoid the psychological consequences of their experiences.

The other important public health and research implication of these findings lies in the comparisons between the findings obtained in community prevalence surveys and in studies of gamblers in treatment. The prevalence of significant impacts in community surveys is consistently very much lower than in treatment samples, often by a factor of two or three times. This again suggests that problem gamblers identified in telephone surveys and those in treatment samples probably represent two extremes of the 'problem gambling' distribution. Those in the community samples are likely to be 'softer' cases or significantly less severe cases, whereas those in treatment are likely to be some of the worst cases because it is known that problem gamblers often do not seek help until they have reached 'rock bottom' (Evans & Delfabbro, 2002, 2005). This means that the typical or true figures relating to these impacts may lie somewhere between these two extremes. Further analysis of the prevalence of these problems within venue samples might be one effective way to obtain a better sense of whether the true prevalence is closer to the figures obtained in treatment samples, or community prevalence samples.

3.2.2 Problem Gambling and Substance Abuse

Alcohol

Several Australian studies have shown that there is a link between gambling and various forms of substance dependence and misuse. In each of these studies, alcohol abuse was identified in around 20% of problem gamblers (Community prevalence: Dickerson et al., 1996; Queensland Government (Treasury), 2002; Treatment sample: MacCallum and Blaszczynski, 2002). Further studies have shown that people (EGM players) report having stronger urges to gamble while under the influence of alcohol, and that they find it more difficult to terminate sessions once they have begun (Baron & Dickerson, 1999). This finding was demonstrated in a laboratory experiment by Kyndon and Dickerson (1999) in which people were asked to gamble for as long as they liked

with, or without, having consumed several alcoholic drinks. People allocated to the alcohol condition gambled for twice as long as the control sample.

The links between gambling involvement and alcohol consumption was also explored in the Mater Hospital- University of Queensland longitudinal study of 3700 children who had been tracked since 1982-1983 until 21 years of age (see Section 2.9.1 for a more detailed description of this study). In this project, young people were classified as gamblers and non-gamblers and were also administered the CPGI. Those who gambled were less likely to be regular drinkers (1 or more standard drinks per day), but those who reported drinking at less than 14 years of age were more likely to be gamblers at the age of 21 years (47% vs. 15%). Differences also emerged when young people were classified according to the CPGI. Those who abstained from alcohol were more likely to score more than 0 on the CPGI, but CPGI scores were higher in those who reported mild to severe impacts associated with alcohol use. As discussed in Section 2.9.1, the findings from this study are difficult to interpret because no attempt is made to distinguish the frequency or type of gambling involved. Those who reported buying an occasional lottery ticket would be classified in the same group as those who playing EGMS regularly. In addition, there is the questionable practice of classifying everyone who scored more than 0 on the CPGI as an “at-risk” gambler. These very broad classifications make it very difficult for these findings to be generalised to other jurisdictions or to be compared with other studies that have classified gamblers more carefully using recognised categorisation systems or cut-off scores.

Despite the somewhat confusing findings of the University of Queensland study, it is generally accepted (based on the findings of other prevalence research) that alcohol consumption is often linked with problem gambling, and these findings have many important public health and regulatory implications. The finding that alcohol is more likely to be consumed by problem gamblers and may also influence their gambling has important implications for venue policies relating to the responsible administration of alcohol to patrons during gambling sessions. These policies include those relating to the provision of alcohol in gaming rooms, the proximity of gaming rooms to bar facilities,

and the conduct of venue staff. The findings also suggest that some problem gamblers may be vulnerable to cross-addictions, and this may have implications for the design of intervention strategies capable of addressing both problems simultaneously. For example, it may be that a reduction in problem gambling may lead to increases in the untreated addiction and this may, in turn, lead the person more vulnerable to relapse into problem gambling.

These findings suggest a need to strengthen the existing national research base relating to the links between alcohol and problem gambling. Most of the studies described above were based only on EGM players, so it unclear whether similar relationships also emerge when the research examines other forms of gambling where alcohol might be present (e.g., card-playing, on-course race-betting). It may also be important to consider the value of further in vivo studies of the links between alcohol consumption and gambling. Although the Dickerson studies provided some useful findings, both are not without their limitations. The Baron and Dickerson study was based only on self-report, so it is not clear whether alcohol actually influenced behaviour, whereas the Kyndon and Dickerson study involved only a very short laboratory simulation involving a small number of trials, and there was little analysis of the relationship between persistence and problem gambling. Some of these studies (Dickerson et al., 1996; Queensland Government (Treasury), 2002) were also not based on any validated measure alcohol dependence.

Cigarette Smoking

Similar analyses have been undertaken in relation to the prevalence of cigarette smoking in gambling samples. In both the 2001 South Australian and 2005 Tasmanian prevalence surveys, around 33% of regular gamblers were found to be smokers compared with only around 20% of people in the general population. In South Australia, 60% of problem gamblers were found to be smokers. MacCallum and Blaszczyński (2002), in a study of problem gamblers in treatment, found that 37% had nicotine dependence. A more recent study by Rodda and Cowie (2005) assessed the smoking habits of 418 EGM players in Victorian gaming venues. Half of the EGM players smoked, and 20% were

found to score in the high to very high dependence level on the internationally recognized Fagerstrom Dependence Scale. Around a third of smokers reported lighting up a cigarette every 30 minutes, around 9% did so every 15 minutes, and 5% smoked almost continuously. Although there was a positive correlation between scores on the CPGI and smoking status, the correlation was generally only small ($r = .20$) suggesting that the intensity of smoking in problem gamblers was reasonably consistent with that observed in other EGM players with lower CPGI scores.

The Mater Hospital – University of Queensland study described above also examined the links between smoking and gambling in their follow-up study of 3700 young people (aged 21 years). The results of this study showed that, of those who smoked 10 or more cigarettes per day, 52.8% were gamblers compared with a figure of only 35.9% for non-smokers. Similarly, when the same comparisons were made using CPGI scores, it was found that 37.5% of heavy smokers scored > 0 on the CPGI as compared with only 7.5% of non-smokers. In other words, if a person was a smoker, he or she was around five times more likely to gamble at the age of 21 years.

On the whole, the evidence for the link between smoking and gambling is stronger than for alcohol, and so these findings have important implications for understanding the impact of smoking bans on gaming machine revenue in different Australian jurisdictions. If so many EGM players smoke regularly, then it becomes highly likely that gaming revenue will fall whenever gamblers are required to go outside to smoke. Objective evidence in support of this view is derived from studies into the effects of smoking bans recently imposed in Victoria and other jurisdictions such as South Australia and Queensland where similar bans have been imposed. For example, in Victoria, EGM revenue decreased 10-20% in the period following the ban, although it is difficult to ascertain the exact extent to which this was due to any changes in the behaviour of problem gamblers as opposed to other EGM players (Marshall, 2003).

A strength of the existing research base is that the relationship between smoking and gambling has been obtained using different research methodologies. Significant

relationships have emerged from large-scale community studies, in treatment samples, and in studies of samples obtained from gaming venues. However, it is important to recognise the differences that are likely to emerge when studies are conducted using different sampling methodologies. Studies based on community prevalence studies are likely to provide reasonably accurate estimates of smoking in regular gamblers, but may not capture the full range of problem gamblers within the community because many problem gamblers will not respond to telephone surveys (Productivity Commission, 1999). Such studies may, therefore, understate the full extent of problematic behaviours (including nicotine dependence) within the community. By contrast, studies based on venue samples may over-state the problem in that these studies will typically obtain a greater proportion of regular and problem players because people are more likely to be in the venue at any particular time and are, therefore, more likely to be sampled. Similarly, if one samples from treatment services, there will be danger that the sample will be comprised of a relatively high proportion of very serious cases and people who might share other difficulties that make them more willing to seek help.

The studies have also varied in terms of how cigarette smoking has been measured. Some have used validated scales, whereas others have relied upon frequency measures. Studies have also differed in terms of how data have been analysed. As described above, some studies have compared problem gamblers to other gamblers, others have compared gamblers to non-gamblers, used varying CPGI cut-off scores, and some have only focused on EGM players. Accordingly, to enhance the policy utility of this area of research it would be useful to re-analyse smoking rates obtained in different surveys and break these rates down by the type of gambling, and by venue type. Future studies that examine smoking should attempt to use a consistent assessment methodology, reference results by CPGI categories, or to measure the frequency of smoking and amount smoked to allow easier comparisons between different studies.

Other Substance Use

A number of studies have also attempted to examine the link between problem gambling and the use of heavier drugs. Once again, these have included large-scale community prevalence studies and those conducted using treatment samples. In the 2001

community prevalence survey conducted by the S.A. Department for Human services, respondents were asked a series of questions relating to their use of substances. The results were presented in a way that made it difficult to compare the responses of gamblers and non-gamblers, or those with different levels of gambling involvement. However, there was clear evidence that problem gamblers were more likely to use hard drugs and various prescription medications than others in the sample. Similar questions were included in the follow-up study in 2005 (n = 17,140, S.A. Department for Families and Communities, 2006). The results showed that marijuana and other illegal drug use was no higher in those who were identified as moderately at risk or problem gamblers by the CPGI, but these groups had very high levels of anti-depressant use (21.4% vs. 7.5% for those in the general community). These findings are generally consistent with the research described in Section 3.2.1 that found high levels of depression and anxiety in samples of problem gamblers.

Other studies conducted using treatment samples have yielded similar results. Battersby and Tolchard (1996), for example, found that 15% of problem gamblers seeking help from the treatment clinic at Flinders University in South Australia had some form of substance dependence, and this figure was very similar to that obtained by Dickerson *et al* (1996) in a sample of problem gamblers identified through a community telephone survey.

The Mater Hospital- University of Queensland study (Haytbakhsch et al., 2006) also asked 21-year old respondents a series of questions relating to their use of substances other than alcohol or cigarettes. The study showed that those who reported smoking cannabis were more likely to score > 0 on the CPGI (16.3%) than those who did not engage in this behaviour (only 6.3% of non-users reported gambling at the age of 21 years). These findings were even stronger when gambler status was analysed by the frequency of cannabis use. Of those who smoked cannabis frequently, 25.6% scored > 0 on the CPGI compared with a figure of 6.5% for those who did not use cannabis. These findings suggested that a general involvement with gambling appears to be linked with a broader interest in other risk-taking behaviours.

Although the studies described were conducted predominantly in two jurisdictions (SA and QLD), it is likely that similar findings would be obtained in other parts of Australia if appropriate questions and analyses were included in community prevalence studies and in assessments of help-seekers. Wherever possible, studies should include questions relating to the use of other substances apart from alcohol and cigarettes and results should be broken down by CPGI status as well as by the frequency of gambling. Moreover, given a broader risk-taking literature that shows higher levels of risk-taking in males, it would be appropriate to examine the relationship between gambling and substance misuse after controlling for the effects of gender.

From a policy perspective, these findings emphasise the importance of utilising broader screening tools in both studies of community prevalence, but also in help-seeking samples. The existence of potentially harmful cross-addictions in problem gambler samples may have implications for the range of professional services required, the nature of intake assessments conducted, and how problem gambling is conceptualised. For some problem gamblers (current figures suggest around 20%), problem gambling may only be one of a number of underlying addictive disorders, so that regulation and treatment of only the gambling-related problem may leave open the possibility of some people still being vulnerable to harm.

3.2.3 Problem Gambling and Social Impacts

A reasonable body of information is currently available in Australia concerning some of the social impacts arising from problem gambling. Most prevalence studies (including the Productivity Commission's national study), have included questions relating to the effects of gambling on relationships. For example, the Commission found that 20% of problem gamblers in its national survey admitted to having insufficient time for their families, 11% said that gambling had led to the break up of an important relationship, and 9% reported a permanent separation due to gambling. In its study of clients of counselling agencies, the Commission extended its range of questions to include the effects of problem gambling on children, domestic violence, and work colleagues, and found that a similar percentage of people had been affected.

With social impact questions generally included in almost every State and Territory prevalence study, it is now generally well established that problem gambling can have significant effects on social relationships. However, there are some useful ways in which this work might be consolidated to inform the national research framework. One important advance would be to differentiate social impacts in terms of their severity. As indicated in the questions above, the impacts can range from insufficient attention or time, a breakdown in trust, to neglect, conflict, divorce, and domestic violence. Moreover, such impacts could be differentiated according to the person or persons affected: families in general, spouses and partners, children, friends, and work colleagues. Some attempt to measure the range of potential social impacts was, for example, provided in a study conducted by New Focus (2005) of 142 problem gamblers within Victoria.

A particularly neglected topic at a national level is the effect of problem gambling on children. A number of studies have shown that problem gambling often has an inter-generational history, with problem gamblers often having a greater likelihood than others in the population to have close relatives with gambling problems. As indicated in the AGR, these findings have emerged in many community prevalence studies, in studies of prisoners (Marshall, Balfour, & Kenner, 1998), and also studies of youth (Delfabbro & Thrupp, 2003; Delfabbro et al., 2005). Despite these consistent associations, very few studies have specifically examined the effects of problem gambling from a child's perspective. For example, in one of the few studies on this topic Carrig, Darbyshire, and Oster (2001) described the very significant distress experienced by children when their parents develop gambling problems, including how they are neglected, exposed to parental mood changes, and become alienated from their parents. However, this study was conducted using only a very small sample in South Australia (around 10 children) and was based on a qualitative interview methodology. Although there is every reason to expect that similar results would be obtained if other children were interviewed in other jurisdictions, it would be necessary to develop a consistent series of measures and questions that could be used for different samples. The sample size would also need to be

extended to examine the effects of paternal vs. maternal problem gambling on children of different ages, genders, and ethnicities.

This deficit in knowledge concerning the effects of gambling on children is currently being addressed by Gambling Research Australia in a commissioned research project examining the links between adult and child gambling. The aim of this project is to examine how parental problem gambling influence's children's gambling, how it places them at risk of problematic behaviour, and what interventions or strategies might be used to assist young people who may be at risk because of their parents' behaviour.

3.2.4 Problem Gambling and Employment Impacts

Community prevalence studies have also included a series of questions relating to the impact of problem gambling on work and study. As with the social impact questions, these range from the assessment of “softer” impacts, such as lost time from work or study, has affected by work or study to more serious problems including a change of jobs or loss of employment due to gambling. Most studies suggest that around 20% of problem gamblers in the community surveys and 50% in treatment experience disruptions to their work as a result of gambling, but the prevalence or base-rate of some of the more serious vocational impacts are so low within community prevalence studies that it is not possible to draw reliable inferences about the nature of these problems within the general population. Indeed, a difference of a few cases can make a very substantial difference to the number of people estimated to be affected. For this reason, it may be difficult to obtain a clear understanding of the extent to which problem influences productivity, or job turnover, merely based on prevalence studies. Although samples of problem gamblers derived from treatment services might increase the numbers available for analysis, these people are not necessarily representative of other problem gamblers within the community.

In general, the consistency of questions across different prevalence surveys allows some capacity to compare results for questions relating to employment impacts, although productivity effects are probably more reliably compared than job losses because of the relatively small number of cases. To enhance this work, it may be useful to include a

more refined series of questions relating to how gambling influences work activities. For example, do people place bets from work, use the Internet or phone? How many people gamble on their way to and from work? What workplace controls are in place to monitor potential employee gambling? It may also be useful from a public health perspective to include some measures of job stress and job satisfaction in gambler assessments to examine the extent to which work-related anxiety may have contributed to the person's gambling, or vice versa (e.g., as done at Flinders Medical Centre in Adelaide). As well as administering these assessments when people seek help from treatment centres, it may also be useful for gambling workplaces (e.g., casinos) to utilise these measures as part of their responsible gambling programs to identify staff members who may be vulnerable to developing gambling problems themselves.

3.2.5 Problem Gambling and Financial Impacts

According to the current national definition (Neal et al., 2005), over-expenditure is a key feature of problem gambling. Items relating to the financial impact of gambling and the process of obtaining money to gamble are contained in all psychometric measures including the CPGI, SOGS, and DSM-IV. It is generally recognised that the relationship between expenditure and problem gambling is complex. Although problem gamblers tend (all things being equal) to spend more than other gamblers, it is the affordability, or expenditure relative to one's income, assets, and financial capacity that is often considered more important (Productivity Commission, 1999). The AGR reviews a number of studies that have documented the financial impacts of problem gambling. These range from: spending more than one can afford, being unable to cut back on expenditure, chasing losses, borrowing money from multiple sources to very serious consequences such as bankruptcy and being unable to afford daily essentials.

Very accurate data concerning the actual amount spent on gambling (net expenditure) is compiled every year in Australia by the Queensland Treasury and formerly by the Tasmanian Gaming Commission. As discussed in Chapter 2, it is easy to determine how much was spent on the different forms of gambling, over what period, and how this differs between jurisdictions. However, such figures do not allow any determination as to how much of this total expenditure was attributable to problem

gambling as opposed to other gamblers. Nor is there any insight into how this money might have been directed away from other activities. As a result, there have been many attempts to estimate the amount spent by problem gamblers using self-reported expenditure data obtained from surveys. In most of these surveys, gamblers are asked to indicate how much they typically spend (out of pocket) on each form of gambling. The number of sessions is then multiplied by the number of estimated sessions per year to estimate how much the person has spent in total.

Several studies have attempted to measure the accuracy of these data and found the estimates to be highly inaccurate. For example, in South Australia's first prevalence study in 1996, Delfabbro and Winefield found that the self-reported estimate of EGM expenditure was only half the actual amount recorded by State Treasury. Similarly, in a recent assessment of the data quality provided by the Household Expenditure Survey 1998-1999, the S.A. Centre for Economic Studies (2006) found that gambling expenditure estimates based upon household diary keeping were so inaccurate as to be almost meaningless. Poker machine expenditure for the entire State was estimated to be around \$40 million as compared with an actual net expenditure of \$418 million. Total gambling expenditure estimates were over five times lower than actual figures.

There are many reasons why self-reported estimates are likely to be inaccurate. One important reason is that people do not interpret questions in the same way. Blaszczynski, Dumlao, and Lange (1997) presented a series of gambling expenditure scenarios to a group of highly educated students and found substantial variations in how the material was interpreted. Some included only the money that was brought along, some included winnings while others did not, while others included extra money that had been taken out during the course of the session. Although some surveys have tried to overcome this by specifically asking people to ignore the reinvestment of winnings (e.g., McMillen et al., 2003 in Victoria), it is still unlikely that they can overcome all the potential biases and omissions inherent in this methodology. People may not recall all of their gambling sessions. Alternatively, they may provide general rule-based estimates and leave out all the other miscellaneous sessions, so that "after-thought" gambling

undertaken as the person passes through the venue, or “loose change” gambling will probably not be included. Further compounding the problem is that people may also have a tendency to recall those occasions when they won rather than when they lost (SACES, 2006). Thus, no matter how the questions are framed, it is likely that expenditure estimates based on gambling surveys will be of limited value from a public health or regulatory perspective.

Another type of expenditure question that has uncertain validity is that which asks people to describe the source of their gambling expenditure, or the nature of activities or purchases forgone in order to finance the gambling. Questions of this nature have been included in several Victorian surveys, e.g., in McMillen et al. (2003), and in both recent Tasmanian prevalence surveys (Roy Morgan Research, 2001, 2005). Such questions impose unreasonable cognitive demands upon telephone respondents and are potentially non-sensical. The questions assume that people are capable of neatly partitioning their expenditure into separate categories for every household or daily purchase, and are then able to recall all of this information on demand.

The only potential value in survey expenditure data relates to the extent to which they can be used to ascertain relative difference in expenditure. That is, how much do people spend on one form of gambling rather than another, and to what extent does this differ between problem and non-problem gamblers? In its national report, the Productivity Commission (1999) used this information to estimate the relative proportion of total gambling expenditure attributable to problem gamblers (33%). In a second analysis, the total proportion of gambling expenditure accounted for by problem gamblers was multiplied by the actual proportion accounted for by each form of gambling (i.e., based on actual statistics) to estimate the proportion of net expenditure on each form of gambling attributable to problem gamblers. Based on this analysis, the Commission estimated that 42% of net expenditure on EGMs was attributable to problem gamblers.

To date, this remains the principal figure that is quoted when assessing the absolute financial impact of problem gambling. However, this figure is only based on

problem gamblers who were willing to take part in a telephone survey, and does not include other gamblers within the community, or take into account the possibility that problem gamblers may understate their expenditure as compared with other gamblers.

3.2.6 Problem Gambling and Legal Impacts

(a) Prevalence of Legal Problems

Problem gambling can also give rise to significant legal implications. In all current prevalence studies, a number of questions are included to determine whether gamblers have experienced legal problems because of their gambling. These questions typically begin by asking whether people have been in trouble with the police because of gambling, if they have been charged with an offence or been to court, and whether they have been convicted. Other surveys have further asked people whether they have engaged in any illegal activities because of gambling (e.g., obtained money illegally, written bad cheques, or stolen goods to raise money to gamble). As with questions relating to significant employment impacts (e.g., job losses), the response rates for these questions tend to be very low in general prevalence surveys (usually around 1% or less), so that the data are usually not very useful. More insightful data have generally been obtained from a number of surveys of counselling agencies. Within these samples, the self-reported prevalence of illegal activity has averaged around 40-50% (Blaszczynski & McConaghy, 1994; Jackson et al., 1997, 1999; Productivity Commission, 1999), with around 20% of clients reporting having been formally subjected to prosecution.

It is highly unlikely that any of these studies provides an accurate estimate of the true prevalence of gambling-related criminal behaviour in the broader community. Individuals who seek assistance from treatment services are likely to have a disproportionately higher prevalence of these problems because they often seek help only when very desperate circumstances (often impending court appearances) impel them to do so. Conversely, those gamblers who respond to telephone surveys are likely to understate their involvement in criminal activities because of fear of detection, embarrassment, and a reluctance to reveal details of their private behaviour.

(b) Types of Offence

Some studies have focused specifically on the types of crimes committed by gamblers. Blaszczynski and McConaghy (1994) conducted a detailed study of 306 problem gamblers from a hospital treatment program and Gamblers Anonymous. Their results showed that 31% had committed some form of theft, 22% had engaged in embezzlement, and 7% had misappropriated funds. Although relatively few had committed very serious or violent crimes, many had committed a very large number of offences (range 1-600 with a mean of 12). Most worked in white-collar jobs with access to money so that they had opportunities to support their gambling through illegal means. However, few had any previous history of offending. In most cases, gambling predated their offending by three or more years, suggesting that gambling rather than any general propensity for crime had led them to begin offending. These findings were useful in that they provided insights into the likely causal links between gambling and crime and the types of employment situations where organisation would need to remain vigilant to the possibility of employee gambling. Unfortunately, few attempts have been made over the last 12-13 years to replicate these findings in different samples, and in jurisdictions outside of New South Wales.

(c) Prison / Correctional Studies

Since the late 1990s, a number of Australian studies have been conducted to examine the prevalence of problem gambling within correctional populations. Studies have been conducted within Queensland (Boreham, Dickerson, Walsh, Harley, & Hogan, 1996; Powis, 2002), South Australia (Marshall, Balfour, & Kenner, 1998), the ACT (Lahn & Grabosky, 2004), Western Australia (Blaszczynski, 1994). Each of these studies involved a very similar methodology. A sample of prisoners was administered a series of questions relating to gambling and problem gambling, as well as other criminal behaviour. All of the studies showed that the prevalence of problem gambling was significantly higher within correctional populations, although the studies cannot be compared without some caution because of variations in the sampling methodology and the measures used. Lahn and Grabosky's ACT study was, for example, conducted using younger offenders, whereas the remainder (Qld, SA, and WA) used the general

population. Lahn and Grabosky and Marshall et al. used the SOGS as their problem gambling measure (34% prevalence rate), Povich used the CPGI (17% problem gambling rate), whereas Boreham et al. did not use a validated measure.

As Marshall et al. further pointed out, all of these studies provide only limited insights into the link between gambling and crime because not all the people sampled were necessarily first-time offenders. Many had committed multiple crimes and for different reasons, so it was not always easy to differentiate gambling-related crimes from those arising from other causes or motivations. Indeed, as Dickerson et al. (1998) cautioned, offenders may sometimes cite gambling as a cause or justification for their behaviour when it was, in fact, just one of number of high-risk behaviours that they engaged in. To address this issue, some other studies (e.g., Meredith, 2001 in SA; Queensland Department for Corrective Services, 2005) have conducted investigations into the prevalence of problem gambling within community corrections populations where people may have less severe criminal records. The Meredith study (SA) involving 50 people found that 20% of respondents scored in the problem range on the SOGS, whereas the Queensland study of 570 people obtained a 9.4% rate using the CPGI. Both studies therefore confirmed that problem gambling is also much higher in those sentenced to less serious penalties, but neither study was able to determine the extent to which gambling caused, or was a corollary of, broader risk-taking behaviours.

Taken as a whole, the findings suggest that there is a need for a more consistent national approach to studying gambling within correctional populations. Apart from the fact that studies have not been undertaken in all jurisdictions, there is a need to ensure that similar measures are used (e.g., CPGI), that both male and female prisoners are surveyed (most studies so far have all been with men), and that consistent sub-populations within prisons are sampled (i.e., similar level of security). Such studies could be supplemented by similar surveys of first and repeat offenders within community corrections populations.

(d) Studies of Archival Data

Another way in which to investigate possible links between gambling and crime has been to examine court records and police reports to determine whether gambling was identified as a factor in the offence committed. Several studies have undertaken this process. For example, Crofts (2003) reviewed 2700 District Court records in NSW and found 105 references to gambling usually involving white-collar crimes such as embezzlement. When 63 files were subjected to detailed examination, it was found that 47 defendants had admitted to having committed crimes due to gambling. A similar methodology was employed by the Australian Institute of Criminology and PricewaterhouseCoopers in 2003. Over 150 cases involving fraud were identified in both Australia and New Zealand and attempts were made to examine records to determine whether gambling had influenced the case. The results showed that gambling had been the primary motivation in 21 convicted cases, with the most common criminal offences including being to obtain finance or credit by deception (43%), cheque fraud (43%), misappropriation of funds (19%), and obtaining goods and services by deception (19%).

Although such results are promising, this methodology is very likely to significantly understate the prevalence of gambling-related crime. Apart from the fact that not all gambling crimes end up in court, the reasons for specific crimes are not specifically recorded in many cases, either by the courts themselves, or in police records (Centre for Criminology and Criminal Justice, 2000; S.A. Office of Crime Statistics, 2004). Until recording techniques can be updated by the implementation of consistent protocols that could be filled out by police and court officers, the data will not be a valid or reliable base on which to inform public policy.

(e) Crime-rate and Geographical Areas

Another method that has been used to infer the nature of the relationship between gambling and crime is geographical mapping. In the most elementary form of this analysis, researchers examine the rate of crimes in standard geographical areas with varying degrees of gambling activity or expenditure. A method such as this was used by the S.A. Centre for Economic Studies (SACES) in 2006 as part of a broader investigation of the social and economic impacts of gambling in South Australia. The Centre obtained

data concerning the net EGM revenue as well as the total number of offences in the various Statistical Local Areas of South Australia. Both indices were expressed in terms of EGM revenue or offences per 1000 adults living in those areas. The results revealed a small, but significant positive correlation between the two variables, and that relationships could also be detected if one broke down the offences into separate categories (property vs. violent crimes). The SACES concluded that there was some evidence of an association between crime rates and the concentration of EGM gambling.

It is very likely that analyses of this nature could be repeated in other jurisdictions in Australia where similar data are available. However, as is pointed out in the Australasian Gambling Review (Delfabbro, 2007), a difficulty with this analysis is that it not possible to draw any causal association between the two variables. Although it would appear logical to assume that the concentration of gambling contributed to higher offence rates, it is also possible that a third variable might be responsible for the association. As shown by the Queensland University study (Haytbakhsch et al., 2006), those people who have a greater likelihood of gambling also tend to have a history of engaging in other high risk behaviours, including substance misuse. If such people are more likely to be found living in specific areas, then they will contribute to both higher levels of gambling expenditure as well as higher offence rates. The apparent association between offending and crime may therefore be spurious. Another difficulty with this type of analysis is that offence data often does not specify the extent to which the behaviour was due to gambling as opposed to other motivational or circumstantial factors.

3.2.7 Problem Gambling and Venue Staff

Although most studies of gambling have focused on the effects of gambling on the broader community, there has been increasing recognition that people who work in close proximity to gamblers (namely venue staff) may be more likely to develop problems associated with gambling. This view has been borne out in a series of studies undertaken by the Centre for Gambling Education and Research at Southern Cross University in NSW. Published in two major reports (Hing & Breen, 2006; Hing, 2008) and in series of related journal papers (Hing & Breen, 200a, b, c, d; Hing & Breen, 2005,

2006, 2007), this research has involved detailed quantitative surveys and qualitative interviews with venue staff working in gaming venues, particularly in Queensland.

In the principal quantitative component of the study (Hing & Breen, 2008), 511 venue employees recruited from casinos (n= 319), hotels (n = 131) and clubs (n= 59) completed a self-report survey. All were asked to indicate how often they gambled, were asked to complete the problem gambling questions from the CPGI and other questions relating to their work environment. The results showed that venue staff were much more heavily involved in gambling than people in the general Queensland community, as based on the most recent Queensland Household Gambling Survey. Ninety-five percent had gambled at least once in the previous 12 months (as compared with around 80% in the general community). The participation rate for lotteries was 85% (1.3 x higher); the EGM rate was 67.6% (2.1 times higher) and the TAB rate (36.8%) was 2.2 times higher. The rate of problem gambling, as indicated by the CPGI (scores 8+), was also significantly higher (4.5% vs. 0.47%) as was the rate of moderate risk gambling (scores 3-7) (11.5% vs. 1.80%). Those with gambling problems were more likely to be male and to have gambled on a wider range of activities.

In the qualitative component of the research, structured interviews were conducted with people working clubs (n = 34), hotels (n = 14) and casinos (n = 38). Other interviews were conducted with venue managers, problem gambling counsellors and a small sample (n = 6) of people who had self-identified as having developed problems as a result of working in venues. The findings from these interviews were classified into themes and used to develop a systematic classification of factors that were likely to make venue staff more at risk of developing problems with their gambling. The same thematic analysis was also used to identify potential protective factors that might reduce these risks. A summary of the risk factors is provided in Table 3.1.

Table 3.1. Venue staff: Risk factors for problem gambling (adapted from Delfabbro & LeCouteur, 2009 and Breen & Hing, 2008)

Risk Factor	Explanation
Close interaction with gamblers	Staff are exposed to people gambling, winning money and talking about gambling
Frequent exposure to gambling	Easy access to gambling opportunities, the sounds of money being won, the intense atmosphere of the gaming floor.
Workplace stressors	Stress associated with work can lead to gambling, e.g., dealing with difficult customers or managers.
Shiftwork	Long hours can lead to tiredness and boredom, feelings of loneliness that might be relieved by gambling.
Influence of fellow employees	Staff may have a common interest in gambling. They may be encouraged to share information, gamble together and introduce each other to gambling.
Influence of venue managers, policies and procedures	Some venue managers may be gamblers and encourage a culture of gambling in the venue.
Other workplace factors	Gambling may also be influenced by the availability of alcohol, the low wages sometimes paid to staff and the ready availability of cash in the venue
Frequent exposure to gambling marketing and advertising	The venue environment itself may encourage gambling because of the large number of incentives and inducements to gamble.

Hing and Breen (2008) showed that many of the factors examined as risk factors can also serve as protective factors. For example, being exposed to problem gamblers can make some staff more determined to avoid the same problems themselves. In some venues, staff can benefit from the support provided by other staff, utilise the responsible gambling services that are made available to patrons, or apply some of their own training to avoid developing problems themselves. As they showed however, a common difficulty, is that those who were identified by the CPGI as being most at risk were more likely to report being exposed to risk factors and less likely to report the availability of protective factors. As an example, problem gamblers were less likely to report that they had colleagues who could offer support if they developed gambling problems.

Hing and Breen's (2008) research has many implications for policy development in Australia. It provides information concerning the nature of work place arrangements and practices that could influence the behaviour and wellbeing of staff. Information of this nature may usefully inform the development of responsible gambling policies or codes of practice (see Section 5.2.3) relating to the safe provision of gambling products in venues. Of particular relevance of this topic, would be policies or provisions relating to staff training, staff use of gambling products, mentoring services, or management responsibilities.

Although Hing and Breen's work was undertaken in Queensland, it is likely that many of the findings, particularly relating to identified risk and protective factors, could be generalised to other parts of Australia, including to other venues with EGM or larger casinos. On the other hand, greater caution needs to be applied to the findings relating to the prevalence of gambling and problem gambling in the employee samples. As carefully outlined in the final report (Hing, 2008), significant difficulties were associated with the collection of survey data from venue employees. For example, of 2700 surveys distributed to hotel association staff, only 109 completed surveys were collected (a 4% response rate). In many venues, staff were not randomly selected, but nominated to do the survey, or people volunteered or self-selected themselves into the survey. A common danger with this method of data collection (also relevant to other studies involving

convenience or volunteer samples), is that one will typically obtain very much higher prevalence figures because those who are willing to participate have a greater interest in gambling. In other words, those who do not gamble may self-select themselves out of the sample and not participate because they do not see the survey as relevant to them individually. For these reasons, the very much higher prevalence of gambling in staff samples could have been significantly influenced by the sampling method rather than the greater opportunities to gamble, as postulated in the research. It therefore is not clear whether these results would be replicated if one were able (and probably only hypothetically) to obtain a random sample of venue staff from venues in other jurisdictions. Nevertheless, these uncertainties do not detract from the important general findings of the research; namely, that venue staff are subject to working conditions that may make them particularly vulnerable to problem gambling.

Chapter 4: The Characteristics of EGMs and Their Role in Gambling and Problem Gambling

4.1 Overview

Of all forms of gambling available in Australia, EGMs generate by far the largest proportion of industry income. EGMs are the most popular continuous form of gambling, with between 30-40% of the adult population gambling at least once per year, and around 3-5% gambling on a weekly basis. EGMs are also played by a wide range of people of different genders, ages and social backgrounds, so that it is often difficult to find clear demographic differences in EGM participation rates as is often the case when considering more traditional forms of gambling such as racing, casino-style games, and sports-betting. The general popularity of EGMs is, however, overshadowed by a consistent finding that this form of gambling is most likely to be associated with gambling-related problems.

This chapter summarises the body of research that has drawn associations between EGM gambling and problem gambling, as well as the factors that contribute to the popularity of gaming machines within Australia. Further sections in the chapter review the theoretical explanations advanced to explain excessive gambling on EGMs, and the nature of gaming machine features that influence gambling behaviour, and to what extent.

4.2 EGMs and Problem Gambling

Although it is acknowledged that many forms of gambling can potentially lead to gambling-related problems, a critical issue of public policy is the extent to which EGMs (as opposed to other gambling forms) contribute to these problems. This question is important for several reasons. First, from a public health and regulatory perspective, it is important to know where policies and regulatory provisions should be directed. Second, when considering what contributions the industry should make to assist problem gamblers, e.g., via the provision of treatment services, it is useful to know what form of

gambling and sectors of the industry are principally implicated in giving rise to problem gambling.

The AGR reviews several sources of information relevant to the establishment of links between specific forms of gambling and higher problem gambling rates.

1. *Participation Rates within Samples of Problem Gamblers*: Many prevalence studies present the percentage of problem gamblers gambling on different activities. Most of these studies show that 80-90%+ problem gamblers play poker machines (Delfabbro & LeCouteur, 2007). However, these figures do not allow one to determine whether poker machine are the specific cause of the person's gambling problems. Problem gamblers often report that they gamble on a wide range of activities, so it is unclear whether poker machines are the specific problem, or whether the combination of expenditure on different activities contributes to over-expenditure.

2. *Problem Gambling Prevalence as a Function of Participation Rates*: Other analyses have examined what proportion of regular gamblers on different activities are problem gamblers. The Productivity Commission (1999) found, for example, that 24% of weekly casino table gamblers, 23% of weekly EGM players, and 15% of racing gamblers were problem gamblers. Roy Morgan Research (2005) found that 39% of weekly EGM players at hotels and clubs in Tasmania were problem gamblers on the CPGI. In the ACT prevalence study (McMillen et al., 2001), 26% of weekly EGM players, 22% of weekly racing gamblers and 19% of casino table game players were problem players (SOGS 5+). These figures are insightful in that they show how quite different figures can be obtained if one examines the prevalence of problem gambling relative to the base-rate or prevalence of the activity itself. Since EGM gambling is more prevalent (30-40% gamble on EGMs vs. < 10% for casino games or 20% for racing), one will get more problem EGM players simply because there are more EGMs in general, i.e., $P(\text{EGM player} / \text{PG})$ is high because $P(\text{EGM player}) > P(\text{racing or casino gambler})$. However, if one calculates the $P(\text{PG} / \text{Casino or racing gambler})$ the figure may be closer to $P(\text{PG} / \text{EGM player})$. That is, racing and casino

gambling must be just as likely to cause gambling problems as EGMs, but it is just that there are fewer people gambling on these other forms of gambling.

3. *EGMs Identified as the Cause*: Relatively few studies have asked problem gamblers to identify the type of gambling that was the principal cause of their problems. One of the few exceptions to this was the survey of clients in treatment conducted by the Productivity Commission (1999). In 6 of the 8 jurisdictions of Australia, EGMs were identified as the cause of problems amongst 65-81% of clients. However, a potential threat to the validity of this analysis is that the agencies concerned might have had a principal focus on the treatment of EGM gambling. In addition, it is well established that women are more likely to have problems with EGMs and to seek help for their problems. Accordingly, there is a possibility that these figures based on agency data might over-state the role of EGMs in problem gambling.

In summary, the existing national literature provides an incomplete analysis of the links between problem gambling and specific forms of gambling because either the wrong questions have been asked, or because researchers have failed to conduct a comprehensive set of analyses relevant to this topic. In future prevalence studies, it would be useful for problem gamblers who admit to having a problem to be asked what form of gambling was principally involved. Moreover, in order to understand the relative risk of problem gambling associated with individual forms, it would be useful to present prevalence as a function of the type of gambling involved (e.g., % of regular or weekly gamblers on each form who are problem gamblers).

4.3 EGM Gambling: Motivational Factors and Preferences

Since the early 1990s, a number of studies have been conducted to examine people's motivation for gambling on various forms of gambling, including EGMs. Motivations have been obtained using both self-report surveys, but also by drawing inferences from observed gambling behaviour in venues. The results across multiple surveys generally show that EGM gamblers play for enjoyment, relaxation, and to socialise with friends. However, other self-report data, particularly relating to motivations

for winning, is very difficult to interpret because the results vary significantly depending upon how the questions are asked and analysed. Since many surveys do not specifically ask about why people gamble on particular activities, it is therefore necessary to cross-tabulate motivational responses with participation questions in an attempt to infer motivations. Accordingly, if one asks - "Do you gamble to win money?" - and then cross-tabulates this response with EGM participation, the results will show reasonable correspondence between this motivation and EGM gambling. However, if one specifically asks people why they gamble on EGMs, very few will identify "winning money" as a significant motivation (e.g., Hill, Deyell, Lockett, & Pederick, 1995). On the other hand, if the question is reframed so as to ask people "how important" winning money is when they gamble on EGMs, most people will consider it to be important (Delfabbro, 1998). Similarly, as McMillen et al. (2003) found in Victoria, if one asks people if they gamble on EGMs for the "dream or thrill of winning", many EGM players will endorse the question because it refers to a hope of winning money rather than an expectation. In other words, although people want to win money when they play EGMs, they also recognize that winning is unlikely.

Self-report data have also been used to determine what features of gaming machines people find attractive. In one recent study by the Australian Institute for Primary Care (AIPC) (2006) in Victoria, detailed focus groups were conducted with 62 problem gamblers who had sought assistance from counselling agencies in Melbourne. When asked what features of machines they found attractive, many indicated that the graphics or sounds were important, but there was no systematic pattern in terms of what particular characteristics were preferred. Players were, however, more consistent in their view that they liked 1, 2 or 5 cent machines because they allowed greater playing time, and an opportunity to bet on a greater number of lines. Playing on a greater number of lines also provided greater opportunities to win bonus features. These findings, particularly the popularity of low denomination gaming machines, have also been confirmed in several State prevalence surveys, e.g., in the S.A. Department of Human Services (2001), and Victorian Prevalence study (McMillen et al., 2003). One, two or five line machines were preferred by 75% of players in Victoria and 83% in South Australia.

When these results were compared across problem and non-problem gamblers, few significant differences were observed (88% of problem gamblers played 1, 2 and 5 cent machines).

As discussed in the AGR, the 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.” (p. 123). However, the validity of the conclusions needs to be treated with some caution because the data were obtained via general self-report interviews rather than by using a standardised measure. The sample also only included problem gamblers within treatment and was 74% female, so it may not be possible to generalise to other problem gamblers within the community. Moreover, the study does not provide a comparison sample of regular gamblers to determine whether similar findings might have been obtained in other gamblers.

A second AIPC study analysed some questions included in a Victorian telephone survey of almost 100 regular EGM gamblers conducted by New Focus Research. Once again, respondents (of whom 70% were women) were asked a series of questions relating to EGM gambling. It was found that 82% preferred 1,2 or 5 cent machines, 60% adopted a gambling strategy that involved gambling on maximum lines and minimum credits per line. This study involved gamblers recruited from the general community so the findings are more easily generalised to other EGM players in the Victorian community, but no comparisons of problem vs. non-problem players were provided to determine whether these preferences were unique to problem gambling or common to many gamblers in general.

A number of self-report studies have also examined variations in the amount bet per game. The Productivity Commission (1999) showed that problem gamblers were more likely to bet multiple credits per line (70% vs. 36%) and to gamble on more lines than other gamblers (9 lines vs. 6 lines). Twenty seven percent of problem gamblers said that they often or always bet on more than one line per spin vs. 16% frequent non-

problem gamblers). McMillen et al. (2003) in Victoria found that 86% of EGM gamblers gambled on more than 1 line and that almost 50% gambled more than one credit per line, although this survey did not specify how often this occurred. In South Australia, the S.A. Department for Human Services (2001) found that 47% of gamblers always bet on more than one line per spin, with 42% usually playing 6-10 lines and 49% on 2-5 lines. Around 50% bet more than one credit per line (73% said 2-5 credits per line), but only 14% doing this “always” or “often”. When the results for problem gamblers were compared with other gamblers, it was found that problem gamblers were more likely to report always or often playing more than one line (89% vs. 74% of regular non-problem players), and were more likely to always or often bet multiple credits per line (27% vs. 16%). Such group comparisons are not provided in surveys completed in the Australian Capital Territory and Victoria even though these questions were included in the survey.

Other studies have inferred the nature of EGM play using observational methods. In this type of research, researchers visit venues and observe players and keep records of their style of play, the amount of time and money spent, and how they interact with specific machine features (Walker, 2000; Williamson & Walker, 2000; Walker, 2004). In one study by Williamson and Walker (2000), 220 players in the Star City Casino in New South Wales were observed in order to examine the nature of player betting styles. Each player was observed for 20 consecutive games. Any player that bet the same number of lines and bets for five or more consecutive spins was described as having a strategy. It was found that almost all players had a distinctive playing strategy. The most common strategy observed in around 45% of players the authors termed a “maximin” betting strategy. Players preferred to gamble on the maximum lines available on the machine, but at the minimum bet (e.g., 1 credit on all 20 lines on the machine). Around 10% of players preferred betting using the maximum bet-size and number of lines, around 1-2% used a minimum bet and minimum lines strategy, and almost no players consistently bet on the minimum lines using the maximum bet.

These findings were confirmed in a laboratory simulation by Delfabbro, Falzon, and Ingram (2004), in which regular players were given pre-exposure to four different

machine with different line and credit combinations in a forced choice situation where players could gamble for 20 minutes, but keep all of their winnings. Even though the return to player was the same in each condition, players uniformly preferred the option with 3 lines, 3 credits, or 3 lines, 1 credit, as opposed to the 1 line, 3 credit option.

According to Walker (2004), players use this strategy for three reasons: (1) Because of a desire to avoid missing out on outcomes that might occur on pay-lines that were not played (ie., to avoid near misses and minimise regret); (2) Because playing this way increased the players' chances of obtaining scatter symbols that triggered free spin features, and (3) because the bonus feature was statistically much more likely event to occur than the major win sequences (e.g., getting 5 of the rarest symbols in a row).

Other similar studies conducted by Walker (see Walker, 2004 for a review) showed that players are generally reluctant to use the double-up feature on the machines, particularly when they have just obtained large wins. Double up features allow players to double their winnings by correctly selecting one of two cards (red or black). An incorrect choice leads to the player losing their win. Despite the fact that this feature offers a 50:50 chance of winning, only a very small proportion of players appear to use double up. One analysis of all of the Aristocrat machines at a Sydney club (almost 78,000 wins) showed that only 5.38% of wins were doubled up. Another interview study involving 120 gamblers at a NSW club found that 71% of players never used double up, and that 67% believed that it was too risky, even though the odds were better than winning on the machine itself. Once again, this effect was explained in terms of people's desire to avoid regret. Consistent with the well established principle of prospect theory (Kahnemann & Tversky, 1984), players appear to be more risk averse (i.e., reluctant to take risks) when faced with certain wins (in this case, a win in hand) than they are when faced with a certain loss.

Walker's studies have high external validity in that they were all based on the observation of genuine players in a real gambling environment. However, it should be noted that the sampling frame and number of observations recorded for some players

(particularly in the Williamson & Walker, 2000 study) was relatively small (only 20 observed trials per player). Within such a narrow frame of reference, it is possible that the study may have under-described the range of within-subject variability that might have otherwise been observed had the researchers observed the same players for longer periods (e.g., 30 minutes or longer). In addition, the findings are not all based on random samples of gamblers, so that it is not clear whether the findings can be generalised to all gamblers. A number of studies are also exclusively based on the Aristocrat Queen of the Nile, which has a particular bonus feature that is attractive to players. It is not clear, therefore, whether the findings can be generalised to other popular machines that do not have these features (e.g., Aristocrat's original Black Rhino had no such bonus feature, but was one of the most popular machines in Australia). Finally, most of the studies did not have any opportunity to administer a standardised problem gambling measure, so (as with the AIPC results above), it is difficult to determine whether these preferences are characteristic of problem gambling gamblers or regular EGM players in general.

In summary, the findings summarised in this section allow some useful conclusions to be reached: (1) EGM Players in general are highly motivated to obtain bonus features on certain gaming machines, and that these features appear to be factors that contribute to persistent behaviour, (2) Many players are also encouraged to spend more (even on low denomination machines) by bonus or scatter features that can be obtained more frequently by betting maximum lines, (3) All players including problem gamblers prefer to gamble on low denomination machines and to gamble on more than one line spin, with around half betting more than 1 credit per line, (4) Problem gamblers typically bet on more lines and bet more credits per line. Most of these findings are readily generalisable to different Australian jurisdictions because of the similarity in gaming machines across the country, in particular the preponderance of low denomination machines and similarity of software platforms. However, there are several ways in which this research could be strengthened to make it more useful for national comparisons, regulation and policy.

- Australian prevalence studies should include questions relating to betting behaviour on EGMs (i.e., how many lines and credits are selected). These questions should ask respondents to indicate the frequency at which these different betting options are chosen (never, rarely, sometimes, often, always) rather than just allow ‘yes’ and ‘no’ responses. It should always be possible to measure some of these responses using quantitative or closed-ended questions to allow inter-jurisdictional comparisons.
- Where such questions are included, there should be clear attempts to compare these responses across problem gamblers and other EGM players. Without these comparisons, it is unclear whether the patterns observed are unique to problem gamblers or regular players in general. Understanding these differences is important for the development of targeted regulatory responses that influence problem gambling, but not at the expense of other players.
- There should be greater use of observational data of the nature employed by Walker, but with a focus on determining how problem gamblers differ from other players in venues. The time frame for observations should also be extended so as to capture a more representative volume of data on the consistency of within-sample betting patterns.

4.4 In-venue EGM Studies in New South Wales and Queensland

4.4.1 EGM Playing Styles: Observational and In Vivo Research

In addition to the observational and self-report studies described above, there are also several studies that have gained access to objective EGM data within venues. A study by Haw (2000), for example, examined data from 700 EGMs with the support of Aristocrat Leisure Industries. The aim was to examine whether specific machine characteristics such as the availability of note acceptors and maximum number of betting lines influenced turnover on the machines. The results showed that both features significantly increased turnover, but it was not possible, due to the absence of any data

relating to the status of individual players, to determine whether this effect was stronger in problem gamblers.

Another study undertaken by Brodie, Honeyfield, and Whitehead (2003) examined the Queensland Government's imposition of an upper limit of \$20 on the bank notes that could be fed into Queensland gaming machines. 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 was conducted. When participants were asked to indicate the extent to which the modification had influenced their behaviour, 61% of respondents approved of the \$20 limit, and a further 28% believed that the limit should be restricted even further. Despite the fact that 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. The results also showed that these reductions were significantly stronger in those identified as high risk or problem gamblers. Within the problem gambler 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 examined changes in net gaming revenue from 1997 to 2002 to determine the revenue effects of these modifications. The results showed no clear evidence that limits 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 the authors pointed out, there may have been 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. For these reasons, the authors concluded that imposing limits on note acceptors was a potentially useful strategy to reduce expenditure among problem gamblers.

In another study described by Walker (2004), 56 EGM players at a large Sydney club gave permission for their data to be tracked over a two week period based on their use of loyalty cards. The results showed that the vast majority (80%) of sessions on individual machines last only around 5-10 minutes, with a further 10-15% lasting less than 30 minutes. These results seem puzzling in that it would usually be expected that people using loyalty cards would gamble for longer because of the desire to accrue points to earn prizes. What the findings instead suggest is that people engage in considerable “sampling” of individual machines before they make a decision to gamble on that machine for longer periods. People try to find the machine that machine which is perceived to be more profitable or which is “paying out” at that particular time. Accordingly, players move from one machine to the next until they find the machine they are looking for.

In broad terms, it is likely that these findings could be generalized to a number of other jurisdictions where there are very large venues (Australian Capital Territory and Victoria), where people may have greater opportunities of being able to pick and choose between different machines in a short period. However, it is unclear whether the findings could similarly be generalized to smaller venues (e.g., in South Australia and Tasmania) where the popular machines are more likely to be occupied (i.e., there are fewer machine from which to choose). These findings also do not provide any indication as to whether this behaviour differs between problem gamblers and other EGM players. Nor is it possible to determine whether people used their loyalty cards on all occasions, or if this sample was representative of other players within the venue.

Another similar study conducted by Svetieva, Walker, Blaszczynski and Sharpe (2006) used a similar methodology to examine the gambling habits of 102 EGM players in NSW clubs. All of the players who agree to participate in the study agreed to complete a short survey that includes the SOGS. Using player membership cards, the researchers sought to determine whether problem gamblers (classified as those who scored 5+ on the SOGS) style of EGM play differed in any way from recreational or non-problem players. The results showed that problem gamblers played for significantly longer (280 minutes as

compared with 192 minutes for the recreational players) and played more often (2.28 days per week vs. 1.79 for the recreational players). The problem players also lost significant more money when they played (\$65 vs \$26 per session). Contrary to predictions, there were no other major differences between the two groups in terms of how often they changed machines, how long they persisted on the same machine, or how they gambled. The authors concluded that the principal difference between problem and non-problem players was quantitative rather than qualitative. In other words, problem gamblers play for longer periods and more often than other players, rather than necessarily more intensely within a specified period of time.

In this sense, the findings from this NSW study are generally consistent with the national definition of problem gambling endorsed by Gambling Research Australia. People are more likely to experience harmful consequences as a result of gambling when they devote a greater amount of time and money to gambling, and particularly on continuous activities such as EGMs. However, before using these results to inform broader policies relating to EGMs, it is important to place these results in the context of other research studies that have not necessarily obtained entirely consistent findings. The Productivity Commission (1999), for example, showed that problem gamblers were more likely to play \$1 denomination machines than other players, and that they tended to play a greater number of lines, and bet more per line. Similar results were also obtained by the S.A. Department for Human Services (2001) and S.A. Department for Health in both community prevalence surveys. These findings suggest that Svetieva et al.'s (2006) NSW findings may need to be treated with some caution because the balance of evidence suggests that problem gamblers do tend to gamble more intensively as well as for longer periods than other players. The difficulty with using card tracking to examine gambling behaviour is that it only usually provides information concerning the duration of sessions, the number of machines played, and overall expenditure. Thus, although it would appear that session duration and frequency were the principal differences between problem gamblers and other players, one cannot rule out the possibility that there were differences in the style of play (e.g., the number of lines and magnitude of bets chosen by problem players).

The important policy implication of this work is that it suggests that card technology could be usefully applied in future research studies and as a regulatory tool to monitor some important aspects of gaming behaviour, most notably the amount of time and money spent by individual players over time. It would appear that policies relating to the length of gambling sessions, or how often problem gamblers can access venues, would appear to be potentially beneficial in that both frequency and the length of sessions have consistently been associated with a greater likelihood of gambling-related harm. Some steps toward the utilisation of this knowledge to assist problem gamblers have been made by Gambling Research Australia in the form of its support for projects relating to pre-commitment strategies or other technologies that might enable either players themselves or regulators to place limits on potential expenditure rates on EGMs.

4.4.2 Near Miss Effects

Other studies have sought to examine variations in the configuration of EGM technology more precisely by actively altering or manipulating the nature of outcomes presented to players. A study of this nature was, for example, undertaken by Sharpe, Blaszczyński, and Walker (2005) whose study focused specifically on the role of near miss events on gambling behaviour. Near misses or “near-wins” have been identified as potentially important in the EGM literature because these events (e.g., a close alignment of winning symbols) are thought to maintain player behaviour and may be particularly reinforcing for, or attractive to, problem gamblers. In most previous international studies of this topic, near misses have typically been generated on very simplistic EGMs or simulators with only three lines and three or four columns of symbols. In these simplified machines, near misses are generally very salient to players. The authors were therefore interested in whether this effect could be replicated on more complex machine configurations where players are exposed to a greater number of symbols and multiple play lines.

In a first study, 57 social gamblers and a sample of university students were presented with 200 graphical representations of machine outcomes taken from

Aristocrat's popular Queen of the Nile game. Machine outcomes were presented in simulated play situations involving 1, 5 or 20 line formats. The results showed that very few of the events thought to constitute near wins were identified by participants. Moreover, problem gamblers (defined as those who scored 3+ on the SOGS), were even less likely than the students to identify these particular events. In a second study, 149 student gamblers were asked to play a machine where they were exposed to different proportions of near win events. All players were given \$10 worth of 1c credits and asked to play for as long as they liked and to keep their winnings. One condition provided a combination of losses and near wins, a second condition had all losses, and a third had all near misses. There were no differences in player satisfaction, play-rates or betting behaviour across the three conditions. Based on these findings, the authors concluded that near misses do not appear to play a very strong role in the maintenance of EGM behaviour on modern machines, and that other features are possibly more important.

The importance of near misses or wins is an issue that has seldom been considered by regulators because machines approval guidelines require that manufacturers avoid the inclusion of any features that deliberately distort players' perceptions of winning. However, there has been some debate within some community organizations concerning the existence of contrived symbol patterns on machines that might constitute a deliberate attempt to encourage people to continue gambling. The research conducted by Sharpe et al. (2005) suggests that the effects of these patterns (whether deliberate or coincidental) is likely to be minimal because of complexity of modern machines. Not only do players find it difficult to observe many events that might be considered near misses, but their experience of gambling does not appear to be altered significantly by their presence. The policy implication of this research is therefore somewhat difficult to discern. On the one hand, the existence of multiple play lines gives rise to a greater probability of players experiencing near miss events, but this same increase in complexity may also make it more difficult for players to differentiate clear examples of this phenomenon from the range of other possible outcomes that typically occur on modern machines.

Sharpe et al's (2005) study is well designed in that it utilises both a self-report and experimental methodology, but it is important to recognise that this work has a number of limitations. Only student gamblers were used in the gaming experiment, people were not playing with own money, the amounts wagered were relatively small, and the outcome sequences were artificial. In real-life gambling, near misses would occur in the context of a wider range of machine events including larger wins. People would also have an opportunity to play their preferred machine. For these reasons, this research does not rule out the possibility that near misses can play a role in the maintenance of gambling on some occasions, and that problem gamblers might be more significantly affected.

4.4.3 Sydney University Machine Reconfiguration Study

By far the most extensive study of machine characteristics was undertaken by Blaszczynski, Sharpe, and Walker (2001) in New South Wales clubs and hotels. With the assistance of industry, a popular Aristocrat game Pirates was placed into venues with specific modifications to the machines. The normal reel speed of 3.5 seconds was increased to 5 seconds on some machines, the usual note acceptor limit of \$100 was reduced to \$10, and a maximum bet (usually \$10) was restricted to \$1. In the hotels subject to investigation, the original machine was placed along with a machine with all three modifications just described. In clubs, an unmodified machine was placed next to machines with every combination of modifications (as described below in Table 4.1).

Table 4.1. Blaszczynski, Sharpe and Walker (2001) Machine Modification Study

Note Acceptor (Max \$100)		
	Maximum bet = \$1	Maximum bet = \$10
Play speed (fast, 3.5 seconds)	A	B (unmodified machine)
Play speed (slow, 5 seconds)	C	D
Note Acceptor (Max \$10)		
	Maximum bet = \$1	Maximum bet = \$10
Play speed (fast, 3.5 seconds)	E	F
Play speed (slow, 5 seconds)	G	H

In the club study, between 175-188 players gambled on both the unmodified machine and at least one modified machine and 110 gambled on every machine, so that it was possible to compare participant responses across all the conditions described above. Another strength of the study was that participants completed the SOGS so that it was possible to compare results for problem and non-problem players. Once players had finished gambling on the machines, they were asked to rate their enjoyment, excitement, and satisfaction with the machines on a scale of 1 to 5. The results showed that lower excitement and enjoyment ratings were obtained for the machines with slower play speed, but that the effect was very small (< .5 points on the 5 point scale). Restrictions on maximum bet size reduced enjoyment, but not satisfaction, whereas restrictions on note acceptors had no effect on ratings. As a check on the validity of the experimental manipulation, players were asked to indicate whether they had noticed anything different about the machines. Most noticed the change in play speed, but few noticed the change in note acceptors or bet size. Nevertheless, as Delfabbro and LeCouteur (2007) point out:

“...when asked which machine they most preferred, 23% rated the control [unmodified] 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.” (p. 98)

Based on these findings, it was concluded that machine modifications appear to have little influence on customer satisfaction. However, it is important to draw attention to an important methodological limitation of this research that may have influenced the validity of the findings. In this study, the researchers had no control over play activity

conducted on machines not included in the investigation. Players were able to come and go from the experimental machines whenever they desired. As a result, player responses may have also been influenced by other gambling activities occurring in the venue (e.g., how much they were generally winning or losing). Some players might, for example, play other machines (not a Pirates machine), lose money and feel dissatisfied, and then come back to the Pirates machines in a bad mood. Others might come back having won and be optimistic about their gambling. If this were the case, it would have been more difficult to detect variations that were merely due to the experimental manipulations.

A second issue was the choice of machine itself. Although the authors describe Pirates as well known game, it is unclear whether it is one of the most popular games. If it were the case that Pirates was not one the most popular machines (such as Queen of the Nile), it is possible than players might not have had a lot of interest in any form of the game. Responses may therefore have been subjected to ceiling effects. Ratings for the unmodified condition may have converged on only a modest average and then remained very similar when the modifications were made because the feature changes did not influence the nature of the game itself. In other words, although the modifications were designed to reduce the rate at which money could be inserted into the machine, these factors may not necessary be the factors that influence the ‘consumer value’ or attractiveness of the machine. As discussed in the previous section, when players are asked to indicate what factors make machines more attractive, they usually refer to the availability of bonus features, graphics, and sounds. No mention was made of the availability of note acceptors, maximum bet sizes and playing speeds. It suggests, therefore, that if the modification had involved placing restrictions on the number of betting lines available (see Delfabbro et al., 2004), the effects on consumer satisfaction and machine preferences may have been more strongly observed.

In a second part of their research, Blaszczynski et al. (2001), observers recorded the behaviour of 779 players on the machines for a 5 day period with 10 hours of observational each day. All players included in the study were surveyed prior to being allowed to play on the experimental machines. The results showed that problem gamblers

were more likely to insert higher denomination notes (\$50 or \$100) into the note acceptors (22% vs. 10% of other gamblers), they were slightly more likely to bet more than \$1 per spin (7.5% vs. 2.3%), but there were no significant differences in play speed between the two groups. Problem gamblers also tended to play for longer (42 minutes vs. 29 minutes), and to consume more alcohol and cigarettes while they gambled. A further finding was that slower play speeds appeared to be associated with longer sessions, which implied that reductions in reel speed might be compensated for by longer playing sessions.

As pointed out by Delfabbro and LeCouteur (2007) in the AGR, these findings need to be interpreted with caution. The fact that problem gamblers smoke and drank more during their sessions may only be due to the fact that they had longer sessions of gambling. Similarly, even though longer play sessions appeared to have been associated with slower play rates, this may have been due to other confounding factors, including the particular style of play adopted by problem gamblers. If this group spent more per spin by betting on more lines and more credits per line, they would have obtained more win events in general, and more bonus features. This in itself would have been sufficient to slow down play rates. Accordingly, for all of these variables, it would have been better to have recorded the data in terms of a rate / minute (i.e., how many cigarettes / drinks consumed per minute, or number of plays, taking out the time spent waiting for bonus and payout sequences to be completed).

The most convincing component of the Blaszczynski et al. (2001) study was a series of analyses conducted on objective machine data to determine whether machine turnover had been influenced by the different modifications. The results showed that the amount of money inserted into machines with lower play speed, smaller note acceptors was 34% lower than on the unmodified machines. In a sense, this finding is unsurprising in that these modifications were designed (all things being equal) to decrease the rate at which players could insert money into the machine within a specified time interval. However, the significance of the modifications was further confirmed by a 48% decrease

in the amount lost (cash in – cash out) on modified machines, suggesting that the manipulation had been successful in influencing actual expenditure.

These findings were promising in that they suggested that the reduction in maximum bet size as well as the restriction on note acceptors could be useful strategies to curb gambling expenditure and minimise final harm associated with gambling. However, in their conclusions, the authors were more cautious about findings. In some parts of their report, they suggest that these changes could be useful harm minimisation strategies, whereas elsewhere (most notably in the executive summary) the authors expressed doubts about bet-size reductions on the grounds that few players gamble more than \$1 per spin, and few insert large denomination notes into the note acceptors. In response to this inconsistency, a review of the research was undertaken by Tse, Brown and Adams (2003) from the New Zealand Centre for Gambling Studies. The reviewers concluded that the authors of the New South Wales report had not been entirely consistent in their conclusions and that restrictions on bet sizes and note acceptors appeared to show some promise as harm minimisation strategies.

In summary, despite its limitations, the Blaszczyński et al. (2001) machine modification study remains the most ambitious and comprehensive study of its type ever undertaken in the world. The use of a field experimental design with orthogonal manipulation of the experimental conditions (machine changes) was a considerable strength of the project and the study used real EGM gamblers who gambled with their own money. Further utilisation of this style of research has the potential to provide very useful insights into the nature of EGM gambling, and appropriate regulatory and policy responses. Some of the particular features of this research that should be replicated, or included, in future studies include:

- The use of modified EGMs within venues. Such research should consider using very popular machines to ensure that people are playing one of their favourite machines.

- The orthogonal (independent) manipulation of machine features in the same study (as per the Blaszczynski et al., 2001 study).
- Players should only be able to play the experimental machines at the venue to reduce the potential influence of other gambling in the same session.
- Observers should record response rates, smoking rates, alcohol consumption rates by per unit time rather than just in total (CTV footage might be utilised for this purpose). Running response rates should be differentiated from response time calculated on the basis of total time on the machine / number of presses. To do this, requires removing the time spent listening to bonus sequences or payouts, although it may be interesting to examine how many problem gamblers over-ride the payout sequences on machines that have a “play through” feature.
- Some attempt might be made to differentiate between changes that influence the “consumer value” of the machines as opposed to the amount of money that can be expended. For example, one could also examine restrictions on the number of pay lines, or the availability of bonus features.

4.4.4 AIPC Study of Games and Game Features in South Australia

Another study that has examined the importance of game features was undertaken by the Australian Institute for Primary Care (AIPC, Livingstone & Woolley, 2008) for the Independent Gambling Authority of South Australia. The project had several aims: (1) To ascertain whether there were certain games or gaming machine features that tended to be associated with higher expenditure or problem gambling, (2) To determine whether there were any games or features that were particularly attractive to problem gamblers as opposed to other gamblers, and (3) To determine whether any features increased the likelihood of a person making a transition from recreational to problem gambling. A number of different research methodologies were employed to investigate these questions. These included analysis of EGM expenditure data maintained by the Office of the Liquor and Gambling Commissioner (2004-2005 to 2005-2006), a focus

group study with 64 problem gamblers drawn from South Australia treatment services and a small telephone survey involving 180 fortnightly+ EGM players drawn from residential addresses in the community.

As described in AGR-4, the principal strategy for the analysis of EGM expenditure data was to identify the top 250 individual machines in terms of net gambling revenue (money in – money out) for the two financial years described above. The authors then determined whether there were certain features or machine types that were under- or over-represented in this list as compared with the general population of machines. Several machines were found to be disproportionately represented. These included two machines manufactured by Konami (Shogun and Shogun 2) and one from Aristocrat Leisure industries- Indian Dreaming. Both Shogun machines were \$1 per credit machines and therefore quite expensive to play. Shogun machines made up only 1.8% of the total population of machines, but comprised 13.6% of the top performing machines in the list of 250, whereas Shogun 2 (3.2% of all machines in S.A.) comprised 40% of the top 250 machines. Similarly, while only 8.2% of machines in S.A. were Indian Dreaming machines, 22% in the top 250 were of this variety. Another machine, Dolphin Treasure which was also manufactured by Aristocrat Pty. Ltd, comprised 8.8% of the top 250 and was the next most successful machine, but was under-represented as compared with the general population of machines (15% of machine in S.A. were Dolphin Treasure). These four machines were found to account for 78% of all revenue earned by the top 250 machines and 27.1% of all revenue statewide as based on all EGMs that had been in operation.

The authors argued that the financial success of these machines could be accounted for by examining the different features of the machines. Games such as Dolphin Treasure were successful because they provided players with a very low entry cost. Each credit usually only cost 1 or 2c, but machines typically had very large numbers of potential pay-out lines. Since players often adopt a maximin strategy (see Section 4.4.1) in order to avoid missing out on wins occurring on other lines, people will often spend larger amounts per spin. Multiple-line betting also provides players with greater

opportunities to win bonus features. A similar argument is advanced to explain the success of Indian Dreaming. Indian Dreaming differs from other Aristocrat machines in that it incorporates a new piece of technology named 'Reelpower'. This feature enables players to bet on reels as well as lines and thereby increases the total number of betting options available to players. Instead of being able to bet on 50 lines as on conventional machines, players can bet on up to 243 different combinations. Players may therefore bet larger amounts to obtain a greater perceived likelihood of obtaining additional winning outcomes. By contrast, Shogun and Shogun 2 machines have few lines (usually only 3), but players spend large amounts (at least a \$1) each time they spin the reels. The attraction of the machine is that credit wins will translate into larger dollar amounts, but this also means that losses will involve multiples of at least \$1 rather than smaller credit amounts.

On the whole, these inferences appear to be sensible and correspond with other research that has examined the ways in which people gamble on EGMs, but there are several factors that need to be taken into account when attempting to generalise these results to other jurisdictions. First, it is important to recognise that the multi-line features described on Dolphin Treasure also exist on other machines on the market. Aristocrat uses similar platforms for many of its machines, so that the apparent success of Dolphin Treasure may also be due to the very high prevalence of these machines in South Australian venues as well as the popularity of the 'theme'. Other machines manufactured by Aristocrat have multiple lines, bonus features and low denominations, but do not attract the same NGR as Dolphin Treasure.

Second, the popularity of individual machines will be influenced by the general 'mix' of machines currently on the market. If most venues in a specified geographical area have the latest games, then newer games such as Shogun may not have the same market salience or dominance in the market. In support of this view, Livingstone and Woolley (2008) showed how the hierarchy of machines varied to some degree when one sampled machines from different areas. In larger regional towns, the composition of high performing list of machines was somewhat different from what had been obtained in the

metropolitan area of Adelaide. It is likely similar variations would be obtained if one were to conduct the research in other jurisdictions in Australia. The impact of very new or salient machines such as Shogun might be more difficult to discern in NSW or the ACT where venues include very large numbers of machines, often with linked jackpot features and prize draws that vary from one period to the next. On the other hand, it may be easier to discern similar patterns in regional areas of Australia where venue sizes are more similar to South Australia (maximum of 40 machines per venue) and where the newer model machines are installed more periodically. In these smaller venues, it may be more likely that the newer machines will ‘stand out’ in terms of their NGR returns as compared with the remaining population of machines. Tasmania may be one State where it might be possible to conduct a comparative analysis of these South Australian results because venue sizes tend to be more similar to those in South Australia.

Third, as discussed in AGR-4, it is also important to recognise that the data used in this study was aggregated across venues and not analysed within individual areas and venues. A danger of this sort of analysis is that it is possible that the data has a hierarchical structure that is not revealed by the overall analysis. More popular and innovative machines may be located in more affluent areas with larger and wealthier venues. Such venues may attract higher spending patrons and have a higher overall NGR because they are more successful venues. If Shogun and the new Indian Dreaming machines were more likely to be located in these larger successful venues, it is possible that this would influence the overall NGR. In other words, the success of the machines could have been influenced by locational and venue characteristics rather than by the particular features of the games. A further analysis would need to be undertaken using ‘nested data’ that allows one to examine the relative success of these machines within different venues with varying numbers of machines. Such analyses could be undertaken very successfully in larger interstate venues (e.g., VIC, ACT and NSW) because it would be possible to obtain larger sample sizes (numbers of machines) to examine whether Livingstone and Woolley’s findings can be replicated within individual venues.

In the second part of their research, involving interviews with 180 regular EGM players, Livingstone and Woolley (2008) examined whether preferences for certain features and machines differed according to people's gambler status as determined by the CPGI. In the sample, 15 or 9.3% were classified as problem gamblers (CPGI 8+) and 31 or 16.2% were moderate risk gamblers. Given the small sample size, these two groups were combined and compared with the rest of the sample to allow 'higher risk group' vs 'lower risk-group' comparisons. It was found that higher risk gamblers typically gambled for longer (usually more than 1 hour) and were more likely to spend more than \$50 per session. They were less likely to bet minimum credits, were more likely to bet medium amounts per line, but were no more likely to bet maximum credits compared with lower risk players. Higher risk players were also no more likely than lower risk gamblers to gamble on \$1 machines and to report that Shogun and Shogun 2 was their favourite machines, but they were more likely to report that Dolphin Treasure and Indian Dreaming was their favourite.

Many of the other findings to emerge from the telephone survey and the focus groups related to factors that enhanced the attractiveness of machines. As in previous studies undertaken by the AIPC and other researchers (see Section 4.3), these findings confirmed many of the observations from other survey and observational studies conducted in NSW (See Section 4.4.1). Most gamblers (87%) reported spending relatively modest amounts when gambling on EGMs (usually < \$50), most reported gambling only up to an hour (66%), and 60% gambled exclusively on 1c machines. Only 4.4% said that they always played \$1 machines and 85% never played them at all. In other words, the findings suggested that the very high levels of expenditure on Shogun machines involve only a relatively small proportion of the total population of gamblers. Indian Dreaming and Dolphin treasure were two of the most popular games, but these games are also more numerous in South Australia so this finding would be expected. The most popular features on gaming machines were big payouts (72%), free spins (66%), frequent wins (59%), and special features (26%). Music, lights and other elements of the game including the theme were not considered as important.

A difficulty with these findings (and many surveys of this nature) is the nature of responses are likely to be influenced by how the questions are worded. All things being equal, people like machines that give them more money or ‘playing value’, whether through larger payouts or free spins, but such ‘value’ could be obtained on many different machines, and not just those which people identify as their favourite machines. In other words, it is likely that the more subtle features of games, including the themes and sounds are very important, but people do not endorse these factors when the response set involves a list of features or qualities relating to the monetary return from the machine. It may be that more subtle aesthetic features are very influential in choosing which type of machine to play, but that one’s choice of which machine to play (i.e., machine individual Dolphin Treasure or Indian Dreaming) is influenced by one’s reinforcement history. Those machines which have a good record of providing memorable wins or a recent history of wins will be chosen over those which have not. Unfortunately, it is very difficult using self-report methodologies to investigate these complexities. If one uses a standard survey format, players may endorse all factors so that it becomes difficult to determine the relative importance of individual factors. On the other hand, forced choice or preferential formats (e.g., “what’s most important) may understate the importance on non-monetary factors. For this reason, longitudinal studies involving the electronic tracking of individual players across different machines (e.g., via card-based systems) combined with observations of outcomes could be usefully considered as a strategy for determining how a variety of features influences gambling preferences over time. To what extent are player choices governed by reinforcement history as opposed to other factors?

Despite these difficulties, both the focus group findings and survey provided some indication that problem gamblers are indeed attracted to machines such as Indian Dreaming and Shogun for the reasons hypothesised by the authors. Many problem gamblers are attracted to free spin features and to multi-line betting options, but this is not a unique feature of problem gamblers. As also shown by Milhouse and Delfabbro (2008) in a consumer choice comparison of gambler preferences, most EGM players (irrespective of whether they are problem gamblers) enjoy these features, so that there

does not appear to be substantial qualitative differences between the gambling preferences of problem and other players. The difference instead appears to lie in the degree or extent of gambling. Problem gamblers are more motivated to gamble; they gamble with more money and they play for longer so that all aspects of EGM machines that influence winning will be scrutinised and afforded greater importance than by other players.

It is likely that many of these findings can be used to inform policy in different jurisdictions. Given the similarity of findings obtained in studies conducted in different jurisdictions and using different methodologies, it is reasonable to conclude that EGM gamblers in one part of the country are influenced by similar factors to those in other parts of Australia. This is because surveys of this nature concern the reactions of individual gamblers to specific machines and features that are available all over the country. The principal policy implication of this research is that, in some jurisdictions, a relatively high proportion of expenditure appears to be attributable to a relatively small class of machines. Although there was only limited evidence that these machines are particularly popular amongst problem gamblers, the fact that problem gamblers are responsible for an estimated 40% of expenditure on EGMs (Productivity Commission, 1999) suggests that the impacts of these machines might nonetheless be more greatly borne by problem gamblers and their families.

4.5 Psychological Studies of EGM Gambling

The AGR also includes a detailed review of psychological research into the nature of gambling, with a particular focus on the mechanisms that appear to maintain gambling on EGMs. Three principal theoretical areas are evaluated in the review. (1) Addiction and Dispositional Approaches, (2) Behavioural approaches, and (3) Cognitive theory. Only a brief summary will be provided because not all of this theoretical material necessarily directly relates to the key research priorities identified by Gambling Research Australia. However, some discussion is provided because of the importance of highlighting the mechanisms underlying problem gambling and the characteristics or personality profiles

that make certain people more vulnerable to problem gambling than others (Research Priority 4).

4.5.1 Traditional Addiction Perspective

According to the traditional addiction perspective, problem gambling is very similar to other forms of addiction involving substances (e.g., alcoholism and drug dependence). Gambling is thought to be based on desire to obtain physiological arousal or excitement. People become addicted to gambling because they eventually develop tolerance, withdrawal symptoms and cravings. Increasing amounts of money need to be spent in order to maintain the same level of arousal (tolerance), and people feel depressed and anxious when they are not gambling, or have strong desires or preoccupations with gambling when they are engaged in other activities.

Over the last two decades, most Australian researchers have tended to reject this model of gambling because there has been relatively little evidence to support the existence of these processes. Although it is true that problem gamblers spend larger amounts of money over time, this may only be due to desire to chase earlier losses. Similarly, despite the fact that many experience considerable disruptions to their psychological and physiological health, all of these symptoms may be due to the stress associated with losing money, and the many other related impacts described in Chapter 3. There is also earlier Australian research that has found little systematic relationship between arousal and gambling behaviour, and particularly in relation to EGM gambling. Dickerson et al. (1992), for example, tracked the heart rates of regular EGM players in venues in relation to the patterns of activity occurring on the machines (wins and losses) and found little relationship between the two. More broadly, there are a number of prevalence studies and consumer surveys (see Section 2.7 and 4.3) that have shown that EGM players are often more strongly motivated by a desire to relax and escape their worries than to obtain stimulation or excitement. Indeed, mere observation of EGM players in any Australian venue can confirm that few EGM players display a great deal of emotion when they gamble, apart from frustration at having not obtained the outcomes they desire. Traditional addiction approaches are also unable to explain why many people are able to overcome gambling-related problems without formal clinical interventions.

Despite this pessimistic assessment of traditional addiction models as valid explanations for problem gambling in Australia, there has been some renewed interest in this area because of recognition of the likely diversity of problem gambling. Blaszczynski, for example, argues in a number of papers (e.g., Blaszczynski & Nower, 2002) that traditional addiction models may play a role in the aetiology of some problem gambling, particularly those people who have broader pathologies that make them prone to addictive behaviours. For this reason, Blaszczynski, Walker, Sharpe and Hill (2005) conducted an reassessment of the value of traditional addiction models in Australian gamblers. The study involved a comparison of the reported symptomology of three groups of people seeking assistance from a treatment clinic in Sydney. One group comprised problem gamblers with no alcohol dependence; a second group had difficulties with gambling and also alcohol dependence, and a third group had alcohol dependence but no problems with gambling. The study investigated whether systems of tolerance and withdrawal were prevalent in the samples of problem gamblers, or whether such experiences were only a feature of substance dependence.

The study found some evidence to support the existence of both these processes. Problem gamblers had a tendency to increase their bets over time to maintain the same level of excitement, a behaviour that is consistent with the process of tolerance, although as the authors conceded, it was likely that this behaviour was more strongly associated with a desire to win money rather than because of a pathological need for physiological stimulation. Evidence for the existence of withdrawal-like symptoms was stronger in the samples of problem gamblers. Many reported feelings of irritability, anxiety and restlessness when they were no longer gambling. These reported symptoms were more prevalent in the problem gambling samples than in those who were affected only by alcohol dependence. Based on these findings, the authors argued that withdrawal does appear to be a significant component of problem gambling, but could not rule out the possibility that these experiences were due to financial and other situational pressures caused by the gambling rather than a direct physiological response.

Although theoretical debates about the nature of problem gambling would appear to be primarily a subject for academic debate, these issues also have relevance for policy development in Australia. If a certain proportion of problem gamblers genuinely experience addictive behaviours similar to alcohol or other forms of substance misuse, this has implications for how problem gambling might be regulated or treated. In terms of regulation, it would suggest that the cause of the gambling problem is very much central to the individual rather than being brought about by environment factors (e.g., as some psychological theories would propose). If gamblers develop addictive behaviour, their behaviour is less likely to be influenced merely by the provision of information in venues, or other subtle changes to venue design or machine characteristics. In effect, their behaviour is driven by a need to gain access to gambling and escape unpleasant experiences. Similarly, from a treatment perspective, there may need to be more effective interventions that focus on the negative symptomology that drives the behaviour (e.g., negative mood states) rather than merely people's desire for monetary reinforcement. It therefore remains important that ongoing developments in this theoretical area be taken into account by both policy-makers and clinicians.

4.5.2 Pathology Model

Despite some debates about the validity of the traditional addiction approach to problem gambling within Australia, there is nonetheless some support for the view that certain people have dispositional or neurophysiological characteristics that make them more vulnerable to addictive behaviours. This view is supported, for example, by Blaszczynski and Nower (2002) who argue that there are several pathways into problem gambling. One of these pathways (termed "Pathway 3") relates to a distinct subgroup of problem gamblers who appear to show a predisposition for various forms of addictive behaviour or psychopathology, and whose gambling appears to arise from some common underlying factor. Termed 'antisocial impulsivists', these people often present with various co-morbidities including substance abuse, personality disorders, criminal behaviour, and other clinical symptomology (see also Battersby & Tolchard 1996). Such people appear to share a number of neurophysiological differences that make them more prone to self-destructive behaviours than other gamblers.

A number of studies have been conducted in Australia to identify individual differences or personality traits that might predispose certain people to risk-taking behaviour. One strain of this research has focused on measures such as sensation-seeking (SS) (or a pathological desire for high-risk or arousal-generating activities). Burnett and Ong (1997), for example, conducted a study of 251 women living in inner-city Melbourne and found that SS predicted an involvement in EGM gambling. Similar results were obtained by the same research team in a study of 778 Year 12 students in Melbourne. Burnett, Ong and Fuller (1999) found that those with higher SS scores were significantly more likely to be regular (weekly) gamblers than those with lower scores. Similar work conducted by Steel and Blaszczynski (1996) involving 115 problem gamblers in treatment reached very similar conclusions. This sample obtained higher SS scores than population norms, although no analysis was undertaken to determine whether these higher scores were unique to problem gamblers or merely regular gamblers in general. Taken as a whole, all of these results suggest that people who gamble are more likely to have a high desire for risk-taking or arousal inducing activities. However, the findings do not provide any convincing evidence that SS is a reliable predictor of problem gambling. Instead, SS only appears useful in profiling those segments of the population who are more likely to gamble.

It has also been suggested that the behaviour of this segment of problem gamblers may share some traits in common with children diagnosed with attention deficit hyperactivity disorder (ADHD), in that both appear to be highly impulsive, sensitive to reward, but relatively insensitive to punishment. Both find it difficult to optimise or regulate their behaviour so as to avoid sub-optimal decision-making. To examine this hypothesis, Blaszczynski et al. (2002) undertook a detailed assessment of 77 adolescents (37 with ADHD and 40 without). The results showed that scores on the DSM-IV were positively related to impulsivity scores, but that there were otherwise no significant differences between the two groups on any measure related to gambling. In other words, the results did not provide any support for the idea that adolescents with ADHD are any more prone to developing problems with gambling.

Although the exact pattern of symptoms and mechanisms require further research within Australia, the principal public health and policy implication of this area of research is that there appears to be a sub-sample of problem gamblers within the community in whom one is likely to observe a strong clustering of problems. Such people may present with various forms of psychopathology, cross-addictions and may have personality disorders. In a conceptual sense, these people create a challenge for policy makers and regulators in that it may be difficult to draw clear associations between the availability or introduction of gambling and the prevalence of various problems that appear to be associated with gambling. Within this sample, there are likely to be many problems that precede, or which are concurrent with, an involvement in gambling activities. In effect, the person's difficulties with gambling may only be a corollary of a broader range of risk-taking and self-destructive behaviours. This group also provides challenges for service providers in that not all agencies may be equipped to deal with the range of problems present in the clients. Basic services such as counselling would need to be combined, or linked with, specialist mental health and/or drug and alcohol treatment services. Moreover, counsellors would be faced with the difficult task of avoiding any transference of problems from one activity to another. Treatment of the person's problem gambling may only lead to increases in other forms of dependency or "addictive" behaviour, so that it would be important for evaluations of service efficacy to take into account a range of outcome variables, rather than just concentrating on gambling behaviour alone.

4.5.3 Psychological Vulnerability

Another subgroup of problem gamblers identified by Blaszczynski and Nower (2002) are thought to gamble because of a desire to cope with significant depression and anxiety. Such people (often more women than men), termed 'emotionally vulnerable' tend to have a history of trauma, abuse, or life changes that create a need to escape from their difficulties. Rather than being attracted by the excitement of gambling, these people become psychologically dependent on activities such as EGMs because they help to regulate their moods, and block out undesirable thoughts. When they are not gambling, they feel depressed or anxious and unfulfilled, and so they develop strong preoccupations with reliving the experience of gambling, and strong urges to gamble. In some cases, the

stimuli associated with gambling can become so strongly associated or conditioned that these people start hearing the sounds of EGMs in their heads even when they are at work, or at home.

There is considerable support for the notion that people can become “psychologically addicted” to gambling in this fashion. As discussed previously in Section 2.7 relating to gender differences in gambling, there are many Australian studies (e.g., Di Dio & Ong, 1997; Pierce et al., 1997; Quirke, 1996, Scannell et al., 2000; Thomas & Moore, 2001) that have shown that women in particular use EGM gambling as a form of avoidant or emotion-based coping. More broadly, there is a wider national and international literature (e.g., Jacobs, 1986; Walker, 1992a) that suggests that this is a consistently observed pathway into problem gambling.

The important policy or regulatory implication of this research is that there are likely to be people in the community who are not usually prone to addictive behaviours, but who are vulnerable to EGM gambling because of the way in which it is promoted or made available. Due to the strong emotional or conditioned component of the gambling, such people may have strong gambling urges that are triggered by gambling related stimuli (e.g., the sight of a venue, advertising, sounds of a machine, Sharpe & Tarrier, 1993). Within venues, such people may also easily lose track of time and reality, so that there is a need to consider the introduction of regulatory measures relating to the design or operation of venues that might influence these patterns of behaviour. Findings such as these may therefore be taken into account in informing policy discussions about the potential value of breaks or reality checks within the gambling environment. These findings also have implications for policies relating to the range and provision of treatment services, including the value of psychologically-based services that would be capable of addressing the underlying anxiety, depression and trauma associated with the problematic gambling behaviour.

4.5.4 *Behavioural Approaches*

Since the early 1990s, several studies have been undertaken to examine whether EGM gambling can be understood in terms of the basic principles of psychological learning theory, in particular, the principles of operant conditioning. According to this perspective, people come to gamble excessively on EGMs because of the fundamental links between the reward structures of the games and behaviour. When people (or animals) engage in a behaviour that is subject to intermittent random rewards (as is the case in EGM gambling), they develop a characteristically rapid rate of responding that is very hard to extinguish. Rapid responding occurs because people sense that a win can occur after any spin or game, so that one will obtain a greater number of wins if one plays more games. Moreover, since substantial wins occur quite infrequently on most gaming machines, people grow used to not winning very often and therefore build up a resistance to losing. The longer one plays without reward, the greater the expectation of winning because people become accustomed (from countless hours of experience) to expect a good win if they persist long enough on the same machine.

EGM gambling corresponds most closely to what is termed a variable ratio (VR) or random ratio (RR) schedule of reinforcement. In random ratio schedules, people are rewarded for every X responses, but where there is a certain probability of obtaining various outcomes on each spin. On many trials this may be a losing outcome, whereas on others it might be a small or large win, but this cannot be predicted from one trial to the next, or by examining what outcomes might have occurred previously. To determine whether a behaviour is scheduled or conditioned according to operant conditioning principles, one examines the pattern of responses to determine whether it confirms to a pattern typical for the specific type of schedule involved (in this case a VR or RR), or whether behaviour appears to be sensitive to machine events (e.g., the pattern of wins or losses).

There have been several studies that have examined EGM player behaviour to look for evidence of schedule-based behaviour. Dickerson et al. (1992), for example, studied the behaviour of 12 high-frequency poker machine players in gaming venues in

the Australian Capital Territory. On-site observers kept records of player response rates and other relevant behavioural data. The results showed that players had a tendency to increase their rate of responding following small wins and to slow the rate following larger wins. A similar methodology was used by Delfabbro and Winefield (1999) in a study of 60 regular and non-regular EGM players in South Australian hotels. Response rates, betting patterns and other relevant behaviours were observed in a venue environment. The results showed that players did not slow their play-rates after large wins, but tended to have short breaks from play. Small wins had little effect on play rates because it was common for very small wins to occur almost all the time on more modern machines (wins or 2-5 credits), so that the effect was difficult to discern. The results further showed that regular players had more consistent or stereotyped patterns of play as compared with infrequent players. Bets were typically increased following wins, and decreased following losses.

Although the specific implications of these studies may not appear immediately relevant to policy and regulation, the findings nonetheless suggest that variation in machine events can have an influence on the pattern of gambling behaviour. It raises the possibility that modifications to machines, or variations in the parameter of gaming schedules, could influence how fast or the manner with which people gamble. However, since 2000, very little, if any, research has been undertaken to examine how changes to EGM schedules (e.g., variations in win frequency or magnitude) might influence response rates, bet sizes, or general persistence.

4.5.5 Impaired Control and Gambling Urges

The AGR also reviews some specific measures that have been developed in Australia to identify patterns of gambling behaviour that might place gamblers at risk of future harm. These measures are potentially useful from a policy and treatment perspective because they relate more specifically to the goals of harm prevention or minimisation, rather than focusing solely on the identification of problem gambling (as is the case with the DSM-IV, SOGS, VGS and CPGI).

The first of these measures is the Scale of Gambling Choices which was developed and applied during several studies in the 1990s (e.g., Baron, Dickerson, & Blaszczynski, 1995; Dickerson, 1993; O'Connor, Dickerson, & Phillips, 1999; O'Connor & Dickerson, 2003). This scale asks players to respond to a series of items relating to the extent to which they have control over their gambling behaviour. To what extent can people resist the urge to gamble when they have an opportunity to gamble? How hard do they find it difficult to stop once they have commenced gambling? O'Connor and Dickerson (2003) administered this scale to a convenience sample of 84 TAB gamblers and 137 EGM gamblers and found that impaired control (as measured by the Scale of Gambling Choices, was significantly related to chasing behaviour, as well as the amount of time and money spent on gambling (the key components of the current national definition of problem gambling). Similar results were obtained in a study by Dickerson, Haw, and Shepherd (2003) using 200 EGM players in New South Wales.

A similar and related scale, the Urge to Gamble Scale, has recently been developed by Raylu and Oei (2004a) in Queensland based on a similar measure utilised in the alcohol literature. This 6-item scale measures the strength of people's desire or urge to gamble, and was validated using a sample of 968 participants including first year psychology students and volunteers from the community. Scores on this scale were found to correlate significantly with the SOGS and other measures of gambling motivation.

As Neal et al. (2005) and Delfabbro and LeCouteur (2007) point out in the AGR, neither of these scales are without limitations. In the case of both scales, there are no specific cut-off scores to determine when a gambler might be at risk. The Urge to Gamble Scale was validated on a very mixed sample that included psychology students rather than a random population sample or group of gamblers classified according to risk level (e.g., CPGI classifications), so that it is difficult to generalise the results to populations of gamblers. By contrast, although the Scale of Gambling Choices has been well validated using appropriate samples, the theoretical interpretation of the scale is unclear. No framework is provided as to why certain people might find it more difficult than others to control their gambling.

Nevertheless, from a policy and regulatory perspective, scales of this nature are useful in that they attempt to capture problematic forms of behaviour that may place people at risk of subsequent gambling-related harm. Further validation of scales of this nature may therefore provide useful tools for monitoring people's responses to the introduction of various regulatory or harm minimisation provisions, or their responsiveness to formal treatments. Such measures could, for example, be included in studies that examine the impact of particular regulatory provisions (e.g., limits on venue advertising, changes in gambling accessibility) on gambling behaviour. The principal advantage would be that the scales could be used to detect behavioural changes in both problem and non-problem gamblers.

4.5.6 Cognitive Approach

The third psychological approach reviewed in the AGR related to the application of cognitive theory to gambling behaviour. According to this view, gambling is considered to be heavily influenced by how people understand and conceptualise gambling (Walker, 1992a). Since most gambling activities are designed so as to yield a long-term negative return to players, it is argued, by logical inference, that gamblers are either irrational or misguided in their understanding of gambling activities. Instead of processing information in a rational and objective fashion, people fall victim to a range of cognitive biases, all of which lead them to over-estimate their chances of winning. Some of many common biases described in the AGR include:

1. *The Gambler's Fallacy or Representation Bias*: People believe that short-term sequences of events should reflect the long-term expected probabilities. This belief leads to the expectation that long sequences of one outcome (e.g., losses on EGMs) should be followed by the opposite event. Players believe that the machine self-corrects the outcomes according to the 'law of averages' so as to maintain a consistent return to player. Machine events or outcomes are no longer considered independent.

2. *Illusion of Control*: People believe that they can increase their chances of winning using skilful play. On EGMs, players may use various betting strategies, superstitious rituals, or other techniques to influence outcomes.
3. *Availability Heuristic*: This bias refers to people's tendency to focus on very salient events or outcomes when making judgements about the qualities of a particular object or activity. In the case of EGMs, people tend to recall very memorable wins or sessions and pay less attention to the occasions when they lose. As a result, they develop an overly optimistic view about the long-term profitability of gambling on EGMs.
4. *Optimism Bias*: People who gamble sometimes believe that they are luckier or more fortunate than others. They believe that good events, in this case, large wins, are more likely to be obtained by them than other players (see Lo, 2001).
5. *Personification / Personalisation of Machines*: People talk or argue with gaming machines and treat them as electronic friends or adversaries.

Two sources of evidence have been used to draw links between gambling and irrational beliefs or irrational thinking. The first, derived from the work of Ladouceur in Canada, involves asking EGM players to speak aloud their thoughts while gambling. One study undertaken by Walker (1992b), involving a small sample of regular EGM players gambling in venues, found that 80% of gambling-related statements were irrational. Very similar results were obtained by Delfabbro and Winefield (2000) with 20 regular EGM gamblers playing in a South Australian hotel. These authors also found that the degree of irrationality was related to the level of risk-taking (average bet sizes), and that there were some noticeable gender differences (women were more likely to personalise the outcomes, for example, by talking to the machines or encouraging them to pay out).

The second primary source of evidence arises from survey studies of gambling beliefs. For example, Joukhador, Blaszczynski, and Maccallum (2004) developed an 8-

item irrational belief scale and administered it to 56 problem gamblers in treatment and 74 non-gamblers. The results showed that problem gamblers scored significantly higher on irrationality than the other sample, and that SOGS scores were positively correlated with greater irrationality. However, a limitation of this study was that some of the items related to religious and psychic abilities that many be related to broader belief systems unrelated to problem gambling. The study also did not include a sample of regular non-problem gamblers as a comparison group, so it is unclear whether the group differences represent clear differences between problem gamblers and other gamblers, or merely gamblers and non-gamblers. In addition, the scale does not differentiate between different types of irrational belief.

A similar investigation was conducted by Ralyu and Oei (2004b) as part of the validation of a comprehensive measure of gambling-related cognitions (Gambling-related Cognitions Scale, or GRCS). This measure was derived from a larger set of belief statements administered to 968 volunteers drawn from the community and from Psychology 1 classes at the University of Queensland. Five subscales were developed and these included: Gambling expectancies, Illusion of Control, Predictive Control, Inability to Stop Gambling, and Interpretative Bias. Once again the results showed that scores on these scales tended to be significantly higher for people with higher SOGS scores. A follow-up investigation based on this original study examined whether parental beliefs about gambling were related to young people's beliefs and their likelihood of gambling (Oei & Raylu, 2004). Both adults and their adolescent children were administered the scales and questions about gambling habits. The results showed that cognitions appeared to play a mediating role in young people's gambling. Adolescent beliefs were related to parental beliefs and these beliefs, in turn, appeared to influence young people's likelihood of gambling.

In theory, these findings from cognitive research have many important implications for policy, regulation and the treatment of problem gamblers. The fact that problem gamblers hold many irrational beliefs about gambling supports the ongoing development of policies relating to effective consumer awareness and education that are designed to

reduce the strength of these beliefs. The findings highlight the importance of policy discussions concerning the value of interventions that provide gamblers with greater knowledge about the objective true odds of winning, the nature of irrational beliefs or biases, and how to avoid them. The value of such information could be examined in several different contexts, including its role in venues, on machines, or as a part of broader community or school-based education campaigns.

Over the last decade, there have been many attempts to use this information in exactly these ways. However, when applying this research, it is very important to be aware of some of the limitations of the methodologies used and to be cautious in the interpretation of the results (see Delfabbro, 2004). The first issue is there are a number of studies in Canada that have shown that students with little gambling experience also produce many irrational statements when asked to speak aloud and play a gaming machine. A second issue is that beliefs and verbalised statements are not the same as behaviour, so there is always a danger that people's descriptions of their behaviours may not always reflect the true basis for those behaviours, i.e., irrational beliefs may be a symptom of gambling rather than a cause of the behaviour.

There are several other challenges associated with using this type of information in interventions, and these will be revisited in Chapter 5, which considers some of the specific strategies that have been used to minimise or prevent the harms arising from problem gambling.

Chapter 5: Harm Minimisation Strategies, Interventions and Services

5.1 Overview

The Australasian Gambling Review (AGR) provides a detailed analysis of strategies and services that have been implemented or suggested to reduce, or minimise, gambling-related harm. The analysis divides these strategies and services into three principal groups based on the nomenclature widely used in public health research: primary, secondary and tertiary. Primary interventions are general wide-ranging strategies that attempt to protect people from developing harm before it has occurred. Secondary services or strategies try to intercept people at the point where harm develops and to reduce or minimise and problems before they can become any worse. Tertiary services are those which are designed to provide assistance to people who have already been subjected to significant harm. The aim of this chapter is to provide a critical review of existing gambling-related strategies, interventions and services that fall into each of these three categories. The first part of the chapter focuses largely on community education initiatives and the effects of promotions and advertising, a second section examines many venue-based interventions, whereas a final section examines the nature of current treatment services in Australia and the research available to support the efficacy of those services.

5.2 Primary Intervention Strategies

5.2.1 School-based Education Programs

The fact that many gamblers have been found to hold irrational or erroneous beliefs about the nature of gambling has led to the suggestion that people could be shielded from some of the harms associated with problem gambling by providing them with more accurate information about the true nature of gambling. Given the perceived success of safe-sex campaigns and drug and alcohol education programs based on a similar logic, a number of State Governments within Australia have made attempts to implement similar gambling-related programs within schools. Examples of these include the “Dicey Dealings” campaign in South Australia (DECS, 2005), “You Figure it out-

Know the Odds” in Victoria, the “Responsible Gambling Curriculum” and Responsible Gambling Teaching Kit developed for Queensland schools (Curtin & Honeyfield, 2002), Gpack in Victoria, and the Australasian Gaming Council’s curriculum resource.

All of these programs contain similar elements. Each curriculum examines the nature of gambling (e.g., what activities involve gambling) and its associated risks, the odds of winning when one gambles (lotteries are commonly used as examples), and appropriate help-seeking strategies. Programs vary in the range of activities or methods by which the information is conveyed. Some, such as the Queensland program, rely heavily on various forms of electronic multi-media such as CD-Roms and Internet pages, whereas others, such as the South Australian program included some interactive games that allowed young people to engage in educational games involving numbers and chance under the supervision of teachers. All programs include video material and class exercises.

Although these programs have been subjected to evaluation, little of this information is readily available to provide guidance to public health policy-makers. Nevertheless, it is possible to reach some reasonable conclusions about the effectiveness of these programs based upon first hand-experience and overseas research. On the whole, these programs are well designed and well received by young people. They also enhance young people’s awareness of gambling-related issues, and their knowledge of the odds of winning. However, a difficulty with these programs is that the children who are most responsive to the messages, may not necessarily be the ones most at risk of gambling (i.e., there is always a danger with any public health campaign that it preaches only to a converted audience). The other significant difficulty is that the funding for these programs is not always ongoing, so that the messages only reach a single cohort of students, and not necessarily students in every school. Previous adolescent research in Australia by Delfabbro, Lahn and Grabosky (2006) has also shown that young problem gamblers do not appear to have a poorer understanding of gambling-related odds. In fact, there are some areas of understanding where their knowledge tends to be superior (e.g., understanding of probabilities). This research, along with some other recent overseas

studies by Ladoucuer in Canada, suggests that it may be more important to focus on idiosyncratic and irrational beliefs, rather than merely focus on objective, statistical information. As discussed in the previous chapter, gamblers often possess what is termed an ‘optimism bias’ and an illusion of control which means that they interpret events in a biased manner. Even though they may understand the odds of winning to be poor, they believe that they are somehow different from other people, and so the odds of them personally winning is somewhat higher than might be the case for others.

For these reasons, there is a need, from an educational and public health perspective, to obtain greater information concerning the effectiveness of these programs, and whether they have any long-term impacts on problem gambling in early adulthood.

5.2.2 Community and Venue-based Information

A very similar train of logic underlies attempts to include responsible gambling information in venues and into community education campaigns (Blaszczynski, 2001; Dickerson, 2002). A number of TV and radio advertising campaigns have been run in different Australian States, all with the intention of creating greater awareness about the dangers of gambling and the availability of treatment services. Very little information is available concerning the broader preventative impacts of these services. One reason for this is that people may already be aware that gambling is a problem in the community, and so the advertising only serves to reinforce existing awareness. For example, when community attitudes and awareness have been assessed in community prevalence studies (e.g., McMillen et al., 2003 in Victoria; Roy Morgan Research, 2001, 2005 in Tasmania), people usually appear to be aware that gambling is a problem within the community and are able to describe many of the impacts. However, a clear public health benefit of these campaigns is that they may encourage people to be more aware of how gambling is affecting them personally. Almost all of these campaigns have been successful in contributing to a significant short-term increase in the number of people seeking assistance.

There have also been several studies and reports that have examined whether the availability of responsible gambling information in venues influences problem gambling

(e.g., Australian Gaming Council, 2006; Mills, 2002). The AGR provides a summary of the different types of information that is usually provided (information regarding the important to gambling responsibly, the availability of support services, and information on gambling odds). As pointed out by Mills (2002), there are many empirically-based guidelines concerning the best way in which information should be conveyed in venues based on the experiences drawn from many years of anti-smoking, and safe-drinking campaigns. These techniques focus on the most effective ways to make people aware of relevant information, to attend to it, and recall it. Attention is also directed towards the most appropriate way in which to frame safe gambling messages such as having a focus on personally relevant examples (e.g., gambling can harm your family) rather than simply telling people not to gamble.

Other venue-based information (presented usually in pamphlets) has provided details concerning the rules and odds of various gambling activities as well as some of the fallacies to which people who gamble might fall victim (e.g., the gambler's fallacy or non-independence of events on EGMs) (Blaszczynski, Ladouceur, Nower, & Shaffer, 2005). Some brochures set out the typical chances of obtaining certain outcomes on EGMs, and provide short checklists of behaviours that might indicate that a person has a gambling problem. All of this information appears, at first glance, to be very useful and is generally accurate and well presented. However, as Delfabbro (2004) points out in a detailed review, there may be many practical challenges associated with ensuring that problem gamblers take heed of this information. Gamblers may deny that information applies to them, believe that they have special ways to "beat the odds" (e.g., strategies, personal luck), misinterpret the information, or refuse to believe it because of what they consider to be evidence to the contrary (e.g., there may have been occasions when they persisted for many hours and eventually got a large win).

Research into the effectiveness of venue-based information is relatively sparse, but informational strategies continue to be a cornerstone of most responsible gambling initiatives and venue codes of practice. Hing (2004), for example, sent out 6000 surveys to members of four Sydney clubs and got 954 replies. In her survey, she asked patrons

whether they were aware of responsible gambling messages within venues, whether it was useful as a way to assist problem gamblers, and whether it had influenced their own behaviour. Most people were aware of the signage and information, For example, 86% recalled having read something about the risks of gambling and 70% were aware of the responsible gambling policy. However, when asked if the information would assist problem gamblers, the results were equivocal. Very few felt that the information had altered their own behaviour. Similar questions were included in a survey of 418 EGM players conducted by Rodda and Cowie (2005). Sixty percent were aware of signage and 80% felt that it would assist problem gamblers, but there were no questions relating to whether this information had influenced their own behaviour. Moreover, the difficulties with both studies is that some positive responses relating to the provision of information may have related to information on help-services, rather than to the value of information in influencing the behaviour of problem gamblers.

Another recent study by Monaghan and Blaszczynski (2007) examined the effectiveness of different strategies for displaying information on gaming machines. In this project, 92 undergraduate psychology students (50% who had played EGMs before) were asked to play a realistic gaming machine for 10 minutes. In one experimental condition, information concerning the odds of winning was displayed in one location on the screen in a static format. In a second condition, the information scrolled across the screen every three minutes for a duration of 15 minutes. After the session had been completed, participants were asked to complete a series of recall tasks. The results showed that 85% of people remembered the message when it had been presented in a dynamic format, but only 24% recalled it when it had been presented only in a fixed format. Although the reasons for these differences are theoretically uncomplicated (e.g., the dynamic message was more salient, passed through player's principal area of focus, and would have attracted more attention), the results have important policy implications. They suggest that simple fixed messages on machines are probably insufficient to convey relevant responsible gambling information to patrons. Unless this information is made more salient, it is unlikely that people will attend to the information and be able to recall it.

In summary, although informational strategies remain an important element in many primary interventions to prevent gambling-related harm and appear to be empirically-informed strategies (see previous Chapter), there is a need for ongoing evaluation and refinement of these strategies. The existing research base appears to show that the provision of information relating to help services can encourage people to seek assistance, but it does not provide clear guidance as to whether providing information can prevent problem gambling. Hing's results described above provide some encouragement that people are aware of information, but it is important to recognise that this study was conducted with large Sydney clubs where people might have personal memberships. In other jurisdictions, and particularly those such as Tasmania and South Australia where there many smaller venues, it is less clear whether people have the same loyalties and consistent exposure to the same venues. In such circumstances, it may be more difficult for patrons to gain familiarity with the venue signage if it is located in slightly different places in each venue.

5.2.3 Effectiveness of Broad Codes of Practice

Since 2000, there have been several studies that have investigated the effectiveness of responsible gambling provisions as well as industry codes of practice. The context of these evaluations differs because different jurisdictions have different regulatory environments that influence the way in which the codes are implemented and enforced. Several jurisdictions, including SA, NT, the ACT, and VIC have mandatory codes, whereas NSW, WA and TAS have voluntary codes, although with components (e.g., venue staff training that are mandatory). Queensland has a co-regulatory system in which the Queensland Responsible Gambling Code, developed through multiple stakeholder consultations, is periodically audited and reviewed over time. For policy-makers, research evaluations are important in that they can ascertain the extent to which the industry is complying with the codes, what elements of the code are effective, and more broadly, whether a voluntary or mandatory system is preferable.

Some of the earlier studies of voluntary codes showed that the level of compliance by venues was generally quite low. Hing (2001), for example, surveyed 213

club managers in NSW and asked them about their support for responsible gambling strategies. The vast majority (88%) supported training for staff, but only 50% had at the time implemented such strategies at a venue level. Most strategies that were in place were confined to the provision of complaints mechanisms, the payment of large wins by cheques, or providing referral information for people who were experiencing difficulties. Relatively few (1 in 5) had prohibited ATMs in gaming areas, and only 28% had trained staff to recognise the signs of problem gambling. Hing (2004) obtained similar results in survey of 1000 gamblers from clubs in NSW. Patrons were asked to rate how confident they were about the effectiveness of current responsible gambling provisions. Most patrons were generally pessimistic about the extent to which venues had embraced responsible gambling principles. For example, they drew attention to the ongoing availability of ATMs in venues and expressed doubts about the effectiveness of providing information in venues.

It is important to note that, as in other States such as SA, QLD and VIC, NSW has undertaken an ongoing process of review and consultation to enhance the quality of responsible gambling regulation in the State. There is now a more comprehensive suite of responsible gambling provisions, many of which have been significantly enhanced since Hing undertook her original studies. Venue staff now usually receive appropriate and accredited responsible gambling training and there have been multiple Independent Pricing and Regulatory Tribunal (IPART) reviews of gaming machine technology and venue design. However, it still remains unclear whether the concerns raised in these studies have been necessarily addressed because a significant proportion of gambling providers may not necessarily comply with the codes of practice if these are not mandatory.

Similar evaluations of the effectiveness of codes of practice have been undertaken (e.g., Queensland Government (Treasury), 2001, 2002). The evaluation was designed to ascertain the public and industry's awareness of the Codes, their level of commitment to providing responsible gambling services, and the nature and extent of staff training. On the whole, the results of this evaluation were quite favourable. Over 70% of gambling

providers expressed a commitment to the Codes, and up to three-quarters had implemented changes to the physical environment (e.g., increase lighting or installed clocks in the gaming rooms), or altered the way in which staff interacted with patrons (e.g., stopped allowing purchases of alcohol and food on the gaming floor). Three-quarters of industry respondents were committed to staff training, although two-thirds of this had been undertaken informally through in-house sessions rather than by accredited training bodies with compliance with the national competency standard. Industry respondents also drew attention to a number of challenges associated with implementing the Codes. These included the cost and time involved, the lack of suitably trained instructors, and the difficulty of assisting venues in more remote locations. Very similar conclusions were reached by Breen, Buultjens, and Hing (2003) in a study involving venue managers and staff in three regional areas of Queensland (Longreach, Townsville, and the south east). A significant proportion of the venues had not completed formal training, many expressed concerns about the time and effort required to undertake training, and drew attention to the difficulties associated with implementing responsible gambling measures in smaller or remote venues (see also Breen, Buultjens, & Hing, 2005a, b, 2006; a,b).

Both sets of results therefore provided policy-makers with a significant amount of useful information concerning the potential effectiveness of voluntary codes. As in NSW, a question remains as to whether all venues will comply with the Codes, and the capacity of individual venues to comply may be influenced by their location and size. For policy-makers, the findings suggest that the need for discussions concerning the means by which smaller or regional venues with fewer resources and staff might be assisted so as to comply with the relevant codes of practice.

As discussed in the Australasian Review (Delfabbro, 2007), the most comprehensive review of Codes of Practice has been undertaken between 2004-2005 in South Australia by the National Institute of Labour Studies (NILS) based at Flinders University. NILS was commissioned by the Independent Gambling Authority of South Australia to evaluate the effectiveness of the mandatory Advertising and Responsible

Gambling Codes of Practice introduced in 2004. These new codes of practice required gambling providers to instigate a number of changes to their operations, policies, and staffing promotional strategies. For example, under the new responsible gambling codes, venues were required to provide responsible gambling information in venues, to ensure that their staff undertook appropriate accredited training every two years. Other provisions included the prohibition of the serving of alcohol to players while in front of an EGM and limits on the number of machines that could be played at once (only one). The Advertising codes placed various restrictions on the timing and content of TV and radio advertising, including restrictions on promotions that were directed towards minors or disadvantaged groups, restrictions on the use of sounds of EGMs in advertising, and the avoidance of advertising that might provide a false sense of the likelihood of winning.

The NILS project involved two components: a series of interviews with problem and recreational gamblers, and structured interviews with venue owners and managers, regulators, and counselling services. In the first part of the project, a randomised telephone survey was used to identify 500 recreational gamblers and 50 problem gamblers. These people were interviewed about their gambling habits before the Codes came into force, 3 months later, and then 9 and 15 months after the implementation. At each of these interview points, gamblers were asked to describe how frequently they were gambling and how much they were spending on different forms of gambling. The aim was to conduct longitudinal analyses to determine whether expenditure patterns changed over time. The results yielded very little evidence that recreational players had changed their behaviour over time, but found that problem gamblers appeared to have decreased both the frequency of their gambling as well as their spending following the introduction of the Codes. These conclusions were based on the careful analysis of changes in expenditure between successive time points as well as multivariate analyses.

As pointed out in the AGR (Delfabbro, 2007), the NILS study provides an excellent template for how similar projects might be undertaken in the future. The study includes a comparative sample of problem and recreational players, has a pre-post design, and samples gamblers from the community using appropriate randomised methods.

However, there are several principal elements of the methodology that encourage some element of caution when interpreting the findings:

- (1) Sampling: NILS found it very difficult to maintain their sample over time. Only 112 of the 504 recreational gamblers stayed in the study until 15 months and only 6 out of 50 problem gamblers. Additional problem gamblers had been recruited at different time points and grouped together with the original sample. This means that the samples used to perform comparisons over time were not the same people, so that the study was not truly longitudinal. Those who were substituted in might have gambled less frequently or spent less than the drop-outs so that one obtained an artificial trend towards less gambling over time. From a personal communication between the author and NILS, it was ascertained that the replacement samples did not differ substantially from the original sample, but this information was not presented in the report to allow independent confirmation.
- (2) Problem gambling Measure: The study used only a partial version of the Victorian Gambling Screen (VGS) as its measure of problem gambling. It is not clear whether the problem gambling sample were genuine problem gamblers or only 'at risk' according to the VGS classification system.
- (3) Dependent Measures: It would have been useful to ask why people had decreased their expenditure or frequency of gambling, or whether they had been aware of any changes in gaming venues since the introduction of the Codes.

Although NILS concluded that the evaluation found clear evidence that the introduction of the Codes had given rise to changes in gambling behaviour, the conclusion of the AGR (Delfabbro, 2007) is more cautious because of the methodological issues raised above. It was suggested that these results should be treated as promising or preliminary until such time that an opportunity arises to evaluate the Codes (or modifications to the codes) using a study with a larger tracking sample of problem gamblers.

The second part of the study involved interviews with industry groups and other respondents. This component found that most industry groups had made significant steps towards implementing and complying with the Codes (e.g., staff training). Most industry respondents expressed few reservations about the provision of information in venues, but appeared less enthusiastic about many of the other provisions. Counselling agencies were generally sceptical about the value of the Codes, and some industry groups (e.g., lottery providers) were unclear as to how the Codes applied to them because their products were seldom implicated in discussions of problem gambling.

In summary, the NILS study provides a number of useful insights that have implications for similar interventions and policies around Australia. Although the mandatory regulatory system prevailing in South Australia differs from many other jurisdictions, the promising nature of the findings has implications for policy discussions relating to the relative advantages of voluntary vs. mandatory regulatory systems. It also supports the view that accredited staff training can be systematically provided to a large number of venue staff, and that multi-faceted codes can be implemented and enforced in a wide range of gaming venues.

5.2.4 Limits on Advertising and Venue Promotions

It has also been suggested that placing limits on advertising and venue promotions may also be an effective strategy to reduce the problem gambling. Three principal reasons are often advanced to explain why advertising and venue promotions could be problematic. First, advertising can encourage people to visit venues, and therefore increase the frequency with which people gamble. Second, it can act as a trigger to encourage people to gambling. Third, it may encourage people to stay longer at venues (e.g., to win prizes).

At the present time, very little specific research has been undertaken to ascertain the effects of advertising on problem gamblers. The effects of advertising have instead been investigated indirectly as a part of broader studies relating to the factors that influence gambling in general, or which might limit problematic behaviour. Australian

Institute for Primary Care (2006) and New Focus (2005), for example, asked regular EGM players in Victoria to describe their views of venue inducements and how they influenced their behaviour. Although some felt that inducements and promotions were sometimes unhelpful when they are trying to reduce their gambling, they did not consider that these were primary reasons why they visited gambling venues. Similar findings were obtained by Delfabbro and Panozzo (2005) in an analysis of focus group data collected from a sample of problem gamblers. Most problem gamblers expressed few concerns about venue promotions because they were already very familiar with the location of venues, and said that they would gamble irrespective of whether inducements or promotions were available.

In conclusion, despite the fact that appropriate advertising and marketing is recognised as an important component of responsible gambling provisions all over Australia, relatively few studies have been undertaken in any Australian jurisdiction to determine how important these elements are in encouraging people to gamble, or whether they increase the likelihood of gambling-related harm.

5.2.5 General Practice Interventions

As pointed out by Tolchard, Thomas and Battersby (2007), general practitioners are one of the most trusted and visited health professionals in Australia. Around 80% of the population visits a GP at least once per year and people are usually willing to disclose a range of personal problems during consultations. As a result, there has been interest in within Australia in using GPs more proactively in identifying and assisting problem gamblers either by providing people with information about services or actively screening for people who have gambling problems. In Australia, detailed resource kits to assist GPs in these processes have been funded and developed in both Victoria and South Australia with principal assistance from the Monash University and University of Melbourne gambling research centre. These kits provide GPs with detailed information concerning the nature of gambling, fact sheets, posters, screening instruments, as well as cards and referral information that can be given to patients.

Although well-intentioned, the success of these resource kits remains very much subject to the willingness and ability of GPs to read the information and provide assistance. To date, there has only been limited research that has investigated the extent to which GPs might be willing to participate. For example, Tolchard et al. (2007) examined the effectiveness of a trial kit in South Australia. In the first part of the evaluation, 320 letters were sent to GPs asking whether they would be willing to receive more detailed information packs. Only 9 responses were received. In a second state, 51 GPs who had made previous referrals to Flinders Medical Centre to the gambling treatment centre run by the authors, were sent information packs along with a survey. The results showed that GPs could potentially benefit from information packs of the nature now developed in South Australia and Victoria. Only 61% were aware of the prevalence of problem gambling in the community and two-thirds felt that they had benefited from the extra information provided to them. Although few reported having encountered very many problem gamblers as part of their work, almost all indicated that they, as GPs, had a role to play to assist people with gambling problems.

Despite only being a preliminary study, it is likely that these findings can be generalized to other jurisdictions in Australia where GPs experience similar time and resource pressures. From a policy perspective, the findings provide useful insights into the ways in which GPs might be engaged, the types of information and resources with which they might be provided, and underscores their potentially important role in providing primary interventions for problem gamblers and their families.

5.3 Secondary Intervention Strategies

5.3.1 Restricting Access to Money at Venues

As pointed out in the AGR, there has been considerable national discussion regarding the extent to which the accessibility of cash facilities such as ATMs influences gambling expenditure and whether placing limits or removing of these facilities might be a useful harm minimisation strategy. The current Australian gambling literature provides some useful guidance in this area because several recent prevalence studies have included

specific questions relating to the use of cash facilities. Responses to these questions can be easily analysed in relation to the status of gamblers, so as to determine whether ATMs and EFTPOS are used to a greater extent by problem gamblers. Studies conducted in a number of different Australian jurisdictions indicate that this is indeed the case. For example, the Productivity Commission (1999) found that almost 60% of problem gamblers often or always used ATMs at venues compared with only 4% of non-problem gamblers. McMillen et al. (2001), in the ACT, found that 74% of gamblers scoring 10+ on the SOGS and 47% scoring between 5-9 often or always used ATMs at EGM venues as compared with only 4% of recreational players.

Other studies have asked members of the public or gambling patrons whether placing limits on ATM withdrawals or removing ATMs could assist problem gamblers (e.g., Hing, 2004 in New South Wales; McMillen et al, 2003 in Victoria; McMillen, Marshall, & Murphy, 2004 in the Australian Capital Territory; New Focus, 2005; Rodda & Cowie, 2005 in Victoria). McMillen et al's (2001) prevalence study in Victoria found that 86% of gamblers supported the imposition of a \$200 limit on withdrawals per day, whereas focus groups conducted in the Australian Capital Territory as part of a larger study conducted by McMillen et al. (2004) (see below) with problem gamblers and their families suggested that ATMs played a significant role in the development of gambling problems. Rodda and Cowie (2005) found that 77% of regular EGM players believed that the removal of EGMs would be highly effective in limiting problem gambling.

McMillen et al.'s (2004) study in the ACT included a variety of methodologies and extended their investigation to consider different cash facilities, including people's access to EFTPOS and their use of note acceptors on gaming machines. To gain insights into these topics, a telephone survey of 735 Canberra adults was undertaken and interviews and/ focus groups were held with industry representatives, experts in the field, problem gamblers, counsellors and their families. In the gambling survey, problem gamblers were identified with a single self-report item² and all respondents were asked to describe the extent to which they used cash facilities in venues. The results showed that

² This was done to avoid making the survey too long.

most people in Canberra had visited clubs (84%) and had gone there to gamble. Eighty-nine percent who had visited clubs had taken out money from ATMs and 63% had used EFTPOS during the previous year. Usage patterns were found to vary according to people's gambling status. Those self-identifying as problem gamblers were more likely to have used ATMs in venues (60%) vs. 25% for regular gamblers and 13% of recreational gamblers. Many patrons also reported having drawn out money from ATMs located outside of venues and 60% of people who had reported using ATMs in venues said that there was another ATM within walking distance.

When people in the survey were asked whether they supported restrictions being placed on cash facilities in venues, most (86%) said that limits should be placed on ATM and EFTPOS withdrawals, and 70% supported restrictions the size of notes that could be fed into acceptors on gaming machines. People also generally supported bans on credit facilities and ATMs and EFTPOS in gaming rooms, but were more equivocal about the complete removal of ATMs from venues. Forty-seven percent supported this policy, but 43% also disagreed with it, presumably because it would give rise to considerable inconvenience to patrons.

Based on the different sources of evidence obtained, McMillen et al. (2004) concluded that there was some support for the notion that restrictions on the availability of cash facilities in venues could play a useful role in reducing the potential harms associated with problem gambling. Most respondents supported withdrawal limits, keeping the gaming floor clear of cash facilities such as ATMs or EFTPOS, and for limits to be imposed on note-acceptors. Indeed, these findings helped inform the ACT Government's subsequent decision to impose restrictions on the size of notes that could be fed into note acceptors and to place limits on daily withdrawals from ATMs. On the other hand, the authors were not able to conclude, from just this study alone, whether the complete removal of ATMs from venues was an appropriate policy. This cautious conclusion was due to the relatively small sample sizes in the study, the inconsistent feedback received from respondents, as well as the equivocal support indicated by the community survey. The authors recommended that further research into this topic be

conducted before any decisions be made concerning the removal of ATMs because of the significant impact that this policy could have on all patrons who visit venues.

In summary, despite their preliminary or exploratory nature, these studies provide a very promising basis for further national and inter-jurisdictional research into the effects on the availability of cash facilities in venues on problem gambling. Questions relating to the use of ATMs could be included in all future community prevalence studies, and attempts should always be made to conduct comparative analyses to determine whether such facilities have a differentially large impact on problem gamblers. The current research literature shows that not all prevalence surveys undertaken in the different jurisdictions during the last 5-6 years have made full use of the opportunity to explore the issue of cash facilities in venues. Some studies (Queensland Government (Treasury), 2001; Roy Morgan, 2001, 2005 in Tasmania; S.A. Department of Human Services, 2001) did not include questions relating to ATMs, whereas others did not provide problem gambler vs. non-problem gambler comparisons of the use of ATMs (McMillen et al., 2003 in Victoria). Inclusion of consistent questions in all future surveys would assist in the development of nationally comparative data relevant to this topic.

In addition to these broader surveys, it would also be useful to conduct detailed surveys of ATMs by patrons at venues. McMillen et al's (2004) study is useful in that provides very detailed data concerning the patterns of usage in the general community and how the removal of ATMs might inconvenience other patrons. However, a limitation of this ACT study was that only a relatively small sample of problem gamblers was interviewed. Such research could therefore be usefully extended in other jurisdictions by purposively sampling regular EGMs players so as to capture a larger representation of problem gamblers. These studies should, wherever possible, attempt to supplement self-report data with some measures of actual behaviour (e.g., how often problem gamblers use ATMs and the extent to which this influences their ability to control their expenditure over time).

Finally, it is also important to be mindful of variations in existing regulatory provisions. In some jurisdictions, provisions concerning the use of ATMs in venues are already in place. For example, Victorian and South Australian legislation places a \$200 limit per transaction, Tasmania does not allow ATMs in non-Casino gaming venues. Similar inter-jurisdictional variations also apply to EFTPOS facilities, although EFTPOS has not been subjected to the same degree of debate because it is considered a more essential service in venues and is, therefore, more difficult to limit, or remove.

5.3.2 Lighting and Clocks in Venues

The fact that some problem gamblers appear to lose track of reality and time when they enter gaming areas has led to the suggestion that greater ‘reality checks’ need to be placed into venues. Some of the common suggestions include adding clocks to venues, natural lighting, or easy access to exist points. These suggestions have been discussed by the Productivity Commission (1999), the IPART review in New South Wales (2003), and in many submissions to inquiries concerning the introduction of harm minimisation features to gaming venues. All of these proposals appear very logical and are usually endorsed by patrons. Studies in Victoria by Cowie and Rodda (2005) and New Focus (2005), as well as in New South Wales (Hing, 2004) have found that patrons supported the introduction of clocks and similar features, and rate them potentially useful strategies to assist problem gamblers. However, apart from these self-report studies, no objective behavioural data is available to support the effectiveness of these features.

An important reason for this is that it is very difficult to ascertain the specific effect of these measures using established research methodologies. Apart from the fact that introducing natural lighting to gaming areas would be impractical or prohibitively expensive for many venues, it would be very difficult to investigate the effects unless one could compare the behaviour of a captive population of gamblers who only used that venue. One would be heavily reliant upon self-report data, and this might only reflect the perception that people consider this ‘to be a good idea’ rather than one that worked in practice. Similarly, any attempt to measure the effect of clocks would be challenged by the fact that this type of measure is often introduced along with a suite of other measures, so that it would be very difficult to discern the specific influence of the clock. It is not

clear that patrons would necessarily look at clocks if they were otherwise preoccupied with gambling, and many may not judge the duration of the session based on the time elapsed, but upon the achievement of specific goals (e.g., obtaining a certain sized win, or a bonus sequences).

5.3.3 *Machine Shutdowns*

AGR-4 provides a review of a number of investigations into the potential effectiveness of machine shutdowns on gambling behaviour, expenditure, and problem gambling. As indicated in the Review, a machine shut-down is a period of predetermined machine inactivity in which players are unable to gamble (e.g., for 4 hours at a certain time of the day). The Review examines evidence from several studies and reports, including the Productivity Commission (1999), SACES (2005a), as well as survey or interview studies conducted by McMillen and Pitt (2005) in the Australian Capital Territory, Livingstone (2004), Cowie and Rodda (2005), New Focus (2005) in Victoria, as well as AC Nielson and Tuffin and Parr (2008) in New South Wales. Almost all of the survey studies interviewed regular and recreational gamblers to determine their views concerning the effectiveness of shutdowns. On the whole, most gamblers or relatives of gamblers who were asked supported the introduction of machine shutdowns.

When other studies have looked more closely at the revenue effects of shutdowns for particular venues, the results have tended to vary. SACES (2005) examined several areas of Victoria that had been subject to regional caps on machine numbers and found some evidence that revenue growth had been slower for venues where shutdowns had been imposed. McMillen and Pitt (2005) found that only a minority of venues in the ACT had experienced small to modest decreases in revenue (3-10%), whereas AC Nielson (2003) in NSW and SACES (2005) both found that any short-term declines in income caused by the introduction of shutdowns were usually short lived because the industry developed ways to counteract the effect (e.g., changing the mix of machines towards more profitable models).

The only study that has looked in depth at the potential effects of machine shutdowns on problem gambling is the project undertaken by Tuffin and Parr (2008)

from BlueMoon Research in NSW. This project was specifically designed to examine the effects of the NSW Government's shutdown of club and hotel machines between 4am and 10am. The research involved 272 face-to-face interviews with regular gamblers, 100 telephone interviews with club and hotel managers and focus groups with a variety of stakeholders including gamblers, managers and other relevant individuals. A useful and interesting feature of this study was that many of the surveys with gamblers were conducted just prior to the 4am shutdown so as to ascertain the immediate effects of the policy on the behaviour and intentions of gamblers. The survey also contained a good representation of problem gamblers and other 'at-risk' gamblers (29% scored 8+ on the CPGI and 27% scored in the moderate range, 2-7).

The results from the gambler survey showed that the shutdown did appear to influence people's gambling intentions. Of the 136 people who were interviewed prior to the shutdown, 71% indicated that this action by the venue was sufficient for them to go home, and this view was more likely to be reported by problem gamblers (68%) than no-risk gamblers (57%). Similarly, when patrons were asked if they would stay in the venue, only 7% of problem gamblers as compared with 26% of no-risk gamblers indicated that they would stay. Only 3% reported that they would go to another venue. Another important finding was that problem gamblers were more likely to report that they gambled during the 4am to 10am period (63% vs. 41% for the moderate risk group vs. 32% for the low-risk group vs. 16% no-risk group). From a policy perspective, these findings suggested that the shutdown was effective in encouraging people to leave the venue and go home and that the impact on problem gamblers was more substantial than for the other groups. Importantly, from a national policy perspective, the findings showed that shutting down machines at one venue does not necessarily lead to people going to another venue to gamble, perhaps on another form of gambling. In this sense, the results emphasise the importance of having a shutdown policy that is uniformly applied across different, but proximal, geographical areas.

On the whole, when asked, most problem gamblers (78%) supported the policy and believed that it should be retained. Only 27% of patrons in general were unhappy

about the policy and the remainder were either happy or indifferent about it. However, it was also felt that the policy did not necessarily help to reduce the likelihood of people developing gambling problems. For example, when gamblers were asked about how the policy affected their gambling in general, only 6% of the players interviewed indicated that they would play EGMs less often and only 8% of problem gamblers reported that the policy had influenced their ability to play EGMs. When the researchers further asked whether the duration of the shutdown should be changed, 47% of gamblers indicated that it should remain the same, 34% said it should be increased, and only 11% said that it should be reduced. Over half the sample (51%) indicated that the shutdown did not have a substantial influence on people's overall involvement with gambling because it was at the wrong time of the day. Most gamblers, including problem players, reported doing much of their gambling between 6pm and 12pm, so that there was some support for a shorter shutdown during these 'peak' periods of play, although it was acknowledged that this would also give rise to greater inconvenience to some players.

Industry respondents were generally more indifferent to the shutdown policy and a majority (61%) felt that recreational players (particularly people who worked unusual shifts) were most adversely affected by the policy. Although many industry respondents indicated that the early hours of the morning was an unusual time for people to gamble and that problem gamblers might be more likely to gamble during that period, they were critical of the duration of the shutdown. Many did not feel that it was appropriate for the shutdown to extend later into the morning. Around 1 in 4 reported that they closed their venues during these times and 1 in 4 reported a loss of revenue, although Tuffin and Parr could find little evidence of any substantial loss of revenue when they examined revenue figures for the period concerned.

Taken as a whole, the findings from Tuffin and Parr's (2008) study in NSW would appear to have many important implications for national policies relating to this harm minimisation strategy. The findings show that the timing of shutdowns is a important consideration of policy and that one must also consider the differential effects on problem vs. recreational players. The project itself also highlights the value of

conducted *in situ* research to examine the direct effectiveness of the policy on those for whom the policy is intended.

5.3.4 Other EGM Features

A number of important EGM features have been discussed previously in Chapter 4 (namely, the effect of modifying bill acceptors, maximum bet amounts, and play speed). However, the AGR also touches on a number of other EGM features that are commonly identified in discussions of modifications to EGM operations. Although discussed in the AGR, these features are often overlooked because of the very limited and speculative range of evidence currently available. Measures or features that fall into this category include: the effects of modifying lights and sounds on machines, changing credit totals to dollar amounts on machines, and bonus or linked jackpots.

(a) Lights and sounds

Cowie and Rodda (2005) and New Focus (2005) found that these features were considered important in the selection of machines (i.e., what made machines popular), but modifying sounds lights was not considered a very effective way to influence problem gambling. Delfabbro et al. (2003), using a simulated slot-machine in the laboratory, found that soundless machines were significantly less popular than other machines because people like to hear the sounds of winning to know what is happening when they play.

(b) Changing Credit Totals

Delfabbro et al. (2003) investigated this feature in a laboratory simulation involving regular EGM players and found that it did not influence machine preferences. No studies have specifically examined this topic in venues.

(c) Jackpot and Bonus Features

Previous studies by Walker (2004) described in Chapter 4 show that free spin and bonus features are extremely important in maintaining EGM playing. However, little similar information is available concerning the effects of jackpot features. Observational studies of the nature conducted by Walker might usually be extended to the study of jackpot (progressive and linked) to determine whether players show obvious signs of persisting on machines where these features are available. Alternatively, it may be useful to conduct expenditure comparisons of machines with and without links to progressive jackpots. In conducting such research from an inter-jurisdictional perspective, it is important to be mindful that not all jurisdictions have these features. South Australian clubs and hotels, for example, do not have linked jackpots and Western Australian clubs and hotels do not have EGMs at all. This means that such comparisons can only be conducted nationally within casinos (EGMs in most casinos have these features), or in clubs and hotels within specific jurisdictions.

5.3.5 Smart Card Technology

The term smart card technology refers to electronic cards can be used in conjunction with EGMs to allow players or venues to monitor, limit, or track expenditure on EGMs. Although many potential models have been proposed around Australia and by different technology providers, the fundamental principles or processes are approximately the same. Players would be required to present identification to obtain a personal electronic card that can be charged with cash or credits so as to provide access to EGMs. Each time the person used the card, credit would be added or subtracted, and the same card would be used for all machines so that a centralised database would monitor and track expenditure. Theoretically, it would be possible for players to specify an expenditure limit in advance, or for the system to limit certain players access to machines if they had exceeded a certain ‘level of play’ (expenditure, frequency of play). As a result of these possibilities, smart cart technology has been the subject of considerable public debate, a topic for regulatory inquiries, a favoured harm minimisation strategy of non-government organisations involved in gambling treatment, and several significant research projects.

The AGR provides a summary of the body of evidence that is currently available concerning the potential value of smart cards. It begins with a discussion of the Productivity Commissions review, and then summarises the findings from several recent surveys and inquiries into the feasibility of this technology, and its potential utility as a harm minimisation strategy. Included in the review is a discussion of Nisbet's (2003, 2004) detailed survey study of players and industry representatives in New South Wales, Livingstone's (2004) comprehensive national review of EGM technology, the Independent Gambling Authority of South Australia (IGA) review of smart card technology conducted in 2005, and a national telephone survey of EGM players recently conducted by McDonnell-Phillips (2005).

In terms of its coverage of the principal issues and the view of the main stakeholders potentially affected by this issue, the current research literature is sufficiently comprehensive to inform ongoing national debates. The IGA review, for example, outlines the different levels or forms that this technology may take ranging from an entirely voluntary system to mandatory systems where machines could only be operated by electronic cards. It points out that gamblers could gamble with, or without identification by venues, employ self-imposed limits on the amount of time spent on machine or expenditure, and that machines could offer multiple forms of access, or only card access.

All of the studies have obtained only limited or, at best mixed, industry endorsement of this technology. Although some industry representatives in Nisbet's 2003 study in New South Wales were receptive to the possibility that privacy issues could be overcome and that the cards could ultimately save some labour costs in venues, other industry respondents, and most gambling providers who responded to the IGA review, were more sceptical. Many felt that the cost of implementation was prohibitive, that the system would only work if it were mandatory, and that it would have adverse affects on recreational or casual players (especially if ID were required to obtain a card). Similar feedback has been received from gamblers. In Nisbet's (2004) interviews with gamblers in NSW, it was found that voluntary card schemes were not endorsed by problem

gamblers because they did not feel that players would use the cards unless it were mandatory.

The McDonnell-Phillips (2005) study included similar questions, but extended Nisbet's analysis by looking more comprehensively at the perceived viability of different card schemes, as well as how regular EGM gamblers felt that they would react to them. On the whole, the results provided clear guidance as to the most preferred system to adopt. Gamblers reported that cards which allowed players to set their own expenditure limits were preferred over those which imposed limits in the frequency of play. These limits should also apply to shorter periods, i.e., be weekly or daily basis rather than less frequently. Most players (61%) supported a voluntary scheme and only 26% preferred a compulsory one. Around half of the EGM players did not believe that either scheme would make any difference to their gambling, but a third reported that gambling would be less enjoyable under a mandatory scheme. Around a half of the sample said that they would use the cards, but a quarter said that they would not. When these results were broken down by gambler status, the results came out even more strongly in support of voluntary schemes: only 17% of problem gamblers preferred a compulsory scheme and 67% preferred a voluntary one. Only 38% of problem gamblers would use cards if they were available and a quarter would not.

In summary, although the existing research literature relating to smart cards provides some useful guidance as to the appropriate form of the technology, the results provide a number of challenges to regulators and policy makers. Most respondents appear to agree that only mandatory systems would be effect in reducing gambling-related harm, but such systems are not likely to be popular with many gamblers. As Livingstone (2004), points out, however, a limitation with much of this research is that few, if any respondents in some of these surveys have had a great deal of experience using smart cards to gamble. Thus, the results are largely hypothetical and speculative and not based on analyses of actual behaviour. Moreover, all of these studies are based only on self-report evaluations rather than actual trials of the technology, so that the current research

base does not provide any guidance as to effectiveness of this technology, but merely what people might prefer and might react to cards being introduced.

5.3.6 Exclusion Strategies

In every jurisdiction in Australia, there are provisions in place that allow: (a) Gamblers to self-exclude themselves from specific venues or groups of venues for a period of time, or (b) Venues to exclude certain gamblers. Although the exact mechanisms vary slightly from one jurisdiction to the next, the procedures are usually very similar. Gamblers fill out documentation, provide a photograph of themselves, and these details are sent to the relevant venue. Debates about the efficacy of these procedures have been conducted for many years and are discussed in the Productivity Commission (1999), but very little research has specifically been conducted to ascertain the effectiveness of these measures.

Apart from a review conducted for the Australian Gaming Council (Blaszczynski, Ladouceur, & Nower, 2004), the only detailed research project into the nature of exclusion studies was undertaken by SACES in 2003 (O'Neil et al., 2003). The SACES project involved secondary analysis of data collected by the industry (AHA Victoria and Crown Casino, Melbourne), a survey study of venue managers, and consultations with various stakeholders including industry, treatment service providers, and State Government regulators. The secondary data analysis of the AHA Victoria data,—namely, the results of 4083 interviews with patrons about exclusion— showed that 2248 (56%) people had been excluded. Around 30% of those excluded had sought additional deeds of exclusion. The Crown Casino data revealed that 933 had been excluded between 1996-2002 and that 15% had breached their deeds with a mean of 3.2 per person. Around one fifth had breached their deeds on more than one occasion. The interviews with industry showed that most were sceptical about the value of exclusion because of the difficulty of enforcing the strategy. Apart from the difficulties in trying to identify people from photos, people were able to disguise their appearance, avoid being seen, and often changed their appearance over time. Staff did not usually have the time to update their knowledge of excluded patrons on a regular basis, especially when these ran into hundreds. It was concluded that greater resources, including improved information

technology resources would need to be made available to enhance the quality of these exclusion programs.

Despite being conducted in Victoria, it is likely that these findings can be generalised to many other jurisdictions because the same challenges are likely to be faced all over the country. However, some contextual factors might influence the generalisability of these findings. For example, it might be easier from an observational perspective to detect breaches in South Australian and Tasmanian venues because the EGM venues are generally smaller than in other States or Territories. Conversely, in some of the larger clubs in New South Wales and the Australian Capital Territory, the requirement to provide membership cards upon entry into clubs might provide an additional opportunity to detect excluded gamblers.

The SACES findings show that many people who self-exclude admit to having breached their deeds, but the project relies upon secondary self-report data from industry rather than primary interviews with gamblers themselves. As a result, it is unclear how many gamblers breached their deeds, and then did not admit to having done so when they completed the survey. There was a need to determine how many problem gamblers actually breach their deeds, as opposed to how many were caught, or admitted to doing so.

Despite some limitations in the data available, the findings from these studies have some value for policies relating to the availability of exclusion provisions in Australia. In particular, they emphasise a need to consider the technology available to assist venues that are implementing these policies, the availability of appropriately trained staff, and the scrutiny applied to people who enter the gaming floor with an apparent intention to gamble. For example, the value of exclusion policies may need to be discussed in conjunction with policies relating to discussion of smart-card technology in relation to the use of gaming machines.

5.3.7 *Smoking Bans*

As indicated in Chapter 3, a significant proportion of gamblers are regular smokers and have a history of smoking while they are gambling on EGMs. As a result, it has been suggested that a significant number of regular patrons would have to leave venues whenever they wanted to smoke if venue smoking bans were enforced. The AGR provides a brief summary of the effects of the introduction of the first smoking ban of this nature; namely, in Victoria (NB. the Queensland ban had not occurred when the review was last updated). The review discusses the analyses conducted by Marshall (2003) as well as the recent review conducted by SACES (2005b) on the effects of regional EGM caps on several Melbourne communities. Both studies show that EGM revenue dropped significantly following the introduction of smoking bans (around 9%), although the magnitude of the effect varied from one venue to another. Similarly, SACES found using time-based regression analyses, that EGM revenue in Victoria decreased during the year that smoking bans were introduced. However, the results also showed that expenditure on EGMs has gradually recovered after the initial fall.

Given the very consistent link found between smoking and EGM gambling in a number of studies in different jurisdictions, it is likely that the findings above could be generalised to other jurisdictions where smoking bans are proposed (or in progress). In evaluating the effects of bans, however, it will be important to take into account the importance of determining how much of the decline in revenue due to the ban is attributable to problem gamblers as opposed to other players. Although the Productivity Commission (1999) estimated that around 42% of EGM expenditure is due to problem gamblers, an even greater proportion of the decline in EGM revenue observed after a smoking ban may be attributable to problem gamblers if smoking rates are disproportionately higher in this group. For this reason, an assessment of the smoking rates of problem gamblers and the number and length of breaks taken by gamblers due to smoking prior to future smoking bans may enhance the policy utility of research findings. Such data would have the potential to anticipate the likely industry impacts as well as the differential impact on problem gamblers.

5.3.8 Staff Training and Identifying Problem Gamblers in Venues

In most jurisdictions in Australia, venue staff are required to undergo appropriate training relating to the provision of responsible gambling services. Wherever possible, it is hoped that this training will conform to a national competency unit entitled Provide Responsible Gambling Services (Code: THHADG03B) developed and taught by a number of training organizations around Australia and based on principles originally set out by the National Ministerial Council on Gambling. As discussed in AGR-4, most of these courses comprise a single day or evening period of instruction with a pre-written manual that contains lecture notes, tutorial-style exercises and other resources. The training courses usually provide details of relevant legislation prevailing in each jurisdiction, the nature of gambling and problem gambling, the benefits of the gambling industry, and specific training relating to the provision of services to gamblers. For example, staff are trained in how to help gamblers find appropriate help services, how exclusion schemes operate, and how to communicate with gamblers who might be experiencing distress.

To date, few of these training courses have been subject to any form of rigorous evaluation, although Betsafe, the service provided by Paul Symond Consultancy in NSW, was evaluated by Synaval in 2001 in terms of whether it provided staff with useful information. No evaluation has, however, examined the effectiveness of any training programmes over time; for example, to determine whether they have any impacts on the long-term behaviour of staff. Despite this, some programmes such as GamingCare in South Australia have sought to provide ongoing or 'top-up' training to staff in venues to assist staff address challenges and other issues relating to venue compliance with the mandated code of practice operating in the State. The effectiveness of existing staff training programmes remains, therefore, a topic that requires further research investigation in Australia. From a policy perspective, this topic raises questions about the appropriate standards that might be used to evaluate a staff training programme as well as what constitutes an appropriate level of compliance with mandated training requirements.

A particular issue that has proved challenging for staff and in training programmes is the degree to which staff should intervene in the event that they observe someone who appears to have difficulties with their gambling. In some situations, the responsibilities of staff are reasonably clear. If gamblers approach staff of their own volition for assistance or make a statement that might indicate the presence of a problem, almost all codes of practice are relatively clear: staff have an obligation and duty of care to provide assistance. The situation is, on the other hand, more complex, when staff are not approached, but gamblers are displaying behaviour that might indicate the presence of a gambling problem. In both SA and the ACT, the codes of practice require staff to take all reasonable steps to recognise the warning signs of problem gambling within venues. However, to what extent are staff required to act proactively in such situations, and to what extent can staff be reasonably expected to identify people who genuinely need assistance?

These issues have been the subject of analysis and discussion in two Australian publications. The first was a review undertaken by the Australian Gaming Council (Allcock, 2002) which compiled a series of paper submissions from experienced counsellors and researchers in the gambling field. Most respondents indicated that there were a number of visible indicators that could be used to identify problem gamblers in situ (e.g., frequent visits to ATMs, social and emotional behaviours, excessive expenditure and time commitments). They also made recommendations about how such indicators might be investigated more formally, but the respondents were, on the whole, pessimistic about the extent to which staff could use these indicators to make within-venue identifications. Many drew attention to the lack of diagnostic training in venue staff, the size of venues, the number of patrons present, and the ability of staff to observe sufficient behaviour for individual patrons so as to make a reasonable judgment about their likely gambling status.

This uncertainty led to Gambling Research Australia to fund a large-scale project that examined the issue of *in situ* identification using empirical research. Conducted by researchers from the University of Adelaide, University of Canberra and Australian

National University (Delfabbro, Osborn, McMillen, Nevile, & Skelt, 2007), this project involved a number of related projects and components. The project included a detailed review of national and international literature, including staff training provisions and codes of practice. Interviews and surveys were conducted with counsellors (n = 15) and venue staff recruited from venues of different sizes in SA, the ACT and NSW (n= 120). There was also a survey of almost 700 regular gamblers (casino, club and hotel users) as well as 140 hours of *in situ* observation of gambling behaviour in both the ACT and in SA.

A principal element of the project was the development of an extensive checklist of potential behaviours or indicators that might be used to identify gamblers within venues. Initially, these were drawn from the AGC review described above, the broader literature, existing checklists developed by casinos around the world, but also drew from initial research conducted by Hafeli and Schneider (2005) in Switzerland and Schrans and Schellinck (2004) in Nova Scotia, Canada. Further indicators were developed from feedback obtained from counsellors, gamblers and venue staff. Following the useful strategy adopted by Hafeli and Schneider, the indicators were clustered into several principal groups. These are described below in Table 5.1. As indicated in Table 5.1, these categories included items relating to how people gambled, but also how they responded to gambling.

Table 5.1. Indicators of problem gamblers in venue (adapted from Delfabbro et al., 2007)

Category	Indicator examples
Frequency, Duration and Intensity	How often, how long, and how much the person gambled. Did the person gamble very fast, continuously, or without breaks? Did the person gamble every day of the week?
Impaired control and choice	Did the person have control over their gambling? How strong was their urge to gamble and ability to stop? Did they gamble when the venue was opening or closing, or

	gamble through meal times?
Social Behaviours	How did the person react towards others? Did they act rudely and defensively, and did others enquire about them at the venue?
Raising Funds / Chasing behaviour	Did the person frequently visit ATMs or other cash facilities, leave the venue and come back, rummage in bags for coins, try to borrow or sell property?
Emotional Responses	How did the person react to losing? How angry, emotional or violent did the person appear?
Irrational Responses	Did the person blame the venue or gaming machines for losing?

Venue staff and counsellors were asked to indicate whether these indicators were valid indicators of problem gambling. Almost all of the indicators were validated by both groups of respondents. Venue staff reported having seen almost all of the indicators at some point during their time working near patrons, but argued that one also needed to consider changes in behaviour. That is, one should also look at changes in appearance, expenditure patterns and behaviours within the same individuals. Such changes could not be easily measured using static indicators.

Staff were also asked to describe their training experiences and how effective it had been, as well as to identify factors that might act as impediments to the identification of gamblers in venues. Most staff reported having received training relating to how to approach patrons and some limited information on identification. Almost all the respondents believed that they had observed problem gamblers in the venue at which they worked with 38% reporting that this happened on a weekly basis and another 42% reporting that this happened all the time. Only 14% indicated that it was hard to spot problem gamblers within venues. Many did, however, feel that there were significant impediments to staff playing an ongoing role in identification. Over half indicated that

patrons were hard to observe, half felt that staff turnover and the length of shifts would be problematic, whereas almost 60% believed that staff did not have sufficient time to make systematic observations. Most staff (70%) felt that they had adequate training, but around half reported experiencing difficulties approaching patrons on the gaming floor. From a policy perspective, these findings suggested the need for discussion concerning the appropriate content, form and duration of staff training in Australia.

The purpose of the principal gambler survey was to determine the self-reported prevalence of different behaviours or indicators in relation to the status of gamblers. In this study, 20% of the sample of regularly or fortnightly gamblers scored 8+ on the CPGI, 21% were moderately at risk, and 58% were low or no risk. The likelihood of problem gamblers as opposed to the remainder of the sample reporting a particular behaviour was calculated. It was found that some behaviours or indicators occurred relatively more frequently in all gamblers, but were more common in problem gamblers. For example, 92% of problem gamblers reported gambling very fast, but so did 43% of non-problem gamblers. Ninety five percent of problem gamblers put large amounts back into the machine and kept playing, but so did 47% of non-problem players. On the other hand, it was very rare for non-problem players to report crying after losses (5% vs. 58% of problem gamblers), displaying their anger (9% vs. 55% of problem gamblers), or asking the venue not to say that he or she was there (2% vs. 16% of problem gamblers). These results suggested that there were many indicators that, on their own, could not be used to differentiate between regular non-problem gamblers because they occurred too often in non-problem players. Other rarer indicators were more reliable, but were perhaps less practically useful because they would be less often encountered if one were to observe a gambler.

To show how well one could predict the identify or classification of problem gamblers, Delfabbro et al. (2007) developed statistical models using logistic regression. The results showed that one could obtain high probability values (i.e., an estimate of the probability of a given person being a problem gambler) based on small clusters of indicators. For example, for males, it was possible to be almost 90% certain of a person

being a problem gambler if they gambled for long periods, gambled at closing time and displayed anger. Women who reported striking machines, gambling intensely, or making two or more withdrawals from ATMs were also more than 90% likely to be problem gamblers (i.e., to score 8+ on the CPGI).³ The important policy implications of these findings was that: (a) It was possible to identify clusters of observable behaviours that might make it possible for venue staff to identify problem gamblers, and (b) Multiple indicators were required for this process to have any chance of success.

As Delfabbro et al. (2007) pointed out, these findings provided only indicative and theoretical evidence that venue staff could identify problem gamblers in venues based on this sort of information. It was another question altogether whether such information could be put to practical use in venues. To investigate this issue, the researchers conducted observations in venues over a number of weeks. In the ACT, the focus was on the form and observability of many different behaviours, whereas the SA study examined whether it was possible to observe a narrow range of behaviours by observing a small number of patrons for an extended period of time. The SA study showed that some patrons could be observed for a sufficiently long time to amass 3-4 indicators associated with problem gambling. However, this required several hours of continuous observation and it was found that venue staff were generally present on the gaming floor for short periods during sessions. The ACT study showed that the form of behaviours varied across individuals, so that there were challenges associated with developing simplistic descriptors of some behaviours (e.g., showed anger, struck machines) because these manifested themselves in different ways. Nevertheless, both studies confirmed that, in principle, most behaviours were readily observable in venues if there was sufficient time for patrons to be observed.

Many of these findings have important policy implications for the operation and regulation of gambling in Australia. First, although some caution needs to be applied in generalising the exact probability figures obtained in this study because of the purposive

³ The mean CPGI score in this group was around 15, so that concerns about false positive rates associated with the CPGI may not be significant in this study.

nature of the gambling, the findings suggest that staff probably do have the capacity to identify people who are at risk of gambling-related problems in the venue. This finding has implications for the development and content of codes of practice and other responsible gambling provisions developed for the gaming industry. Second, the findings have implications for the design and content of staff training programmes; in particular, the importance ascribed to material relating to the identification of problem gamblers and staff responsibilities. The results do, however, suggest that further more refined studies need to be undertaken to determine whether staff perceptions of gamblers *in situ* correspond with the actual status of gamblers as based on an independent assessment. Such work has recently been completed by the principal author with the support of GamingCare South Australia.

5.4 Tertiary Interventions

5.4.1 Help-Seeking in Problem Gamblers

A well recognised fact concerning problem gamblers is that relatively few seek formal assistance because of their problems. However, determining exactly how large the disparity is between actual numbers and the number seeking help is not a straightforward issue. Although it would appear logical to compare the estimates derived from prevalence surveys with the numbers in treatment agencies, such comparisons are thwarted by several complicating factors. First, it is often only Government funded agencies that maintain and provide aggregate data concerning help-seeking. Other people who seek out support from psychologists in private practice, who seek private counselling, visit Gamblers Anonymous, or speak to their GP, will not be included in official help-seeking statistics. Second, some agency records can be unreliable. Not all people who seek help will necessarily be recorded.

Most prevalence studies suggest that the percentage of problem gamblers seeking help is much higher than estimates based on comparisons of prevalence and data derived from funded services. For example, the Productivity Commissions' national survey suggested that around 20% of problem gamblers identified in their survey with SOGS scores of 10+ had sought help, whereas McMillen et al.'s (2001) survey of the ACT

obtained a figure of around 29% for the same group. Actual statistics derived from agencies (see Productivity Commission, 1999) would, however, suggest that the figure is as low as 5%.

Other more recent studies have examined the reasons why people seek help for gambling problems and what factors act as barriers to help-seeking. Evans and Delfabbro (2002) in South Australia examined this issue in 70 gamblers who had sought help for gambling problems, whereas as Rockloff and Schofield (2004) conducted a telephone survey involving 1100 Queensland adults. More recently, McMillen et al. (2004) conducted qualitative interviews with 9 problem gamblers and their family members, and New Focus (2005) completed interviews with 119 problem gamblers. Despite having different sampling methodologies, all of these studies expressed very similar views about help-seeking in problem gamblers. This conclusion was that most gamblers only seek help when they reach 'rock bottom' or where they have no choice but to seek help due to an impending bankruptcy, marriage breakdown, loss of employment, or appearance in court. The principal factors preventing them from seeking help earlier are: denial, embarrassment and shame, a belief in the ability to gamble their way out of trouble, and uncertainty about the availability and effectiveness of treatments.

All three of these studies have limitations that are worth noting. The Delfabbro and Evan's study was based on a convenience sample of problem gamblers, so it is not clear whether the findings can be generalised to other gamblers who have sought help because of their difficulties. In contrast, the Rockloff and Schofield study uses a random sampling methodology for recruiting participants, but included only a very small sample of problem gamblers. The McMillen et al. (2004) study had both limitations, although was designed specifically to capture more detailed qualitative information that was not so easily obtained in the other two studies.

In summary, existing research into help-seeking provides both consistent and inconsistent guidance to policy-makers. On the one hand, it is clear that the reasons why people seek help and the barriers to seeking help are likely to be very consistent across

jurisdictions. However, it may be more difficult to obtain clear estimates of the number of people who do not seek formal help. The research suggests that policy-makers in each jurisdiction should be guided by a combination of figures drawn from both treatment services, but also community prevalence surveys.

5.4.2 Pre-Commitment and Self-Help Strategies

One additional and important reason why official prevalence figures may often be considerably higher than official treatment services populations is that many problem gamblers manage to resolve their problems without formal intervention. There are some who appear to ‘grow out of the problem’ or stop gambling without any significant intervention (i.e., who are thought to undergo a process of “natural recovery”). Another group of people are thought to use “self-help” strategies to overcome problem gambling with little support from others (Jackson, Thomas, & Thomason, 2002). Not surprisingly, both of these groups are of considerable interest to researchers and policy-makers because they raise the possibility that it might be possible to assist problem gamblers using only very limited resources, or by developing effective early intervention strategies that might be promoted to the community. This group may also have personal strategies or techniques that could be applied to gamblers already in formal treatment programmes.

The AGR draws attention to several published self-help guides available in Australia (Allcock & Dickerson, 1990; Coman, Singer, Burrow, & Singer, 1996), and provides a summary of the key elements. As indicated, these include such elements as: keeping a record or diary of expenditure, setting goals for change, setting budgets, substituting in other leisure activities, and anticipating and dealing with relapses. Unfortunately, no information is currently available as to how effective these self-help methods are as compared with formal services.

The only study that has examined self-help empirically was a small study undertaken by the National Council for Education and Training on Addiction (NCETA) in Adelaide in 1996. This study included key informant interviews with researchers, counsellors, and other experts in the field and a convenience sample of 30 problem gamblers. The study identified a number useful strategies used by problem gamblers such

as avoiding friends who gambled, taking someone with them when they went shopping, paying bills or going to the bank, or getting others to handle money on their behalf. Many other strategies were similar to those recommended in the self-help manuals described above.

Although the sample was not randomly selected, there is no reason why these findings could not be generalised to gamblers anywhere in Australia. However, before one could make consistent recommendations, one would want to know whether these methods would be effective over an extended period of time. Moreover, it would be important to know, given the nature of the sampling, whether there were additional motivational or situational characteristics (e.g., presence of a supportive partner or friend) that may have enhanced the effectiveness of the strategies that were employed. Not all problem gamblers necessarily have the motivation to bring about change, and not all would necessarily have the social supports required to sustain their commitment to changing their behaviour.

In addition to self-help strategies, there has also been interest in other broader strategies that gamblers in general might use to limit the potential for gambling-related harm. One such example is the use of pre-commitment strategies to limit the potential of losing control of one's expenditure. The role of pre-commitment was investigated in some depth by McDonnell-Phillips (2005) in a telephone survey of 482 monthly EGM or racing gamblers. Most gamblers were found to use pre-commitment strategies. For example, most gamblers (70%) reported setting personal limits on expenditure prior to their visits to venues. When asked what factors typically triggered over-expenditure, most EGM players referred to the availability of ATMs, the potential for large jackpots, or feeling lonely or bored. TAB gamblers referred to similar factors, but felt that positive mood states prior to gambling also made a difference. All of these factors were found to be more influential for problem gamblers than other groups of gamblers.

A third component of the study asked gamblers what strategies they used to control their gambling. Most reported relying upon willpower (66%), avoiding large bets

(47%), taking along only what they needed to spend (38%), avoiding ATMs (34%), and engaging in other activities (25%). Again a very similar pattern of results was obtained for TAB gamblers.

A strength of the McDonnell-Phillips study was that the results were based on a random sample of gamblers from the community. The sample was also large enough to allow comparisons between gamblers with varying degrees of risk, and the sample was obtained nationally. Accordingly, there is good reason to believe that these findings reflect the typical strategies used by gamblers to limit expenditure, and the factors that act to make this process more difficult.

5.5 Evaluations of Treatment Services and Interventions

The AGR provides a summary of the different intervention services currently available to assist problem gamblers. A comprehensive and quantitative summary of the range of services typically available is also available in the Productivity Commission's (1999) report and the summary of gambling statistics produced annually by the Australian Gaming Council (2006). The most striking conclusion to be drawn from the AGR's review of the current Australian literature is that very few empirical studies have been conducted in Australia to evaluate the nature and effectiveness of current treatment services. Although it is relatively easy to obtain statistics concerning the range of services available, annual data concerning the clients who seek help (e.g., Jackson et al., 1997 in Victoria; S.A. Department for Community Services, 2006), or descriptions of emerging service models (e.g., from the annual conference proceedings of the National Association for Gambling Studies), empirical research involving the tracking of outcomes in relation to particular service modalities is very sparse.

The AGR commences with an overview of counselling services. It is pointed out that most treatment centres or networks (e.g., Break Even) around Australia tend to offer a similar range of counselling services, including financial and relationship counselling, family therapy, legal assistance, and various treatments or interventions for problematic gambling behaviour. Interventions can be one-on-one, group focussed, single or multi-

disciplinary, and eclectic or specialised. Most involve initial assessments with standardised protocols and then a period of follow-ups conducted over several weeks. Clients may be asked to attend group sessions, complete diaries or checklists, undergo counselling, and are provided with various forms of information including details of the odds of gambling, how to set budgets and manage money, manage and pay off their debts, and how to restructure their lives so as to reduce their opportunities to gamble.

As pointed out in the AGR, there is some limited government data available concerning the number of clients who successfully completed counselling services. In a number of jurisdictions, e.g., South Australia, Victoria, Queensland, and New South Wales, Government funded services maintain standard minimum data-collection procedures. This paperwork is usually completed when new clients enter the service and again when they leave. However, even when this data is available, evaluations of services are still difficult because outcome data is usually not available for those who do not complete all requested services, or fail to return to treatment. Many counselling interventions are also so broad and eclectic that it is usually not possible to determine what component of the service had been effective in bringing about any form of change. For example, if a person undergoes a range of interventions (financial counselling, information sessions, and specific therapies) and then reports having significantly reduced his or her gambling, one can only conclude that the whole package of services was useful. The findings cannot be necessarily generalised to the next client, or across different jurisdictions. A further problem is that most assessments of the efficacy of services are very short term (e.g., only 1-3 months after the intervention was provided, or when the person left the service). It is not clear whether the person's improvement (if this were the outcome) has been sustained over time.

Many of these issues were discussed in a recent paper by Jackson, Holt, Thomas and Crisp (2003) who argue that one might address the problem of inconsistency in interventions by developing a standardised methodology for the categorisation and profiling of tasks or services undertaken by different agencies (The Counsellor Task Analysis Scale or CTA). This method involves documenting the different tasks that counsellors perform, and allows some determination of the relationship between the

frequency with which each task is performed and the counsellor's beliefs about the importance of the tasks performed. So far this scale has been validated using a sample of 49 problem gambling counsellors from 18 different agencies in Melbourne, and in terms of nine different tasks, 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.

Apart from standardising the recording of the intervention itself, there is also a need to ensure greater consistency in the initial assessments. Neal et al. (2005) as well as the Productivity Commission (1999) provide a detailed summary of the different measures of problem gambling that are currently being used by agencies around the country. As indicated, this varies considerably from the SOGS, VGS, and DSM-IV and CPGI to more obscure measures such as the G-Map (Loughnan, Pierce, & Sagris, 1996) and Gambling Severity Index (Neal et al., 2005). Since it is well known that these scales differ in their definitions of problem gambling, have different cut-off scores subject to varying interpretations (see Chapter 2), it is difficult (with the exception of the Productivity Commission's survey of client services) to compare data obtained from different jurisdictions.

Similar problems arise when one tries to compare drop out rates and follow-up periods. Some agencies record this information, whereas others do not. Many agencies also often do not include standardised instruments to ascertain the degree of behavioural change brought about by the intervention. For this reason, there is a need to encourage consistency in the methods used to collect outcome information.

5.6 Evaluations of Specific Therapeutic Interventions

A number of major reports have been specifically devoted to describing the different forms of therapeutic intervention currently available to treat problem gamblers, and the international literature available to support their efficacy. Some example of these reports 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'; Jackson, Thomas, and Blaszczynski's (2003) review in Victoria, and Blaszczynski's (1998) recent book on cognitive-behavioural techniques.

Few of the methods described in these reports have been subjected to detailed empirical evaluation within Australia during the last decade, although there is literature extending back into the 1980s that has evaluated some of these techniques, particularly in NSW (see Blaszczynski, 1998 for a review of these studies). Some of the principal methods used are described in the AGR. These include cue exposure techniques/behavioural therapy, cognitive-behavioural, cognitive therapy and motivational counselling.

Cue exposure is based on the notion that problem gambling is largely a behavioural addiction. People develop conditioned responses to gambling-related stimuli (the process of gambling, venues, winning, sounds and colours on machines). These associations develop because gambling serves to assuage depression or anxiety. The consequence of these processes is that gamblers come to develop very strong urges to gamble, or strong feelings of anxiety, when they are not gambling or are exposed to gambling-related stimuli. The aim of treatment, therefore, is to decondition these responses by teaching the person how to substitute other stimuli (e.g., feelings of being in control or relaxation) in the place of the negative symptoms. This is usually achieved by teaching the person relaxation techniques either in the clinical setting or by giving them tapes that they can listen to at home. Over time, these feelings of being in control and relaxation are paired with gambling-related stimuli either mentally (imaginal desensitisation), or through actual or *in vivo* exposure. Some interventions will favour imaginal sensitisation (e.g., Blaszczynski, MacCallum, & Joukhador, 2000), whereas

others, such as the programme at Flinders Medical Centre in Adelaide, use systematic *in vivo* exposure.

Such techniques are well supported by international evidence, but so far only a few studies have been published in Australia. The most comprehensive coverage of this literature is contained in Blaszczynski (1998), whereas an example of a paper that presents research based on these techniques is the above-mentioned article by Blaszczynski et al. (2000). This study compared the effectiveness of both imaginal desensitisation techniques and cognitive therapy (described below). The results showed that imaginal desensitisation based on only two clinical sessions and a take-home audiotape with practical exercises was sufficient to create abstinence in 40% of gamblers. These results were commensurate with those obtained using a combination of imaginal desensitisation and cognitive therapy, and cognitive therapy alone. The principal limitation of this study, however, was that the sample size was only very small (only 11-12 participants were in each group), and the outcomes were based on the gamblers' status after only one month. It is unclear, therefore whether the changes observed were sustained over a longer period. Usually, in clinical studies, it is appropriate to consider changes to be clinically significant only after at least 6-12 months has elapsed because of the significant likelihood of relapses.

Apart from confidential outcome data provided to its funding body, the Flinders Medical Centre programme has also published some outcome data to demonstrate the effectiveness of their programme. Battersby and Tolchard (1996) described the results obtained from 135 cases and reported that 63% had completed the treatment successfully, but that 23% had dropped out at the assessment point, and 13% had dropped out during treatment. Clients reported having experienced a significant reduction in their gambling-related symptoms over a 6 month period.

The few other published evaluation studies available from Australia have been undertaken using cognitive-behavioural or cognitive therapy (e.g., Blaszczynski et al., 2000; Dowling, Smith, & Thomas, 2006). Cognitive therapy is based on the assumption

that gambling is strongly influenced by people's decision-making, knowledge, attitudes, and processing of information. In pure cognitive therapy, the aim of the therapy is to address or "restructure" various irrational or erroneous beliefs and attitudes towards gambling. By contrast, cognitive-behavioural therapy examines both cognitive processes as well as behaviour. As Walker (2005) has recently pointed out, cognitive-behavioural therapy can take one of two forms. In one form, which he terms the *cognitive-behavioural synthesis* approach, it is assumed that a change in cognition will lead to a change in behaviour. The process is based on cognitive therapy and its assumptions, but outcomes are measured in terms of both changes in cognitions as well as behavioural changes. The second form, which he terms the *cognitive-behavioural components* approach, both cognitive and behavioural approaches are used in the therapy on the assumption that both processes maintain excessive gambling (Sharpe & Tarrier, 1993). Thus, treatments may involve some sessions with cognitive therapy, whereas others may include various other interventions including the cue-exposure techniques described above. In Australia, most treatment services adopt this latter approach (i.e., they mix up different types of therapy as part of their programmes), although the gambling treatment clinic at the University of Sydney tends to favour a more cognitive-behavioural synthesis approach.

Apart from Blaszczynski et al's (2000) study described above that combined cognitive and imaginal sensitisation, the other recently published Australian study is by Dowling, Smith and Thomas (2006) that examines the effectiveness of cognitive behavioural therapy in a sample of 19 women in Victoria. The study used a combination of behavioural and cognitive methods and showed some promising results (89% of the treatment individuals) no longer met DSM-IV criteria 6 months post treatment. However, as the authors indicate, the study started with 39 people and lost 20 at various stages of the intervention and included only women, so it may not be possible to generalise the results to many gamblers seeking treatment as only the more motivated or committed clients may have successfully completed the treatment.

For findings from clinical evaluations to be useful to policy makers and funding bodies, it will be necessary for this field of research to be greatly expanded in Australia. Apart from the fact that there are so few studies, there is also the question as to whether studies meet the very high standards required for valid clinical trials. Both Walker (2005) and Blaszczyński (2005) have recently provided critical reviews of this literature and provide a summary of many of the design and conceptual issues that would need to be taken into account in undertaking such research. Some of the most important of these include (table 5.2):

Table 5.2. Requirements for Valid Evaluations of Clinical Treatments

	Best Practice	Current State of Play
<i>Sample Size</i>	The sample size must be sufficient to detect significant changes.	Most studies use sample groups of < 20.
<i>Using Randomisation</i>	Participants should be randomly allocated to treatments and control conditions.	Randomisation generally used
<i>Double Blind procedures</i>	Neither the participants or therapists should know into what condition the gamblers have been placed.	Some therapies are administered by the researchers themselves. Difficult to achieve both type of 'blinding'.
<i>Appropriate Control Group</i>	A control group that is matched for gambling severity and other factors thought to influence outcomes (e.g., gender, age) should be included.	Not clear that control groups are included in all studies. Waiting list controls may not be appropriate if gamblers often improve over time anyway (i.e., through natural recovery).
<i>Appropriate Measures</i>	There is a need to include standardised measures that might be sensitive to treatment changes. Both harm and behavioural measures should be included.	Generally used, but there may be an over-reliance on harm-based measures. Need to include measures of behavioural change.
<i>Appropriate Statistical Methods</i>	Group analyses can be deceptive in that very large changes in a	Not often reported.

	minority of cases might give rise to a significant overall difference, but which is not sustained throughout the sample. Researchers should report reliable change indices and clinically-significant change measures.	
<i>Treatment of Drop Outs</i>	Drop outs should be recorded and taken into account in evaluating outcomes. The stage of drop out should be reported.	Drop out rates are reported, but not usually included in the denominator when calculating outcome statistics.
<i>Documentation and Standardisation of Methods</i>	The process should be consistent, be documented, and replicable.	Usually within treatment centres, but varies from one jurisdiction to the next.
<i>Absence of Parallel Intervention</i>	People should not receive other concurrent treatments.	Difficult to enforce, especially with waiting list controls (for ethical and practical reasons)

Both Walker (2005) and Blaszczynski (2005) pointed out that many of these ideals are difficult to achieve in practice. Clinical trials are very cost and labour intensive, so it may only be feasible to conduct small-scale evaluations. It is very difficult to disguise the nature of the intervention and difficult to make the therapist blind to the nature of the intervention. Finally, the process of natural recovery also provides a significant challenge to researchers. If many gamblers get better anyway without help, how does one know whether people in one's treatment group have got better as a result of the passage of time rather than as a result of the treatment? A similar issue applies to the waiting list control group. If this group finds other ways to help themselves, or become better anyway over time, the magnitude of treatment effects (as measured by treatment – control group effects) may be quite small (Walker, 2005).

To address this problem, Walker recommends the use of parallel control groups that engage in neutral tasks, or designs that compare one therapy with groups that receive more than one so as to detect the incremental effect of the additional therapy (assuming that one can match the number of sessions). Most other issues can be addressed by adopting appropriate statistical and methodological techniques. Sample size issues may need to be addressed by using meta-analyses or other methodologies (e.g., multi-site evaluations) using standard instrumentation, sampling and methods so as to allow the consolidation of smaller samples into a larger group. Such work is currently underway in several countries already, but with only limited Australian involvement. Despite this, there may be other projects concerned with related topics that might shed some light on some of these issues. Gambling Research Australia has, for example, recently funded a project into the factors that contribute to relapse in problem gambling treatments. Undertaken by Flinders University, this work may have some potential to understand the factors that contribute to treatment drop-outs and treatment successes.

5.7 Predictors of Relapse in Treatment Programmes

As pointed out in the previous section, one of the major challenges in the design and evaluation of treatment programmes is having a sufficiently large follow-up period to determine the longer term efficacy of interventions. A principal rationale for doing this is to ascertain what proportion of the individuals who respond favourably to treatment subsequently relapse in the months that follow. At present, relatively little is known about the process of relapse, although it is known from the broader addiction literature that relapses are quite common in populations of this nature. A small study that has recently examined relapse in a treatment population was conducted by Oei and Gordan (2008). Seventy-five current clients of Gamblers Anonymous in Queensland who had been involved with the 12-step programme for at least 12 months completed the South Oaks Gambling Screen (SOGS), a measure of social support, the Gambling Urges Scale, and Gambling Related Cognitions Scale (both of these measures were designed and validated by the 1st author's research team). Also included in the study were measures of people's religious convictions and their belief in a higher power as well as two measures of compliance: how well people adhered to the 12-step programme and their record of

attendance at GA meetings. The aim of the study was to determine to what extent these variables predicted relapse within the previous 12 months.

The researchers conducted their analysis in two stages. An initial series of univariate analyses showed that those clients who had successfully remained abstinent during the relevant period had greater social support, stronger beliefs in a higher power, and had complied with the treatment programme more closely. They had adhered to the 12-steps more closely and had attended more meetings. The second analytical stage, which involved multivariate analysis, showed that the level of adherence to the 12-steps as well as the level of social support available were the two most important factors. These findings were generally consistent with the broader addictions literature that has drawn attention to the importance of peer and family support in overcoming addictions. The results also showed how adherence to programme requirements can influence outcomes, although it is clear that a more detailed analysis of individual-level factors might need to be undertaken to determine why some people were willing to comply with the programme requirements. For example, it would have been useful to have included some measures of self-efficacy and people's motivation to accept and undertake change. Another consideration was the extent to which compliance had been encouraged by the social support and motivation gained from attending the group sessions.

Although relatively small-scale, Oei and Gordan's (2008) study is useful study in that it shows how some insights into relapse can be obtained using a relatively simple methodological design. More sophisticated studies of this nature could be undertaken in different jurisdictions involving a variety of services that have the capacity to conduct longer-term reviews of client progress. In light of this need for further research into the nature of relapse, Gambling Research Australia funded a project, conducted largely in South Australia by the Flinders Medical Centre, that has examined the factors which appear to influence relapse in problem gamblers receiving treatment. This project involves a detailed literature review, focus groups with gamblers and experts in the field as well as some analysis of follow-up data obtained from the South Australian Statewide Gambling Service and other relevant sources.

Chapter 6: Economic and Geographic Impact Studies

6.1 Overview

The final section of the AGR is concerned with studies that have examined the economic impacts of gambling and the geographical distribution of gambling activities and how this is related to gambling patterns, expenditure, and the prevalence of problem gambling. This section does not directly coincide exactly with any of the national research priorities as stated in Chapter 1, but touches upon specific elements listed under each priority. These include: the importance of understanding the effects of policy measures on problem gambling (Research Priority 2), the nature of patterns of gambling (Research Priority 6) and strategies designed to “measure the impact and effectiveness of strategies introduced to reduce the extent and impact of problem gambling” (Research Priority 5). The first part of the chapter provides an overview of the major economic studies that have been undertaken in Australia, whereas the second part examines geographical studies.⁴

As will be evident in the discussion that follows, there are currently many challenges associated with conducting research in this area. Effective economic analysis requires the availability of consistent, comprehensive, and accurate economic data at an aggregate, regional, or local level. In many cases it requires the consolidation of data collected by Governments at different levels, as well as sometimes sensitive material maintained by industry groups that often do not have a commercial interest or statutory requirement to provide it to external parties. As a consequence of these difficulties, Australian economists have found it quite difficult to access to the range of data necessary for comprehensive economic analyses of the gambling industry. To compensate for these problems, economists therefore have to use their best judgement to

⁴ The content of the AGR was very much informed by the needs of the Independent Gambling Authority of South Australia, so that only the most relevant impact studies are included. For example, the findings from casino impact studies were not included because the Authority is very unlikely to have to consider the effects of the establishment of a new casino in Adelaide. There is also a preference for an inclusion of actual impact studies rather than prospective evaluations of possible impacts.

estimate the values of missing data items, or make assumptions about the likely range of values.

Another challenge faced by economists is choosing an appropriate theoretical framework to apply. In contrast to some areas of social science where researchers can often confine themselves to describing the patterns that emerge from within data-sets (e.g., as is the case in prevalence research), economic analysis usually requires the adoption of a conceptually consistent framework or model. At present, there is no consistently agreed-upon conceptual framework for Australian gambling research. Instead, researchers have tended to employ different economic approaches and sources for data for their analyses.

6.2 Estimating Economic Costs and Benefits

The AGR commences with a summary of the Productivity Commission's (1999) analysis of the costs and benefits of gambling. The approach adopted by the Productivity Commission is based on the concept of consumer surplus. Consumer surplus refers to the difference between what consumer's pay for a product or service and the maximum that they would have been willing to pay. Consumer surplus is relatively straightforward to calculate mathematically, but requires information concerning the price of gambling from the standpoint of consumers as well as the slope of the demand curve. In particular, there is a requirement to know something of the demand elasticity of gambling; namely, how responsive consumer demand (how much they gamble) is to variations in the price of gambling. The AGR summarises the fundamental problems associated with this form of analysis when applied to gambling. These problems include the lack of clear information concerning the price of gambling (For example is it the cost of entry, return to player, odds of winning?) as well the elasticity of demand; namely, do changes in the price of gambling gives rise to variations in the amount of gambling observed?

Without definitive guidance on either of these issues, the Productivity Commission addresses this problem by developing a range of approximate elasticity values. However, this range is seen to vary depending upon the status of gamblers.

Demand is seen to be more elastic for recreational gamblers because it is easy for them to substitute one gambling activity for another if the price varies. By contrast, since problem gamblers feel compelled to gamble even when it is expensive to them, their demand curve is assumed to be more inelastic. Based on these assumptions, the Commission estimated that recreational gamblers obtain a net consumer surplus benefit, whereas problem gamblers usually incur a loss. Taking into account these figures as well as the taxation benefits to the Government, the Commission concluded that the net benefit to Australia was somewhere between \$4.37 billion and \$6.08 billion per annum.

Having obtained these estimates of benefit, the Commission calculated the likely costs of gambling based on the various impacts likely to arise from problem gambling. Estimates were obtained by working out the typical cost to the community of divorces, crime associated with gambling, lost productivity, psychological distress, and other factors. These costs were then extrapolated to the number of problem gamblers estimated to exist in the Australian community as based on the Commission's national survey estimates. The final figure was estimated to lie somewhere in the range of \$1.8 billion to \$5.59 billion. When these figures were then combined with the benefit figures provided above, the total net effect was therefore calculated as lying in a range from -\$1.2 billion (a loss) to \$4.3 billion (a net gain). Thus, on balance, the overall effects of gambling on the Australian economy and community were assumed to have a greater likelihood of being positive rather than negative.

Such analyses are important from a public policy perspective in that they allow Governments and regulators to determine whether the introduction of gambling, or expansion of gambling is likely to have positive or negative overall impacts on the community and the economy. However, the obvious difficulty with these analyses is that they are based upon layers of assumptions, many of which may not be entirely supported by empirical evidence. Cost estimates are likely to be inaccurate because not all severe problems are reported in telephone surveys, and not all impacts are easy to associate with a discrete cost amount. For example, what is the social/ community cost of a divorce, or a person who gambles at work? Similarly, without further research into the actual price of

gambling and demand elasticity, it is very difficult to be confident about the estimates of consumer surplus provided in the Commission's report.

6.3 Economic Impact Studies

A range of economic impact studies are also reviewed in the AGR. The analysis commences with a discussion of the National Institute of Economic and Industry Research (NIEIR) (2000) in Victoria. The aim of this study was to ascertain the net costs or benefits of gambling to the overall Victorian economy as well as some specified local areas. The study included an analysis of Household Expenditure Survey (HES), some micro-economic simulation analyses, and a venue survey conducted by Market Solutions (1999). In its study, the NIEIR employed what is termed a Keynesian approach to economic analysis in that their focus was on the extent to which the recent growth in the gambling industry in Victoria had expanded overall economic output. Economic output refers to the total amount of economic activity in the economy as indicated by how much people and Governments spend, the amount of investment by industry, and the amount of taxation revenue reaped by the Government. It is assumed that economic benefits accrue from economic growth because of the combined effect of greater consumption (higher sales of a the product or service) and what are termed multiplier effects. Multiplier effects occur when expenditure on one industry lead to greater expenditures on other related products or services (e.g., in the case of gambling: alcohol and meals). NIEIR's study investigated whether gambling had led to growth as a result of industry investment in infrastructure, an increase in consumer spending, and increases in taxation revenue to the Victorian State Government. They also examined how evenly these positive impacts of the gambling industry were distributed across different communities.

The NIEIR concluded that the overall effect of the gambling industry on Victoria was a positive one based on growth in employment, multiplier effects, and greater consumer spending. The NIEIR argued that this increase occurred largely because gambling encouraged greater consumer spending drawn from savings or asset reserves. In other words, gambling led to greater cash flow in the Victorian economy because people injected their savings or reserves into gambling and related products and services rather

than leaving it in the bank or diverting existing expenditure away from other areas of consumption. On the whole, this conclusion appeared to follow logically from the data analysed by the NIEIR. However, as Pinge (2001) pointed out, there are several important caveats that need to be taken into account when interpreting the conclusions drawn from this report. The first is that the report contains relatively little discussion of the social impacts of gambling, so that the overall net benefits are seen to accrue from gambling may be overstated due to the omission of many important costs to the community. Second, as Pinge (2001) points out, the HES data used by NIEIR is highly suspect as reflected by the considerable under-estimation of actual gambling expenditure. Third, according to Pinge, it is questionable whether declines in saving ratios observed during the period of growth in gambling expenditure were necessarily attributable to gambling. Many other factors such as increases in the general cost of living may have been influential. In other words, although the NIEIR utilised a set of analyses that were logically consistent and which utilised actual reported expenditure data, the conclusions need to be analysed in terms of the primary focus of the investigation and the validity of the “savings hypothesis” assumption.

Other studies reviewed in the AGR include the Market Solutions (1999) survey of 698 venues and 454 patrons in Victoria, KMPG longitudinal impact study (2000), and other studies commissioned by the Victorian Casino and Gaming Authority (VCGA) that examine the impact of gambling on inner city municipalities and small rural communities (VCGA, 1997a, b, c). All of these studies relied upon analyses of aggregate economic data for the regions under investigation, as well as focus group or telephone surveys of stakeholders, including gamblers, venue owners, local government, and welfare agencies. As indicated in the AGR, not all the findings from these studies greatly advance knowledge in the area because much of the evidence is based on people’s commonsense appreciations of the broader issues, and their own vested interests. Industry groups emphasise the benefits of gambling, including the effects on employment, economic growth, and venue refurbishment, whereas welfare agencies tended to express concerns about problem gambling, community impacts, and other related issues. The more significant findings related to the limitations of gambling as a source of economic growth

in local communities. It was pointed out, in both the metropolitan and regional studies, that a considerable amount of consumer spending was lost to the local community via gambling taxes, and that the wide-spread prevalence of gambling meant that the introduction of EGMs to specific communities did not necessarily lead to any increase in local gambling-related tourism.

Another study was undertaken by Pinge (2001) using the city of Bendigo as a case example. Instead of examining overall economic growth in the region (the aggregate or Keynesian approach adopted by the NIEIR), Pinge's adopted what is termed an input-output approach which focused on the inflows and outflows of revenue caused by the introduction of EGMs to the city. Input-output analysis differs from the aggregate approach in that the focus is on ascertaining the overall or margin economic impact of an industry by comparing how much money it effectively brings in, or takes out, of a local economy. Alternatively, these analyses might analyse how an industry compares in terms of its economic effect with other similar industries that might exist in its place. Typically, money will flow in when the industry is able to establish multiplier effects⁵, (i.e., it leads to sales and growth in other related industries) and where it can establish forward and backward linkages⁶ to industries in the local area. Another factor is taxation. If consumption leads to industry revenue that is lost to the local community in the form of taxation revenue to the State Government, a question arises as to how much of this is returned to the local economy.

To conduct his study, Pinge used data obtained from local industry, the ABS Census, and regional gambling data. Pinge also used nationally available data on the multiplier effects associated with the particular mix of industries available in Bendigo. Based on his analyses, Pinge reached quite pessimistic conclusions about the effects of the EGM industry on the Bendigo economy. He argued that the highly technological

⁵ A multiplier refers to the extent to which an activity gives rise to additional employment or income growth. For example, a value of 1.2 means that for every \$1 spent on one industry leads to 20% growth in another industry, whereas 0.8 means that the activity of one industry reduces employment or expenditure in another industry by 20%.

⁶ A forward linkage is where the output from one industry (e.g., tyres) is used as the input for another industry (e.g., cars). A backward linkage means that the input from an industry is sourced from the local community (e.g., local people are used to provide technical support, parts, etc.).

nature of EGMs meant that backward linkages were minimal because there were few technologically based industries in Bendigo that could provide technical support or supplies for the EGM industry. Instead, two-thirds of inputs were derived from outside the local economy. There was also some loss of taxation revenue to the area. One third of this income went to Tattersalls or Tabcorp, and one third to the Government in taxation, so that only one third remained in the local economy. He also found that the effects of gaming expenditure did not give rise to proportional increases in wage and employment growth. While gambling represented 1.1% of total consumer spending in the area, it only generated 0.3% of wages, 0.4% of regional jobs, and 5.1% of regional imports. Based on existing knowledge of the employment effects of other industries, Pinge estimated that the local economy would have had more jobs and more income if EGMs were removed from the community because other industries would have forged stronger employment growth and linkages with the local economy. Overall, EGM gambling was seen to have led to a \$11.57 million loss to the Bendigo region per annum vs. a benefit of \$6.2 million based on increased tourism, and increased demand for venue-related services (e.g., conferences and accommodation).

It should be pointed out that some elements of Pinge's analysis need to be treated with caution. First, the multiplier and linkages were estimated rather than based entirely on an extensive body of empirical data derived from the local economy. Second, despite the fact that taxation revenue was lost from the local economy, some of this may have been reinvested in the local community by the State Government or through allocations from the Community Benefit Fund. Third, there are also questions about how cost estimates are derived and quantified in this type of analysis. Nevertheless, the style of analysis used by Pinge (2001) provided a very useful template for how similar regions might be analysed in different jurisdictions across Australia. The use of input-output analysis, multipliers, and linkage analyses would appear to be one of the more effective ways to analyse the effects of gambling on the local economy. The only significant limitation of these analyses, however, is that each jurisdiction is likely to be slightly different so that the results obtained from regional studies may not be generalisable to metropolitan areas. For example, if EGM technology suppliers were located in the city as

the EGMs (which is more likely in metropolitan areas), there is a greater possibility for backward linkages. In addition, if the community concerned were not isolated geographically (as is the case with metropolitan regions), not all local residents would necessarily gamble exactly in the same area, and there would be a greater likelihood of spillover benefits in the form of visits from gamblers from neighbouring areas.

Another study that took advantage of concepts and methods employed by Pinge as well as the Productivity Commission (1999), was a study undertaken by the South Australian Centre for Economic Studies (SACES) (2001) to examine the impact of EGMs on provincial towns and cities in South Australia. This study also used input-output analysis to determine the net employment effect of EGMs in each of the regional communities, but included several refinements. Consumer income distribution effects were mapped to related industries that were more likely to be logical substitutes for gambling (e.g., recreation and leisure activities). The study also included an estimate of consumer surplus based on a similar method used by the Productivity Commission (1999). State-wide estimates of problem gambling were also adjusted upwards based on the assumption that the prevalence of problem gambling would be higher in regional areas due to the greater expenditure on EGMs in those regions. In the end, SACES (2001) estimated that EGMs were likely to have imposed a social cost on the provincial cities of around \$16 to \$52 million, with a further \$26 million lost by problem gamblers. Total taxation revenue was \$22 million, but this was largely lost to the areas. Combining these cost figures and the SACES estimate of consumer surplus, it was estimated that the net benefit of problem gambling for regional centres was likely to be negative (range -\$0.6 million to -\$43.6 million). Once again, this appeared to be for similar reasons as in the Pinge study: the loss of taxation revenue, the limited multiplier effects, and forward and backward linkages.

In 2005-2006, SACES was commissioned by the Independent Gambling Authority of South Australia to conduct a broader economic impact study into gambling across all of the State. As with the previous Provincial Cities report, the SACES study comprised two principal components: a detailed profile of the South Australian gambling

industry over time and several analyses based on secondary data sources. The principal analyses were based on two sources: (a) the 1998-1999 ABS Household Expenditure Survey which documents the expenditure patterns of a representative sample of South Australian households over a period of time and (b) national account data, and (c) gambling expenditure data compiled by the Queensland Treasury.

Using regression modelling, SACES examined the relationship between demographic characteristics of households and their expenditure on gambling, changes in aggregate demand during the period in which EGMs were introduced, and the relationship between gambling expenditure and other household expenditure. The results showed that households in disadvantaged areas tended to spend more on gambling, and that, consistent with previous studies, gamblers tended to spend more on cigarettes than other people. However, there was little evidence that gambling expenditure had significantly affected overall consumer demand because only 2.91% of household expenditure was directed towards gambling. The only redirection of expenditure evidenced in the household expenditure survey was that people appeared to have switched their expenditure away from conventional cafes and restaurants and towards hotels with gaming machines.

Other parts of the report provided analyses of the links between the introduction of gaming machines and employment growth within the gaming industry. It was found that venues with EGMs had experienced growth largely at the expense of venues that did not introduce machines. Hotels had on the whole been more successful in achieving revenue and employment growth than licensed clubs.

As in the Provincial Cities report, SACES provided estimates of the likely net costs and benefits of EGMs to the local economy. These analyses again showed that the likely costs of EGMs were likely to outweigh the benefits. When one took into account the consumer surplus received by gamblers, the taxation revenue earned by the State Government and then subtracted the social cost of gambling, it was estimated that the net loss to South Australia was in the range of -\$582 million to -\$56 million).

The SACES studies, as with the Pinge study, describe two approaches that can be used to estimate the net benefits or costs associated with the introduction of gambling into a particular area. However, as listed below, there are many caveats that need to be applied to both studies. Many of these points are not criticisms of the logic or the methodologies applied, but relate to the fact that Australia does not have a sufficiently well developed body of data to allow many important analyses to be conducted.

- It is difficult to determine the dollar cost of particular social costs of problem gambling.
- The method used to estimate the prevalence of problem gambling for the purposes of economic modelling is subject to question.
- The absence of clear information concerning the nature of demand elasticities in the gambling industry makes it difficult to undertake accurate consumer surplus calculations.
- Household expenditure data often used in economic impact studies does not appear to be all that accurate. Even when people are asked to keep diaries, they clearly find it difficult to keep records of all expenditure, and to partition their expenditure into neat categories.

For all these reasons, it is very difficult to obtain anything more than a very general sense of the overall impact of gambling on the community. Greater confidence can, however, be placed on those analyses that confine themselves to more objective economic data (e.g., employment effects, investment expenditure, and linkages). The findings suggest that there is a need for further more detailed research into the nature of the industry itself. This includes studies of consumer demand to obtain a better sense of how people's behaviour changes in relation to price variations in the gambling industry (elasticity of demand), studies of the linkages between the gambling industry and other industry areas, and the likely value of multipliers. Given the demonstrated feasibility of collecting such information in other industry areas (e.g., in tourism, manufacturing, or

retail), it should be possible in the future for similar data to be collected about the gambling industry.

6.4 Inter-jurisdictional Impact Analyses

Based on the many concerns that have been expressed about EGMs and their effects on individuals and the communities described above, SACES (2005b) was commissioned to undertake a further study that compared the nature of gambling activities in Victoria (a State with EGMs in clubs and hotels) and Western Australia (a State without machines in clubs and hotels). The aim was to conduct a natural comparative experiment to highlight any differences between similar regions in the two States. As summarised in the AGR, the study comprised multiple parts. The first section was largely concerned with the analysis of existing gambling statistics concerning both jurisdictions. The second component was a mail-out community attitudes survey sent to residents in both regions. The third component was a secondary analysis of broader social data, including information from treatment services, GPs and other relevant individuals who potentially came into contact with problem gamblers. The final section examines the apparent economic impacts of gambling on regions in each State. The overall hypothesis was that the social and economic impacts of gambling would be greater in Victoria than in Western Australia.

In essence, much of this project was an audit or review rather than primary research in that many of the statistics have been reported elsewhere, e.g., in the Productivity Commission (1999) report and in previous WA prevalence research. The analyses highlighted many important differences in gambling between the two States. In contrast to Victoria, Western Australia:

- Has experienced less growth in gambling revenue in the last 20 years;
- Fewer people gamble on EGMs in WA (16% vs. 45% in Victoria);
- The prevalence rate of problem gambling in WA (< 1%) is lower than in Victoria (> 1%).

The SACES resident survey (n = 1813), which was sent out to seven regions in Victoria and seven demographically matched regions in Western Australia, showed that Western Australians were more likely to gamble on racing and lotteries than Victorians, but were less likely to gamble on EGMs. Victorian residents expressed stronger reservations about the effects on gambling on the community, and were more likely to consider gambling to be too readily accessible. Further analysis of secondary data showed that problem gamblers seeking assistance in Western Australia were significantly more likely to be male and to report racing as the principal cause of their gambling. GPs in Victoria were four times more likely to report having identified problem gambling as a disorder in their patients. Finally, the economic impact analysis showed that, although there had been, at some points, greater employment growth in the gambling industry in Victoria due to the introduction of EGMs, this growth had not continued. In fact, the growth in employment in relation relative to growth in EGM expenditure was quite poor as compared with other industry sectors.

From a policy perspective, the SACES study is useful in that it takes advantage of natural differences between the regions in its consideration of the social and economic impacts. It shows quite convincingly that the patterns of gambling and gambling-related impacts differ between the regions. The only principal limitation of the study is that is that the project (due to time-frame and funding) did not have the capacity to obtain more detailed data, e.g., to conduct a more formal community survey, and to interview businesses, analyse local economic data in more detail.

6.5 Geographical Analyses

6.5.1 Accessibility and Indices of Gambling Activity

Although the accessibility of gambling can be influenced by a range of factors discussed earlier in this report (e.g., cultural and social influences, conditions of entry, the size and nature of gambling venues and Government policy), the final section of the AGR is concerned predominantly with an analysis of studies dealing with the geographical accessibility of gambling. Geographical accessibility is considered an important policy and regulatory issue for several principal reasons: first, because of concerns about the

unequal impact of gambling on specific communities (e.g., disadvantaged areas, and second, because of the implications of these findings for future expansion of gambling in particular areas. Geographical accessibility is also one potential aspect of the gambling industry which might be amenable to some form of regulation (e.g., limits on the expansion of future gambling operations or reductions in the availability of existing forms of gambling).

The fundamental assumption of underlying many geographical approaches is that gambling by residents is influenced by the position of venues as well as by the spatial concentration of gambling. Key independent measures that have been used in this form of analysis include: the number of EGMs or gambling venues per capita population in specified geographical areas, the demographic or socio-economic profile of areas where gambling venues are located; the geographical spacing between venues (e.g., are they evenly spaced or concentrated within particular locations?), and the distance from venues to where people live. Important dependent measures in these studies include: the net revenue earned by particular venues in those areas; the net revenue per capita residents in an area; gambling participation rates; and, the estimated number of problem gamblers per capita. In these studies, the usual research hypothesis is that greater gambling opportunities are, or should be, associated with greater expenditure on gambling, more frequent gambling, as well as a greater proportion of problem gamblers. A secondary hypothesis, based on the demographic findings of prevalence surveys, is that areas with greater socio-economic disadvantage tend to have a high levels of gambling and a greater proportion of problem gamblers.

As the AGR points out, studies of this nature commenced with a series of analyses conducted as part of the Productivity Commission's (1999) report. The Commission found, for example, based on its national survey, that jurisdictions with a greater density of EGMs (EGMs/ 1000 adults) tended to obtain higher SOGS scores in the national survey. Other analyses of data from the Victorian Department of Human Services (Jackson et al., 1998) showed that service agencies located in areas with a greater density of EGMs had a greater demand for services (i.e., more clients seeking

help). As the Commission concedes, neither of these analyses are entirely satisfactory in that the inter-jurisdictional correlation is based on very few data points, whereas the Victorian data might only reflect the fact that services tend to be located in areas where there is greater demand, rather than the concentration of gambling necessarily being the cause of the greater demand for services.

Nevertheless, there have, since then, been a number of other studies conducted in multiple jurisdictions that have obtained similar findings. Livingstone (2001) as well as Marshall and Baker (2001a, b; 2002) found, using gambling data from Victorian local government areas (LGAs) that net gambling revenue was highly correlated with the number of EGMs per 1000 people. Similar results were obtained using Statistical Local Areas (SLAs) by Delfabbro (2002). There was a very high correlation between the density of EGMs and venues and net expenditure, as well the proportion of the population who had sought help from the treatment services. Taken together, these various studies suggested that areas where gambling is more geographically accessible are more likely to have higher levels of gambling expenditure and a higher incidence of problem gambling.

This association is thought to exist because people tend to gamble very close to where they live. Marshall (2002), for example, in a study in NSW, found that people living within 500 metres of a club were more likely to gamble than those who lived further away, whereas KPMG (1999) in Victoria found that Victorians typically only travelled 2.5 kilometres in order to gamble. Another study by McMillen et al. (2003) in Victoria similarly found that 57% of Victorians travel less than five kilometres to gamble and that 32% travel less than 2.5 k.m.. Thus, there is now inter-jurisdictional data from three separate States to support the view that people tend to be attracted to gambling venues close to their place of residence and that venue location, in turn, may therefore attract people from local areas.

In terms of the relationship between the density of gambling and socio-economic status, the results have also shown some consistencies. Marshall (1999) found, based on

EGM data pooled across postcode areas in metropolitan Adelaide, that areas with a greater proportion of EGMs per capita tended to score more poorly on measures of social disadvantage. Similar results were obtained in Victoria by Livingstone (2001), Delfabbro (2002) in Adelaide using single demographic indicators of disadvantage (e.g., proportion of housing trust dwellings) and a follow up study in Victoria by Marshall and Baker (2002). In Marshall and Baker's analysis, the distribution of EGMs in Victoria was mapped against the changing demographic profile of areas over time. The results showed that the correlation between social disadvantage and EGM density became stronger over time, suggesting that EGMs were gravitating towards areas with greater disadvantage. It was concluded that the migration of machines may reflect the fact that they are more profitably deployed by industry in areas with greater disadvantage. At the same time, the AGR cautions that one cannot necessarily extend this argument to all jurisdictions in Australia. For example, in South Australia, the location of EGMs is influenced by historical factors such as the original location of clubs and hotels rather than by any strategic positioning of venues. Venues were usually established long before gambling was introduced, so that any association between gambling and lower socio-economic status only occurs because hotels happened to be clustered in traditionally "working" areas.

Although studies based on the use of particular geographical areas (SLAs and LGAs) are useful in gaining some general sense as to the relationship between gambling availability and related patterns of activity, it is not always the case that this form of analysis can be applied very effectively in every jurisdiction. In cities such as Adelaide and Melbourne, there is a tendency for venues to be relatively more homogenous in terms of their nature and size. A venue in one Adelaide suburb will, for example, have a similar number of machines and look very similar to others located elsewhere. In such situations, it is convenient for local people to drive to their local hotel or club to gamble, or to treat each venue as being very similar. One can, therefore, make reasonable assumptions that the vast majority of patrons at a particular venue will have probably only travelled 2.5-5.0 k.m. to gamble. By contrast, in cities such as Sydney and Canberra, the situation may differ in that some clubs may be many times larger than other venues (e.g., have 1500+

machines), and have specific membership requirements. In such situations, it is more likely that venues may be treated as destination venues by a greater number of patrons, so that the catchment area for patrons will not so easily coincide with a 2-5 km radius (as might typically correspond with a LGA or SLA).

To investigate this possibility, Marshall, McMillen, Niemeyer, and Doran (2004) undertook a very detailed geographical investigation of the Canberra area of Tuggeranong. A total of 2447 local residents were interviewed using a door-knock methodology about their gambling behaviour and asked to indicate where (i.e., at which clubs) they gambled. House locations were mapped by precisely using GIS technology and patron catchment areas were mapped to each club. The results showed that some clubs had catchment areas that were very proximal and regular in their distribution (rather like a SLA), whereas there were others that did not correspond with this pattern. Most patrons came from contiguous areas, but others were willing to travel further. Despite this, the results nonetheless confirmed that people who lived closer to venues (< 3.54 k.m.) tended to spend more on gambling than those who lived further away. Unfortunately, the study did not include any measures of problem gambling, or the relative size or density of venues, so it unclear to what extent the proximity of venues or the number of gambling opportunities within a given area had any negative impacts on the surrounding areas.

The important policy and regulatory implication of these findings is that the accessibility of gambling appears to influence gambling expenditure and also the impacts of gambling on the local community. Even taking into account the caveats described above, these findings appear to be generalisable across a number of Australian jurisdictions, and suggest that the geographical distribution of gambling may have important policy implications when assessing the expansion or reduction of gambling opportunities in a given area. Despite being subject to some limitations, SLA and LGA studies provide useful indicators as the strength of the relationship between gambling opportunities and other indicators (e.g., expenditure, gambling involvement), but such broad analyses may also need to be supplemented by smaller, more refined catchment

studies that examine the effects of particularly salient venues. Such analyses would appear to be particularly important in New South Wales, the Australian Capital Territory, and possibly in regional areas where people have to travel further to gamble. For such research to have the optimum benefit for regulators and policy makers, it would be possible to replicate many features of the ACT Tuggeranong study in other jurisdictions. Some of the important elements of this research might include:

- Community residential survey of gambling travel patterns;
- An assessment of gambling involvement and also problem gambling;
- The use of GIS to pinpoint residential locations in relation to venues;
- The use of aggregation, cluster or gravity models to assess the effect of venues or clusters of venues with different sizes. To what extent do larger clusters attract more patrons and expenditure than smaller clusters?

6.5.2 Effects of Capping Schemes and EGM Reductions

The final section of the AGR reviews two Australian attempts to limit or reduce the availability of EGMs. The first part of this section examines the recent removal of gaming machines in South Australia, whereas the second part examines the effects of the regional capping scheme imposed in specific regions in Victoria.

The South Australian machine reduction was based on an inquiry and report submitted to Parliament by the Independent Gambling Authority of South Australia in 2003 (IGA, 2003) and originally involved the removal of 3000 EGMs from South Australian venues. However, when the legislation was finally put into place, S.A. Clubs were exempted from the removal process, so that the actual number of machine removed was reduced (in practice) to just over 2000 machines. Larger for-profit-venues with 32-40 machines lost 8 machines, and between 1-7 machines were removed from venues with 21-31 machines with a floor value of 20 machines (i.e., for-profit venues with 21 machines only lost 1).

The effectiveness of the machine reduction was evaluated in a report by Harrison Health Research and Delfabbro (2006) involving an analysis of venue data, a survey of 400 venue patrons (regular or fortnightly + EGM players) from different clubs and hotels variously affected by the machine removal. The results showed that overall revenue remained relatively unchanged even after the machines were removed in July 2005, and that there was little change in the number of venues after the reduction. The survey showed that many patrons were aware of the changes and that around 50% reported that it was harder to find a machine than before. However, relatively few people reported a reduction in their urge to gamble or any greater control over gambling. Only 30 of 400 people reported having made any changes to their gambling since the reduction, and most did not consider removing a small number of machines to have any impact on problem gambling.

In Victoria, a similar attempt was made to reduce gambling accessibility by removing 406 machines from 5 regions identified as being particularly at risk of gambling related problems due to their relative level of social disadvantage. In 2005, the South Australian Centre for Economic Studies (SACES, 2005a) was asked to examine the effect of this policy on gambling expenditure and problem gambling. EGM expenditure data from 2002-2004 for individual venues within the capped regions were analysed. The results showed that the reduction appeared to have had very little, if any, impact on expenditure during this period. Instead, other measures, including general smoking bans and restrictions on opening hours, appeared to have had a greater impact on venue revenue. These findings were further borne out in a series of interviews with counselling agencies and industry representatives. Counsellors felt that there had been no change in the number of problem gamblers seeking help for their problems, whereas industry representatives pointed out that utilisation rates of machines (usually 20-25%) were so low that a small reduction in machine numbers would have little effect on the availability of gaming machines to patrons.

Although both of these studies have some limitations that need to be taken into account when interpreting the results (ie., the use of self-report data that may not

necessarily correspond with actual changes in behaviour), the fact remains that both objective and subjective data tended to support the same conclusion. Even when there may be some links between the geographical accessibility of gambling and other indicators (e.g., expenditure, participation and problem gambling rates), the removal of only a small number of gaming machines is unlikely to have a significant effect on gambling behaviour or problem gambling. For these measures to be effective as public health initiatives, it is likely that a significantly greater number of machines and venues would need to be removed. At present, the considerable saturation of EGMs in many regions means that it remains relatively easy for patrons to gain access to this form of gambling even after these limitations are imposed.

Chapter 7: Summary: Informing the National Research Priorities

7.1 Overview

The purpose of this final chapter is to consolidate the material reviewed in previous chapters and to examine its implications for each of the national research priorities (NRPs) identified by Gambling Research Australia. As pointed in Chapter 1, some of the material set out in the Australasian Gambling Review and used in this report is not grouped into the same categories as the NRPs. Some NRPs are very broad and encompass different areas, populations and issues, so that there is a need draw together diverse material in a way that corresponds with the grouping of ideas within each priority area. Although this has, to some degree, already been achieved in the report (e.g, in Chapter 2 on the definitions of problem gambling, Chapter 4 on EGMs and Chapter 5 on services and interventions), some of the broader priorities (such as 3 and 5) are informed by material drawn from multiple chapters and require some additional elaboration and discussion.

Priority 1: A national approach to definitions of problem gambling and consistent data collection

This Priority issue is discussed in some depth in Chapter 2. Gambling Research Australia has already commissioned research to establish a national definition of problem gambling (see Neal et al., 2005). However, as noted in Chapter 2 and also in Chapter 5 in relation to the operation of treatment services, there are still some variations in: (a) The specific measures used to diagnose or measure problem gambling, or (b) The sampling strategies used to establish the prevalence of problem gambling at a community level. It was concluded in Chapter 2 that inter-jurisdictional research could be enhanced through:

- The uniform adoption of the CPGI as the measure of choice for prevalence surveys (this has now happened);

- The use of the CPGI as the standard screening tool for treatment services so as to allow comparisons with prevalence data, but also to allow the comparison of treatment service data across jurisdictions;
- Consistency in the sub-sampling of regular gamblers within prevalence surveys (i.e., weekly or fortnightly + exclusion of lottery / bingo gamblers) so that the CPGI is being administered to a consistent population group across the country.
- Further validation of the CPGI against clinical measures (such work has currently been funded by the Independent Gambling Authority of South Australia) as well as independent measures of harm or co-morbidity (Gambling Research Australia has commissioned research into this issue in 2009).

Priority 2: Feasibility and consequences of changes to gaming machine operation such as pre-commitment of loss limits, phasing out note-acceptors, impositions of mandatory breaks in play and the impact of linked jackpots

All of this material is summarised in Chapter 4 which shows that there is a reasonable body of evidence to support the view that EGMs are the major cause of problem gambling in Australia, and almost the exclusive cause of gambling problems for women. However, it is also emphasised that more consistent attempts could be made in data collection strategies (e.g., prevalence surveys and intake data collection at agencies) to include questions that make it easier to identify the type of gambling that caused the person to experience problems. At the present time, instead of asking people what type of gambling was the principal source of their difficulties, most previous studies have had to infer this information from participation statistics or questions relating to preferred or ‘favourite’ activities.

This chapter also provides a review of the effects of varying specific gaming machine features on player behaviour. Although much of this research was considered useful, several important limitations were identified. The first limitation related to sampling. It was pointed out that, for these studies to be valid, it is important for studies to include a sample of both problem and non-problem gamblers so that one can identify

the responses that are unique to problem gamblers, and not just regular gamblers in general. A second issue was that many studies are overly reliant on self-report data. Self-report methods provide a useful way to highlight features that might be important to players, but it is not always clear whether what people say is borne out by behaviour. Self-report studies need, therefore, to be combined with observational studies of the nature that have been undertaken for some years in Sydney (e.g., Walker, 2004), or through controlled field studies involving the modification of existing EGMs located within the same venue (Blaszczynski et al., 2001, Section 4.3). A further strategy might involve analyses of existing objective EGM revenue data to determine how this relates to variations in EGM features. Chapter 4 contains a number of recommendations as to how these studies might be further enhanced; namely, through the selection of very popular EGMs, controlled access to only experimental machines, and careful game by game observation of players while they are gambling within venues (Section 4.4).

The existing body of research reviewed in Chapter 4 as well as studies described in Chapter 5 (Section 5.3.1), showed that the features of gaming machines that appear most influential, particularly in terms of their effects on player satisfaction, playing time, and expenditure are those which influence the rate at which people can insert money into machines. In particular, modifications to the availability of note acceptors, restrictions on the maximum bet appear more influential than modest changes to play speed. Other factors such as variations in the number of pay lines available, or the availability of bonus features, were also considered worthy of future investigation as based on a number of preliminary studies.

Finally, as a result of the recent study conducted by Tuffin and Parr (2008) in NSW concerning the effects of 6-hour machine shutdowns (Section 5.3.3), further information is now available concerning the effectiveness of this policy and how it might be evaluated. The Tuffin and Parr study showed that shutdowns can influence the behaviour of gamblers and potentially have a greater influence on problem gamblers. However, it was found that further examination of the timing of shutdown periods is

necessary. The research highlights the value of collecting *in situ* data from players who are directly affected by the policy.

Priority 3: Best approaches to early intervention and prevention to avoid problem gambling; Priority 4: Major study of problem gamblers, including their profile, attitudes, gambling behaviour, and the impact of proposed policy measures on them

In Chapter 5, the review discusses the principal primary intervention strategies that have been developed to prevent problem gambling. As documented below under Priority 4, many of these interventions have involved the provision of information, in schools, venues, and in the community. The second approach has been to examine the potential effectiveness of self-help strategies. These strategies have included the methods that people use to pre-commit themselves to certain manageable levels of expenditure (McDonnell-Phillips, 2005), but also specific behavioural strategies, often involving the support of friends and families, modifying daily schedules, or seeking alternative strategies for managing finances. Many of these strategies have been documented in a limited number of small-scale studies or in dedicated self-help manuals, but the long-term effectiveness of these methods, their effects on behaviour, or utility for people who have not previously tried these methods, has not been investigated nationally or on a large scale. To address this issue, Gambling Research Australia is seeking to fund further research that will examine the factors influence gamblers' pre-commitment decisions.

Issues relevant to the second part of this research priority are described in Chapters 2 and 4. Chapter 2 provides a summary of the significant impacts that are commonly observed in problem gambling ranging from personal effects such as anxiety, depression and suicide, to family dysfunction and relationship breakdowns, financial problems, legal problems, difficulties with employment, and co-morbidity (e.g., substance abuse). These issues will be further explored by research commissioned by Gambling Research Australia that is examining the links between problem gambling and co-morbidities. A feature of this new work will be that it will attempt to examine, not only merely the association between co-morbidities and problem gambling, but also

consider cause and effect relationships. That is, to what extent do co-morbidities contribute to the development of gambling problems as opposed to being outcomes of the disorder itself? Such work will help to strengthen the empirical basis for existing models of problem gambling such as Blaszczynski and Nower's (2002) pathways model that postulates a link between pre-existing co-morbidities and problem gambling. Moreover, as pointed out in Section 2.4 in a discussion of the conceptual underpinning of problem gambling, it was argued that such work may also need to address some concerns recently expressed about the CPGI as a valid measure, or adjunct for, more pure harm-based measure of problem gambling.

The review in this report highlighted several important conceptual issues as well as research limitations in existing co-morbidity research, all of which might provide some guidance for future research involving the assessment of the impacts on gamblers (i.e., their profile of needs). These are listed below.

- In studies of the links between gambling and poor psychological functioning, there is a need to obtain greater information concerning the direction of causality. To what extent does poor psychological functioning predispose people to gambling problems, and how does gambling influence, or intensity, psychological dysfunction?
- There are significant discrepancies between the intensity of harm observed in treatment samples than in prevalence surveys. Since not all problem gamblers respond to telephone surveys, there is a need to determine to what extent prevalence surveys underestimate the true level of harm. At the same time, since problem gamblers often only seek help when they have reached 'rock bottom', there is a danger that a reliance on treatment samples may lead to an over-estimation of the typical level of harm. Further research is needed to consolidate the typical prevalence and profile of harm typically obtained by these two different methods. For example, what level of harm is experienced by problem

gamblers in the community who have not sought help and who do not respond to telephone surveys?

- There is good evidence to suggest that problem gambling is linked to a higher incidence of smoking, as well as alcohol and drug use. The review suggests, however, that there is a greater need for the adoption of consistent validated measures across different surveys so that this relationship can be consistently examined.
- Assessments of social impacts, legal and vocational impacts could be enhanced by the development of a more graded series of questions that captures the varying degrees of severity that might apply (e.g., loss of work productivity, change of job, loss of job). Measures of work stress, satisfaction and productivity could also be included in some studies to obtain more validated assessments of the impacts of gambling on work functioning.
- Considerable concerns were raised about the use of questions relating to financial impacts. Information on gambling expenditure collected by the ABS or through household expenditure surveys are grossly unreliable and probably should not be used in research projects. Estimates from prevalence surveys are also unreliable, although accuracy can be enhanced using the methods employed by the Productivity Commission in its 1999 national survey; namely, the use of questions that request information both expenditure outlays as well as the amount of money remaining afterwards so as to allow the calculation of estimated net expenditure.

Further insights into the psychological profile of problem gamblers were provided in Chapter 4 which included summaries of the principal psychological approaches to the study of problem gambling. It is now generally accepted, based on the work of Blaszczynski and Nower (2002) and many years of international research, that problem gambling is a multi-faceted phenomenon, and that there may be multiple pathways into problem gambling. It is clear that gamblers can become conditioned to gambling-related

stimuli, can become psychologically dependent on gambling (females > males), and that cognitive distortions or irrational beliefs are more prevalent in problem gamblers. All of these areas can have implications for treatment and also public policy and regulation (e.g., the effects of gambling-related stimuli, advertising, and information on people's urge to gamble).

At the same time, it is also apparent that there is a subset of problem gamblers (males > females) who experience significant psychological and psychiatric symptomology in conjunction with their gambling. This group may not be so easily amenable to clinical treatments or other forms of intervention and may require additional support, in the form of greater co-ordination specialist psychological, medical, and rehabilitation services not currently provided by many counselling agencies. Understanding how service models might be developed so as to broaden the range of professional expertise available to gamblers (e.g., by forging stronger links between GPs, Section 5.2.5, psychiatrists, and psychologists) would appear to be another important issue that will be need to be addressed to meet the needs of the different profiles of gambler identified as requiring treatment or assistance.

Priority 5: Benchmarks and on-going monitoring studies to measure the impact and effectiveness of strategies introduced to reduce the extent and impact of problem gambling, including studies of services that assist problem gamblers and how effective these services are

Chapter 5 provides a summary of the range of intervention and prevention strategies that have currently been used or considered within Australia, with a distinction drawn between primary, secondary and tertiary interventions. The review showed that primary interventions have taken a variety of forms. These have included: school or community education initiatives, the provision of information within venues, or policies to limits the nature and range of venue advertising and promotional strategies (Section 5.2.2). Although many of these initiatives were considered well-intentioned, it was argued that further research needs to be undertaken to evaluate their effectiveness in

bringing about actual changes in behaviour. Instead, at the present time, most of the research relating to these initiatives appears to rely very heavily on self-report data collected from members of the public, or from gamblers.

Much of the discussion relating to secondary interventions concerned the existing body of knowledge relating to modifications to venue environments or machine features to limit the potential harms associated with excessive gambling. Once again, it was pointed out that the majority of studies concerning these topics has relied upon self-report studies and that there have been very few systematic trials that have attempted to modify specific aspects of the gaming environment and then examined how this influenced player behaviour, expenditure, or various indices of problem gambling. Interventions or initiatives that appear promising and which are worthy of future investigation include the removal of ATMs from gaming venues, the use of smart-card technology to limit gamblers' expenditure, smoking bans, and self-exclusion strategies. Modifications to lighting, the addition of clocks, machine shutdowns, and other similar initiatives are currently less well supported by the current research literature and appear less promising as harm minimisation strategies.

The discussion of tertiary intervention strategies commenced with an analysis of research relating to help-seeking in problem gamblers. It was pointed out that only a relatively small proportion of people with gambling problems ever seek help, and that there is a need to conduct more detailed research to determine how many gamblers in the community experience natural recovery or use self-help methods (as a recent research study by McDonnell-Phillips, 2005 on pre-commitment strategies has suggested). Another important issue addressed in this section was the need for a consolidation of national help-seeking statistics to obtain more accurate estimates of the number of problem gamblers in Australia who obtain formal assistance. Not all official statistics necessarily include all formal sources of help for gambling-problems, so that one will often obtain higher estimates of help-seeking from prevalence surveys than from data collected from funded agencies. Some attempt to reconcile these estimates by greater collaboration with a variety of help-services (e.g., psychologists, GPs via the Australian

Medical Association) may be useful to obtain more reliable and valid estimates. Some of these issues will be considered in an ongoing review and research project into help-seeking in problem gamblers funded by Gambling Research Australia and being conducted by Southern Cross University.

The principal conclusion to be drawn from the analysis of treatment services is that the current research base is not, in any sense, sufficient to inform public policy and funding agencies. Although some well-designed trials have been undertaken to analyse some small-scale intervention models, there have been almost no evaluations that would meet current international standards for formal clinical interventions because of the significant costs associated with conducting large controlled trials. Using recent reviews published by Walker (2005) and Blaszczynski (2005), the review sets out the key principles governing formal evaluations of treatment services and how these might be undertaken. The review suggests the need for the development of national guidelines and standards regarding the consistent implementation and evaluation of treatment services, the need for common outcome measures, follow up periods, consistent classification of drop-outs from treatment, as well as multi-centre trials that can pool the findings from several smaller studies.⁷

***Priority 6:** To research the patterns of gambling, the impacts of gambling and consider strategies for harm reduction among rural and remote communities among Australian Indigenous communities and populations, such as Indigenous, rural, remote or culturally and linguistically diverse communities, young people or older people*

As pointed out in Chapter 2 of this review, current knowledge concerning the nature of gambling in Indigenous and culturally and linguistically diverse communities remains very sparse. Little national prevalence data is available due to difficulties of recruiting these populations in prevalence surveys, and most studies that have engaged

⁷ . The value of multi-centre trials was indeed a strong recommendation to arise from a recent Thinktank held in Melbourne with the support of Gambling Research Australia, and such work, involving researchers from several different countries including Australia, is currently in progress.

these populations (particularly Indigenous populations) have involved focus groups, key informant interviews, or more ethnographic research. It is known that both populations are adversely affected by problem gambling with some evidence that Indigenous communities may be particularly adversely affected. It is also known that both populations are reluctant to seek help (or do not seek help) for their problems because of uncertainty concerning the availability of appropriate services and feelings of shame or stigma within their own community. The current literature, therefore, suggests that there is a need for further research that attempts to gauge the prevalence of gambling, problem gambling, and gambling-related harm at a national level, e.g., by applying a similar methodology within several areas, towns, or other geographical areas that are known (from ABS Census data) to have a very high proportion of people from Indigenous or CALD communities.

Some important steps towards addressing this paucity of knowledge is being undertaken by Gambling Research Australia through newly commissioned research projects. The aim of this work is to obtain a greater understanding of the prevalence of gambling in indigenous communities, the types of gambling preferred, the factors that place indigenous people at risk of gambling-related problems, and the nature of the consequences. One new project involves an in-depth analysis of gambling within indigenous people in NSW and QLD to develop a conceptual understanding of how indigenous people view, participate in, and understand gambling in their communities. Another project will examine differences in the distribution of gambling within the indigenous community in terms of participation rates, types of gambling activity preferred, and socio-demographic correlates.

Considerably more is known about the nature of gambling in older and young people. Several surveys of adolescent gambling have now been undertaken in several Australian jurisdictions, although not all have reached the same conclusions about the nature and prevalence of gambling in this age range. Schools surveys appear to yield very much higher estimates of problem gambling and related harms than those conducted

using telephone methodologies. Despite this, there is sufficient evidence to draw a number of conclusions from the research:

- Adolescent gamblers are just as much at risk of developing gambling problems than people in the adult population. Most school studies suggest that the ratio of adolescent to adult problem gamblers is at least 2 to 1.
- Adolescents who start gambling earlier, or who experience early wins, are more likely to have gambling problems as adults;
- Adolescent problem gambling often coincides with significantly poorer psychological adjustment, other high-risk behaviours, and poorer health.

A limitation of this research is that it has not been extended to all jurisdictions within Australia. The results of these studies are also contentious in that it is not entirely clear how one should interpret adolescent problem gambling measures. Although there is little question that problem gambling can commence in adolescence (and particularly so in the case of male gamblers) and can have significant negative consequences for young people, some doubts have been raised internationally about whether young people experience the same degree of financial, legal, and vocational harm as adults. Accordingly, there is a need for further clinical validation of adolescent gambling measures to ascertain how many young people identified as problem gamblers are indeed suffering from a genuine pathology. Steps towards addressing these issues have been made by Gambling Research Australia in the form of a newly commissioned national research project that will examine the nature of youth gambling in Australia with a particular focus on the extent of gambling involvement, potential risk factors for problem gambling, and social and demographic differences.

As shown in this review, there is also some useful information available in Australia concerning the nature of older people and gambling. Most prevalence studies clearly show that older people are less likely to gamble, spend less on gambling, experience a

lower prevalence of problem gambling, and tend to gamble on a narrow range of activities (e.g., casino games, sports betting and racing is less common than in younger samples). Although some attempts have been made to identify specific motivational factors or problems that appear common in older gamblers, the absence of any comparison samples of younger gamblers in these samples makes it difficult to draw definitive conclusions. Further investigations into older gambling are therefore recommended, but with a stronger focus on comparative analyses to highlight the distinctive features of older gamblers that sets them apart from other gamblers in the community.

Finally, in terms of the impacts of gambling (most notably EGMs) on rural and remote communities, the review contained in Chapter 6 clearly shows that there is scope for further investigations. The best quality research in this area has shown that EGMs do not necessarily contribute to economic growth in rural communities because they give rise to few multiplier effects, few backward or forward linkages, and give rise to a leakage of income in the form of taxation revenue that is not necessarily reinvested in the community in equal measure. As indicated in Chapter 6, such research could be extended and enhanced by extending the analyses to different jurisdictions, towns and cities of variable size, and with a greater focus on primary data collection so as to enhance the accuracy of the estimated parameters used in economic models.

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