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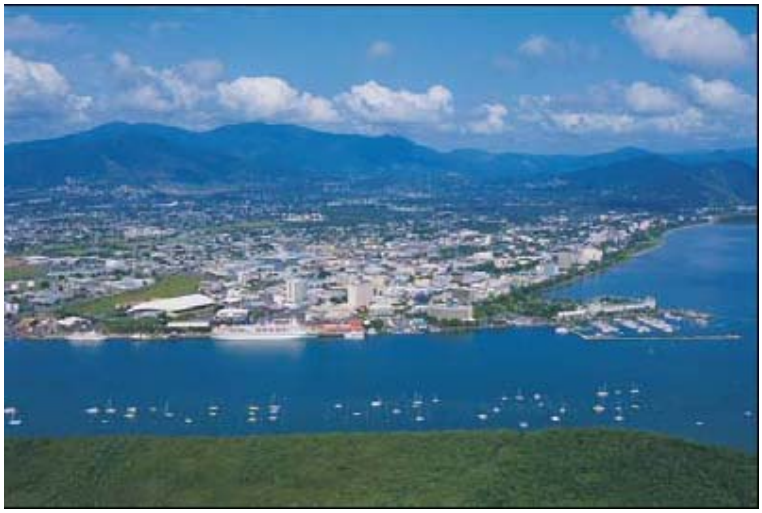

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WHAT DO THE PRETTY BRAIN PICTURES MEAN IN PROBLEM GAMBLING – FREE WILL OR FREE WON'T?

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In the interests of culture I thought we would start with a little poetry.

There was a young man who said "Damn,
It grieves me to think that I am
Predestined to move
In a circumscribed groove,
In fact, not a bus, but a tram".(1)

Over the last decade, which overlaps with the decade of the brain, there has been a tendency to move some thinking about various behaviors, and today we are talking about gambling, to the tram hypothesis. We are propelled along tracks, against our wills often times, and the driver who is frequently blamed is the brain.

Indeed, strong statements by influential people have been made to this effect. To cite one, Alan Leshner, when Director of the National Institute on Drug Abuse (NIDA) wrote in the prestigious journal Science an influential article entitled "Addiction is a Brain Disease and It Matters" (2). His hypothesis is that the voluntary pattern of drug use eventually leads to the brain's pleasure centres being taken over. People are then propelled to use, at times against their wishes. These changes are presumed to last indefinitely so the risk of relapse is high.

Now, as Sommers and Satel note in "One Nation Under Therapy" (3) there is a counter. Addicts (if you wish to use that term, whatever it actually means) spend only a little of their time in withdrawals with undoubtedly highly disrupted neuronal function such that resistance to usage is indeed exceedingly difficult.

Most hold jobs and/or make scores of decisions all day – including the occasional decision to seek help (about 10-15% of people with problems).

Sommers and Satel write describing PET scan findings that "These colourful pictures (I have called them pretty pictures) show parts of the brain called reward centres "lighting up" with increased metabolic activity when a drug is taken". Just showing pictures of people using can do the same, matching the sensation of craving.

Yet, as they also note "biology is not destiny". The brain of an addict craving but resisting lights up even more strongly. Inhibitory centres are now activated. But also self reported craving does not necessarily correlate with a greater chance of using i.e. the tram does not always go along the same track once started. They conclude that it is easy to read too much into brain scans.

Now what of gambling? In the interests of time I will focus on only two papers that I think reflect the current state of research and hint at future directions. One paper is by Marc Potenza et al (4), published in 2003 and the other is by Crockford et al (5) produced in 2005.

In essence Marc Potenza's group conclude, on the basis of a Stroop test of 9-10 runs and 102 stimuli that a small sample of thirteen problem gamblers differed from eleven controls only in response shown in a "brain region previously implicated in disorders characterized by poor impulse control" This was a DECREASE in activity in the left ventromedial prefrontal cortex.

The authors note that the current finding was in a brain region that has been "implicated in decision making" and the orbitofrontal region is "thought" to have a role in "processing of rewards" during the expectancy of winning and losing money. One almost feels a whiff of phrenology at such specific localizations of such specific functions, but these processes are described as being all associated with impaired impulse control.

Note, all in the sample were male and the researchers themselves do call for a wider study involving women. I recall a presentation at Malmo where one of three papers looking at brain pictures did find a difference between genders.

Crockford, using an fMRI again, this time found greater activity in the right dorsolateral prefrontal cortex (note, not decreased activity in the left) in response to visual gambling scenes that alternated with relaxing nature scenes. Activity increased in the left occipital cortex.

The two findings give somewhat different pictures although a theme of relative imbalance between the right and left dorsolateral prefrontal cortex (DLPRC) exists with the left at least being relatively inactive.

To address this question of laterality I utilized a screen purporting to show which side of the pre-frontal cortex is dominant in individuals. It is argued that we are born with an asymmetry noticeable in the nursery and thereafter that reflects the dominance of one side over the other.

Professor Richard Davidson (6) discovered this pattern when working at the University of Wisconsin and the screen I used is one he feels show up the laterality. It is copyright to the American Psychological Association. It is as follows: -

WHICH OF THE FOLLOWING STATEMENTS IS THE MORE TRUE OF YOU.

(Please circle A or B only)

Set A.

*I'm always willing to try something if I think it will be fun.
*If I see a chance to get something I want I move on it right away.
* When good things happen to me it affects me strongly.
*I often act on the spur of the moment.

Set B.

*I worry about making mistakes.
* Criticism or scolding hurts me quote a bit.
* I feel worried when I think I have done poorly at something important.
*I have many fears compared to my friends.

This screen was administered anonymously with the only other data collected being gender, age and type of gambling problem. No gambler asked refused and I thank my colleagues at Hornsby Drug, Alcohol and Gambling Service (Ian and Emma) for adding to my numbers.

Now judge for yourself where you fit, but where would you think most gamblers would point? When I have asked groups of counselors that question most expect A>B reflecting the mistaken belief (my view) that this is a disorder of impulse control.

If you chose A you are left dominant, less subject to depression and get over upsets more easily. Right dominance leads to more anxiety, obsessionality and a more withdrawn style of living.

Sadly, no real guidance here. Our sample of 54 has 28 for B and 26 for A. It is a draw, but some answers to this screen have so amazed me that I have explored useful areas with the client and now include this in the routine assessment for new people. I would note that there was a non statistical trend (on Chi squared analysis) towards non machine gambling problems in the A group and that may suggest areas for future research.

Clearly there are differences in brain function between those who have a problem and those who do not. But, and the researchers themselves agree in this, more studies are needed to show if gender or type of gambling produce different findings. Tentative signs suggest this is so. Also, should there be a consistent test – we have seen Stroop versus gambling scene but which best stirs up excitement? Do different tests activate different pathways? Also there is a need to look at brain patterns of those who gamble regularly and do not have a problem. I suspect my every Saturday attempt to win on the horses may also show some weird patterns but would they be different to a problem gambler? I am willing to donate my brain to science in this cause!

Perhaps laterality is not the issue after all. Maybe a more useful distinction lies in what Jason Zweig (7), a finance writer of "Your Money and Your Brain" – a book in my view, despite the title, of considerable scholarship, talks of as the "reflective" brain versus the "reflexive" brain.

Old primitive pathways run from the reflexive brain – built to help us live in the face of hairy mammoths and the search for food and mates – to the reflective brain of more recent times that lets us curb (sometimes!) those patterns and "reflect" more thus behaving differently to the original drive, urge or idea.

To put this in, I am sorry to say, more scientific jargon, some addictive (or as I prefer repetitive) patterns of ultimately destructive behaviour involve "circuits between evolutionary old structures of the brain, particularly the nucleus accumbens and the amgdala in the limbic system and the more recently evolved neocortex, particularly anterior cingulate, orbital prefrontal and (yes) the dorsolateral prefrontal cortex" (8).

And condensing a large amount of research into a few sentences, we know: -

1) immediate gratification makes the area around the nucleus accumbens fire more dramatically than delayed gratification.

2) damage to the frontal regions, especially the orbitofrontal and ventromedial prefrontal cortex do lead to loss of inhibition of potentially destructive behaviour and leads to poor financial decision making. One study at the University of Iowa (7) showed such patients can identify which bets in a gambling situation are likely to lose but more than half the time will place these bets anyway. As Zweig says, "With their regret circuits knocked out they cannot stop themselves".

Hope springs eternal. Excluding those with brain damage to these areas there is evidence that as we age we are better able to overcome or dampen down the "reflexive responses of the amgdala with the reflective powers of the prefrontal cortex". Something apart from wine has to improve with age and this may account for the natural history with troublesome behaviors such as excess alcohol, gambling or even anti-social acts.

But is this not what therapy is all about? We work on cognitions and the behaviors and it is the reflective part of the brain we are encouraging. It is hard work because we also know that the reflexive parts are firing off in anticipation of a reward well before we are really aware of the situation. Again to credit Zweig he writes "It's as if Pavlov's dogs start salivating not when the bell rings but when they saw Pavlov start to walk toward the bell"

So let us summarize. It seems as if gambling, along with other potentially problematic behaviors can create reward pathways that trigger off reactions that over time lead to frontal parts of the brain becoming subdued in people who demonstrate problems. No consistent parts have been clearly demonstrated to be active to date but "something happens". The Behaviour Completion Pathway proposed by the late Neil McConagahy (9) is looking to be a sound proposition for certain vulnerable people.

Does this make for a brain disease?

Does this explain the behaviors?

Bus or Tram?

The idea of such circuits being involved in these sorts of process is not new. What may be a development is to suggest that the same circuits that are implicated in chemical addiction are caught up in a behaviour that at best may induce the same chemicals to flow down the same track. But I wish to challenge somewhat the next step in the thinking - that this automatically means a disease and then a further step that comes up often – being ill may involve a role that is by implication reducing personal responsibility. This is the sick role and there is much debate in our field as to where or whether loss of control is really happening or if there is a choice not to control which can look like the same thing to an observer but there are really two very different internal responses. Also is that loss in the decision to start gambling or is it once the gambling starts? And if there is a brain disease should we not allow some latitude to the person when they gamble again? Was it really their fault?

To me there are a number of inconsistencies in the thinking a lot of the time. Because we can look at a lung X-ray and see pneumonia, then we compare that to a normal lung and we can say there is a disease. But is it valid to look at the brain of an "addict", see a difference (even if we could see a consistent and explainable difference as in the case of pneumonia) and presume we see a disease? I would suggest it is too early to make that assumption.

Samples are small in the gambling research with the concerns about gender and gambling activity noted earlier. And another important point is that not all gamblers go down this brain training pathway. Why not? Are some brains more susceptible, more genetically vulnerable, more biochemically responsive to dopamine bursts? And, as Sommers and Satel noted, if these pathways drive the person to act why are they not always gambling (to use our field)? You always nave pneumonia until cured.

Hence I come back much more to the bus then the tram. Yes, if you do something a lot there will be pressures to repeat it if some pleasure is gained. But the brain can change. We now know the brain is much more plastic than we were taught in my days in medical school. To cite one study to support my claim I turn to the work of Jeffry Schwartz (10) in his book "The Mind and the Brain", but also to papers he has published in the Archives of General Psychiatry overtime. In his book he mentions the famous London Taxi Driver study published in 2000, showing part of the hippocampus changed in these drivers compared to controls and the changes (posterior becoming larger than anterior) correlated with the amount of change to the length of the driving career.

But Schwartz's main work is in Obsessive Control Disorder. He found that in a group of suffers that the right caudate nucleus was more active. After ten weeks of a behavioral treatment involving mindful awareness and other procedures this activity had markedly reduced and so had the behaviour.

Another step for research is to produce such studies to look at the brains of gamblers in this sort of detail before and after treatment. This will show if changes occur here also – and my bet is they will.

What does all this mean for therapy? We can acknowledge the pressures people are under when they commence or continue excessive gambling behaviour. Losses are not pleasant - the pain of a loss is felt twice as strongly in its emotional impact as the joy of a win (11) -and having started with hope the pursuit of ones losses is driven by factors that are physiological as well as psychological – if one wishes to separate the two!

I will conclude on a controversial note that does link in with what I have said. Do cognitions matter? If our clients are driven by "primitive" urges that are hard to shut out from the older parts of the brain, does the prefrontal brain conquer these any better with a understanding of the odds and the task?

In a challenging article published this year in clinical Psychology Review Longmore and Worrell (12) find "little evidence that specific cognitive interventions significantly increase the effectiveness of therapy" for depression and anxiety. If this is so for gambling it may explain why some people say "I know the odds but still do it"

Personally I have little doubt that cognitive challenges help many but perhaps the brain research may suggest the need to keep the behaviour side well forward. Avoiding cues that may trigger the drive, limiting access to money at least for a time to allow change, self exclusion where the individual sees that as breaking a pattern all may help the brain to change as much if not more than cognitions.

Hopefully your brains have all been a little changed by this presentation!

References

1. Quoted in "The Blank Slate" by Steven Pinker, Penguin Books, 2002, p174
2.Addiction is a Brain Disease and It Matters. A. Leshner, Science 278 (1997) pp45-47.
3. One Nation Under Therapy. Christina Hoff Sommers and Sally Satel. Griffin Books 2005.
4. M. Potenza, H. Leung, H. Blumberg et al An fMRI Stroop Task Study of Ventromedial Prefrontal Cortex Function in Pathological Gamblers. American Journal of Psychiatry 160-11, pp1990-1996, 2003.
5. D. Crockford, B. Goodyear, J. Edwards et al. Cue Induced Brain Activity in Pathological Gamblers. Biological Psychiatry 15, 58 (10) pp787-75.
6. in J. Haidt "The Happiness Hypothesis". William Heinman 2006.
7. J. Zweig. "Your Money and Your Brain" Souvenir Press 2007
8. J. Sellman, M. Baker, S. Adamson, L. Geering. The Future of God in Recovery from Drug Addiction. ANZ Journal of Psychiatry, 41, pp800-808. 2007
9.N. McConaghy. Behaviour completion mechanisms rather than primary drives maintain behavioral patterns. Activas Nervosa Superior (praha) 22, 138-151, 1980.

10. J. Schwartz and S, Begley. The Mind and The Brain. Harper Collins 2002.
11. D. Kahneman and Atversky. Prospect Theory: An analysis of Decision Making Under Risk. Econometrica 47, no.2, pp263-291.
12.R. Longmore and M. Worrel, Do we need to challenge thoughts in cognitive behaviour therapy? Clinical Psychogical Review. 27, pp173-187, 2007

SPOKESPEOPLE ON EXPERIENCES OF PROBLEM GAMBLING: THE POWER OF STORYTELLING FOR COMMUNITY EDUCATION

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ABSTRACT

The 'Spokespeople on Experiences of Problem Gambling' Pilot Project was run by Gambler's Help City throughout 2004-05 (pilot) and 2007 (second phase). The aim of the project was to engage, train and support a group of (current or former) clients of Gambler's Help services (metropolitan Victoria) over a short-term period to partake in various activities that raise awareness about the harms and risks associated with gambling in Victoria. The main thinking behind the concept was to move away from the 'individual pathology' view and towards a 'consumer protection' view, which incorporates public health principles. After the completion of training, participants took part in various engagements, sharing their story with a wide range of audiences. Evaluation of the project has been extremely positive and has highlighted the power of story telling for community education.

Introduction

There is widespread evidence, which supports the notion of story telling as one of the most powerful means of educating and empowering individuals and communities. Many studies refer to "narrative intelligence" which is the ability or tendency to perceive, know, think, feel and explain our experience and influence reality through the use of stories. These stories shape our awareness and behaviour and ultimately provide the guidance we need to find our most meaningful place in the universal story. This includes the ability to organize our experience and ideas as well as the tendency to understand things better when they are presented in the form of a story.

The Spokespeople on Experiences Problem Gambling Project embedded these key concepts of story telling into a meaningful and relevant community education project. It aimed to give individuals impacted by problem gambling opportunities to speak out and share their experiences in hope that others in the community will be educated and empowered. The individuals involved in the project showed tremendous courage and passion in speaking out on an issue that commonly carries with it much stigma and shame. This paper will focus specifically on the second phase of the project.

The project ran consistently with:

- The Victorian Government's 2006 *'Taking action on problem gambling'* strategy, which ensures an integrated approach to consumer protection as well as prevention, early intervention and treatment of gambling related harm.

• The role of the Council of Gambler's Help Services (peak body) to "support members in executing their role in preventing and/or minimising harm associated with the provision and consumption of gambling in Victoria".

Rationale

The rationale behind the Spokespeople Project included:
1. A trend emerged of Gambler's Help clients voicing their desire to speak out about the issue of problem gambling for various reasons including preventing others from taking the same path; to speak out politically and possibly contribute to making sustainable change; and as part of their recovery.

2. Gambler's Help City staff held the view that people who have experience with a gambling problem, either personally or impacted by family members hold special knowledge, skills, competencies and expertise that can assist others in similar situations. Giving a voice to this wisdom and experience can also raise the profile of a problem in a community. It can also aid in normalising the issue and reducing the shame and stigma often attached to problem gambling. Furthermore, the political and social impacts of voicing these experiences has exciting potential to tackle the issue in the wider community and to empower people to have a voice and share their story. In using a consumer voice model, it was anticipated that participants would experience positive personal outcomes such as increased confidence and self esteem. Furthermore, it was anticipated that the participants would have the opportunity to educate and empower the wider community on the issue of problem gambling.

Implementation

1. Pilot Phase
The pilot phase of the project began in 2004 and was administered by Gambler's Help (City and Northern services). The focus of this project was to recruit, train and engage individuals with experiences of problem gambling (including family members) to participate in predominantly media engagements. The costs involved in the project were covered by Gambler's Help and participants took part on a voluntary basis.

Participants undertook approximately 46 engagements over the 2004/05 period.The pilot intended to engage the spokespeople for a limited period of time or for as long as they felt comfortable. Taking this into account, as well as the positive evaluation findings, the decision was made to continue the project by engaging a new group of spokespeople in 2007.

2. Second Phase
This phase of the project was implemented in mid-2007 and was expanded to include three training modules: Media Skills; Writing Skills; and Public Speaking in the Community. The rationale behind expanding the scope of the project came from recommendations made in the evaluation of the pilot project. Previous spokespeople (from the pilot phase) were invited to continue with their role; take part in the training of the new group; and/or cease involvement. The input of previous spokespeople assisted in informing the structure and processes of the second phase.

• **Recruitment**

Gambler's Help City staff attended staff meetings at other services in metropolitan Melbourne to inform them of the project. It was requested that they refer appropriate clients (including family members) to the project. It was imperative that counsellor's selected clients discreetly rather than advertising the project publicly in order to ensure that the following selection criteria was met:

- *Gambling problem largely under control*
- *Preferably experienced problems with poker machines*
- *Desire to speak out or "do something" about the issue*
- *Presents with skills in communicating their story in a focused manner*

The selection criteria were to be considered according to each individual case and at the counsellor's discretion. This method of selection was chosen as it ensured that the individual being referred was engaged in counselling and had access to support during their involvement in the project. It was anticipated that those recruited had a broad range of experiences, ages, cultural backgrounds and socioeconomic status'.

Counsellors involved in the training sessions focused on creating an environment that did not focus on therapy and did not view the participants as 'Gambler's Help clients' but rather, spokespeople on experiences of problem gambling. Furthermore, the counsellors involved in the project did not refer any of their own clients.

Once a client was referred as a participant for the project, a meeting was set up with the problem gambling counsellor from Gambler's Help City. In this meeting, a set of questions was asked regarding the project and an assessment was made of the client's suitability and needs. After this session, suitable clients were invited to be involved in the project and asked to fill out an application form that had to be signed off by their counsellor. Those clients that became involved in the project did so on a voluntary basis.

• **Training**

Gambler's Help City offered participants the opportunity to partake in training that included a compulsory introductory module as well as three elective modules. All participants chose to take part in all four training sessions.

Module	**Objectives**
Introductory Module	• Participants get to know one another • Build rapport between participants and Gambler's Help staff • Increase understanding of the project including moving away from a therapeutic focus to community education and awareness raising • Increase understanding of what will be expected of participants • Focus on the importance of privacy and safety • Discuss therapeutic issues & debriefing • Participants become comfortable with telling their story

Module 1: **Media Liaison**	• Information on asserting anonymity options and rights • Setting limits/boundaries for oneself in media interviews (e.g. – political, organisational) • Gain an introduction to basic media skills and be exposed to past interviews • Develop skills to identify different interview styles, prepare for interviews and manage/control interviews • Discuss different interview styles for radio, television and print media • Develop skills in differentiating between media outlets that aim to inform and explore issues and those that seek to sensationalise, personalise and victim-blame • Develop skills in considering objectives for taking part in an interview • Develop skills in communicating with journalists • Develop skills in relaxation and preparation • Develop an understanding of unacceptable behaviour in interviews & issues such as defamation • Gain the opportunity to practice being interviewed in a media setting (i.e. – 3CR Radio Studio)
Module 2: **Writing Skills and Liaison with Key Figures**	• Develop skills in understanding and expressing your point of view • Develop a basic understanding of your rights as a consumer • Develop skills in writing letters to MPs or other political figures • Develop skills in writing your own problem gambling story • Gain opportunity to meet and speak with a local MP or political figure
Module 3: **Public Speaking and Community Education**	• Develop a basic understanding of community development and education principles • Develop skills in public speaking and sharing your story with community or other groups • Develop skills to partake in community development initiatives which aim to raise awareness about problem gambling (e.g. – attending local events, assistance with projects) • Gain an opportunity to present your story to a community group

• **Links**

The project management team was responsible for informing the wider Gambler's Help Network and other health & welfare networks about the project and encouraging assistance in referring clients for participation and linking the spokespeople with suitable awareness-raising activities. This was achieved through information sessions for Gambler's Help services; discussing the project in appropriate meetings; including information in the Gambler's Help newsletters; and informing other health and welfare networks.

It was important to keep the Gambler's Help Network informed and updated on the project, in order to ensure that the spokespeople were given sufficient opportunity to utilise their skills, knowledge and desire to make a difference.

• **Engagements**

Participants were asked to complete a form, which outlined their personal details, availability, interest areas, gambling experience and any matters of concern for them.

The project management team (with support from the wider Gambler's Help Network) was responsible for linking the spokespeople with various engagements including:

1. Media

This involved liaising with media representatives to gain information on interviews and then relaying this information to the spokespeople. It was imperative for team members to ensure that the spokespeople did not feel pressured to be involved. Furthermore, spokespeople were sufficiently debriefed following their media engagements.

2. Communication with key figures

Participants were encouraged to use the skills gained in their training to consult with key figures in their own time. Project management staff offered assistance where appropriate and in accordance with their role at Gambler's Help.

3. Community Education

The project management team (with support from the wider Gambler's Help Network) were responsible for linking the spokespeople with community education sessions; community development projects; government initiatives; and committees and working groups. This was done in consultation with the Department of Justice, Council of Gambler's Help Services, Gambler's Help Community Educators Network and other health and welfare networks. Participants were linked with activities and initiatives that they felt comfortable engaging in.

The spokespeople were sufficiently debriefed either by their counsellor or a member of the project management team (or both). Debriefing was imperative to ensure that the project continued to meet the needs of the participant and that no harm is being caused in the process. Participants were also encouraged to keep a log or diary of their involvement.

It was decided that clients would only be involved in the project over a short-term period. This was so that participants did not feel weighed down by continually reliving their story and to ensure that they could move forward and not be defined by the problem gambling experience. Participants were informed and aware of their right to withdraw from the project at any point in time.

Outcomes

Since completion of the training course, participants in the project have taken part in various engagements including:

- Council of Gambler's Help Conference, Victoria. Several presentations as 'consumer voices'
- Presentations to students at several local secondary schools
- Interview on Channel 10 News
- Interview with the Herald Sun newspaper
- Focus group session with a Swinburne University researcher
- Interview with Women's Information Referral Service (WIRE) for a research project on isolated women and problem gambling
- Interview with IPS New Worldwide
- Interview with the Melbourne Leader newspaper
- Reflective articles for the Gambler's Help City 'GWord' Newsletter
- Interview with the mX newspaper
- Interview with the Sydney Morning Herald newspaper
- Presentation to Ladies Probus Group of Malvern
- Interview with the Big Issue magazine
- Presentation to Salvation Army cadets
- Interview with ABC Radio Cambodian Program

Evaluation

Evaluation of the project to date has been extremely positive. The following is an overview of survey results received from participants. Three surveys have been collected to date – Introductory Session & Training Module One; Training Modules Two and Three; as well as Overall Involvement and Engagements.

1. Introductory Session and Training Module One

All participants agreed or strongly agreed that they enjoyed the training; felt adequately informed about the project prior to the commencement; and felt well supported by the project staff. One participant commented, "…the facilitators presented well and made the training environment warm and comfortable". Another described the environment as "…a very friendly atmosphere where people speak from the heart".

All participants agreed or strongly agreed that they found the content and learning materials were adequate; guest speakers were informative; the sessions were presented clearly; and that the session at a radio station was helpful in reinforcing learning. One participant commented that the session at 3CR radio was "…a great hands-on and practical experience, which brought together learning to date".

Some recommendations provided by participants included allowing more time in sessions to cover content thoroughly; finding a larger venue; more practical sessions (i.e. – at radio stations etc.); and more opportunities for participants to interact in sessions. One

participant also commented that "…at times reliving what you have done regarding a gambling problem can cause a bit of stress".

2. Training Modules Two and Three

All participants agreed or strongly agreed that the materials provided to them were adequate; content was adequate and presented clearly; and that the guest speakers were informative. One participant commented, "…course materials provided were extensive, well researched and presented very professionally". Another commented, "…the project/course/group was fantastic. I learnt a lot from the facilitators, others in the group and also about myself".

Some recommendations provided by participants included adding extra time to each session; start and finish the sessions earlier; and include more practice with media skills. Several participants provided further comments in their evaluations such as "…everyone telling their stories was amazing for me to witness because I saw how powerful the individual stories are…" Another commented, "… absolutely worthwhile course and essential for any problem gamblers who wish to educate others on the issues…"

3. Overall Involvement and Engagements

After the completion of training, project facilitators continued to lead meetings with participants to discuss engagements and progress of the project. All participants agreed or strongly agreed that there were a sufficient number of group meetings to discuss progress in the project; the time and day of the meeting was sufficient; and the content and discussion in meeting was valuable. One participant suggested, "A monthly meeting would be good" and another commented, "It's always good to listen to other people's stories and discussions".

All participants agreed or strongly agreed that they were satisfied with the number of engagements they had taken part in; that the engagements have been rewarding; and that they felt adequately supported by project staff when taking part in engagements. One participant commented, "I would like to continue to do more" and another commented, "I will never stop being passionate about the issues surrounding problem gambling/pokies and every engagement provides me with an opportunity to express that passion". One participant suggested doing a small-scale group project to increase awareness.

When asked what the highlight of their involvement in the project has been, the participants' responses seemed to emphasise the aims of the project:

- "Ability to express the impact on me personally and also acquire skills to speak publicly when requested"
- "Speaking on community radio and obtaining different opinions from the group members"
- " Speaking at the conference at Richmond Town Hall"
- "Listening to others stories and the involvement of all concerned. Giving me the opportunity to tell other of the dangers of poker machines"
- "I loved our night at 3CR (radio), also our group interview with Swinburne…I just don't want our group to end…the group keeps me passionate"

- "The visit to the radio station. The recorded interview had a significant emotional impact".

Conclusion

The Spokespeople on Problem Gambling project has been an extremely successful initiative. It has given past and present Gambler's Help clients the opportunity to speak out on the issue of problem gambling and contribute to raising community awareness. The recruitment and support processes put in place have been effective in ensuring that the project meets its intended aims. Anecdotal evidence collected from people who have witnessed presentations by the spokespeople has been extremely positive. The success of the project has highlighted the power of story telling for community education and the need to utilize the unique expertise of those who have experienced harm from problem gambling to educate the wider community.

GAMBLING ON THE FUTURE: THE SINGAPORE FAMILY AND CASINOS

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ABSTRACT

Many studies have investigated the impact of gambling on families but not familial causes of gambling. Using Ajzen and Fishbein's framework of reasoned action theory, this paper will contextualise casino gambling in relation to Singaporean families and society. It will be argued that family plays a vital role in predicting and influencing gambling behaviour. Policy efforts are essential for educating families of their influence on shaping the norms, attitudes and beliefs of gamblers. Social support is an especially important facet in managing the side-effects of easy access to casino facilities. However, public policy thus far has not adequately addressed the role of family relationships in engaging and deterring gamblers from the potential harms of gambling. A comprehensive, multifaceted strategy is fundamental to the tackling of problem gambling.

Introduction

"The gambler… is a supremely superstitious being. The habitués of gambling casinos always possess magic formulas to conjure the Fates."
Paul Lafargue, *Die neue Zeit, 24(1)* in Cosgrave 2006: 512.

Sociologists have long recognized that gambling is inherent to human society (Goffman 1967). Social acceptance of gambling however varies across cultures and societies. Rather than regarding gambling as a social malady, Bloch (1951) defines the emergence of gambling as social pathology only when there is widespread resentment directed against it. Singapore's planned casino developments have provoked widespread debate from a multitude of interest groups and stakeholders in society over the prudence of such a decision. While the Singapore government has attempted to defuse objections to the casinos by implementing measures such as the Casino Control Act, significant social hazards remain associated with effectively establishing gambling as a normative form of behaviour. The extensive social and moral jeopardy associated with the building of casinos is further exaggerated by having two casinos in close proximity to a small, dense population. It is opportune to conduct a sociological analysis of gambling which investigates its significance for individuals and groups, given the socially constructed and contextual nature of gambling.

This study of gambling will approach the issue of problem gambling from an interactionist perspective rather than investigating individualised causes and concerns. A review of gambling literature reveals its emphasis on studying gambling with a focus on

the individual. Few studies have set out to specifically situate the social causes and impacts of gambling primarily within a family context. The application of Fishbein & Ajzen's (1980) reasoned action theory suggests that families are more than simply reflexive participants responding to the gambling behaviour of their kin, but should instead be seen as playing an active role in shaping and influencing the decisions of their family members to gamble. Fishbein & Ajzen's analysis of social behaviour, which has been employed extensively in the area of public health, concludes that a person's perception of the social norms held by people around them can motivate behavioral change. It is a form of social learning (Winfree, Sellers & Clason 1993) that powerfully influences members of families and communities by bringing into consideration the costs and benefits of adhering to norms in the course of deciding to gamble. Family influence can either be a risk factor for problem gambling or serve as a source of positive influence on potential gamblers.

The role of family in the socialisation and developmental processes of youth will be argued to represent a critical factor in the acquisition of gambling behaviour. Rather than treating gambling as an individual pursuit, it will be contextualised as a social activity that is deeply intertwined and correlated with kin relationships. On a larger societal scale, conflicts and dysfunctions arise when personal or familial values run contrary to wider social values. Reasoned action theory can explain how conflicts may arise as a result of the disjunction between the government's tacit approval of gambling and social norms which regard gambling with caution.

A critical review will be carried out of the current policies on problem gambling in relation to the social impact of family and whether existing plans are adequate for containing the potential negative effects of two casinos. While it is well known that gambling incurs widespread ripple effects on both society and economy, there remains a dearth of comprehensive dialogue from a family-oriented perspective between social organisations and policy makers in Singapore over the management of problem gambling. A public sociology approach (Burawoy 2005) that engages civil society on contemporary issues of importance can fill this gap by including wider audiences in the casino discourse, in the spirit of C. Wright Mills' dictum to turn public concerns into public issues. Specifically, the aim of responsible public policy should be to prepare and empower families to negotiate the potential social fallouts from the casino developments by drawing associations between family acculturation and gambling behaviour.

Definitions and Methodology

Problem gambling is defined here as gambling which exceeds reasonable limits whereby the gambler and those around him experience negative consequences (Aasved 2003, Cosgrave 2006). The social causes of problem gambling as it pertains to family will be the focus. Gambling can include betting done at casinos, football games and lotteries which involve the element of chance. Losses are not simply financial as often the relationships between gamblers and those around them are adversely affected by their addictions. Nearly all gambling studies cited use the South Oaks Gambling Screen (SOGS) as a standardised instrument to measure the severity of problem gambling.

Participants are required to answer questions which assess their gambling frequency and whether harm has resulted from their gambling behaviour.

The research methodology for this study involved a literature review from a variety of sources. Both primary and secondary sources were made reference to. Political speeches and press releases on the casino, journal articles, books and media sources discussing the casino issue were analysed and contextualised in relation to the family. Emphasis was placed on current sources and publications from recent years, in line with the public sociology orientation of this research paper which aims to give it contemporary relevance. Due to the rapid onset of dialogue over the casino up to the current time, finding recent sources was not a problem. News on the state and civil society handling of casino-related issues was interpreted in relation to the Singapore family, using reasoned action theory as a theoretical framework.

Theoretical framework

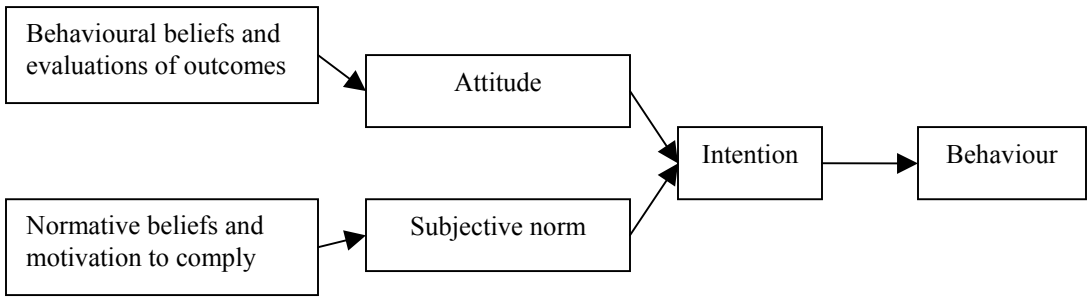
This paper adopts a symbolic interactionist perspective as put forward by Blumer (1969) and others which looks at how meanings are derived from social interaction. Reasoned action theory as initially devised by Ajzen & Fishbein (1980) and later interpreted by Griffiths (2001) and Moore & Ohtsuka (1999) will form the theoretical framework. This will look at how individual beliefs are often influenced by family and social norms which interact to motivate behaviour. A reasoned consideration of available information is made before people as rational actors decide to behave in a particular way. The theory of reasoned action (TRA) as originally formulated by Ajzen & Fishbein states that there are relationships between engaging in behaviour and the following: *attitudes* toward that behaviour, knowledge or *beliefs* shaped by social norms about the likely outcomes and consequences of the behaviour, and finally *intentions* to carry out the behaviour. The TRA suggests that norms embraced by significant others including family and friends, together with the individual's motivation to comply with those norms and his expectations about what the outcomes will be, profoundly influence the way an individual acts.

According to Tuck & Riley (1986: 161) "the power of the theory arises from... its capacity to "unpack" each particular (behaviour) in terms of the underlying beliefs. Thus, attitudes are held to be dependent on beliefs about outcomes (both what the actor expects will happen and how he or she evaluates these possibilities), and norms are seen to be dependent on the expectations of salient others." The use of reasoned action in the sociological approach to problem gambling looks at the family as one of the factors strongly influencing decisions made by gamblers. This theory suggests that norms and attitudes shaped by the family and society play an integral role in influencing gambling behaviour. It will be argued that family attitudes towards gambling behaviour predict intentions of individuals to gamble and subsequently influence their gambling behaviour. The strength of the reasoned action perspective is that it offers more than simply an explanation of social behaviour but also provides a framework for affecting behavioural change. The discussion of casino policy will look at this aspect further. The theory can be

used to predict the outcomes of social influences on many addictive behaviours (Griffiths 2001) and has been used extensively in the field of public health.

While reasoned action does well at drawing together causal factors with predictions of behaviour, it is however not a comprehensive solution. The potency of norms can predict the frequency of gambling but does not explain why some people are susceptible to problem gambling while others who gamble with the same frequency do not experience difficulty. The phenomenon requires more in depth study and the inclusion of other theories (Moore and Ohtsuka 1999). The TRA furthermore assumes sufficient freedom of choice and rationality on the part of the individual. It does not explain why some people may appear to act irrationally, for example persistently acting in a way which does not benefit them. TRA suffers from limitations when it comes to explaining the actions of individuals who feel they have little power over their personal beliefs and attitudes, for example convicts or the extremely destitute. Ajzen and Fishbein later developed the theory of planned behaviour to predict behaviours which result from a lack of volitional control on the part of the individual.

Figure 1: The theory of reasoned action



(Source: Terry, Gallois & McCamish 1993: 6)

Social learning theory is an aspect of the TRA which complements its attitudinal and beliefs-oriented facets, in this case determined by familial norms surrounding the individual. Social learning is mentioned here because of its importance in explaining the correlation between the onset of problem gambling and the gambling attitudes of family members. Gupta and Derevensky (1997: 181) consider "support for social learning theory in the development of addictive disorders (as) overwhelming." A social learning approach posits that the availability of positive role models, increased social attachments and communal integration of individuals translates into lower risk of deviant behaviours such as addiction (Winfree, Sellers & Clason 1993). Strong bonds between individuals and their family, community and society can serve as a policing mechanism which regulates behaviour.

Many theories of gambling have been proposed to explain the rationales behind the risk-taking behaviour of gamblers. These need not necessarily be interpreted in opposition to each other. Theories often address different aspects of gambling and may provide complementary perspectives. A comprehensive analysis of the social aspects of gambling would require a multi-theoretical approach since no single theory at present is all-inclusive.

The impact of family on gambling behaviour

The last casino in Singapore was operational in 1917, a small operation set up by the British colonial powers to meet the demand of the seafaring travellers here. The social milieu of Singapore has come a long way since then. The family has become a matter of increasing concern to the state due to Singapore's plummeting birthrate and the insustainability of the current local population. Given these circumstance the casino developments are of particular concern because of their potentially detrimental impact on Singapore families. Estimates place the proportion of problem gamblers in most developed societies with casinos at 2% (Gupta & Derevensy 1997, NCPG 2006, Hsu 2006). Applied to Singapore, this would place the potentially affected number at about 80,000.

It will be shown that many problem gamblers are led to gambling because of their social experiences in childhood. Adolescents and children are an especially pertinent group to study because many problem gamblers first pick up addictive behaviours in their formative years. Compared to non-problem gamblers, a significantly greater proportion of problem gamblers begin gambling in adolescence, known as the "early start phenomenon" (Aasved 242). This trend was consistent across the various ethnic groups studied. Many studies support the link between parental behaviour and problem gambling. Vachon et al. (2004: 398) found that "parenting practices are important risk factors in the development of risk-taking and deviant behaviors during adolescence" while Hardoon et al. (cited in Kalischuk et al. 2006: 31) reports that the susceptibility of adolescents to pick up gambling is strongly correlated with "family members… having gambling problems." These findings strongly suggest that family influence plays an important role during the early developmental stages of problem gamblers. Of special concern is that among adolescents, there is rapid progress from social gambling to problem gambling, often measured within the space of less than a year (Derevensky & Gupta 1997). The formative years thus constitute a stage which can determine the severity of problem gambling later on in life. Global research indicates that young people are up to four times more likely than adults to become problem gamblers (ST 16 Feb 2007).

An intergenerational transfer of habits or a culture of gambling within the family leads to adolescents acquiring gambling habits from early on. But which aspects of family interaction contribute to this trend? Kalischuk et al. (2006: 35) looks at three familial factors which contribute to the development of problem gambling: genetic inheritance, family modeling and family dynamics. Several studies indicate that the determination of genetic inheritance as being purely biological rather than environmental is inconclusive (Grant & Kim 2001; Black et al. 2003 cited in Kalischuk: 35). The acquisition of gambling practices appears more plausibly the result of social learning rather than biology. According to the family modeling explanation, positive attitudes of parents and other family members towards gambling serves as an impetus for youth to start gambling themselves. Parents may involve children in various forms of gambling by playing with them, betting together, buying lottery tickets with their children or asking children to purchase tickets for them. This effect, in conjunction with family dynamics which looks

at family conflict and lack of cohesion as risk factors for problem gambling, indicates the significant role of family in shaping the reasoned action of youth who are influenced by behavioural norms found in their social environment.

Family modeling and family dynamics have a significant impact on the reasoned action of gamblers by shaping their attitudes towards gambling and subjecting them to norms about gambling. By painting gambling in a positive or negative light, family influence plays a significant role in the behavioural intentions of gamblers to start gambling. Gambling which starts early on in life occurs at an age when adolescents are still susceptible to parental norms and family influence. This is supported by statistics gathered by a Ministry of Community, Youth and Sports (MCYS 2005: 9-13) survey which found that 63% of Singaporeans start gambling at age 24 and under, while the majority (44%) of pathological gamblers fall between the 18 to 24 age range. Problematic gambling behaviour must therefore be addressed from a family perspective as part of the wider social causes leading to addictive behaviour.

Besides parents, other members of the family are predicted to have varying degrees of influence on the reasoned action process of individuals. Gambino et al. (1993) determined that different configurations of grandparent and parent gambling place an individual at risk of pathological or severe gambling. According to their study, individuals whose grandparents are the only pathological gamblers in the family are at the highest risk of producing a problem gambler. This is followed by individuals whose grandparents and parents are both compulsive gamblers. Among individuals who had a single parent exhibit evidence of pathological gambling, the relative risk was even lower. Siblings can also be viewed as role models whose behaviour and norms are emulated. One study by Gupta and Derevensky (1997) found that children are more likely to gamble with their siblings as they grow older. Presently, no study has focused on the nature of sibling relationships and their correlation with gambling behaviour (Aasved 2006).

Not only the presence of certain family members, but an absence of positive parental influence, poor family ties or neglect can foster suitable conditions for problem gambling to occur. Hudak, Varghese and Politzer (1989) argue that the quality of family relationships contributes to problem gambling behaviour because family may serve as a buffer against excessive forms of gambling. Social support serves as a buffer against gambling behaviour by occupying time which could otherwise be spent under negative influences. Parents and spouses who are themselves problem gamblers furthermore create a cascade effect whereby not only do they serve as negative role models, they also affect the other quality of other family relationships for their children and partners. Darbyshire, Oster and Carrig (2001) found that the loss of relationship quality children face with their extended family, often occurs in tandem with the physical and emotional loss of their gambling parent. These may result in destructive coping mechanisms which aggravate the problem.

It is also useful to differentiate between the varying impact parental gender has on gambling behaviour since correlations have been drawn between the severity of gambling

problems in adolescents and the gender of the parent. Vachon et al. (2004: 400) found that the severity of the gambling problem with fathers was "significantly associated with the severity of gambling problems in adolescents," while such a link was not found for mothers. The finding could either suggest that role modelling may occur more strongly in relation to the father or that the father occupies a more critical role in the family in determining adolescent behaviour.

Limitations of family influence and other social groups

Problematic gambling behaviour may however still emerge in spite of having family members who are positive role models. The explanation for this is that family is not the only source of social support for the gambler and its social significance in the individual's life varies. Other social networks may contribute to the onset of gambling behaviour. Gambling develops as an established normative behaviour which can stem from a confluence of social contacts. including family members, friends and social groups adolescents belong to. Support may be derived from relationships formed on the basis of friendship, shared interests or common background. While family would have the most impact on the gambler's reasoned action in childhood and adolescence, other social influences would weigh increasingly on the reasoned action process of the gambler over time. These other groups can influence decisions to gamble as well as represent a source of social support which the gambler faces trouble disengaging from. Rosecrance's (1986) insight is that problem gambling may be exacerbated over time by the gambler distancing himself or herself from other social groups, as he finds the most support from others in his own gambling clique.

"In many cases, through a process of socialization, gamblers have disengaged from other social groupings and maintain only a limited number of relationships outside of the gambling milieu. Because membership in betting groups can be maintained only by continuining to participate, quitting gambling can be extremely disruptive" (Rosecrance 1986: 368 cited in Aasved 2006: 78).

The very fact of having a stable family environment has itself been suggested to be a contributing factor to gambling. Devereux (1949: 695) attributes this rebelliousness to the gambler being "fraught with strain… the result is an intolerable, but not necessarily wholly unpleasant, state of tension" while Cosgrave (2006: 110) suggests that "paradoxically this tension is often deliberately heightened by gamblers who clearly find it pleasurable as strain… real pleasure may also lie in tension-resolution." Nuanced behaviours and rationales like these are easily missed by the reasoned action model and are worthy of further investigation.

A review of the familial impact of casino policy in Singapore

Given the importance of familial and social norms in influencing decisions to gamble, it will be shown that reasoned action has an integral role to play in effecting responsible gambling decision making among families. The vital role the family plays in the propagation of positive beliefs and norms risks being circumvented by the current

approach to gambling management, which inadequately addresses the family's role in instituting and maintaining balanced attitudes and beliefs about gambling. Methods of intervening to promote desirable gambling norms and attitudes at the levels of family and other social institutions such as schools will be suggested. Before explaining the relevance of the TRA to shaping family attitudes towards gambling, current gambling management strategies in Singapore will be briefly reviewed.

The government has recently in the last two years introduced legislation and implemented public awareness campaigns in attempts to contain the possible social repercussions of gambling:

Gambling Controls

- Casino entrance fee for Singapore citizens and PRs: $100 a day and $2,000 a year.
- Spouses and family members can ask that people with gambling problem be denied entry
- Bankrupts, people on public assistance and those with poor credit records will be excluded
- Locals cannot use credit cards post-dated cheques or get credit from casinos
- No advertising by casinos in local media
- Home Affairs Ministry to set up Casino Regulatory Authority
- Ministry of Community Development, Youth and Sports to set up National Council on Gambling
- Public education programme on danger of gambling
- National wellness centre to be up to help compulsive gamblers

(Source: Today website, www.todayonline.com)

By most measures, these controls appear to be grossly insufficient in coping with the social fallout from the ensuing rise in rates of problem gambling. As of 2005, the social service sector were "quick to admit that they (were) woefully under-resourced to deal even with current levels of gambling addiction and the attendant social issues" (ST 14 Jan 2005). The same report estimates the costs associated with gambling addiction at $1.7 billion. The inadequacy of public awareness campaigns lie in the focus of their message. By attempting to convince viewers of the harms associated with gambling in relation to the individual and glossing over how family plays an integral role in norm reinforcement, media advertisements are insufficient for changing familial mindsets about gambling. The point needs to be driven home that family members can and must positively influence the attitudes and beliefs of their kin. Developing awareness of consequences of personal behaviour on family members can serve as a much more effective motivator for propagating responsible norms related to gambling, compared to the current strategy.

The reasoned action framework allows for a comprehensive solution which begins with identifying and addressing the underlying motivators of problem gambling. The components of reasoned action namely norms, attitudes and beliefs each have a role in determining behavioural intent (Fishbein & Ajzen 1980). The theory interpreted in relation to gambling results in the hypothesis that attitudes, norms and beliefs are related to intentions to gamble, which in turn directs actual gambling behaviour. Within the

family, behavioural norms are shaped by family members who serve as role models for gambling behaviour, whether positive or negative. It has been argued that family plays the most critical role in the formation of behavioural norms by either encouraging or discouraging gambling. Attitudes towards gambling are meanwhile a result of the sum of beliefs about the behaviour, weighted by an evaluation of the potential outcomes. These beliefs can be looked at from two aspects, the family and the individual. Under a reasoned action framework, social propagation of desirable beliefs about gambling are key. This begins with the family institution. Family members have to subscribe to the belief that their actions can either positively or adversely influence other family members. The individual on the other hand, has to believe that irresponsible gambling behaviour can result in problem gambling. The alternatives to gambling are considered in light of the potential outcomes.

As the relative weight of the components of reasoned action (norms, attitudes and beliefs) vary dynamically according to individuals and their social context, the positive effects of a gambling management strategy may best be maximised by studying the specific ways in which attitudes, beliefs or norms interact to influence behaviour. This is especially important from a familial context, as family serves as a primary determinant of norms and beliefs, but must include other social institutions, schools in particular. Determining the specific ways in which attitudes, norms and beliefs interact and the importance of each requires surveys of families and children which test for the variables that contribute to gambling behaviour. Questionnaires which gauge the relative impact of attitudes, beliefs and norms on individual decision-making would allow for the devising of a successful approach. For example, if beliefs about gambling are found to have the most impact on intentions to gamble, belief-targeted messages in mass media advertising or the incorporation of gambling education as part of the civics curriculum in schools would be the most effective strategy to employ.

The practical and policy-oriented conclusion of this paper is that gambling management strategies must always address the role of family in deterring problematic gambling behaviour. Rather than palliative measures which address problem gambling only after its occurrence, resolving the problem at the family point of origin is a more effective strategy. Family involvement represents a vital element in the prevention of problem gambling because of the ability for family members from early on to teach youth how to gamble responsibly and to spot addictive behaviour (Orford 1994). Policy must therefore educate families about their role in preventing problem gambling. More family-friendly policies and gambling education are needed to spread understanding of how problem gambling can be prevented. This does not preclude the involvement of other social and communal groups outside of the family, which are especially needed in the event that family cannot be relied upon to encourage positive gambling behaviour. Adding to this problem is the concern that euphemising the casino as an integrated resort and playing up its economic potential, while glossing over the multitude of negative impacts on Singapore families further serves to distract efforts at engaging families in the risk management process. A failure to adequately prepare families for the expected social repercussions of a casino and their role in prevention will only exacerbate the negative

consequences. What is especially worrying and necessitates more urgency in gambling education is that one of the intended markets for the integrated resort is the family:

"Genting submitted the most compelling proposal overall that best meets our economic and tourism objectives. In particular, the proposal reflects our vision for the Sentosa IR as a large-scale, family resort with its host of *world-class family leisure attractions* and other strong offerings. The attractions will position Sentosa and draw a significant number of new and repeat visitors" - Deputy Prime Minister S. Jayakumar (STB 2006).

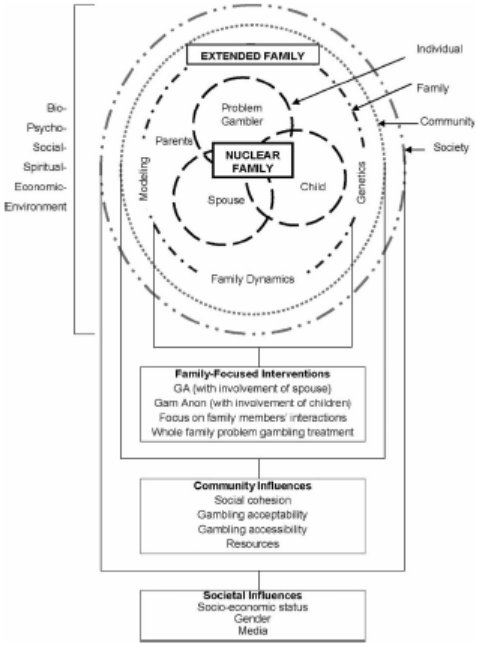
Such an approach which encourages families to patronise the integrated resort facilities, a stone's throw away from the casino, may serve to socialise the young into gambling culture by exposing them to normative perceptions of gambling from an early age, shaping accepting attitudes towards casinos from early on in life. Criticisms have been leveled at casino operators in other countries which suggest that targeting the youth market in anticipation of future patronage is precisely their aim.

A community-oriented approach which targets multiple avenues for raising awareness of the familial role in gambling is vital. Expecting the government to shoulder the responsibility for dealing with problem gambling may aggravate the situation further by fostering complacency among parents and families. In a longitudinal study among Quebec children and their parents, a significant decrease was found between 1995 and 2000 in the number of parents who recognised parental gambling as a risk factor for gambling problems among their children (Ladouceur, Vitaro & Cote 2001, cited in Tepperman & Korn 2006). Interestingly, this finding occurred at the same time as an increase in parental satisfaction with the government's initiative to control the rise in youth gambling. Social and family organisations such as AWARE must thus be intimately involved in the discussion process and be given the mandate and support to educate and forewarn families of the risks factors associated with gambling. Family-based and social work organizations currently do not receive sufficient support to handle social problems arising from casino visitation.

As has been discussed, it should not be assumed that family is the only significant agent acting on decisions to gamble. A comparison of the relative weight of attitudes, beliefs and norms may in fact reveal the greater influence other social groups bring to bear in the course of interactions with the individual. The family cannot be considered in exclusion as the variables affecting behavioural intentions to gamble come from a variety of sources interacting in an open system. Ultimately, the best measure of effectiveness of any reasoned action approach would be the resulting change in rates of problem gambling.

Although it extends beyond the scope of this paper, an integrated model (Figure 2) proposed by Kalischuk (2006) comprehensively considers interactions between the individual and family, community and society at various levels including the social, economic, psychological and others. A gambling management strategy could start with a recognition of these interactions, followed by a targeted approach which addresses each of them.

Figure 2: Integrated model for problem gambling and family



(Source: Kalischuk 2006: 54)

Conclusion

Singapore has once again forged its own path of economic development and gone against all expectations with its building of two casinos. Gambling is here to stay both as an economic tool and an entrenched form of recreation (Bloch 1951: 220). Although dilemmas will always arise over the social costs of having casinos, the repercussions can be managed through a sociological approach which considers the various social influences acting on the gambler. This is no simple task. Given that the casino industry in Southeast Asia is still in its infancy compared to the well entrenched industry in North America and Europe, gaming standards and regulation in the region still fall far short of international benchmarks (Bromberg 2006: 77). Singapore has already demonstrated its intention to peg its casinos to a high standard. Given the unique social demographics and concerns about social stability and family, the state must make additional efforts to protect this vital institution. The extent to which it will be successful remains to be seen. However, even as research for this paper was being conducted, positive signs such as a ramping up of gambling education via the media were observed. There has also been increased exposure of casino-related issues in the newspapers.

The findings suggest that gambling control measures must begin with the family as both a source and solution for problem gambling. This necessitates community mobilisation through broad public education programmes which highlight the role of family, who are not only affected by the repercussions of problem gambling but are also contribute to the phenomenon due to their influence on other family members. Korn (1999) argues that given the large number of individuals affected by gambling, it should be regarded as a public health issue which necessitates measures aimed at minimising the impact of

problem gambling on society. This is especially necessary since the economic gains generated by gambling make it too attractive for governments to ignore. It is a matter of concern is that governments may see casinos as a quick-fix solution to economic stagnation and proceed with endorsing gambling without sufficiently considering the repercussions on family. Other countries in the region such as the Philippines and Taiwan (ST Mar 22 2007) have already made use of Singapore's surprising casino developments to justify overturning their opposition to casino gambling. The economic stimulus created by the casinos comes at a cost to society and families that must be prepared for the potential repercussions of problem gambling. Family is vital at all stages of the gambling management process. For gambling therapy to be successful, the strategy for tackling problem gambling must involve the cooperation of family members of the gambler (Kalischuk 2006: 51).

A further consideration is the degree of autonomy that should be allowed to families dealing with problem gamblers in their midst. This paper has advocated familial responsibility for the policing of family members, rather than a top-down approach which lays the burden of prevention and rehabilitation of problem gamblers upon the state. There may however be instances in which families are either incapable of helping their members with gambling issues, or serve as the foremost source of negative influence. As in many other areas of civic life, a balance must thus be struck between family self-sufficiency and state intervention. Broad education on familial causes of problem gambling would serve as a positive step towards prevention, while legislation must be progressive in dealing with problem gamblers. A professional assessment of the problem gambler which considers his domestic situation in totality, soliciting the involvement and aid of family members, would be one approach which respects family needs while allowing the state to step in if circumstances require.

Formulating a comprehensive strategy to tackle problem gambling will also require a large volume of representative data which can be generalised to the entire population. Problem gambling research on families too often consists of small sample sizes or specialized groups of people, such as support groups or prisoners, making the results inapplicable to large populations (Kalischuk: 55). Self reported data on gambling habits could also be falsified or inaccurate. Some data is difficult to pick up on unless it is specifically sought after since the researcher may not be aware of its correlation to gambling. Co-addiction, whereby problem gamblers are addicted to other addictive behaviours at the same time, is one example. These issues have not been given sufficient airing in the public sphere. It may be that civil dialogue on the casino has been constrained due to concerns about raising further doubts in society and the acceptance of the casino as a foregone conclusion. Given the potential repercussions on social integrity however, a dedicated and wide-ranging strategy which engages and involves families from the ground up must be adopted for problem gambling to be adequately managed. The future stakes for Singapore merit nothing less.

References

Aasved, M. 2003. *The Sociology of Gambling*. Illinois: Thomas Books.

Ajzen, I. and Fishbein, M. 1980. *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, NJ: Prentice-Hall, Inc.

Bloch, H. A. 1951. "The Sociology of Gambling." *Journal of Sociology* 7(3):215-221.

Blumer, H. 1969. *Symbolic Interactionism: Perspective and Method*. Berkeley: University of California Press.

Bromberg, P. D. 2006. "Gaming in Southeast Asia" in *Casino Industry in Asia Pacific: Development, Operation and Impact*, edited by Hsu, Cathy H.C. New York: The Haworth Hospitality Press.

Buroway, M. 2004. *For Public Sociology: Address to the American Sociological Association*. Retrieved 18 Feb 2007. (http://sociology.berkeley.edu/faculty/burawoy/workingpapers.htm).

Collins, P. 2004. *Effective public policy on casinos: Containing potential negative impact*. Institute of Policy Studies. IPS Forum on the Casino Proposal. Retrieved 28 Feb 2007. (http://www.ips.org.sg/events/casino/Synopsis_casino.htm).

Cosgrave, J. F. (ed). 2006. *The Sociology of Risk and Gambling Reader*. London: Routledge.

Darbyshire, P., Oster, C., and Carrig, H. 2001. "The Experience of Pervasive Loss: Children and Young People Living In a Family Where Parental Gambling Is a Problem." *Journal of Gambling Studies* 17(1):23-45.

Devereux, E.C. 1949. "Gambling and the Social Structure: A Sociological Study of Lotteries and Horse Racing in Contemporary America." Ph. D. dissertation. Source: JSTOR online database. Retrieved 6 Feb 2007. (www.jstor.com).

Gambino, B., Fitzgerald, R., Shaffer, H., Renner, J. and Courtnage, P. 1993. "Perceived family history of problem gambling and scores on SOGS." *Journal of Gambling Studies* 9(2):169-184.

Goffman, E. 1967. *Interaction Ritual*. New York: Anchor.

Gupta, R. & Derevensky, J.L. 1997. "Familial and social influences on juvenile gambling." *Journal of Gambling Studies* 13:179–192.

Heineman, M. 1994. "Compulsive gambling: Structured family intervention." *Journal of Gambling Studies* 10(1):67–76.

Hudak, C. J., Varghese, R., and Politzer, R. M. 1989. "Family, Marital And Occupational Satisfaction For Recovering Pathological Gamblers." *Journal of Gambling Behaviour* 5(3):201-210.

Kalischuk, R. G., Nowatzki, N., Cardwell, K., Klein, Kurt., and Solowoniuk, J. 2006. "Problem Gambling and its Impact on Families: A Literature Review." *International Gambling Studies* 6(1):31–60.

Krishnan, M. and Orford, J. 2002. "Gambling and the family: From the stress–coping support perspective." *International Gambling Studies* 2:61–83.

MCYS. Ministry of Community Development, Youth and Sports. 2005. *Survey on gambling practices among Singaporeans*. Singapore: Government Printing Office.

Ministry of Home Affairs. 14 Oct 2005. Press release. "Casino control bill for public consultation." Retrieved 17 Mar 2007. (http://www2.mha.gov.sg/mha/detailed.jsp?artid=1751&type=4&root=0&parent=0&cat=0).

Moore, S.M. and Ohtsuka, K. 1999. "The prediction of gambling behavior and problem gambling from attitudes and perceived norms." *Social Behavior and Personality* 27:455–66.

NCPG. National Council on Problem Gambling. 2006. *Survey on the perceptions and attitudes towards gambling issues in Singapore*. Retrieved 5 Mar 2007. (http://www.ncpg.org.sg/).

NCPG. 2006. RISK video. Retrieved 19 Mar 2007. (http://www.youth.sg/index.php?option=com_content&task=view&id=2284&Itemid=28).

Orford, J. 1994. "Empowering family and friends: A new approach to the secondary prevention of addiction." *Drug and Alcohol Review* 13:417–29.

Riley, D. and Tuck, M. 1986. "The theory of reasoned action" in *The Reasoning Criminal*, edited by Cornish, D.B. and Clarke, R.V.G. Berlin: Springer-Verlag.

Rosecrance, J. 1986. "Why regular gamblers don't quit: a sociological perspective." *Sociological Perspectives* 29:357-378.

ST. Straits Times (Singapore). 14 Jan 2005. "Casino debate: laying out all the cards."

ST. 16 Feb 2007. "Youth gambling: nipping it in the bud."

ST. 22 March 2007. "Taiwan revives plans to build casinos; Govt may issue four licences in bid to boost revenue, tourism."

STB. Singapore Tourism Board. 2006. Press release. "Genting International and Star Cruises Wins the Bid For the Integrated Resort On Sentosa." Retrieved 10 Mar 2007. (http://app.stb.com.sg/asp/new/new03a.asp?id=6023).

Tepperman, L. and Korn, D. 2006. *At Home with Gambling: An Exploratory Study*. The Ontario Problem Gambling Research Centre. Retrieved 18 Feb 2007. (http://www.gamblingresearch.org/contentdetail.sz?cid=2970).

Terry, D. J., Gallois, C. and McCamish, M. 1993. *The Theory of Reasoned Action: Its Application to AIDS-Preventive Behaviour*. Oxford: Pergamon Press.

Thompson, W. N., Gazel, R. and Rickman, D. 1996. *The social costs of gambling in Wisconsin.* Wisconsin Policy Research Institute Report. National Gambling Impact Study Commission, US Government Printing Office. Retrieved 18 Mar 2007. (http://govinfo.library.unt.edu/ngisc/).

Vachon J., Vitaro F., Wanner B. and Tremblay R. E. 2004. "Adolescent Gambling: Relationships With Parent Gambling and Parenting Practices." *Psychology of Addictive Behaviors* 18(4):398-401.

Walters, G.D. 2002. "Behavior genetic research on gambling and problem gambling." *Journal of Gambling Studies* 17(4):255–271.

Winfree, L. T., Sellers, C. S. and Clason, D. L. 1993. "Social learning and adolescent deviance abstention." *Journal of Quantitative Criminology* 9(1):101-125.

SURVEY OF GAMBLING HABITS OF PEOPLE HAVING INTELLECTUAL DISABILITIES

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ABSTRACT

Intellectual disabilities, including mental retardation and autism spectrum disorders, affect approximately 2% of the population. Though most clinicians are aware that individuals having intellectual disabilities (ID) frequently do gamble and, not uncommonly, have difficulties as a result of gambling, recent reviews of the literature revealed no studies pertaining to problem gambling in individuals having ID. In this study, 79 consecutive clients presenting to the Mojave Intellectual Disabilities Clinic in Las Vegas, Nevada, U.S. were surveyed regarding their gambling behavior using adapted versions of the Gambling Symptom Assessment Scale (GSAS) and the Structured Clinical Interview for Pathological Gambling (SCI-PG). Two subjects (2.5%) were found to meet DSM-IV-TR criteria for pathological gambling, and 5 (6.3%) met criteria for problem gambling. Findings suggested that a variety of problem gambling behaviors occur in this population that are not captured by current diagnostic criteria. Other relevant demographics are presented.

Introduction

In the United States, intellectual disabilities (ID) are defined to encompass mental retardation of any cause, autism spectrum disorders, and permanent cognitive impairment of any cause occurring prior to the age of 18 years. Intellectual disabilities affect approximately 2 percent of the general population, an estimated 15,000 to 25,000 residents of Las Vegas. Fewer than 5000 of these individuals receive services related to their disabilities.

Individuals having intellectual disabilities are widely regarded to be particularly vulnerable to a variety of behavioral concerns including problems with gambling. Clinicians are frequently called upon to address gambling problems that result from poor judgment, impaired impulse control, or limited social skills in disabled individuals. However, a review of the literature produced no information concerning the prevalence of problem or pathological gambling in individuals having ID.

Exposure of vulnerable individuals is of particular concern in Nevada, due to the pervasiveness of opportunity to gamble. In Las Vegas, electronic gambling machines are prominently displayed in nearly every grocery, convenience store, and gas station, in addition to more traditional venues such as casinos, clubs, and restaurants.

Methodology

Participation in the survey was offered to sequential clients of the Mojave Adult, Child, and Family Services Intellectual Disability Clinic who met inclusion criteria. All subjects were at least 21 years of age with a documented full scale IQ of 75 or below. In addition, all participants were their own guardian, as Nevada state law prohibits research upon conserved adults.

Subjects were administered a questionnaire that included general demographics as well as modified versions of the Gambling Symptom Assessment Scale (G-SAS) and the Structured Clinical Interview for Pathological Gambling (SGI-PG). Psychiatric diagnosis, co-occurring medical conditions, and current psychotropic medications were obtained from the clinic chart. Seventy-nine subjects completed the survey.

Results

Demographics of the study population are given in Table 1. Subjects were nearly evenly divided in terms of gender (53.2% female, 46.8% male) and consisted mainly of younger adults (69.6% aged 21 to 39 years). The latter finding may reflect foreshortened life expectancy in this population. Ethnic diversity is noteworthy for a relative under-representation of Hispanics in the study population relative to Las Vegas demographics.

Table 1: Demographics

Gender		Ethnicity	
Female	53.2%	African-American	22.8%
Male	46.8%	Asian	1.3%
		Caucasian	65.8%
		Hispanic/Latino	8.9%
		Pacific Islander	1.3%
Age			
21-29 years	43%		
30-39 years	26.6%		
40-49 years	15.2%		
50-59 years	12.7%		
60 and over	2.5%		

The vast majority of study subjects (88.6%) had gambled at some time in their lives. Seventy-one percent had gambled within the past year, and roughly one-fifth reported that they gambled weekly. This very closely approximates the gambling habits of average Nevadans (Table 2). Two study subjects (2.5%) were found to meet criteria for pathological gambling on the SGI-PG, and 5 (6.3%) met criteria for problem gambling. Prevalence of pathological gambling among average Nevadans has been estimated at 2.7-

4.3%, and problem gambling at 2.2-3.6% (Volberg, 2002). Of note was the fact that the preponderance of problem gamblers (85.8%) among study subjects was female, in contrast to statistics for average Nevadans showing that 79.5% of problem gamblers are male (Table 3). All but one of the problem gamblers were under age 40, consistent with both the demographics of the study population and the demographics of average Nevadans having gambling problems.

Table 2: Frequency of gambling

	Study Sample (N=79)	Nevada*
Lifetime	88.6%	85.6%
Past year	71.4%	67.9%
Weekly	21.4%	19.0%

*Volberg, 2002

Table 3: Gender of problem gamblers

	Study Sample*	Nevada**
Female	85.8% (N=6)	20.5%
Male	14.2% (N=1)	79.5%

*Includes problem and pathological gamblers.

** Volberg, 2002.

Compared to non-problem gamblers in the study population, problem gamblers were more likely to live in the family home (57.1% versus 15.9%). The majority of non-problem gamblers lived in group residential settings (60.3%). None of the problem gamblers lived independently, while 23.8% of non-problem gamblers lived in their own apartments. These data are given in Table 4.

Table 4: Residence

	Non-Gamblers (N=9)	Non-Problem Gamblers (N=63)	Problem + Pathological Gamblers (N=7)
Family Home	3 (33.3%)	10 (15.9%)	4 (57.1%)
Group Home	4 (44.5%)	38 (60.3%)	3 (42.9%)
Own Apartment No added supports	0	4 (6.3%)	0
Own Apartment Support Services	2 (22.2%)	11 (17.5%)	0

A large number of respondents reported gambling with family members (57.1% of non-problem gamblers and 28.6% of problem gamblers). Problem gamblers were more likely to gamble alone (42.9% versus 23.8% of non-problem gamblers). Of note was the fact

that about one-third of respondents reported gambling with friends or residential and community support staff. We also learned that, in some instances, trips to the casino to gamble were used as reinforcers in individuals' behavior plans.

Casinos were the most common gambling venue for both study subjects having gambling problems (85.7%) and those who did not (93.6%). Restaurants and groceries were also common sites for gambling, while internet gambling was very infrequent (Table 5). Slots and other electronic gambling machines were the predominant gambling activity among both non-problem gamblers and problem gamblers (96.8% and 100% respectively). Other types of gambling were endorsed significantly less frequently (Table 6). Casino gambling and the use of electronic gaming machines are also predominant among average Nevadan gamblers. The majority of study subjects, including both problem and non-problem gamblers, reported spending 5 to 20 U.S. dollars when gambling (Table 7).

Table 5: Gambling venue

	Non-problem gamblers (N=63)	Problem Gamblers* (N=7)
Casino	59 (93.6%)	6 (85.7%)
Internet	3 (4.8%)	0
Restaurant/Bar	14 (22.2%)	2 (28.6%)
Grocery	13 (20.6%)	2 (28.6%)
Other	11 (17.5%)	1 (13.3%)

*Includes problem and pathological gamblers.

Table 6: Gambling activities

	Non-problem gamblers (N=63)	Problem Gamblers* (N=7)
Played cards for money	8 (12.7%)	0
Bet on sports	2 (3.2%)	2 (28.6%)
Bet on horses, dogs	2 (3.2%)	1 (14.3%)
Played dice games	5 (7.9%)	1 (14.3%)
Played numbers or bet on lottery	3 (4.8%)	1 (14.3%)
Played bingo for money	13 (20.6%)	2 (28.6%)
Slot or other machines	61 (96.8%)	7 (100.0%)
Bowled, shot pool, games of skill	2 (3.2%)	0
Pull tabs, scratchers	7 (11.1%)	3 (42.9%)

*Includes problem and pathological gamblers

Table 7: Amount of money gambled

	Non-problem Gamblers (N=63)	Problem Gamblers (n=7)
Less than $5	15 (23.8%)	0
$5-$20	36 (57.1%)	4 (57.1%)
>$20 to $50	3 (4.8%)	2 (28.6%)
>$50	2 (3.2%)	0
Don't know	7 (11.1%)	1 (14.3%)

Study subjects reported having had a variety of difficulties associated with gambling, even in the absence of "problem gambling" per se (Table 8). Twenty-six percent of subjects reported having spent more money than they wanted on gambling, twenty-five percent endorsed intrusive thoughts of gambling, and twenty-four percent had borrowed money in order to gamble. A small number of respondents reported exploitation experiences at the gambling venue or arguments with others about gambling. Contrary to expectations, very few subjects reported alcohol use while gambling (Table 9), though Las Vegas casinos routinely serve free drinks to gamblers.

Table 8: Problems associated with gambling

Have you ever gambled more money than you wanted to?	26.6%
Do you ever think about gambling when you don't want to?	25.3%
Have you ever borrowed money to gamble?	24.1%
Have you ever told people you were winning money when you were actually losing?	17.7%
Do you get upset when it is time to stop gambling?	17.7%
Does thinking about gambling ever get in the way of other things you want to do?	12.7%
Has anyone tried to borrow or take money from you while gambling?	8.9%
Have you ever argued with family, friends, or staff about your gambling?	7.6%
Have you had money problems as a result of gambling?	5.1%
Have you ever panhandled to get money to gamble?	2.5%
Have you ever been physically aggressive with anyone due to gambling?	2.5%
Have you ever lost time from work due to gambling?	1.3%

Table 9: Alcohol use while gambling

	Non-problem gamblers (N=63)	Problem gamblers (N=7)
None	57	7
One drink	2	0
2-3 drinks	2	0
4 or more drinks	2	0

Study subjects fell predominantly into the mild range of intellectual disability (Table 10). As in average individuals having problem gambling, study subjects having problem gambling had frequent co-morbidity of depression and anxiety. Two subjects having problem gambling had co-occurring psychotic disorder (Table 11). Of note was the low co-occurrence of substance abuse disorders and nicotine dependence.

Table 10: Severity of disability

	Total Sample (N=79)	Non-Problem Gamblers (N=63)	Problem Gamblers (N=7)
Borderline	5 (6.3%)	5 (7.9%)	0
Mild Mental Retardation	53 (67.1%)	39 (61.9%)	6 (85.7%)
Moderate Mental Retardation	21 (26.6%)	19 (30.2%)	1 (14.3%)

Table 11: Psychiatric co-morbidity

	Non-problem gamblers (N=63)	Problem gamblers (N=7)
Schizophrenia/schizoaffective disorder	8	2
Other psychotic disorder	4	0
Bipolar disorder	13	0
Major depression	25	5
Other mood disorder	7	0
Panic disorder/GAD	6	2
OCD	1	0
PTSD	1	0
Impulse control disorder	5	0
Autism spectrum disorder	3	0
Substance abuse disorder	2	0
Nicotine dependence	3	0
ADHD	5	1
TBI	2	0

Conclusion and Discussion

Gambling appears to be a common pastime of Las Vegas residents who have intellectual disability. Pathological gambling, as defined in the DSM IV TR, was demonstrated in 2 subjects (2.5%), and an additional 5 subjects (6.3%) met criteria for problem gambling. These figures suggest that problem gambling may be more common in individuals having intellectual disability than among average Nevadans (Volberg, 2002). It is suspected that these figures underestimate the actual prevalence of problem gambling among people having ID for a number of reasons. First, individuals under guardianship were excluded

from the study, including many individuals who had been placed under guardianship due to community difficulties stemming from problem gambling. Also, a number of individuals who were known, from our clinical experience, to have gambling problems, chose to decline participation in the study. Further, all our subjects were recipients of state-funded ID services. Most of these individuals live in highly supervised settings and may have diminished opportunity to gamble compared to the majority of citizens having ID, who live in the community with natural supports only.

Data from study subjects regarding gambling venue and preferred gambling activity conform closely to that reported for Nevadans in general. Patterns of co-morbidity in this study also are consistent with data obtained regarding the average population in the United States with respect to frequent co-occurrence of mood and anxiety disorders (Petry, et. al., 2005). In contrast, low co-occurrence with substance abuse disorders was found in the ID sample. This may reflect decreased access to illicit substances, though alcohol consumption while gambling and nicotine dependence were also infrequent. Of note in this small sample is the preponderance of female subjects among those having problem gambling. One wonders if this is of significance or is, instead, an artifact that reflects other variables such as liberty in the community or availability of social supports.

It is noteworthy that a relatively large number of subjects reported some distress associated with gambling, though they did not meet diagnostic threshold for problem gambling. Clearly there is a need for increased awareness of the risks associated with gambling for people having ID. This is particularly true for family members and support staff, many of whom gamble with disabled individuals for recreation or reinforcement. Further, disabled individuals may benefit from the inclusion of information concerning gambling as a routine part of community skills training, especially in Nevada, where gambling is pervasive.

The integration of disabled citizens into our community also calls for increased attention to the issue of integrity in marketing. Individuals having limitations in abstract thought may be likely to misinterpret common gimmicks in advertising, such as invitations to "win instantly" or "double your paycheck." Further research is warranted regarding the impact of such advertisements, with consideration given for more stringent guidelines concerning marketing practices.

References

Petry, N.M., Stinson, F.S., Grant, B.F. (2005). Comorbidity of DSM-IV pathological gambling and other psychiatric disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry,* May 66(5):564-74.

Volberg, R.A. (March 22, 2002). Gambling and problem gambling in Nevada. Report to the Nevada Department of Human Resources.

ALTERNATIVE APPROACHES TO GAMBLING DATA FOR TYPOLOGY DEVELOPMENT

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ABSTRACT

The modern gambling environment is heterogeneous - there is a vast array of different gambling products (including great diversity within single products) available in a variety of locations and used by a wide cross-section of the population for varying reasons. Despite this, gambling is frequently discussed in essentially homogeneous terms. For example, the predominant typology of gamblers has been the clinically-driven model which simply categorises gamblers into problem and non-problem gamblers.

Recognising the limitations of the binary approach, authors such as Blaszczynski (2002) and Stewart (2005) have identified sub-typologies of problem gamblers based upon factors such as motivations and pathways to gambling. There has also been a shift into categorisation of all gamblers into 'risk groups' such as the 'low risk', 'moderate risk' and 'problem' categories in the Canadian Problem Gambling Index. However, even with efforts to segment gamblers into broader categories, other possible demarcations are often overlooked.

This paper seeks to take an exploratory approach to dissecting gambling data for analysis which may be useful to researchers in classifying and analysing gambling and gamblers typologically. In particular the paper focuses on population survey data – notably the limitations of current orthodoxies and some possible new approaches. It is expected that such new demarcations of gambling data would not replace existing approaches, but would overlay or sit alongside them.

Introduction

The modern gambling environment is heterogeneous. There is a vast array of different gambling products (including great diversity within single products) available to gamblers in both physical and online formats. It is possible to gamble in a diverse variety of locations (casinos, hotels, member's clubs, newsagents, shopping centres, sporting grounds, airports, TAB outlets), through numerous mediums (in-person, telephone, internet, mobile phones) and at all times of the week both night and day. Furthermore, population surveys indicate that a wide cross-section of the community gamble for varying reasons, with different patterns of behaviour and with a diversity of experiences. Despite this undeniably complex set of variables, gambling and indeed problem gambling is frequently discussed in somewhat homogeneous terms.

While the basic activity of gambling can be defined at a homogeneous level – the staking of something valuable on the outcome of an uncertain event in the hope of some gain – such a narrow definition is all but useless in most modern contexts. The context, experience and consequences of gambling are extremely diverse, and not accounted for within this narrow definition. For example, what is valuable in the gambling activity differs greatly across individuals, as does the uncertain event and anticipated level of gains. Despite this, many analyses do not take into account the range of circumstances which influence gambling activity. Most notably, population survey reports frequently confine their analysis to just a handful of standard variables.

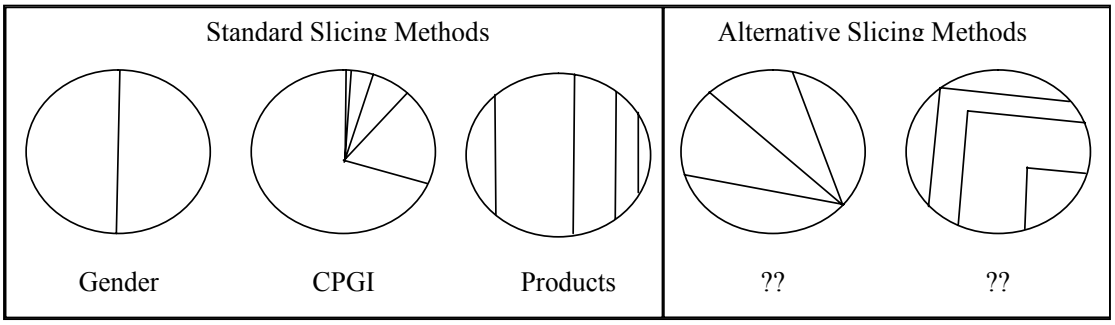
By way of example, comparing a pensioner gambling $200 in an afternoon on gaming machines, with a senior executive who puts $200 on their favourite football team each week, is akin to comparing apples with oranges. However, this is exactly what happens in most standard survey analyses, with both cases identified as weekly gamblers who spend $200 on each occasion. The point is that they would often be indistinguishable in a gambling survey analysis – yet they are dissimilar in many ways.

The point is that to better understand the extremely complex modern gambling environment and diversity of gamblers, there is a need to be looking at the activity of gambling and those who gamble in different ways. Orme (2007) neatly summarises what is driving the thinking behind this paper, asking "When are we going to stop talking about and dealing with gambling as though it's all the same thing?"

There have of course been many efforts to demarcate different types of gamblers and to identify different typologies of gamblers. However, by and large these efforts have been focussed on problem gamblers and at small scale clinical or treatment levels. What is not being seen within the literature however, are new demarcations of gamblers and gambling activity at the population level. By and large survey data – of which there is now vast quantities – is often analysed along traditional lines with little attempt to break outside of the box. The traditional analyses include the standard gambling activities, demographic, regional and socio-demographic variables and problem gambling groups (using a variety of clinical screens and other problem gambling measurement screens). We argue that there has been minimal effort to diversify the range of analyses.

Focussing on population level survey data, this paper puts forward a case to diversify the range of demarcation tools to provide a better opportunity to understand the diversity of gambling activity, experience and contexts that exists. It is not advocated that current orthodoxies should be replaced; rather that these traditional analyses should be enhanced and diversified. To use an analogy, to provide better understandings of gambling, the 'pie' should be sliced differently (Figure 1). There are a number of standard slicing methods for analysing large scale datasets but there are many other approaches as yet unexplored which will shed more light or new light on this complex phenomenon. In other words, there may not be a need to slice the whole into smaller groups. Rather, just slicing it differently may uncover previously unidentified relationships and issues.

Figure 3: The Pie Slicing Analogy



To further the discussion of gambling data demarcation approaches, the paper is divided into two major sections – 'Typologies of Gambling' and 'Typologies of Gamblers'. These sections attempt to view the way that data could be mined in an exploratory way to enhance the current analytical framework for gambling as an activity, and as an activity undertaken by people. While it is recognised that 'gambling' and 'gamblers' are inextricably linked, for ease of discussion these headings have been used to separate variables which relate mostly to the activity of gambling from those which are associated with the gambler.

Typologies of Gambling

Analysis of gambling data often focuses on problem gambling data, and sub-analysis of this data. Yet prevalence studies collect population level data, providing important insights and benchmarks into general population level gambling activity. The purpose of this section is to show how population-level gambling data can be used to provide benchmarks against which sub-analysis can be undertaken, and to provide better insights into general gambling activity.

Analysis by Product Type and Participation

Across Australian States and Territories, similar gambling activities are offered, although regulatory parameters may differ. The standard gambling product types in the *Australian Gambling Statistics* are Racing, Sports betting, Lotteries, Gaming machines, Casino gaming, Keno, Football pools, Interactive gaming and Minor gaming (Office of Economic and Statistical Research, 2006).

Prevalence studies often collect information by product type, asking respondents their gambling activity. For example, in the *Queensland Household Gambling Survey 2003-04*, respondents are asked to nominate their gambling activity across the range of legal activities in Queensland, including gaming machines; betting on horse or greyhound races; Instant scratch tickets, lotto or any other lottery game like Gold Lotto, Powerball, Oz Lotto, the Pools or bought lottery tickets; Keno; Table games at a casino; Bingo; Sportsbetting; Internet gambling, card games; and Art Union tickets (Queensland Treasury, 2006). Prevalence study data therefore is able to provide estimates of population gambling activity (that is, participation rates) for each gambling product type.

Analysing gambling by product type can provide useful information on participation rates in the general population for various gambling products; information which is not generally available. For example, the *Queensland Household Gambling Survey 2003-04* (Queensland Treasury, 2006) described population gambling rates by product, as follows:

Table 1: Queensland, Participation Rates by Gambling Product, 2003-04

Gambling Product	Participation Rate, All Queensland Adults
Gaming Machines	32%
Lottery products	52%
Keno	17%
Horses/dog races	16%
Art Union tickets	27%
Casino Table Games	6%
Sporting Events	4%
Private Games	2%
Bingo	4%

Source: Queensland Treasury, 2006.

As can be seen, lottery products are the most popular gambling activity (i.e. have the highest participation by Queensland adults), followed by EGM gambling and then keno and horse/dog racing This information is of interest in gambling analysis, since it provides a population estimate for how many people in Queensland actually gamble on the various products.

Participation and Problem Gambling

The general participation rates by gambling product in the general population provide a useful benchmark for analysing participation by other categories. For example, extending the analysis of participation rates in the population, using the benchmark provided above as well as CPGI categories, provides a different analysis outlined in Table 2.

Table 2: Percentage of CPGI Gambling Groups who use various gambling products

	General Population	Recreational Gambling	Low Risk Gambling	Moderate Risk Gambling	Problem Gambling
	Participation Rate (% of each gambling group which gambles on this product)				
Gaming Machines	32%	36%	71%	85%	95%
Lottery products	52%	84%	84%	78%	91%
Keno	17%	18%	42%	52%	69%
Horses/dog races	16%	18%	37%	44%	45%
Art Union tickets	27%	34%	29%	29%	26%
Casino Table Games	6%	6%	20%	23%	14%
Sporting Events	4%	5%	10%	18%	21%
Private Games	2%	0%	6%	13%	11%
Bingo	4%	4%	9%	11%	21%

Source: Queensland Treasury, 2006.

The table shows that participation rates generally increase in accordance with the CPGI risk scale. For example, whilst population-level participation in gambling on electronic gaming machines is 32%, across the risk groups, the participation rate in gambling on gaming machines is much higher. Likewise, participation across all other gambling products increase as CPGI scores increase. This does not indicate a causal effect – it does not show that gambling on gaming machines causes at-risk gambling. You can see that the participation rates on many other gambling products also increases as risk increases – for example, on lottery, keno and racing for example. What this shows is that more in these CPGI risk groups gamble on each respective product, compared to the general population.

Analysis by Number of Products

An alternative approach to analysing gambling data is by the number of products. This may provide useful analysis of whether, in the general population, people tend to gamble on a single activity, whether they gamble on more than one activity, and what combinations of activities they may gamble on.

By way of example, in the Queensland Household Gambling Survey (Queensland Treasury, 2001), it was found that recreational and low risk gambling groups tended to participate in one or two gambling activities, whilst those in the moderate and problem gambling groups tended to participate in three or more gambling activities. Analysis of the distribution of gambling activities found that a majority of those in the moderate and problem gambling groups gambled on Instant/lottery or lotto games; gaming machines, Keno, and raffle or art union tickets. Betting on horses and greyhounds or table games at a casino were also activities participated in by almost half of these groups. Low risk gamblers appeared to be split into those who gambled on 1-2 activities, and those who gambled on more. A similar pattern was found in the 2003-04 Queensland Household Gambling Survey (Queensland Treasury, 2006). Table 2 above provides an indication that there may be participation in multiple gambling activities as risk increases.

Further (and certainly more research into multiple gambling activities and its association with gambling risk groups should be undertaken), there are some thoughts worth exploring in relation to number of gambling activities:

- moderate and problem gamblers appear to participate in multiple gambling activities outside of licensed gambling venues, as well as participating in more than one activity within licensed venues; and
- low risk gamblers appear to have a sub-group within the category who are similar to moderate and problem gamblers in the number of gambling activities in which they participate.

The data may also be indicating that the traditional concentration within the gambling literature concentrating on electronic gaming machines in relation to at risk gambling may be missing the 'big picture' for risk groups. In reality, there are multiple forms of gambling available within a single venues (EGMs, Keno, raffles and betting, for example); as well as in other venues. Understanding the impact of multiple forms of gambling in relation to risk may be crucial to better addressing of the risks of gambling to individuals.

Analysis by Product by Exchange Type

Another avenue from which to consider the activity of gambling is at the level of the exchange. The *exchange process* for gambling on an EGM occurs between the consumer and the machine; the consumer places a bet through the EGM, and the machine then facilitates the gambling activity based on the bet sold to that consumer (Livingstone et al., 2006). At its most simple level, the EGM exchange is initiated when the consumer inserts money or a token which is then structured to be staked on a bet facilitated by the machine. To signify the placement of a stake, the consumer must physically confirm their stake; generally through the push of a button on the machine. The EGM's computer program then generates a random outcome, which will result in either a win or loss to the consumer.

There are, however, many more parameters involved in the contemporary EGM process than simply the insertion of money by the consumer and the generation of an outcome by the machine. The activities involved in one exchange process can be best described in a logical sequence of activity:

- The consumer supplies *legal tender* to the EGM. From the resulting credits, the consumer purchases a bet on the machine.
- The consumer is generally able to structure their bet through the *betting system* which allows the consumer to modify the number of lines they wish to bet upon, or the number of credits they are willing to bet on each line.
- After the consumer confirms their bet to the machine, the EGM generates a random outcome that results in either a win or loss for the consumer. The win or loss for the EGM consumer is reflected by the EGM as credits on the machine, and maybe either 'cashed' or 'recycled' through the machine.

In studying consumer activity on an EGM, this simple exchange process may provide interesting categories of study for gambling activity. For example, gamblers may be categorised by their use of coin, notes or the cashless systems which are provided in some jurisdictions; or be categorised by their use of lines and credits, and the rate at which they utilise these lines and credits.

The Productivity Commission (1999, 15:10) identified several permutations for gambling activity which may be useful for the study of gambling activity on EGMs more broadly. Using the assumption of a finite budget, the Productivity Commission identified that there were three main contrasting styles of play (permutations) for consumers:

- *Long duration, low volatility play*, characterised by gambling on only line, one credit for each stake, producing a long duration game;
- *Short duration, low volatility play*, playing more lines for each stake, but betting only the minimum credits. This type of play may produce more wins for the gambler than for the previous type of play;
- *High volatility, short duration style*, where the gambler plays one line with a maximum number of credits, producing a shorter duration game.

These three variations highlighted by the Productivity Commission are excellent examples of gambler typologies which do not rely on the more typical gambler types which focus on problems and money. They are permutations possibly available from population datasets already. However, the permutations overlook a fourth permutation, where the style of play where consumers play the maximum number of lines with the maximum number of credits, producing a game of short duration, but with potentially more wins from the number of lines played. The gambler will be spending more per spin, with maximum chances of winning maximum credits – will consume money very quickly but with more simultaneous chances of relatively large wins.

There are thus many possible *exchange process* facets which might be exploited for further use in dissecting existing population survey data. These may provide opportunities to group gamblers into more specific typological groupings based upon their gambling type preferences, level of intensity and style of activity.

Typologies of Gamblers

Unlike typologies of gambling which look at ways of unpacking gambling activity, patterns of play and similar segmentations of data, 'typologies of gamblers' focuses on the individual and their more personal characteristics – sometimes related to gambling. As with the typologies of gambling section, in the first instance some of the standard approaches for demarcating gambling data are discussed before moving on to look at some alternative approaches.

Demographics and Socio-economics

This is undoubtedly the most common approach by which to demarcate population gambling survey data. Most surveys report on gambling by gender or by age groups, and

by employment status, education and income. Such demarcation of course can and does provide useful information. For example, young males as a group with potentially problematic gambling activity have emerged from some surveys (e.g. Productivity Commission, 1999) and significantly higher levels of low education in the problem gambling group has emerged in others (e.g. Queensland Treasury, 2006, 18). Demarcating survey data by demographics can be particularly useful when done in conjunction with products to identify which population sectors are gambling on what types of products. However, very few published reports present cross-tabulated data for more than one variable simultaneously (Marshall et al. 2005, 17). Most studies report gender breakdowns as well as age breakdowns however few report on gender and age simultaneously in conjunction with problem gambling rates or product types.

This may explain why limited really useful information has emerged from the socio-demographic analysis of gambling data. Despite some notable exceptions (such as the young males example above) the wide range of demarcations which occur along socioeconomic and demographic lines which occurs have tended not to identify many clear and consistent patterns. An endearing theme and perhaps the only really strong relationship identified over the years is the tendency for very few socio-demographic relationships of significance to emerge from data. The strongest finding has thus been that gambling and problem gambling in one form or another cuts right across and through society with few strong and consistent relationships with any specific socio-demographic variable. This was observed in 1999 by the Productivity Commission (6.1) which noted that there are few clear socio-demographic factors that seem to predispose people a higher likelihood of developing gambling problems, with the exception of younger people.

Regional

Regional demarcation is also a relatively standard method for analysing gambling survey data - some might argue that it is not as common or detailed as it should be. Regional demarcation of data provides an opportunity to look at relationships between activity reported in surveys and the availability of gambling facilities in the area. Such an approach is particularly useful when geo-coded data can be used with geographical information systems (GIS) to identify relationships between gambling facilities and local population gambling activity at a fine scale (e.g. Marshall et al., 2004; McMillen and Doran, 2006). This approach can identify groups of gamblers who may be living in high accessibility neighbourhoods and perhaps be useful in combination with product knowledge such as EGM expenditure by region or knowledge of local level events such as new venues and venue promotions.

However, as far as providing a basis for a typology, regional demarcations have limited use. For example, authors such as Marshall and Baker (2001) and Doughney and Kelleher (1999) have demarcated populations into regionally based areas for analysis in an effort to understand the relationship between availability and use of gambling facilities. However, such analyses overlook internal diversity of the regions. Furthermore, there is often much correlation between regions and other socioeconomic variables which confounds the analysis. The regions tend to be based not on the characteristics of the

population, or on characteristics of the gambling environment (which would be very useful regions) but on political/administrative boundaries.

Psychometric Scales

The other very common means by which to demarcate gambler populations is by psychometric scales such as the CPGI, VGS and SOGS. The CPGI for example categorises the population on a continuum into 'risk groups' such as the 'low risk', 'moderate risk' and 'problem' categories. The SOGS uses a binary and sometimes a three part scale with non-problem gambler, problem gambler and sometimes severe-problem gambler. Indeed these are perhaps the most common current typology of gambler in current use.

Unlike some of the other demarcation approaches discussed here, these demarcations take into account aspects of the gambler's gambling. Through how different survey questions are answered, the population is divided into groups which reflect the level or extent of problematic gambling engaged in by the respondent.

While demarcations of data based on scales such as SOGS serve a purpose, they obviously have their limitations. The SOGS, with its binary approach – problem gambling or not – fails to acknowledge that those with problems may have a variety of different problems, different severities of problems and for different reasons. Similarly amongst the non-problem group, there are individuals who gamble a little, those who gamble on different products for different reasons and to different extents.

The point is that the typological category is capturing individuals for very different reasons. With such great diversity within a typological grouping, developing any responses and prevention approaches could prove very difficult.

Pathways to Gambling

A useful point to start here is with a typology which is already in use within the gambling literature – namely pathways to gambling. This approach could relate to both gamblers in general but also specifically to gamblers experiencing problems.

With respect to problematic gambling, Blaszczynski and Nower, (2007) recognise that no single theory can account for the full diversity of etiology in all problem gamblers. Indeed as Slutske (2007) points out, there is now consistent evidence emerging to suggest that the course of problem gambling is variable – in that for some people their problems are relatively transient but for others they are persistent and chronic.

Blaszczynski and Nower (2002) put forward a pathway model which has three causal pathways to problem gambling – namely:

1. Pathway 1 – built not around any precondition or determinant, but rather occurs through conditioning and cognitive distortion surrounding the independence of events;

2. Pathway 2 – those who have similar conditioning aspects as those in pathway 1, but who have some other vulnerability issues in their lives such as problematic backgrounds, poor coping skills, traumatic experiences and the like; and
3. Pathway 3 – are those who have similar vulnerabilities as those in pathway 2, but who have high levels of antisocial personality, impulsivity and attention deficit type issues.

As they recognise (Blaszczynski and Nower 2007) these pathways require further testing to validate or refute them or to expand upon their usefulness perhaps as they apply to different demographic groups.

While these three pathways are focussed on the psychological characteristics of gamblers, a pathways approach might also be based around historical involvement with gambling – or the continuity of the gambling of respondents. At present most surveys are based on the previous 12 months and thus are simple snapshots. However, identifying individuals who are long-term as opposed to short-term gamblers is another potentially important issue which is largely unexplored in survey research. Many surveys have asked when a respondent first gambled, with some asking who they first gambled with and on what product, but it appears that none have attempted to assess the continuity of gambling. That is, whether gambling has been a long-term continuous, intermittent or ad-hoc part of their lives. As Slutske (2007) observes, despite the awareness of the variability of problem gambling trajectories, there is still little known about the longer term stability/instability of gambling behaviour patterns.

While longitudinal studies are likely to be the best vehicle for identifying pathways to gambling and problem gambling, with carefully constructed and devised questionnaires, there may be a capacity to identify persons who have long term patterns of behaviour rather than temporary or fluctuating engagement with gambling. Once data has been collected which can help identify persons with differing temporal relationships with gambling, it may be possible to identify some new typological groupings of gamblers.

Time

Continuing with the theme of time, there are a number of more specifically time focussed variables which could be utilised more systematically in gambling data analysis and which might be suitable for further typological development. The first is the time of day at which gambling usually occurs and the second is the cumulative duration of time spent gambling - over a week, fortnight, month or year. Each is examined separately here.

Time of Day/Day of Week

Surprisingly, the time of day at which gambling occurs has had very little attention in gambling research. It is possible and indeed quite likely that gambling patterns differ in different venues at different times of the day and in a related context, day of the week. Not only may there be gamblers with different characteristics in venues at different times of the day but their patterns of behaviour may be different as well. Persons gambling during weekday mornings are likely to differ as a group to people gambling on weekends

and evenings. The former may reflect an older/retired demographic while the latter is likely to be younger and with more employed persons. Such distinct groups may have very different patterns and gambling behaviour characteristics which may be exploited for typological development. Indeed Baker and Marshall (2005) have done some analysis on this issue. They identified in their modelling of data collected in Northern NSW, some complex relationships between socio-economics, level of gambling involvement and days of gambling activity which certainly warrant some more detailed examination in larger scale surveys.

Cumulative Time

As with time of day/week, cumulative time involvement has received little attention in the gambling literature. While frequency is a common survey question, duration is less often asked of survey respondents. As such, it is often not possible to calculate an approximate level of time involvement in surveys. Where duration of session is recorded in surveys, it is often not combined with frequency to calculate an average weekly or monthly figure.

One study in which the issue of time involvement has been examined is Marshall (2002). Having asked EGM gamblers how long a session usually lasted and how frequently they usually used EGMs, a scale of time involvement - low, medium heavy and very heavy was formulated as per Table 1.

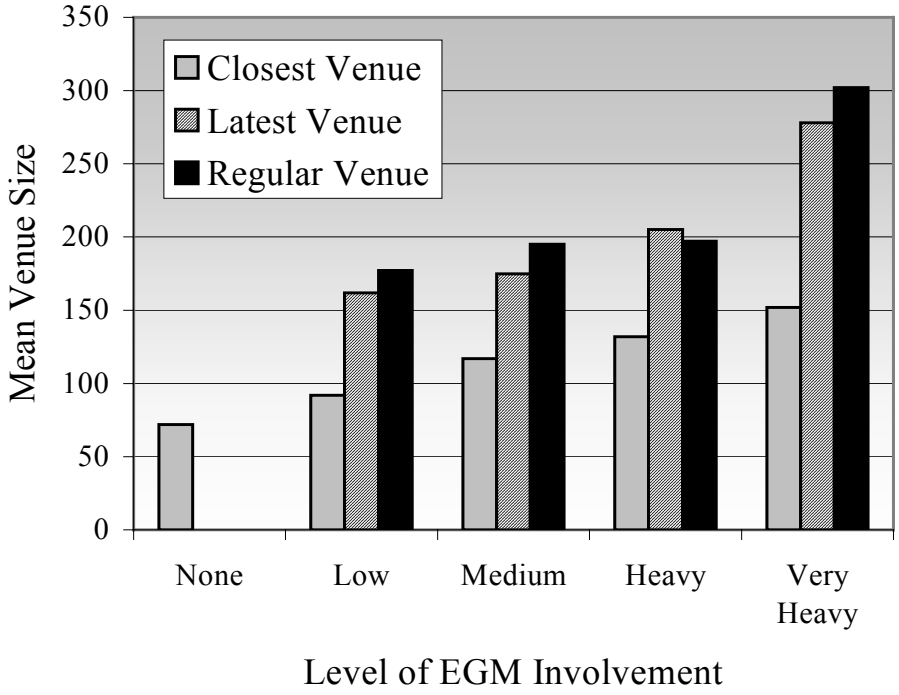
Table 3: Four levels of gambling time involvement

Low	Up to 5 minutes per week
Medium	6 – 30 minutes per week
Heavy	31 – 120 minutes per week
Very Heavy	Over 2 hours per week

Source: Marshall, 2002.

Using this scale Marshall (2002) looked at the relationship between venue size and time involvement by surveyed gamblers in the Tweed region of NSW and identified a clear positive relationship. As Figure 2 reveals, the size of the regular venue, most recent venue and closest venue in terms of number of EGMs had a clear positive relationship with the time involvement of the gamblers in the study. The conclusion reached was that gamblers who lived closer to or visit larger venues tend to spend more time in those venues than gamblers who live near or visit smaller venues.

Figure 4: Mean venue size for closest, latest and regular EGM venue by EGM involvement categories, Richmond-Tweed sample population



Source: Marshall, 2002.

Motivations/Beliefs

The underlying motivations and beliefs of gamblers is another area which seems to be under explored in population surveys and which has great potential for assisting with typological development in gambling.

To date, there is no universally agreed upon position amongst gambling researchers as to why people gamble (Blaszczynski *et al.,* 1999). A range of explanations has been put forward, including perspectives from anthropologists, economists, sociologists (Caldwell, 1974; Deveraux, 1968), and almost every major branch of psychology (Griffiths and Delfabbro, 2001). There have thus been many small scale studies and analyses which have explored and identified a variety of different attributes of gamblers and problem gamblers. Toneatto and Nguyen (2007) identify a range of these including arousal levels, cognitive activity, levels of dissociation, illusions of control, impulsivity and sensation seeking to name a few.

Cocco, Sharpe and Blaszczynski (1995 cited in Toneatto and Nguyen, 2007) for example argued for essentially two underlying subtypes of gamblers – those who are overstimulated and are attracted to types of gambling which soothe and narrow attention, and those who are under-stimulated and seek gambling which promotes arousal such as horse racing or craps. Certainly entertainment, amusement, and excitement are the most

common inducements cited by the average recreational gambler in surveys (Caldwell, 1974; Productivity Commission, 1999; Walker, 1996). In South Australia, for example, 92% of respondents to a 1995 survey claimed to play poker machines 'just for entertainment' (South Australian Government, 1995, Appendix:6). In contrast to these 'positive' motivational explanations, in which gambling is ostensibly a fun activity, less positive determinants have also been reported such as escapism or killing time. For example, Fisher (1993) identified escapism as a strong theme in her study of young machine players in Britain, as did Lynch (1990, 198) in his study of EGM users in New South Wales. Wykes (1964) suggested that gambling is simply a way of buying hope.

Despite such a diverse range of possible motivational factors for gambling, by and large such variations have not been explored in larger scale population studies and if they have, have not been reported on in detail. Identifying survey respondents who fit with typologies built around these sorts of motivational and belief factors potentially opens up a realm of new analysis possibilities. So rather than identifying just which group a gambler falls into (i.e. problem gambling or low risk gambling), if it were possible to identify gamblers who are participating for escapist reasons, or value adding to entertainment, this would provide much more focussed knowledge to help inform harm minimisation and intervention strategies.

Context

There has also been little effort to understand the wider gambling circumstances or context of gamble' activity in population surveys. The exception to this has been to ask about family history. However, there are a wide range of circumstances which may be impacting on an individual's participation in gambling, level of involvement, type of behaviour and consequences. For example, the work environment, circle of friends, wider family and perceived local recreational opportunities could all have an impact on gambling activity.

At a more detailed level, asking gamblers whether they gamble alone or with friends, whether they usually gamble on pay days, after work or at lunch times could all provide useful perspectives from which to examine gambling activity patterns at the population level.

Moving Forward with Understanding Gambling

In this discussion of some of the existing typological/demarcation groupings used for analysing population survey data and some possible new avenues for exploration, there is a need to consider how these ideas might be incorporated into survey data analysis.

As Volberg (2007, 34) observes, population surveys are important for identifying the prevalence of problem gamblers in the population and also which sectors of the population contain the highest prevalence rates. But population surveys can also be used for much more. They also help to identify patterns of gambling, by different groups of gamblers and to identify which trends are growing and which are not. They can also

assist in identifying groups of gamblers/population sectors which share similar characteristics related to their gambling. Surveys are thus potentially central to understanding and developing typological structures in gambling through testing the relevance of existing typological theories and helping identify alternative typologies of gambling and gamblers.

To enhance the capacity of population survey data to contribute to the development of typologies in gambling there needs to be a greater effort in, not only using the traditional analyses which include analyse of prevalence using screening tools, but also to identifying alternate groups within the data. Exploration and use of alternative typologies can further understanding of the diverse range of experiences, motivations and outcomes occurring at the gambler/gambling interface. With such information, programs and activities in areas such as problem gambler treatment, community awareness campaigns and harm minimisation policies could all be enhanced through better use of available data.

There are two straightforward ways of finding new typologies and different ways by which to demarcate gambling survey data: make use of existing survey data/question; and construct new questions for surveys to assist with more complex typological development.

Making better use of existing data within surveys generally has been the theme of this paper. Simple non-traditional analysis may yield better understanding of the activity and issues related to gambling.

Whilst developing new questions may seem like an obvious point, it is surprising to see how many major gambling surveys are simply repetitions of previously run surveys in other jurisdictions or from the past. While this is not a problem as such – since trend series analysis is an important dimension to gambling research and such analysis needs continuity – identifying new patterns and issues is at least as important and this is likely to need new questions.

One approach may be to simply dissect existing typological groups a little bit further through the addition of an extra question or two. For example non-gamblers (usually people who have not gambled in the previous 12 months) are generally analysed as a single typological group despite the fact that they contain two clear cohorts of gambler types within them – persons who have never gambled in their lives and those who have gambled, but have not done so in the past 12 months. Logically, they are very different and so should be treated differently. Having been identified as a non-gambler a single simple question could be asked to ascertain whether they are a true non-gambler or have simply not gambled in the recent past.

Alternatively, there may be a need to introduce entirely new series of questions into surveys. This may of course mean removing blocks of existing questions to ensure the questionnaires do not become too lengthy. Such a task should seek to identify questions which have had consistently similar results over time and/or across jurisdictions. In other

words, questions for which the results are likely to be pre-empted can be replaced with questions for which results are not known. By sticking to the tried and tested questions and approaches which have in the past improved the level of understanding will not suffice in moving the understanding of gambling forward.

Conclusion

What this paper has sought to achieve is not to provide a comprehensive outline of the range of possible demarcations which might be useful in analysing data from population gambling studies, but to highlight the potential information which can be derived from greater flexibility or creativity in segmenting survey data. There are a wide range of possible typological segmentations which could be used to help in analysing survey data – some of which are already well understood, and others which probably require further refinement.

However, whilst general population survey reporting sticks to a cluster of tried and tested approaches, providing continuity and consistency, it potentially limits the ability to better understand gambling and gamblers. By continuing to use the same methods and segments in data analysis, the same findings will be found over and over again. While this is useful for time-series and comparison across surveys and jurisdictions, it doesn't provide an opportunity for new and/or better understandings.

We are not advocating that current orthodoxies should be replaced - rather that they should be enhanced and diversified. New typologies of gambling would not replace existing typologies, but would overlay them. New approaches to demarcating survey data can assist this process.

Awareness of alternative typologies can further understanding of the diverse range of experiences, motivations and outcomes occurring at the gambler/gambling interface. With such powerful information, programs and activities in areas such as problem gambler treatment, community awareness campaigns and harm minimisation policies could all be enhanced.

References

Baker, R. and Marshall, D. 2005, Modelling gambling time and economic assignments to weekly trip behaviour to gambling venues, *Journal of Geographical Systems*, 7(3-4), 381-402.

Blaszczynski, A. 2002, Pathways to pathological gambling: Identifying typologies, *eGambling*, 6.

Blaszczynski, A. and Nower, L. 2002. A Pathways Model of Problem and Pathological Gambling, *Addiction,* 97(5), 487-499.

Blaszczynski, A. and Nower, L. 2007, Research and Measurement Issues in Gambling Studies: Etiological Models, in *Research and Measurement Issues in Gambling Studies* G. Smith, D. Hodgins and R. Williams (eds.), Academic Press, Burlington MA, 323-344.

Blaszczynski, A., Walker, M., Sagris, A. and Dickerson, M. 1999, Psychological aspects of gambling behaviour: an Australian Psychological Society position paper, *Australian Psychologist*, 34(1), 4-16.
Caldwell, G. 1974, The gambling Australian, in *Social Change in Australia: Readings in Sociology*, D. Edgar (ed.), Cheshire, Melbourne.
Devereaux, E. 1968, Gambling, in *International Encyclopaedia of the Social Sciences,* D. Sills (ed), MacMillan Company and The Free Press, New York, vol. 6.
Doughney, J. and Kelleher, T. 1999, *The impact of poker machine gambling on low-income municipalities,* unpublished report, Workplace Studies Centre, Victoria University.
Fisher, S. 1993, The pull of the fruit machine: a sociological typology of young players, *Sociological Review*, 41(3), 43-50.
Griffiths, M. and Delfabbro, P. 2001, The biopsychosocial approach to gambling: contextual factors in research and clinical interventions, *eGambling: The Electronic Journal of Gambling Issues*, 5.
Livingstone, C., Woolley R., and Borrell, J. 2006, *The Changing EGM Industry and Technology*, report prepared for the Victorian Gambling Research Panel, Australian Institute for Primary Care, Melbourne.
Lynch, R. 1990, Working-class luck and vocabularies of hope among regular poker-machine players, in *Sport and Leisure: Trends in Australian Popular Culture*, D. Rowe and G. Lawrence (eds.), Harcourt Brace Jovanovich, Sydney.
Marshall, D. 2002, *A Geography of Gambling in Australia: Electronic Gaming Machines in Richmond-Tweed*, Unpublished PhD Thesis, University of New England, Armidale.
Marshall, D. and Baker, R. 2001. Clubs, spades, diamonds and disadvantage: the geography of electronic gaming machines in Melbourne, *Australian Geographical Studies*, 39(1), 17 - 33.
Marshall, D., Haughton, J. and Harris, N. 2005. *Young Men and Gambling in the ACT: An Exploratory Study of Attitudes, Perceptions and Engagement,* ACT Gambling and Racing Commission.
Marshall, D., McMillen, J., Niemeyer, S. and Doran, B. 2004. *Gaming Machine Accessibility and Use in Suburban Canberra: A Detailed Analysis of the Tuggeranong Valley.* ACT Gambling and Racing Commission.
McMillen, J. and Doran, B. 2006, Problem Gambling and Gaming Machine Density: Socio-spatial Analysis of Three Victorian Localities, *International Gambling Studies,* 6(1), 5-29.
NSW Government, 2007, *Final Report: Prevalence of Gambling and problem Gambling in NSW – A Community Survey 2006*, a report prepared by ACNielsen for the NSW Office of Liquor, Gaming and Racing.
Office of Economic and Statistical Research, 2006, *Australian Gambling Statistics 2006*, Queensland Treasury, Brisbane.
Orme, C. 2007, GamblingIssuesInternational@yahoogroups.com, 4th May.
Productivity Commission, 1999, *Australia's Gambling Industries*, Report No. 10, Ausinfo, Canberra.
Queensland Government, 2001, *Queensland Household Gambling Survey 2001*, Queensland Treasury, Brisbane.

Queensland Government, 2006, *Queensland Household Gambling Survey 2003-04*, Queensland Treasury, Brisbane.
Slutske, W. 2007, Longitudinal Studies of Gambling Behavior, in *Research and Measurement Issues in Gambling Studies* G. Smith, D. Hodgins and R. Williams (eds.), Academic Press, Burlington MA, 127-154.
South Australian Government, 1995, *Inquiry into the Impact of Gaming Machines in Hotels and Clubs in South Australia*, South Australian Government, Adelaide.
Stewart, S. 2005, *Mood Priming of Reward and Relief Gambling Expectancies in Different Subtypes of Gamblers*, Ontario Problem Gambling Research Centre (OPGRC) Final Report.
Toneatto, T. and Nguyen, L. 2007, Individual Characteristics and Problem Gambling Behaviour, in *Research and Measurement Issues in Gambling Studies* G. Smith, D. Hodgins and R. Williams (eds.), Academic Press, Burlington MA, 279-303.
Volberg, R. 2007, Population Surveys, in *Research and Measurement Issues in Gambling Studies* G. Smith, D. Hodgins and R. Williams (eds.), Academic Press, Burlington MA, 33-54.
Walker, M. 1996, The medicalisation of gambling as an 'addiction', in *Gambling Cultures: Studies in History and Interpretation*, J. McMillen (ed.), Routledge, London and New York.
Wykes, A, 1964, *Gambling*, Aldus Books Limited, London.

GAMBLING AND PEOPLE WITH A DISABILITY

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ABSTRACT

People with a disability, particularly people with an intellectual disability are an at risk group. Many people with an intellectual disability are living independently in the community, have money to spend and find the local club a great place to socialise. There is little research out there that can tell us if people with a disability are at a higher risk than the general population. However certain factors have led us to a hypothesis that people with a disability are more likely than the general population to develop a gambling problem and that they are less likely to receive appropriate assistance. These factors include a higher risk of a mental health diagnosis; they are 30% more likely to have a depressive illness, and the higher likelihood of having an impulse control disorder. In addition risks are enhanced by deficits in budgeting, decision making, and leisure planning along with the notion that the standard CBT approach adopted by most gambling treatment programs is inadequate for person who has a cognitive impairment. We are working to lead the way in uncovering the truths around how many of the most vulnerable members of our communities are struggling with living in this gaming world. We are at the forefront of a reform in the gambling treatment domain that is tailoring its approach with clients who have a disability to provide a more holistic approach that has its roots in the disability sector case management approach. As a result we will improve the outcomes and access to treatment for people with a disability and their families.

Introduction

The Ability Options Responsible Gambling Project is a unique service operating state wide to assist people with disabilities who are experiencing problems with gambling. The project was initiated by The Independent Pricing and Regulatory Tribunal of New South Wales Report (IPART Report) which evaluated Problem Gambling Counselling Services funded by the Department of Gaming and Racing. Among other recommendations it stated that people with a disability do not present to these services as often as they need to and also that the current approach of Cognitive Behavioural Therapy used by most services may not be the most appropriate approach for people with disabilities.

Many people with an intellectual disability, who are living independently in the community, have money to spend and find the local club a great place to socialise. There is little research out there that can tell us if people with an intellectual disability are at a higher risk than the general population. However certain factors have led us to a hypothesis that people with a disability are more likely than the general population to develop a gambling problem and that they are less likely to receive appropriate

assistance. These factors include a higher risk of a mental health diagnosis and the higher likelihood of having an impulse control disorder. Prevalence rates of psychiatric disorders in adults with an intellectual disability may be up to 40 % (Cooper and Bailey 2001).

In addition risks are enhanced by deficits in budgeting, decision making, and leisure planning along with the notion that the standard CBT approach adopted by most gambling treatment programs is inadequate for person who has a cognitive impairment. As we are aware Pathological Gambling is classified as an impulse control disorder in the DSM-V. Impulse control difficulties represent a major feature of many behavioural disorders in people with Intellectual disabilities (Gardiner 2005).

We are working to lead the way in uncovering the truths around how many of the most vulnerable members of our communities are struggling with living in this gaming world. We are at the forefront of a reform in the gambling treatment domain that is tailoring its approach with clients who have a disability to provide a more holistic approach that has its roots in the disability sector case management approach. As a result we will improve the outcomes and access to treatment for people with a disability and their families.

Method

Our Responsible Gambling project provides specialist disability consultation to the Problem Gambling and Disability sectors. We provide this service state wide via training and education sessions, by providing tools such as intake forms and counseling effectiveness assessment forms, we present our observations at seminars and conferences as well as providing our specialist support and supervision through our Gambling Support Line. It has been through the interactions on our Gambling Support Line and subsequent consultations that we have gathered the information for this paper, although a few cases have been referred to us when providing training and education sessions.

The Gambling Support Line is a support line for Problem Gambling Counselors, Disability Support Workers and Case Managers. We also take calls from the gamblers themselves and their friends and families. We would only redirect them to call G-Line for telephone counseling or provide them with a warm referral to face to face services only.
For health care professionals we provide and initial consultation over the phone followed by face to face consultations further scheduled telephone sessions if distance is an issue. We follow up with the worker for as long as we are needed. The average amount of consultations provided per case is three.

Details of the interactions are entered into our data base. We collate the counselors/case managers details, the date and time of the consultation followed by an outline of what was discussed, what advice was given and the action plan. We do not record the names of the clients involved or have any direct discussion with them.

For this paper we have drawn upon 20 of our most involved cases. We have observed common themes and trends during our consultation work on these cases and share them with you in this paper.

Observations

Since September 2006 we have been assisting both Problem Gambling Counsellors and Disability Case workers to provide assistance to their clients who have a disability and a gambling problem. We have consulted on numerous cases providing specialist disability expertise and support. We have developed an intake model for people with disabilities and an evaluation tool for treatment effectiveness. It has been through our involvements in these cases that we draw some anecdotal evidence to support our hypothesis.

In all the cases that we have been involved with we have observed many trends and consistent themes. All the cases have involved individuals with a higher susceptibility to mental health conditions and cognitive defects associated with budgeting and social skills. The prevalence of a dual diagnosis in this population group puts the individuals at higher risk of developing a gambling problem. We believe that the individual cases we have been involved with have at higher risk than the general population of developing a gambling problem due to their higher susceptibility to mental health conditions and cognitive deficits associated with budgeting and social skills.

Mohr (1998) describes four key concepts in understanding the nature of dual diagnosis, these are: people with an intellectual disability are capable of having all of the psychiatric disorders, they are more likely to have a psychiatric disorder, they are less likely to be accurately diagnosed with a psychiatric disorder or the correct psychiatric disorder, and they are unlikely to be treated appropriately. This again supports our hypothesis.

We have also observed deficits in appropriate support services that not only inhibit recovery but actually facilitate the progression of the gambling problem. Over the last 25 years we have seen a reform in disability services, where the rights of people with disabilities have been underpinned by legislative changes for the provision of services. Whilst people with intellectual disabilities have been integrated into the community, significant deficits still remain in the level of support they receive.

These include:

- Lack of accommodation facilities for people with intellectual disabilities.

- Limited awareness by other professionals concerning the nature of their disability and support requirements. (e.g.; Problem gambling counselors and limited treatment options for people who experience a problem with gambling)

- Lack of specialist case management support services (e.g. Dual Diagnosis support, Forensic support, and legal advocacy)

- A poor level of integration into some community facilities. (e.g.; Local Clubs where there are limited policy and procedural guidelines in place to support people with disabilities

Many adults with an intellectual disability and associated psychiatric disorders require a co-ordinated multidisciplinary service, based on individual needs (Fletcher 2001). Funding from the NSW Government for specialist case management support should be seen as a priority. Mental Health Teams and DADHC Community Access Teams, and non-government service providers should be funded to develop these specialist positions. Within the disability sector we have observed a lack of knowledge in relation to problem gambling and its effects. In fact in some cases we have observed workers actually facilitating a client to gamble. When conducting training within this sector we observed worker attitudes that suggested that their clients could not have a gambling problem because of their limited income. Due to a lack of education around problem gambling workers believed that you must be loosing a substantial amount of money to be diagnosed as a pathological gambler. In fact in the DSM-V it does not reference once to an amount that needs to be gambled before the patient can be diagnosed.

Within the problem gambling sector there are also problems. The standard CBT approach in its basic form is inadequate for this population group. By its very nature a cognitive aspect to therapy becomes difficult for a client who has cognitive impairments to complete.. We have found within this sector a lack of support for counsellors working in isolated communities with little or no disability knowledge or training. Feelings of inadequacies on the part of the counsellor who is nervous that she is not providing a good service also compounds the problem. If people with a disability are fortunate enough to have been referred to a counsellor or have sought help themselves can soon become disillusioned with the service.

The theories outlined below have been developed through observations of, and experience working with individuals with a disability who also have a gambling problem.

They included:

- The desire to win, whether this is for financial/material gain or for the feeling of achievement associated with winning.

- The entertainment, excitement and enjoyment associated with the gambling activity and atmosphere, as well as the social interaction involved.

- The possibility that the individual may be bored may not have any other interests/hobbies/sports or may gamble as part of an established routing.

- The need to gamble as an escape from or to avoid problems, pain or reality; as an outlet for emotional problems; and/or to fill voids preceding or resulting from problematic gambling behavior.

- An inability to resist the desire to gamble.

Due to cognitive impairments, inability to express emotions appropriately, and impulse control difficulties we have observed extreme reactions in this population group when experiencing a gambling loss. Common reactions reported have been violent and threatening outbursts at the venue, criminal behavior to acquire funds, self harming behavior and in one case calling '000' when money is lost. These extreme reactions only serve to isolate individuals, inhibit recovery and add criminal charges to an already complex situation.

Family and friends cannot apply for self exclusion or be part of this process. In some cases the appointment of a gaurdian has been necessary to support financial decisions, lifestyle options, and contractual arrangements on behalf of the client. The appointment of a case manager has also been effective in advocating for, and co-ordinating services. We have observed that client outcomes are enhanced when gambling support services work collaboratively with disability service providers.

Conclusion

In conclusion we can state that we have gone some way to supporting our hypotheses , that people with a disability are more likely than the general population to develop a gambling problem and that they are less likely to receive appropriate assistance. We have explored potential explanations for problem gambling issues in individuals with a disability.

It is difficult to create a profile of a 'typical' individual with a disability because amongst the population there exists huge variety in type and severity of disability, but we have indeed identified common themes and trends.

Whilst we cannot simply assume that individuals with a disability are more likely to develop a gambling problem without further work we can state that the individuals' susceptibility to develop a problem may be enhanced by issues related to their disability. As stated before we can not fully support our hypothesis we need to do further work. Our next research project needs to be a quantative study, with as many participants so that we can lock in some statistics on the prevalence of problem gambling issues in this population group. The work we have outlined in this paper is rich qualitative work looking at very complex cases in which we were involved. This information has been invaluable in formulating our hypothesis however participant numbers are too low to support our hypothesis completely.

Next we intend to collect statistics which will include how many people with an intellectual disability present to NSW RGF funded services.and an intake review outlining how many people with an intellectual disability who are experiencing gambling problems present to Disability Support Services.

At the same time we intend to run a comparison study on the success of CBT versus Case Management intervention. We aim to have 100 participants who have a intellectual disability and a gambling problem. 30 will receive CBT intervention, 30 will receive case

management support and 30 will receive CBT intervention combined with case management support. The final 10 will be our control group who do not receive any formal intervention.

The research findings should be available at the end of 2008.

References

Cooper, S. A. Bailey N. M. (2001). Psychiatric Disorders amongst Adults with Learning Disabilities - Prevalence and Relationship to Ability Level. *Ir Journal Psychological Medicine; 18:* 45-53.

Gardiner, W.I. (2005) Impulse Control Difficulties in Persons with an Intellectual Disability: Role in Behavioural and Psychiatric Disorders. *Nadd Bulletin 8:*3 Article 1.

Fletcher, R. (2002) Information on Dual Diagnosis [Online], Available: http://www.thenadd.org/pages/about/ddinfo.shtml

Mohr, C. (1998) Disability *Essentials Four Big Ideas*. Centre for Developmental Disability Health, Victoria

UNDERSTANDING PLAYER LOYALTY SYSTEMS: A BEHAVIOURAL FRAMEWORK

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ABSTRACT

This paper examined the multi-faceted nature, complexity, and dynamics of the interaction between a patron who plays electronic gaming machines (EGMs) and the EGM (referred to as *the patron-EGM interaction*). Specifically, the paper applied the biopsychosocial model to explore the impacts (or effects) of the patron-EGM interaction, player loyalty systems in Queensland as well as modifications to existing player loyalty systems on patron gambling activity. The derived implications from these effects (that is, what such impacts mean) for patrons who play EGMs were also reviewed. It was found that a range of primary and secondary behavioural reinforcement schedules are likely to play a key role in developing and maintaining patron gambling activity, especially frequency and likely expenditure. When these psychological factors were examined in relation to concurrent social and biological responses, it was found that player loyalty systems are likely to produce increased investment of patrons' time and expenditure, and to further encourage the patron to engage in gambling behaviours.

Introduction

Over the past few years, the multi-faceted nature, complexity, and dynamics of the interaction between a patron who plays electronic gaming machines (EGMs) and the EGM (referred to as *the patron-EGM interaction*) have been examined from various perspectives. These include the biological, psychological, social, and economic perspectives. From each of these various perspectives, two questions have often been raised in regards to patrons who play EGMs:

1) How does the interaction between a patron and the EGM *affect* the patron in terms of their gambling activity (i.e., *the impacts*)?
2) What do these impacts mean for patrons who play EGMs (i.e., *the implications*)?

With new EGM technologies being introduced to the gambling arena to encourage people to commence or maintain their gambling behaviour (Parke & Griffiths, 2007), there is a need for these questions to be revisited. One technological development which is of particular interest is the proposed modification of the delivery of rewards to patrons in Player Loyalty Systems (PLSs). PLSs are becoming increasingly common in Queensland gaming machine venues. When made available to a patron, these systems add additional, complex dynamics to the patron-EGM interaction.

The purpose of the present paper is to examine the patron-EGM interaction, PLSs in Queensland, and modifications to these existing PLSs from a behavioural perspective. The impacts of each of these on patron gambling activity together with the implications derived from these effects for patrons who play EGMs are also reviewed from a behavioural perspective. We recognise that the impacts and implications we discuss in the present paper may not necessarily apply to all patrons who play EGMs, as certain other variables that we have not considered may be involved. In this paper, the biopsychosocial model will be considered in relation to the patron-EGM interaction given that positive reinforcement, a key behavioural process, contributes to maintaining the patron-EGM interaction, a patron's gambling behaviour, and is further evident in the structure of PLSs in Queensland. In adopting this perspective, we explicitly acknowledge the role of biological, social and cognitive factors in the patron-EGM interaction and the gambling behaviour of patrons. From this perspective, we aim to achieve a better understanding of the patron-EGM interaction, existing PLSs, modifications to these existing systems, the impacts of each of these on patron gambling activity as well as the derived implications from such impacts for patrons who play EGMs.

The Biopsychosocial Model

The biopsychosocial model was first theorised by psychiatrist George Engel (1977, 1980). This model is a general approach proposing that biological, psychological and social factors all play a significant role in human functioning. Psychological factors include thoughts, emotions and behaviours. Biological factors include autonomic arousal and immune system responses, and social factors include the broader environmental and social context surrounding a given human behaviour. The biopsychosocial model originated in part as a response to the classic medical model of illness whereby the mind and body are treated separately and, implicitly, that every disease process can be explained by an underlying biological process (e.g., an antigen). In contrast to the medical model, the biopsychosocial model recognises a direct interaction between the mind and body as well as indirect effects through other factors (Engel, 1980).

This model does not seek to provide a straightforward, testable model to explain interactions or causal influences by each of the three model components. On the contrary, this model has been a general framework to guide theoretical and empirical exploration and is extensively used in various disciplines (such as medicine, nursing, health psychology and psychiatry) to guide the treatment of disease processes (Armitage & Conner, 2000; Gatchel & Oordt, 2003).

The Application of the Biopsychosocial Model

Some researchers (e.g., Griffiths & Delfabbro, 2001; Sharpe, 2002) have suggested that a patron's gambling behaviour is likely to have biological, psychological, and social influences. One particular element that would seem to perpetuate the patron-EGM interaction is reinforcement via operant conditioning (see Figure 5 below). As will later be examined, this key element can also be found in PLSs, hence further maintaining the patron-EGM interaction.

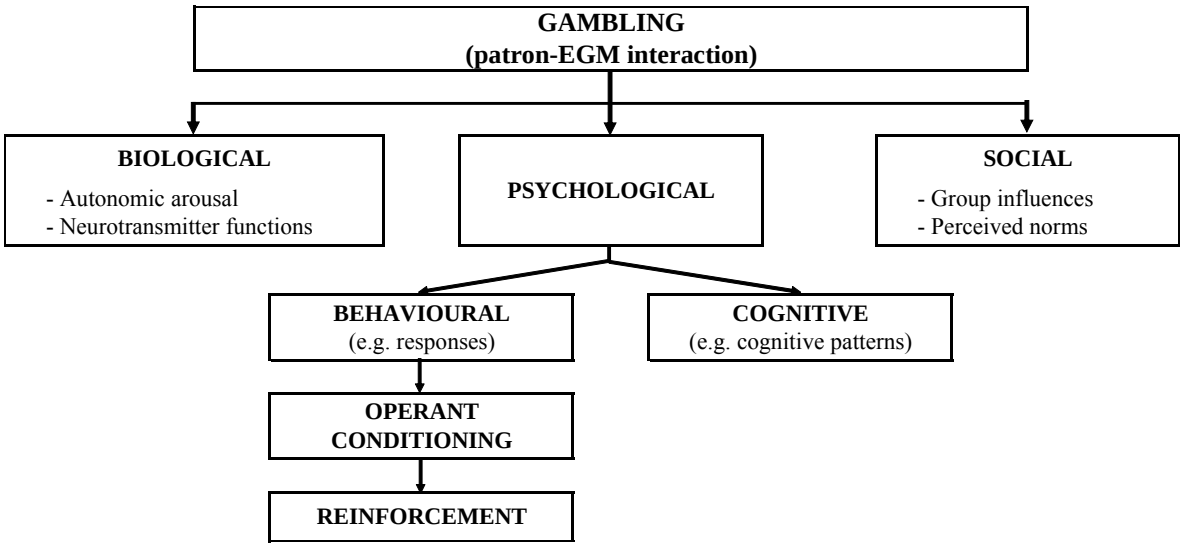

Figure 5: Reinforcement via the behavioural pathway in the biopsychosocial model

Theory of Reinforcement

Reinforcement occurs through the process of operant conditioning. The theory of operant conditioning was developed in the early 1900s on the basis of work by Edward Thorndike (who developed the "Law of Effect") (Thorndike, 1901) and subsequently B. F. Skinner (Ferster & Skinner, 1957; Skinner, 1953). In operant conditioning, reinforcers act to directly influence behaviours (part of psychological response) (Ferster and Skinner, 1957). Specifically, a person's behaviour/response can be made to occur more frequently (through reinforcement) or less frequently (through punishment or extinction). Reinforcement forms a key part of operant conditioning in that consequences are used to modify the occurrence and also form of a person's behaviour (Ferster & Skinner, 1957).

There are two different forms of reinforcement: *positive reinforcement* and *negative reinforcement*. Each of these serves to increase the frequency of a behaviour or response. *Positive reinforcement* occurs when a response is followed by a favourable stimulus (which is commonly seen as pleasant) that increases the frequency of that behaviour (Skinner, 1938). *Negative reinforcement* occurs when a response is followed by the removal of an aversive stimulus (commonly seen as unpleasant) thereby increasing the frequency of that behaviour (Skinner, 1938). It is imperative not to confuse negative reinforcement with punishment, as the two are not the same. Punishment results in a decreased frequency of the behaviour (Ferster & Skinner, 1957; Skinner, 1938).

The stimuli used in both positive and negative reinforcement can either be a *primary* or *secondary* reinforcer. A *primary reinforcer* is a stimulus that does not require pairing to be reinforcing (i.e., it is an unconditioned reinforcer). Primary reinforcers include food, sleep, water, air, and adequate warmth. Conversely, a *secondary reinforcer* is a stimulus that becomes reinforcing after being associated with a primary reinforcer, or an earlier conditioned reinforcer. Examples of secondary reinforcers include money, attention, and social approval. "Secondary reinforcers acquire their value through being associated with [primary] reinforcers... [For example, a person might] seek money because [they] have learned that it may be exchanged for primary reinforcers" (Rathus, 1997, p. 236). Positive reinforcement can be seen to occur in the patron-EGM interaction with a common secondary reinforcer – money.

Reinforcers and Reinforcement Schedules

Several primary and secondary reinforcers can be identified in the patron-EGM interaction. Primary reinforcers include arousal or excitement (either autonomic or cortical) (Brown, 1987; Brown, Rodda & Phillips, 2004; Rockloff et al., 2007). Some empirical research has shown this primary reinforcer can occur after a win (Coventry & Constable, 1999); through cues developed in association with gambling (Rosenthal & Lesieur, 1992); or regardless of a win or loss (Brown, 1986) (i.e., arousal resulting from the patron simply gambling).

Secondary reinforcers identified in the patron-EGM interaction include lights, sounds, and colour. Pleasant sights and tones from an EGM are examples of these structural EGM characteristics (e.g., Griffiths, 1993). Other secondary reinforcers include feedback in the form of messages from the EGM (the patron is being praised and, thus, rewarded for their response) and social reinforcement (e.g., in the form of praise provided by peers to the patron for having taken a monetary risk by placing a bet/s on the EGM) (Abt & Smith, 1984). The strongest and most commonly cited secondary reinforcer by researchers (e.g., Myers, 2005; Haw, 2007) is money (in the form of credits (i.e., return to player), or jackpots). Given the importance of money as a key secondary reinforcer, it is of central focus in this paper.

As emphasized by Baron (1998), a stimulus which acts as a positive reinforcer for one individual may not necessarily function as a positive reinforcer for another. Thus, each

patron will find *different* stimuli, be they primary or secondary reinforcers, to be positively reinforcing.

Furthermore, the delivery of reinforcers can be varied in terms of reinforcers' schedules. Specifically, a person may be reinforced via *continuous reinforcement* whereby "every occurrence of a particular behaviour or response is reinforced" (Baron, 1998, p. 191). Under such conditions, a person learns rapidly to provide a given behaviour or response. However, this behaviour can also be extinguished rapidly (Myers, 2005).

Alternatively, a person can be exposed to intermittent reinforcement. Under intermittent reinforcement, a person's response is reinforced "only part of the time" (Myers, 2005, p. 263). Intermittent reinforcement can occur via the following schedules:

- Fixed ratio (reinforcement after every n^{th} response);
- Fixed interval (reinforcement for the first response after a given time period since the last reinforcement);
- Variable ratio (reinforcement after a random number of responses); or
- Variable interval (reinforcement for the first response after a random length of time since the last reinforcement).

Variable schedules produce higher responses, greater persistence, and are more resistant to extinction than most fixed schedules (Myers, 2005). Moreover, the variable ratio schedule produces the highest rate of responding, and is the most resistant to extinction (Myers, 2005).

Reinforcers, Reinforcement Schedules, and the Patron-EGM interaction

Figure 2 presents some of the psychological factors at play in a patron-EGM interaction, with particular emphasis on behavioural conditioning and responses. In the patron-EGM interaction, a patron is typically exposed to a variable ratio schedule (Myers, 2005). That is, after a random number of responses (i.e. placing bets) on an EGM, the patron is positively reinforced (and rewarded for their gambling behaviour) with a secondary reinforcer – money (Parke & Griffiths, 2007) – in the form of credits. This schedule of reinforcement also applies when an EGM is linked to a jackpot in a venue or across a number of venues. A jackpot is usually in the form of some monetary value and constitutes a secondary reinforcer.

Patrons who play EGMs in Queensland are typically exposed to *non-deterministic jackpots*, as most jackpots on offer in Queensland venues are of this nature (The State of Queensland, 2005). Non-deterministic jackpots function whereby "the probability of winning the jackpot remains constant for repeated constant bet amounts" (The State of Queensland, 2005, p. 6). In other words, a patron has the same probability of winning the jackpot per cent bet on an EGM.

It is important to note that the probability of winning on a jackpot is lower than the probability of winning on an EGM (D. Simon, personal communication, October 27,

2007). Thus, the likelihood of a patron actually being positively reinforced with the jackpot is lower than that of with credits from an EGM. In order to increase one's chance of winning the jackpot (and being positively reinforced with this secondary reinforcer), a patron would need to increase their number of bets on the EGM. Yet the jackpot also holds temporal unpredictability – the jackpot is triggered at a random point in time, which is unknown to the patron. Consequently, there is uncertainty as to *if* a patron will be positively reinforced with the jackpot for their gambling behaviour and *when* this secondary reinforcer will be provided.

Nonetheless, when there is a jackpot present in the patron-EGM interaction, the possibility remains that the patron can be positively reinforced (and rewarded) for their gambling behaviour at two levels. The first is with money in the form of credits obtained through small wins from the EGM (i.e., return to player) and the second is with the jackpot (if the patron wins the jackpot).

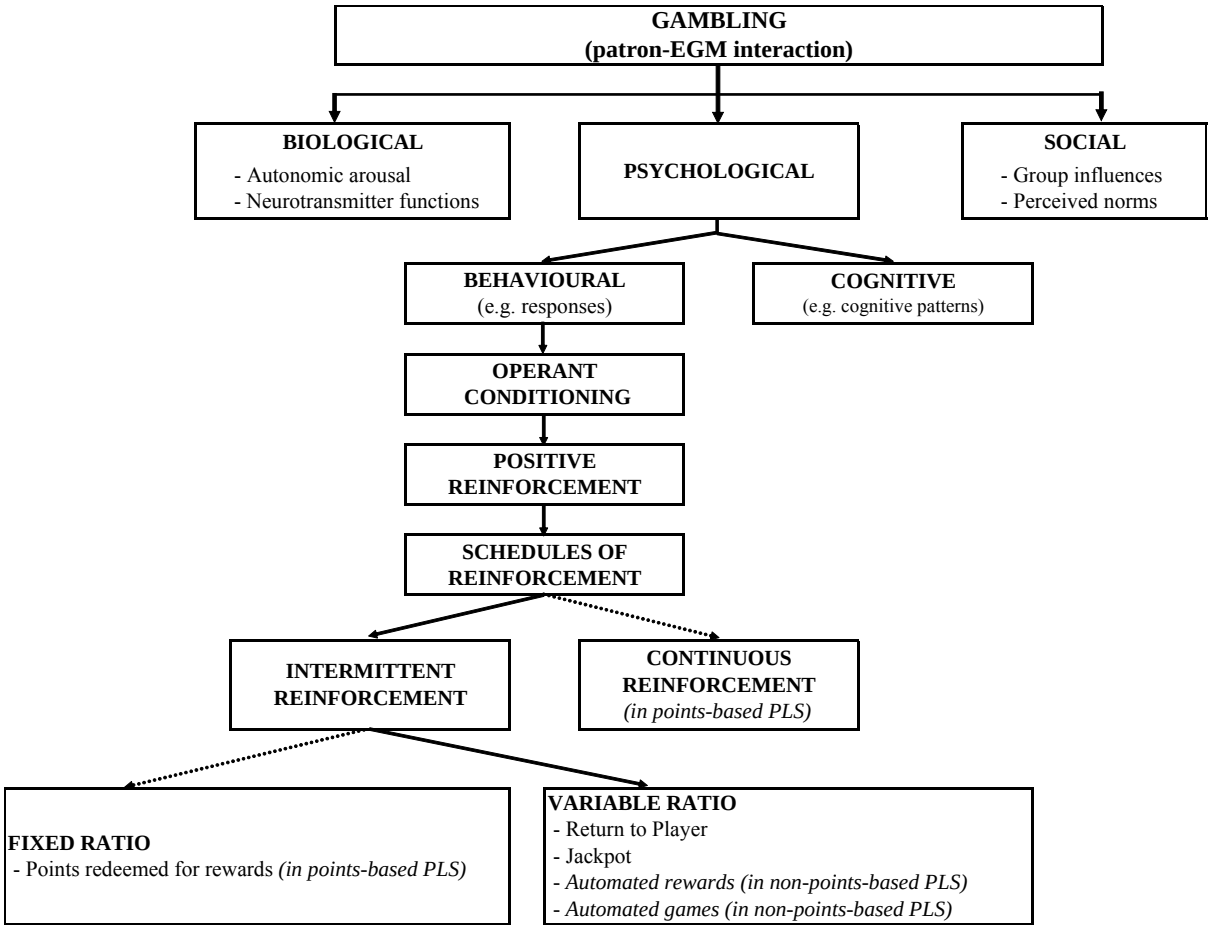

Figure 6: The patron-EGM interaction in the context of the biopsychosocial model

Impacts and Implications of the Patron-EGM Interaction for Patrons who play EGMs

Positive reinforcement with money as a secondary reinforcer delivered via a variable ratio schedule can impact on patrons in several ways. Theoretically, this form of reinforcement can increase the patron's persistence of placing bets on an EGM despite the patron having to face repeated losses (Myers, 2005). This is due to reinforcement and thus the provision of the secondary reinforcer occurring unpredictably (Myers, 2005). Reinforcement via this schedule also can increase a patron's resistance to reducing the frequency of their placing bets on the EGM. A third associated impact of this reinforcement schedule is that it becomes harder for the patron to stop (Myers, 2005) placing bets on the EGM. Thereby, it is harder for the patron to extinguish their behaviour of playing the EGM.

These issues have raised several implications for patrons who play EGMs which may result from the presence of intermittent reinforcement in the patron-EGM interaction. First, the patron could choose to continue to play the EGM and, thus, continue to spend their money on the EGM – perhaps even bet using more lines and credits. Second, given variable ratio schedules have the potential to produce the highest rates of responding, a patron could increase their frequency of placing bets and number of lines and credits bet on the EGM. Finally, the reinforcement of the patron's gambling behaviour and therefore the patron-EGM interaction, is fostered (Moreyra et al., 2000).

Player Loyalty Systems (PLSs)

Player Loyalty Systems (PLSs) are becoming increasingly common at venues in Queensland. In 2006, over one quarter of clubs (29.0%) and hotels (27.4%) offered PLSs to their patrons (The State of Queensland, 2007). PLSs have been defined as:

"a system, used in connection with the operation of gaming machines in approved venues or a casino, in which the players of those gaming machines accumulate bonus, loyalty or reward points from playing the gaming machines" (State Government of Victoria, 2007, p. 49).

Extending this definition, a patron may also be able to accumulate and redeem loyalty or rewards points from the use or purchase of an approved venue's or casino's products and/or services, if these have been included for points accrual and/or redemption in the player loyalty system.

Note that for the purposes of this paper this definition will be used as the operational definition of a PLS. This definition has been selected for several reasons: first, because an operational definition of a PLS for Queensland is currently in development by the Queensland Office of Gaming Regulation; second, because an Australia-wide operational definition of PLSs is currently unavailable; and third, because the State Government of Victoria's (2007) operational definition accurately encapsulates how PLSs function in regards to EGMs in Queensland.

Types of Loyalty Systems

According to Berman (2006), there are four main types of loyalty systems. The first type involves members receiving an additional discount/s from a venue for their purchases. For example, in a supermarket program a customer may receive an additional discount at the register for their groceries. The second type involves members receiving a unit or item free of charge, as a result of having purchased a specified number of units or items. A common example of this is coffee card programs offered by cafés and coffee outlets.

The third type, as Berman (2006) described, entails members receiving rebates or points based on cumulative purchases. Exemplary of this type of system are airline programs such as "Frequent Flyers" and programs such as "FlyBuys" linked to credit card programs (Loyalty Pacific Pty. Ltd., 2007). Finally, the fourth type of loyalty system involves members receiving targeted offers and mail-outs, generated by a database that stores information about the customer and their purchases.

A combination of the third and fourth types can be found in a casino setting. For example, Conrad Treasury and Conrad Jupiters Casinos in Queensland operate a loyalty system called "Casino Rewards" (Conrad Treasury, 2007). In this system, a patron can earn reward points for their every EGM play at and across these two venues, which they can then redeem for vouchers for food, drinks, and accommodation (Conrad Treasury, 2007). Patrons also receive discounts on all casino retail merchandise and accommodation.

The "Casino Rewards" program is based on a three-tier system. In this system, there are three levels of casino rewards membership – white, silver, and gold - which are determined by a patron's EGM play at either Conrad Treasury or Conrad Jupiters casinos (Conrad Treasury, 2007). The higher the level of membership a patron has, the more rewards, discounts, targeted offers, and incentives the patron receives for their loyalty to the venue/s.

The element of the fourth type which can be found in this loyalty system is that members receive a Rewards magazine twice per month via the casinos' mailing system (Conrad Treasury, 2007). This magazine informs members on a regular basis of events and promotions being held and provided by the casinos (Conrad Treasury, 2007).

PLSs offered in Queensland venues tend to reflect the third or fourth types, or a combination of these types. The third type of loyalty system is most commonly used in Queensland gaming machine venues with regards to EGMs. Subsequently, this type of loyalty system is of primary interest in this paper. The system in Queensland gaming machine venues typically involves a patron inserting a loyalty card into an EGM through which the patron can earn and accumulate points for every play. A patron can redeem their points for various free rewards (i.e., products or services) provided by the venue. Such rewards include venue retail merchandise, food, and drink (Palmer & Mahoney, 2005).

Reinforcers in PLSs

Additional primary reinforcers are provided via PLSs in conjunction to the existing primary reinforcers in the patron-EGM interaction. Common primary reinforcers provided in PLSs in Queensland include food, drink, and venue retail merchandise (e.g., an item of warm clothing featuring a venue's logo). It is important to note that not all venue retail merchandise can be considered a primary reinforcer. This is due to the reason that, to be considered a primary reinforcer, the merchandise itself must not require pairing with another stimulus that is a primary reinforcer in order to be reinforcing.

There are also additional secondary reinforcers. These include vouchers and discounts for food and drink, points, and accommodation. Taking into consideration that "secondary reinforcers acquire their value through being associated with [primary] reinforcers" (Rathus, 1997, p. 236), meal and drink vouchers and the actual points that a patron receives for their EGM play can be regarded as secondary reinforcers. Like money, people have learned that they can redeem their points for primary reinforcers and that meal and drink vouchers can be exchanged for food and drink (two primary reinforcers).

Accommodation can also be regarded as a secondary reinforcer. If and when accommodation is provided by a gaming machine venue to a patron, the patron receives a free room for a set number of evenings. During their stay, the patron can use the money they might have otherwise expended on the venue's products and/or services, and perhaps engage in more EGM play.

PLSs in the context of the Biopsychosocial Model

Reviewing PLSs in the context of the behavioural pathway in the biopsychosocial model, PLSs can be regarded as providing positive reinforcement for one's gambling behaviour via a continuous schedule. Continuous reinforcement, as mentioned earlier, involves "every occurrence of a particular behaviour or response [being] reinforced" (Baron, 1998, p. 191). In the context of PLSs, a patron would be earning and accumulating points for their every EGM play. Thus, after each game play, the patron is positively reinforced with a secondary reinforcer – a point or set number of points – for having placed a bet on the EGM. A patron may also be able to accrue points elsewhere in a gaming machine venue for using the venue's other products and services (if offered by the venue in their PLS, thus reinforcing other favourable behaviours provided by the patron alongside their EGM play.

The patron is also exposed to a fixed ratio schedule. As mentioned earlier, a fixed ratio schedule entails a patron being reinforced for their behaviour "after a set number of responses" (Myers, 2005, p. 263). In a PLS, patrons are provided with rewards from the gaming machine venue for their EGM play (and other possible behaviours) based on the points system previously discussed. Such rewards can function as primary or secondary reinforcers. The points system further incorporates a fixed ratio schedule in that, after accruing (and being reinforced with) a certain number of points for playing EGMs and maybe engaging in other favourable behaviours, the patron can exchange (or 'redeem')

their points for a reward and, in the process, be positively reinforced for their gambling behaviour.

In a PLS, there is generally an array of rewards from which a patron may choose. This is because, as stated earlier, people vary in the particular stimuli which act as effective reinforcers of their behaviours (Baron, 1998). Hence, a given patron will find only some rewards to be reinforcing. In addition, each available reward has a set number of points that a patron would need to acquire through their EGM play and perhaps use of the venue's other products and/or services in order for the patron to be able to redeem the reward. Also, the patron is informed by the venue of the set number of points the patron needs to accrue and, simultaneously, the number of times they would need to place bets on an EGM and/or use the venue's other products and/or services to redeem their points for a given reward and be reinforced for their behaviour. Patrons are typically informed by venues of these via visual means such as a rewards showcase on display or on-site brochures or flyers. Clearly, there is a high degree of predictability in the PLS for the patron in terms of receiving positive reinforcement.

The frequency of reinforcement via the fixed ratio schedule in the PLS is, however, dependent upon the reward the patron wishes to be reinforced with. Certain rewards have a higher set number of points required for redemption of the reward than others. Consequently, the time required to be positively reinforced with a higher-point value reward would take longer than in comparison to a smaller point-value reward. In turn, the frequency of a patron being reinforced with a higher-point value reward over time would be less than that of a smaller-point value reward. Nevertheless, a patron may still opt for a higher-point value reward over a smaller-point value reward, as they might (and prefer to) be more strongly positively reinforced for their EGM play with a higher-point value reward compared with a smaller-point value reward.

Furthermore, in order to accrue the required points to be able to redeem the higher point-value reward and be positively reinforced for their gambling behaviour, the patron would need to perform a series of behaviours. As a starting point, the patron would need to engage in more EGM play and/or use of the venue's other products and/or services. In doing so, the patron would also spend more time and money at the venue to play the EGMs and use the venue's other products and/or services. In addition, the patron would be likely to visit the venue more often to play the EGMs and use the venue's other products and/or services. More participation and involvement in EGM play and/or use of the venue's other products and services are sought from the patron for the redemption of higher-point value rewards.

Overall, it can clearly be seen that in PLSs positive reinforcement is actively used via three schedules: continuous reinforcement (with the accrual of points), fixed ratio schedule (with the redemption of rewards through the accrual of points), and variable ratio schedule (with EGM play) (see Figure 6 above).

Impacts of and Implications of PLSs for Patrons who play EGMs

PLSs can have several impacts on patrons who are members of this system and play EGMs. First, PLSs can further reinforce a patron's EGM play with the provision of an additional secondary reinforcer (player loyalty points) through the process of continuous reinforcement as well as other primary and secondary reinforcers through a fixed ratio reinforcement schedule occurring predictably. Note that each of these reinforcement schedules is not as strong as the variable ratio schedule. Hence, their effects could be considered as further encouraging the patron to engage in gambling behaviour. The additional reinforcement schedules identified in the PLS (i.e., the continuous schedule and fixed ratio schedule) could be considered to foster, if not amplify, the magnitude of the effects derived from the variable ratio schedule in the patron-EGM interaction.

A second identifiable impact on patrons is that a PLS, theoretically, can strengthen the patron's already existing persistence to engage in EGM play with the reinforcement of money (i.e., return to player), a secondary reinforcer, through the variable ratio schedule occurring unpredictably. Further, given that the variable ratio schedule remains present in the PLS in terms of the patron-EGM interaction, the patron's resistance to reduce the frequency of their gambling behaviour is increased. Thus, it remains difficult for the patron to cease and extinguish their behaviour of playing the EGM.

Furthermore, through continuous reinforcement and fixed ratio schedules, a PLS has the potential to encourage other desired behaviours from patrons in the venue. These include, for example, the use of the venue's other products and/or services (if these have been included in the points accrual/redemption process of the venue's PLS).

In addition to these impacts of PLSs on patrons, under exposure to a variable-ratio schedule a patron is likely to increase their frequency of placing bets and number of lines and credits bet on the EGM. Further, given the patron is being continuously reinforced with points for playing the EGM and/or using the venue's other products and services, the patron is likely to continue to play the EGM and continue to spend money on the EGM and/or on the venue's other products and services. The patron is likely to increase their stay and the frequency of their visits to the venue, and could increase their frequency of EGM play in order to accrue points to redeem for rewards.

In the longer term, a relationship is established between the patron and the venue which is maintained and enhanced over time (Palmer & Mahoney, 2005). Through this relationship the patron is, and can feel, rewarded by the venue through the venue's PLS for the patron's loyalty to the venue.

We note that each of the implications we have described above refers to *general gambling activity of patrons*, as opposed to specific problem gambling behaviours. While we hypothesise, based on the current literature, that PLSs are likely to impact on specific problem gambling behaviours, additional research is required to further confirm an association.

New Developments in PLSs

Technological advancements in the functioning of PLSs have been proposed by some gaming technology companies (e.g., Maxetag). Such advancements involve the patron being able to choose how they wish to receive their rewards. That is, a patron is given the option to choose between receiving their rewards via the PLS featuring the accrual and redemption of player loyalty points for their EGM play (i.e., a points-based system) or they may opt to receive rewards via a *non-points-based rewards system* (Maxetag, 2007).

In comparison to the points-based system, the non-points-based system is not contingent on the points accrual/redemption process (Maxetag, 2007). Rather, the patron can receive rewards through automated rewards and/or automated games (if they choose to participate in the latter). Automated rewards involve an automatic random draw of prizes at pre-set times throughout the day (Maxetag, 2006). With automated rewards, it is essential for patrons to be logged on to an EGM using their loyalty card when engaging in EGM play to be given the opportunity to win a prize. A patron is notified of their reward via an electronic audio announcement and accompanying sound effects. Notification of the reward is also electronically recorded onto the patron's loyalty card so that when the patron presents their loyalty card at the venue's selected terminal they can redeem their reward (Maxetag, 2006). According to Maxetag (2006), rewards are determined by a pre-set proportion of gaming room turnover. Gaming room turnover is calculated for the entire gaming room minus any EGMs played by patrons who are part of the points-based PLS (Maxetag, 2006).

Automated games involve a number of EGMs linked up to one server (Maxetag, 2006). In doing so, several patrons can play a simulated game that is run by the server like the childhood game of "Pass the Parcel". An electronic audio announcement is provided before the game commences informing patrons that the game will be starting in a given period of time. This announcement also encourages patrons to log on to an EGM using their loyalty card so that they can take part in playing the game on the EGM (Maxetag, 2006). When the game has finished, another electronic audio announcement is provided which congratulates the winning patron and informs the patron of their prize (Maxetag, 2006). The objective of automated games is to further engage patrons in activities held at the venue (inclusive of EGM play) during their visit at the venue. Given there is no dependency on the accrual of points for the redemption of rewards involved in this system, a patron might choose this option as a means to receiving their rewards.

Non-Points-Based PLSs, Associated Reinforcers and Reinforcement Schedules

Upon closer examination of both the automated rewards and automated games in the non-points-based PLS, several primary and secondary reinforcers are evident. Primary reinforcers in this system include arousal or excitement, food (e.g., light refreshments, complimentary dining given as a prize), drink, and venue retail merchandise. As stated earlier with the points-based PLS, not all venue retail merchandise provided to patrons in the non-points-based PLS can be considered a primary reinforcer.

Alongside these primary reinforcers, there are also several secondary reinforcers. These include vouchers and discounts for food and drink, accommodation, money (return to player, jackpots), sounds (e.g., pleasant tones from EGM) and feedback (in the form of messages on the EGM and via electronic audio announcements). The last two secondary reinforcers are thought to produce excitement amongst patrons (Maxetag, 2007).

In addition to receiving these reinforcers, patrons are provided with the opportunity to choose how they are rewarded (Maxetag, 2006) and, simultaneously, the schedule of reinforcement to be implemented. If a patron opts for the non-points-based rewards system, they would be exposed to a variable ratio schedule in their EGM play as well as a variable ratio schedule of reinforcement via automated rewards.

In automated rewards, a patron can be positively reinforced with a randomly selected reinforcer for their gambling behaviour throughout the day. This randomly selected reinforcer is further accompanied by two secondary reinforcers, electronic audio feedback and sound effects, which, in turn, instigate a primary reinforcer, excitement and autonomic arousal within the patron.

Much unpredictability of reinforcement surrounds automated rewards for the patron, as it is unknown to the patron if they will be reinforced. This uncertainty stems from taking into account the likelihood of the given patron being selected to win the prize out of all patrons who are part of automated rewards and are actively engaging in EGM play at that point in time. Additionally, there is temporal unpredictability for the patron in terms of when the reinforcer will be provided (despite this being pre-determined by the venue). Moreover, the patron is unaware of the number of times they would need to place bets on an EGM in order to receive the reinforcer and be positively reinforced for their behaviour, as this activity is dependent upon gaming room turnover.

The patron may also choose to participate in automated games, which are based on a variable ratio schedule. Automated games, when played in a series of games, are analogous with EGMs in terms of variable ratio reinforcement. That is, like EGMs with reinforcement provided after a random number of bets by the patron, in a series of automated games and after a random number of times, the patron logs on to an EGM with their loyalty card and participates in an automated game. They are then positively reinforced for their behaviour with a prize in the form of one of the reinforcers identified earlier. There is also a spatial unpredictability within each game. Given that several EGMs are involved in the game, a patron will not know to which EGM the prize (reinforcer) will be provided. Further, in any one game, there is uncertainty for the patron, who does not know (despite the decision having already been programmed in the server)) whether they will be reinforced, since other patrons would also be taking part and have as equal a probability of being positively reinforced for logging on to an EGM.

It can therefore be seen that in this variation of the points-based PLS, a variable ratio schedule is used as the primary mode in which to deliver positive reinforcement to patrons. More so, as presented in Figure 6 above, this schedule is actively used within the non-points-based PLS at several levels: a) with EGM play, b) with automated rewards,

and c) with automated games. Two levels are in effect if the patron chooses to only engage in EGM play and automated rewards. However, if the patron additionally takes part in the automated games then three levels would be in effect.

Impacts and Implications of Non-Points-Based PLSs for Patrons who play EGMs

There are several associated impacts for patrons which can be identified, due to this alternative non-points-based PLS being heavily reliant on a variable ratio schedule for reinforcing patrons. One likely impact is that a patron's persistence to place bets on an EGM and, consequently, engage in the patron-EGM interaction, is intensified even more than it is in the points-based PLS. This is due to additional reinforcers being provided to the patron in an unpredictable manner. A second possible impact is that the patron's resistance to reduce the frequency of their placing bets on the EGM is further strengthened. Additionally, due to the strong presence of the variable ratio schedule in this form of PLS, it becomes even more difficult for the patron to stop placing bets on the EGM, and thus refrain from engaging in the patron-EGM interaction.

The non-points-based PLS also raises implications for patrons. Patrons are likely to spend more time and money on one or more EGMs at the venue with automated rewards, due to the unpredictable provision of the reinforcer. It is also likely that the patron would spend more time at the EGMs with automated games as a result of these games becoming available at the EGMs. In so doing, their level of exposure to variable ratio schedules and their duration of stay at the venue would be increased. Additionally, each of these issues further assists in maintaining and fostering the patron-EGM interaction and the patron-venue relationship that is established from having a PLS in place.

A final implication of the non-points-based PLS is that the patron can be reinforced more often in this system than in the points-based PLS. In the points-based PLS, the patron relies on their points to accumulate over time and their frequency of EGM play, whereas in the non-points-based PLS, this is not the case. Rewards (reinforcers) are provided by the venue several times throughout the working day through automated rewards and automated games.

Summary

In summary, this paper sought to review the impacts of the patron-EGM interaction, player loyalty systems in Queensland as well as modifications to existing player loyalty systems on patron gambling activity from a behavioural perspective using the biopsychosocial model. Additionally, the paper sought to examine the derived implications from these impacts for patrons who play EGMs. We have shown that the patron-EGM interaction is a complex and multi-faceted phenomenon, and one which is experienced by many patrons who play EGMs. Whilst the patron-EGM interaction may seem relatively simple to a general observer, when a behavioural framework (specifically, the biopsychosocial model) is adopted, it becomes evident that the patron-EGM interaction is more complex and ambiguous. This is particularly the case when

factors such as reinforcers, reinforcement schedules, PLSs in Queensland, and modifications to these systems are taken into consideration.

We recommend that future researchers build on past empirical research (e.g., Griffiths & Delfabbro, 2001) and the present paper, by considering applying the biopsychosocial model to gambling behaviours and the patron-EGM interaction. As we have already noted, further research is needed given the continual evolution of new gaming technologies and modifications to existing PLSs. Accordingly, a more comprehensive understanding of the patron-EGM interaction, existing PLSs, modifications to these existing systems, the impacts of each of these on patron gambling activity in conjunction with the implications of such impacts for patrons who play EGMs should be obtained at a state or nation-wide level.

References

Abt, V. & Smith, J. (1984). Gambling as play. *Annals of the American academy of political and social sciences, 474,* 122-132.

Armitage, C. J. & Conner, M. (2000). Social cognition models and health behaviour: A structured review. *Psychology and Health, 15,* 173-189.

Baron, R.A. (1998). *Psychology (4th ed.).* Needham Heights, MA: Allyn & Bacon.

Berman, B. (2006). Developing an effective customer loyalty program. *California Management Review, 49(1)*, 123-147.

Brown, R. (1986). Arousal and sensation-seeking components in the general explanation of gambling and gambling addictions. *International Journal of the Addictions, 21*, 1001-1016.

Brown, R. (1987). Models of gambling and gambling addictions act as perceptual filters. *Journal of Gambling Behaviour, 3*, 224–285.

Brown, S.L., Rodda, S. & Phillips, J.G. (2004). Differences between problem and nonproblem gamblers in subjective arousal and affective valence amongst electronic gaming machine players. *Addictive Behaviors, 29,* 1863-1867.

Conrad Treasury (2007). *Casino rewards,* viewed 30 October 2007, http://www.conrad.com.au/treasury/casino_rewards

Coventry, K.R., & Constable, B. (1999). Physiological arousal and sensation seeking in female fruit machine players. *Addiction, 94,* 425–430.

Engel, G. L. (1977). The need for a new medical model: The challenge for biomedicine. *Science, 196,* 129-136.

Engel, G. L. (1980). The clinical application of the biopsychosocial model. *American Journal of Psychiatry, 137,* 535-544.

Ferster, C. B. & Skinner, B. F. (1957). *Schedules of reinforcement.* Englewood Cliffs, NJ: Prentice Hall.

Gatchel, R. J. & Oordt, M. S. (2003). C*linical health psychology and primary care: Practical advice and clinical guidance for successful collaboration.* Washington, DC: American Psychological Association.

Griffiths, M.D. (1993). Fruit machine gambling: the importance of structural characteristics. *Journal of Gambling Studies, 9*, 101-120.

Griffiths, M.D. & Delfabbro, P.H. (2001). The biopsychosocial approach to gambling: contextual factors in research and clinical interventions. *The Electronic Journal of Gambling Issues*, *5*, 1-33.
Haw, J. (2007). The relationship between reinforcement and gaming machine choice. *Journal of Gambling Studies, 24*, 55-61.
Loyalty Pacific Pty. Ltd. (2007). *Flybuys*, viewed 30 October 2007, http://www.flybuys.com.au
Maxetag. (2006). *Maxetag presentation* [CD-ROM], Queensland: Maxetag.
Maxetag. (2007). *Maxetag,* viewed 4 November 2007, http://www.maxetag.com
Moreyra, P., Ibáñez, A., Saiz-Ruiz J., Nissenson, K. & Blanco, C. (2000). Review of the phenomenology, etiology and treatment of pathological gambling. *German Journal of Psychiatry, 3*, 37-52.
Myers, D.G. (2005). *Exploring psychology, sixth edition in modules (6th ed.).* New York: Worth Publishers.
Parke, J. & Griffiths, M. (2007). The role of structural characteristics in gambling. In G. Smith, D. Hodgins and R. Williams (Eds.). *Research and measurement issues in gambling studies* (pp.217-249). Boston: Academic Press.
Palmer, R. & Mahoney, E. (2005). Winners and losers: segmenting a casino loyalty programme. *International Gambling Studies, 5(2)*, 271-287.
Rathus, S.A. (1997). *Essentials of psychology (5th ed.).* Florida: Harcourt Brace College Publishers.
Rockloff, M.J., Signal, T. & Dyer, V. (2007). Full of sound and fury, signifying something: the impact of autonomic arousal on EGM gambling. *Journal of Gambling Studies, 23*, 457-465.
Rosenthal, R. & Lesieur, H. (1992). Self-reported withdrawal symptoms and pathological gambling. *American Journal of Addictions, 1,* 150-154.
Sharpe, L. (2002). A reformulated cognitive–behavioural model of problem gambling: a biopsychosocial perspective. *Clinical Psychology Review, 22*, 1-25.
Skinner, B. F. (1938). *The behaviour of organisms: An experimental analysis.* Englewood Cliffs, NJ: Prentice Hall.
Skinner, B. F. (1954). *Science and human behaviour.* New York: Free Press.
State Government of Victoria. (2007). *Gambling Regulation Act 2003*, version 21. Department of Justice, Victoria.
The State of Queensland (2005). *Jackpot systems: minimum technical requirements, version 2.1.* Queensland Office of Gaming Regulation, Queensland.
The State of Queensland. (2007). *Results of the 2006 survey of operational machine gaming sites*, retrieved 29 October 2007 from http://www.responsiblegambling.qld.gov.au
Thorndike, E. L. (1901). Animal intelligence: An experimental study of the associative processes in animals. *Psychological Review Monograph Supplement, 2,* 1-109.

THE CPGI AND THE NATIONAL DEFINITION OF PROBLEM GAMBLING

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ABSTRACT

"Problem" and "pathological" gambling represent core concepts that guide gambling research today. However, confusion over the meaning and use of these two terms is continually misguiding the measurement and interpretation of empirical data, and may cumulatively lead to larger-scale problems of conclusion and policy formulation over the next decade. This paper firstly outlines the relationship of the two terms, clarifying the alternative meanings of "problem gambling", and highlights the utility and increasing acceptance of a public health definition of problem gambling. Specifically, the paper aims to criticise the Canadian Problem Gambling Index (CPGI) as a prevalence measure intended to exemplify the public health definition of problem gambling, yet developed without a full understanding of the implications of that model. It is argued that results obtained using the CPGI, much like those of its predecessors, will not adequately capture the notion of harm that underpins the definition of problem gambling and that only a theoretically coherent, independent and comprehensive measure will be able to achieve this aim.

Introduction: Problem and Pathological Gambling

Research in problem gambling is notorious for being plagued with a multitude of terms that seek to capture the construct, including "compulsive", "pathological" and "problem" gambling. These are ill-defined, often used interchangeably and without an understanding of their theoretical origins and implications. Over the years, pragmatic concerns have relegated conceptual distinction to the wayside with the view that making advances in treatment efficacy is more important than what is seen as largely academic debate over terms and concepts. However, we wish to draw attention to an important conceptual distinction concerning the definition of problem gambling and show how, in certain jurisdictions, failure to understand this conceptual distinction has led to muddled thinking resulting in a bifurcation between concept and practice in the measurement of problem gambling, a bifurcation which may have significant consequences for future research and policy decisions.

In the literature on problem gambling, there are two quite different conceptions of what is "problem gambling". The earlier conception has its origins in the development of the related concept of "pathological gambling". Pathological gambling was added to the list of psychiatric disorders in the third edition of the Diagnostic and Statistical Manual of the American Psychiatric Association (1980). In the revision of this manual published in

1987 (DSM-IIIR), the criteria for pathological gambling were based on those for substance dependence and an underlying explanatory model of addiction was assumed (Walker, 1992). At the same time, the South Oaks Gambling Screen (SOGS, Lesieur & Blume, 1987) was developed as a clinical screen for diagnosing individuals as probable pathological gamblers. Importantly, the SOGS included items concerned with preoccupation, tolerance, withdrawal and loss of control that overlapped with DSM-IIIR and are the core constructs of an addiction model. Thus, the construct of "pathological gambling" is not theoretically neutral either in its definition or in its measurement. Rather it assumes that gambling can become an addiction that can be clinically diagnosed by similar signs to other addictions. Indeed, excessive gambling has been referred to as a "pure addiction" since the addiction exists without the associated chemical component of drug addiction (Custer & Milt, 1985; Jacobs, 1986).

In the SOGS, probable pathological gambling is diagnosed by a score of five or more positive answers to the twenty items on the list. Problem gambling is defined as a score of three or four positive answers to the same list of twenty items. Thus, the concept of "problem gambling" inherent in the SOGS is as a weaker form of pathological gambling. Pathological gambling and problem gambling share a common theoretical basis as terms relating to addiction to gambling. There is now an extensive literature of research and argument which assumes that problem gambling and pathological gambling are closely related and only differ in severity. This conception of problem gambling as a weaker form of pathological gambling is explicitly stated in research on the prevalence of pathological and problem gambling. For example, Petry and Tawfik (2001) state:
Pathological gambling is a disorder of impulse control characterized by loss of control over gambling, tolerance to amounts wagered, and financial difficulties. Pathological gambling is frequently accompanied by family and social problems, as well as legal difficulties and psychiatric distress. A less severe form of the disorder is called problem gambling, a condition that leads to adverse consequences but not to the extent of pathological gambling. Problem gamblers may experience moderate financial or family difficulties, but they do not experience the severity or full array of adverse consequences encountered by pathological gamblers. (p. 1324)

An alternative view of problem gambling is becoming increasingly popular. This more recent conceptualisation is based in the distinction between excessive gambling behaviour and problems that are a consequence of that behaviour (Walker, 1992). By defining problem gambling as gambling problems which result from excessive gambling behaviour, this alternative conceptualisation of problem gambling remains theoretically neutral. In particular, there is no implication that problem gambling involves an addiction to gambling. The focus of this alternative view of problem gambling is the degree of harm caused to the individual and associated friends and family, not the mechanisms by which the gambling behaviour becomes excessive. It is a viewpoint that has found widespread international acceptance. In the United States (Cox, Lesieur, Rosenthal & Volberg, 1997; Lesieur, 1998), Canada (Ferris & Wynne, 2001) and Britain (Sproston, Erens, & Orford, 2000) problem gambling has been defined to encompass all gambling behaviour types and patterns that cause disruption and damage to a person's

functioning. Similarly in Australia, Dickerson, McMillen, Hallebone et al. (1997) defined problem gambling as:
The situation when a person's gambling activity gives rise to harm to the individual player, and/or to his family, and may extend into the community. (p. 106)

By highlighting the harms caused by excessive gambling behaviour, this alternative definition of problem gambling informs the construct or problem gambling used within a public health model whose "broad viewpoint on gambling is not restricted to a narrow focus on gambling addiction" (Shaffer, 2003, p. 15). The public health approach is a broad framework providing the perspective that problem gambling is not just a problem of addiction and individual psychopathology but rather a problem that exists in a social setting, is multiply determined and has broad community effects (Shaffer, 2003; Korn, Gibbins & Azmier, 2003). Rather than focusing on the psychological and clinical experience that has informed gambling research so far, the public health model focuses on harm caused by gambling, and by this virtue is designed to allow a better determination of the socio-economic impacts of gambling. It also has several policy functions. Gamblers experiencing harm may not necessarily be those experiencing severe personal or psychological problems. By limiting the count of problem gamblers to those with specific psychological or psychiatric symptom profiles, policy efforts may fail to reach the larger numbers of individuals who are harmed by excessive gambling. Furthermore, as Shaffer and Korn (2002) point out, while this larger group may not be suffering from severe psychological impairment or psychopathology at the individual level, they collectively have the greatest impact on the community. For this reason, greater individual and community benefit may accumulate from intervention, treatment and education measures directed at this larger group that are defined by the range and intensity of the harms caused by gambling.

Despite the explicit definitions of problem gambling that underpin the emerging public health approach in Australia, Britain, Canada, and the United States, discussions of the public health model and its implications have sometimes lapsed into confusing the illness conceptions and social problem conceptions that lie at the centre of the debate and have thereby, unintentionally, led to muddled conclusions. Shaffer (2003) for example, points out how a public health approach to problem gambling is akin to other addictions and communicable diseases. He advocates an,
Epidemiological examination of gambling and gambling-related disorders … to understand the distribution (i.e. pattern and spread) and determinants (i.e. origins) of gambling as well as the factors that influence a transition from healthy to unhealthy gambling… [O]nce scientists identify the base rate of an illness with some degree of precision, then they should direct attention to vulnerable groups with very high rates of the disorder. (p. 2)
In this view gambling prevalence research is similar to psychiatric epidemiology that directs treatment, harm reduction and prevention efforts. It also makes the assumption that problem gambling is a psychiatric disorder, that there exists a point at which gambling becomes "unhealthy", and that at its heart is a diagnosable "illness". It is beyond the scope of this paper to review the empirical evidence that problem gambling is an illness/psychopathology (see Walker, 1992; Walker & Dickerson, 1996), or to restate

any view that the illness model serves a socio-political rather than scientific function (see Rosecrance, 1985). Suffice to say, the assumption is contentious and places the public health model into a theory-laden framework. The greater risk is that this assumption may further legitimize the use of clinical screening tools in prevalence studies, while at the same time ignoring the true implications of theory-neutral and widely accepted public-health definitions of problem gambling.

Searching for a coherent definition and measurement of problem gambling

In a move to standardize and consolidate problem gambling research within Australia, the Ministerial Council of Gambling, under the guidance of the National Framework on Problem Gambling 2004-2008, established Gambling Research Australia (GRA) to administer its research program. As a matter of priority, GRA commissioned its first report on the establishment of a definition of problem gambling that would reflect a national consensus on how problem gambling is defined and that would guide future research and policy decision-making in the field. In reviewing the literature and in consultation with stakeholders, the commissioned report came to the conclusion that while there are still areas of contention as to how problem gambling is conceptualised, there was a general consensus that any workable definition of problem gambling must incorporate two elements. That is, it must refer to "both individual's gambling behaviours and to gambling related harms" (Neal, Delfabbro & O'Neil, 2005, p. 2). The National Definition adopted states that,
Problem gambling is characterized 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 et al., 2005, p.125).

The national definition makes specific references to 'difficulties in limiting time and /or money' to complement the experience of gambling-related adverse consequences. The behavioural element, "difficulties in limiting time and money", is aimed to reflect the assertions of many counsellors and researchers that a loss of control (or 'impaired control') is characteristic of the experience of problem gamblers. The definition incorporates the experience of adverse consequences (or harm) because a definition based on behaviour alone was deemed to be insufficient in adequately capturing the problem gambling concept. Indeed, there may be heavy time and monetary expenditure on gambling activities, but if there are no consequences of that behaviour, as may often be the case for gamblers with ample leisure time and large disposable incomes, then this cannot constitute problem gambling in the public health sense.

Above all, in the formulation of this definition, the authors wanted to remain theoretically neutral and avoid the inclusion of terms and concepts that are either highly contentious or show explicit reliance on illness or mental health models. At the same time, they also wanted their definition to incorporate the currently held idea that problem gambling exists on a continuum, both in the intensity of problem behaviour, the subsequent harm caused, and in the range of people that may be affected. In this regard, the authors have succeeded in formulating a definition that is practicable, sensible and relevant in the Australian context. However, the theory-neutral nature of the definition should not

obscure the conceptual importance that definitions hold for the conduct of gambling research. As Dickerson et al. (1997) state,

Definitions are not simply labels that aid communication; they also influence the very perception of the issues and they way in which they can be measured and evaluated. (p. 11).

Furthermore, Neal et al. (2005) themselves observe that,

The definition one adopts will clearly play an important role in the relative prominence ascribed to consequences and behavioural items in assessment methods. (p. 56)

The definition therefore represents both a foundation for how we should conceptualise problem gambling and also a first logical step in planning the conduct of problem gambling research within the public health model. In reviewing the current practices in problem gambling screening, the authors expressed the benefits in both adopting a consistent measure in gambling research as well as the longer term goal of developing a measure that would be an accurate reflection of the national definition, where prominence is ascribed to behavioural and harm based items through the development of two separate subscales (Neal et al., 2005).

The Canadian Problem Gambling Index

The re-conceptualisation of problem gambling in terms of the harm caused by excessive gambling implies a re-evaluation of the methods by which problem gambling is screened and measured. The SOGS (Lesieur & Blume, 1987) has been used in almost all problem gambling prevalence research across the US, Asia, Europe and Canada (Shaffer, Hall & Vander Bilt, 1999; Sproston, Erens & Orford, 2000; Volberg, Abbott, Ronnberg, & Munck, 2001). While recent prevalence studies in the US (Gerstein, Murphy, Toce et al 1999) have also used a DSM-IV based screen such as the NODS, the SOGS remains as one of the most widely used prevalence measures in the world (Abbot & Volberg, 2006). Over the period of its use, the SOGS has received an accumulation of criticism, directed at the context and assumptions behind its development (Volberg, 2001), its outdated criteria (Volberg, 1996) and the validity of its estimates (Walker & Dickerson, 1996).

One recently developed scale, the Canadian Problem Gambling Index (CPGI) has received attention as a potential successor to previous instruments. Developed largely as a response to the criticism around the SOGS, the CPGI has been presented as a modern and promising tool for use in problem gambling prevalence research. The scale as a whole contains 31 items (plus demographics) that cover gambling involvement, problem gambling assessment and correlates of problem gambling (Ferris & Wynne, 2001). Only nine of those items are scored, and they comprise the Problem Gambling Severity Index (PGSI), an index designed to serve both as a prevalence measure and a general population screen that is brief, reliable and provides adequate estimates of the problem. (In fact, in conducting a review of the CPGI for the funding partners, McCready and Adlaf, 2006, found that only half of respondents actually used the non-scored items in the problem gambling assessment section of the CPGI).

In the first stage of the development of the CPGI, the Canadian Inter-Provincial Task Force on Problem Gambling adopted the following definition of problem gambling:

Problem gambling is gambling behaviour that creates negative consequences for the gambler, others in his or her social network, or for the community. (Ferris & Wynne, 2001, Introduction, at 1.2)

This definition takes as its focus the consequences/harm of gambling activity, and thus is similar to the public health definitions found in the Australian context (Dickerson et al., 1997; Neal et al., 2005). While neither Ferris and Wynne's (2001) nor Dickerson et al.'s (1997) definition contain the specific reference to "difficulties in limiting money and/or time spent on gambling" featured in Neal et al.'s (2005) definition, the developers of the CPGI stated that they still sought to develop the Problem Gambling Severity Index (PGSI) as a measure of both problem behaviour and adverse consequences (Ferris & Wynne, 2001). Aside from adopting a harm-based operational definition, the PGSI also involved the creation of a range of categories into which respondents may fall: non-gamblers, non-problem gamblers, low risk gamblers, moderate risk gamblers, and problem gamblers. The ordinal sub-types of the PGSI suggest a problem gambling continuum, and so are seen as a substantial improvement to the dichotomous and discrete variables encompassed in instruments such as the DSM-IV and the SOGS. In brief, in the CPGI's rationale and associated features, the developers of the CPGI claim that it is,

A new, more meaningful measure of problem gambling for use in general adult population surveys, one that reflect[s] a more holistic view of gambling, and include[s] more indicators of social context. (Ferris & Wynne, 2001, Introduction, at 1.1)

The CPGI has become the measure of choice throughout Canada and has also been used in Norway and Iceland (McCready & Adlaf, 2006), recently in New Mexico (Volberg & Bernhard 2006) as well as in Australian prevalence studies in New South Wales (A.C. Nielsen, 2007), Queensland (Queensland Treasury, 2005, 2001), Victoria (McMillen, Marshall, Ahmed & Wenzel, 2004) and Tasmania (Roy Morgan Research, 2006). Furthermore, McMillen, Wenzel, Marshall and Ahmed (2004) compared the South Oaks Gambling Screen, the Victorian Gambling Screen and Canadian Problem Gambling Index and viewed the CPGI more favourably than the other two screens in terms of its overall rationale, psychometric properties, and a brevity that promises efficiency of administration. However, as this paper will aim to show, despite the explicit definition of problem gambling in terms of the public health model, the actual prevalence index in the CPGI is associated in the US clinical addiction model and as such, it cannot provide a measure of problem gambling as conceptualised in the public health model adopted both in Canada and Australia. Research aimed at measuring problem gambling as defined by the Australian national definition (Neal et al., 2005) may be seriously misguided in using the CPGI prevalence index.

An analysis of the Canadian Problem Gambling Index

The development of the CPGI was associated with an explicit rejection of a medicalised model of pathological gambling in favour of viewing problem gambling as social issue with public health consequences (Ferris & Wynne, 2001). However, in the light of such a framework and the explicit model adopted, it is important to analyse the actual items chosen for the PGSI.

Table 1. The Canadian Problem Gambling Index (Ferris & Wynne, 2001)
In the last 12 months how often have you

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 criticized your betting or told you that you have a gambling problem, whether or not you thought it was true?
8.	Felt that 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

The first, and most problematic aspect of the PGSI, is that its items were drawn from scales measuring pathological gambling. The PGSI uses items largely borrowed from instruments - SOGS (Lesieur & Blume, 1987) and DSM-IV (American Psychiatric Association, 1994) - which have been developed in a U.S. clinical context and for the express purpose of identifying "pathological" gambling. Using a content analysis of the items in the PGSI and SOGS, McMillen and Wenzel (2006) concluded that the PGSI and the SOGS show considerable overlap in their content, much more so than their foundational differences may suggest. Furthermore, the PGSI includes an item taken from the DSM-IV relating to tolerance (item 2), a core construct of the addiction model. The authors claim that the inclusion was justified because "DSM-IV items ... capture the more severe end of the gambling problem spectrum very well" (Ferris & Wynne, 2001, Results section 3.2). By adopting the older concept of problem gambling as a less severe form of pathological gambling, this statement undermines the explicit claims that the CPGI concept of problem gambling derives from the public health model.

The derivative nature of the PGSI attracts with it further problems. Given that the CPGI is based on items in the SOGS and DSM-IV, a certain amount of skepticism is needed in relation the supposed favourable psychometric properties of the CPGI, namely its internal consistency, calculated at 0.84 by Ferris and Wynne (2001) and 0.92 by McMillen and Wenzel (2006), test-retest reliability (0.78), specificity (1.00) and classification accuracy (0.83, as measured against the DSM-IV) and its 0.83 correlation with both the DSM-IV and the SOGS (Wynne, 2003). Indeed, any strong correlation with the SOGS and the DSM-IV should be expected given that eight of the nine items in the index are based on SOGS and DSM-IV items. Govoni, Frisch and Stinchfield (2001) have also pointed out these significant overlaps with the implication that caution that must be taken in interpreting these estimates.

It is inappropriate to correlate the CPGI with the SOGS or to estimate its classification accuracy against the DSM-IV in order to establish robust psychometric properties. It should come as little surprise that it produces superior statistical properties (such as reliability coefficients and estimates of specificity and a single factor loading) over other screens because that is what it was designed to do, and correlation with previous screens is an artifact of the fact it is a derivative of previous screens. The CPGI is part of a chain that links all its predecessors - the SOGS was developed from and evaluated against the DSM-IIIR, The SOGS was the standard for the development of the DSM-IV, and now the CPGI is developed from and evaluated against both the SOGS and DSM-IV. The circularity of this process led Shaffer and Korn (2002) to observe that "most screening devices are incestuous, having been derived from each other and then used to test the development of their progeny. The result is psychometric tautology" (at 182). They agree that there is currently no gold standard by which prevalence measures can be evaluated and link it to a more general problem in lack of a valid and independent standard by which we can evaluate the utility and precision of prevalence measures (Shaffer & Korn, 2002). In sum, the statistical development and statistical validation of the CPGI is a victim of the same circular reasoning that lies behind its predecessors.

The validation of any prevalence measure necessitates a different process. As Thomas, Jackson and Blaszczynski (2003) note,
We are strongly of the view that measures of problem gambling and the evaluation of their utility need to be directly aligned to their stated purposes and that they also need to derive from a conceptual or theoretical account of problem gambling and its components. (p. 20).
Thus either an index is designed to reflect a theory about problem gambling and then evaluated using statistical procedures, or, if an index was compiled from previous instruments using statistical procedures, then it should be evaluated on its theoretical coherence.

Little research has attempted to validate the CPGI against the actual problems caused by excessive gambling and the conclusions that can be drawn, thus far, are not encouraging. In fact, the CPGI has not been adequately validated against any measures appropriate to the public health model. In attempting to measure the construct validity of the CPGI, Wenzel et al. (2004) conducted a validation study of three screens (SOGS, Victorian Gambling Screen and CPGI). The authors compared the CPGI to other *correlates* of problem gambling, such as people's self-rating of the extent of their gambling problem, wanting help, family history, stress, depression etc, and concluded that:
Because scores for the CPGI show the closest relationships to variables which correlate theoretically to aspects of problem gambling, it seems that we should be most confident that the CPGI, of the three screens, most closely measures what it is supposed to measure – problem gambling. (Wenzel et al., 2004, p.47).
This indirect approach is symptomatic both of the fact that no objective external criteria were available to assess validity, as well as the study's general failure to directly consider the question of what is "problem gambling" when evaluating the items. The problem is made even more difficult when the DSM-IV and SOGS items are clearly founded in an

addiction model of gambling, making it difficult to specify what measures would indeed be appropriate and independent.

A further problem is that, because the PGSI lacks theoretical coherence and face validity, it is not able to avoid the inevitable debate about whether it is making measurement errors, that is, over or underestimation. Ladouceur, Jacques, Chevalier, Sevigny and Hamel (2005) for example, have published data that sought to compare the SOGS and the CPGI with classifications based on a clinical interview. A majority (82%) of the SOGS or CPGI- identified problem gamblers did not have this classification confirmed when they were administered the follow-up clinical evaluation. In fact the misclassification rate for the CPGI was 88%, giving cause to believe that, much like the SOGS, the CPGI may be overestimating prevalence and introducing false positives in prevalence data.

There is also a second major cluster of problems that surround the CPGI, in that the items in the PGSI that supposedly measure harm are not comprehensive. The promise of the CPGI lay in the harm-based definition adopted in Phase I as well as the emerging Canadian view that problem gambling is a public health issue. However, the actual PGSI items that are claimed to measure harm are questionable in this capacity. These consist of items 6-9, (Ferris & Wynne, 2001, section 5, see Table 1)

Items 6 and 8 relate to clear indicators of adverse consequences. However, these two items cover only a small proportion of the domains where harm can occur, such relationships, employment as well a person's legal situation. Excessive gambling behaviour may cause a range of social problems including fractured family relationships, work-related problems, legal problems, and a generalised reduction in the quality of life. Additionally, the psychological effects of problem gambling (e.g. preoccupation), as well as the excessive amount of time involved, may have their harmful effects on a person's relationship(s) and employment even if they haven't as yet gambled beyond their means. Excessive time involvement may provide a separate pathway to harm caused by gambling, an effect that may be particularly prominent among Electronic Gaming Machine (EGM) players. Further, in their report on the harms arising from gambling, the Queensland Department of Communities specifically discussed gambling-related in harm in Indigenous communities where they found that it is excessive time involvement that leads to problems of disengagement for these communities ("truancy of children, malnutrition") rather than just monetary expenditure (as cited in Neal et al., 2005). Secondly, item 6 asks about "health problems". It is unclear what interpretation the respondent may give to this domain. For one respondent, "health problems" may be limited to physical health problems whereas for another the same term may include mental health problems (such as, depression), and for another, personal problems (such as, heavy smoking). Lastly, the content analysis of the CPGI, conducted by McMillen and Wenzel (2006), found only one item that referred to personal and social consequences, which they found surprising given the developers' claim that they were aiming to emphasise issues of harm (p.159). It is clear therefore that these items either do not address, or address insufficiently, the adverse consequences that are the core part of the public health definition of problem gambling. These items do not adequately capture the harm that may occur to the self, others and to the community.

Items 7 and 9 further exacerbate the problems of the scale. Firstly we share the view of the Productivity Commission (1999) that item 7 is more indicative of problematic behaviour rather than harm (Productivity Commission, 1999, section 6.28), and that it is an item that would be, at best, only indirectly indicative of harm to relationships. Secondly, while a person's excessive gambling may be causing arguments and other disruptions to family life, 'criticism' in undefined terms is too broad to hold a direct link to problem gambling. Henry Lesieur himself (see Thomas, Jackson & Blaszczynski, 2003, p.39) has criticised the inclusion of these two items from the SOGS, as those least helpful in differentiating problem gambling, a criticism shared by Strong, Breen and Lejuez (2004) who doubt the ability of these SOGS derived items to appropriately measure problem gambling. The original problem with the SOGS was that in being validated using a clinical sample it included items (such as those relating to feeling guilt and criticism) which may differentiate 'pathological' gamblers from the non-gamblers but that at the same time may be characteristic of all regular (non-problem) gambling (Dickerson et al. 1996; Allcock, 1995; Battersby, Thomas, Tolchard & Esterman, 2002; Stinchfield, 2002). Given the overlap of the CPGI with the SOGS, one can expect that the CPGI may face similar problems.

At the expense of items which may more comprehensively measure harm, The PGSI instead includes items that may be responsive to cultural differences in gambling attitudes rather than problem gambling. The developers of the CPGI believe that SOGS-derived items such as "receiving criticism" provide an appropriate measure of harm in that they "tap into the social context of gambling" (Ferris & Wynne, 2001, p1.2). This may be the case, but they may do so in an inappropriate manner. Given the nature of the gambling activity and the level of moral polarisation associated with it, spouses and friends (depending on their moral persuasion) may be apt to criticize any gambling activity, however infrequent or excessive. Item 9 (feeling guilt) appears to fall in the same predicament, whether as a marker of a person's own moral attitude towards gambling or guilt as a result of other people's moral censure of gambling. For example, a person may feel guilty every time they gamble, even if they do so infrequently and would not be normally be considered a problem gambler.

The consequences of this is that endorsement of these items will not be so much a measure of actual harm, but will vary according to the moral acceptance of gambling within a culture. For example in the US, gambling has traditionally not been as readily accepted and available as in Australia (Walker & Dickerson, 1996). While gambling in Australia has had continuing support and acceptance since the 1920s (O'Hara, 1998), in the US it was seen as a moral vice for much of the 20th century (Rosecrance, 1985); while the 1980s was a period of proliferation of proposals in the US to legalise gambling, Australia was already seeing the emergence of easily accessible urban casinos (Eadington, 1998). In Australia, as in any country where there is less moral stigma attached to gambling, we may expect less criticism to occur of gambling behaviour, regardless of how extensive it is, and thus we may also expect relatively fewer people to feel guilt in relation to any gambling behaviour, however frequent. Lower endorsement of these two items may, all other things being equal, indicate a lower prevalence of problem gambling that would not be accurately reflecting the actual extent and severity of harm

being experienced by a community. In addition, the moral and cultural acceptance of gambling tends to change with time as the boundaries of what is deviant gambling behaviour become redefined (Gusfield, 1967; Cosgrave & Klassen, 2001). This means that such items could not only lead to biased estimates of prevalence but could also lead to difficulty in comparing prevalence rates both across different cultures and generations.

Moreover, it could introduce particular problems when measuring prevalence in a multicultural society such as Australia. For example in a study for the Victorian Casino and Gaming Authority, Thomas and Yamine (2000) found significant differences between cultures in their perception of the prevalence of problem gambling within their community. While European cultural groups did not perceive problem gambling as widespread in their community, relatively more concern was expressed by Vietnamese, Arabic, Chinese, Cambodian and Turkish groups, for whom there is greater social or religious proscription against gambling. Recent research for the VCGA about the demographics of problem gamblers states that while general population problem gambling prevalence rates were at 1.5%, "problem gamblers" are five to seven times more prevalent in the Chinese (10.7%), Vietnamese (10.5%), Greek (9%) and Arabic (7.2%) communities, despite these groups having gambled *less* than the general community (Cultural Partners Australia Consortium, 2000). Other studies have also found gambling to be a source of shame and stigma in NESB communities (Scull & Woolcock, 2005) that sits at odds with the prevailing social acceptance of gambling in Australia.

The argument against the use of these two items is thus beyond the criticisms that are normally directed at subjective items. Indeed, the inclusion of subjective items does not necessarily present an impediment to measurement and does not necessarily invalidate prevalence estimates, especially if harm-related measures are sufficiently unambiguous, concrete and broad in scope. Items however, that more directly tap into moral attitudes (whether derived from cultural or religious proscription) and that represent a significant proportion of any screening tool, will not only result in invalid measures of harm and adverse consequences but will introduce systematic differences between large groups of people, not just individuals.

The way forward

The public health definition of problem gambling (as excessive gambling behaviour which causes harm to the individual at personal and interpersonal levels), implies an approach to measurement which is independent of previous work where the addiction model of gambling was an inherent part of the definition of problem gambling. Given the reliance of the CPGI on items drawn from addiction based measures of pathological gambling, and given the criticisms of the actual measurements made by the CPGI, it would seem important to regard this instrument as not measuring "problem gambling" as defined in the public health context. Furthermore, it remains unclear why clinically based scales have been and may continue to be included as part of an index used in population prevalence studies in Australia. The Productivity Commission's report (1999) goes some way in explaining this anomaly by observing that

'The Australian approach has been a pragmatic hybrid between one based on accepting that the community and personal dimensions of problem gambling are broader than a clinical problem, and using a US 'clinical test' approach to measure some aspects of the problem' (at 6.17)

The CPGI allows this hybrid approach to continue to exist in Australia. This is because on the one hand, the CPGI has become associated with a social context, harm focused, public health approach to problem gambling, while on the other hand, its prevalence measurement tool is a direct derivate of the US clinical test approach. While it is seen as a tool that has emerged out of the growing doubt in the ability of clinical and psychological frameworks to assess problem gambling, its foundations lie in these very constructs. It is the view of the authors that the continued use of the CPGI in research on prevalence of problem gambling continue to cause confusion and misguidance in the interpretation of the severity of problem gambling throughout the world, in understanding the relation of problem gambling to its causes and distribution through communities, and in deciding best policy and practice in the attempts of governments to deal with this major social problem.

What is required is an independent approach to measurement that does not rely on prior research conducted within the addiction framework. The public health definition implies that both gambling behaviour and the harms caused by that behaviour must be measured. Thus, a dual index would seem necessary. Importantly, public health policy must focus on the harm caused to individuals by the presence and availability of widespread gambling opportunities. Of all the measurement instruments which must be developed to appropriately monitor problem gambling, the one which appears central is that which measures the cumulative harm to the individual across the major domains of human functioning. A statistically sound measure of harm caused would seem a necessary next step in problem gambling research. Some attempts to develop such an index already exist, including the gambling addiction severity index (Lesieur & Blume, 1990; Petry, 2003) and the HARM scale (Productivity Commission, 1999). While none are without major criticism, these earlier attempts give some guidance to the kind of reasoning needed to measure harm caused by gambling successfully. The way forward may well begin with the logic behind these instruments as a starting point.

References

Abbott, M.W., & Volberg, R.A. (2006). The measurement of adult problem and pathological gambling. *International Gambling Studies, 6 (2)*, 175-200.

A.C. Nielsen (2007). Prevalence of Gambling and Problem Gambling in NSW – A community survey 2006. Final report to the NSW Office of Liquor, Gaming and Racing, Sydney.

Allcock, C. (1995, November). *Some ponderings on pathological gambling: An introspective essay*. Paper presented at the Sixth National Conference of the National Association for Gambling Studies, Sydney.

American Psychiatric Association. (1980). *Diagnostic and Statistical Manual of Mental Disorders, Third Edition*. Washington, DC: Author.

American Psychiatric Association. (1987). *Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised*. Washington, DC: Author.
American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*. Washington, DC: Author.
Battersby, M., Thomas, L.J., Tolchard, B., & Esterman, A. (2002). The South Oaks Gambling Screen: A review with reference to Australian use. *Journal of Gambling Studies, 18 (3)*, 257-271.
Cosgrave, J. & Klassen, T. R. (2001). Gambling against the State: the State and the legitimation of gambling. *Current Sociology 49(5)*, 1-15.
Cox, S., Lesieur, H.R., Rosenthal, R.J. & Volberg, R.A. (1997). *Problem and pathological gambling in America: The national picture*. Columbia, MD: National Council on Problem Gambling.
Cultural Partners Australia Consortium (2000). *The Impact of Gaming on Specific Cultural Groups*. Victorian Casino and Gaming Authority, Melbourne.
Custer, R.L., & Milt, H. (1985). *When luck runs out*. New York: Facts on File Publications.
Dickerson, M. G., Baron, E., Hong, S. M., & Cottroll, D. (1996). Estimating the extent and degree of gambling related problems in the Australian population: A national survey. *Journal of Gambling Studies, 12*, 161-178.
Dickerson M., McMillen J., Hallebone E., Volberg R., & Woolley R. (1997) *Definition and Incidence of Problem Gambling, Including the Socio-Economic Distribution of Problem gamblers*. Victorian Casino and Gaming Authority, Victoria.
Eadington, W. R. (1998). Contributions of Casino-Style Gambling to Local Economies. *Annals of the American Academy of Political and Social Science*, American Academy of Political and Social Science.
Ferris, J. & Wynne, H. (2001). *The Canadian problem gambling index: Final report*. Ottawa: Canadian Centre on Substance Abuse.
Gerstein, D., Murphy, S., Toce, M., Hoffmann, J., Palmer, A., Johnson, R., Lariso, C., Chuchro, L., Buie, T., Engelman, L. & Hill, M.A. (1999). Gambling Impact and Behavior Study. Report to the National Gambling Impact Study Commission. Chicago, IL: University of Chicago, National Opinion Research Center.
Govoni, R., Frisch, G.R. & Stinchfield, R. (2001). *A Critical Review of Screening and Assessment Instruments for Problem Gambling.* Windsor: University of Windsor Problem Gambling Research Group. Available at http://www.gamblingresearch.org/.
Gusfield, J. R. (1967). Moral passage: the symbolic process in public designations of deviance. *Social Problems, 15(2)*, 175-188.
Ladouceur R., Jacques C., Chevalier S., Sevigny S., & Hamel D. (2005). Prevalence of pathological gambling in Quebec in 2002. *Canadian Journal of Psychiatry, 50 (8),* 451-456.
Jacobs, D.F. (1986). A general theory of addictions: A new theoretical model. *Journal of Gambling Behavior, 2*, 15-31.
Korn, D.A., Gibbins, R. & Azmier, J. (2003). Framing Public Policy Towards a Public Health Paradigm for Gambling. *Journal of Gambling Studies. 19(2)*, 235-256.
Lesieur, H. (1998). Costs and Treatment of Pathological Gambling. *The Annals of the American Academy of Political and Social Science, 556*, 153-171.

Lesieur, H. & Blume, S. B. (1987). The South Oaks Gambling Screen (SOGS): a new instrument for the identification of pathological gamblers. *American Journal of Psychiatry, 144*, 1184-1188.
Lesieur, H. & Blume, S. (1990). *Modifying the addiction severity index for use with pathological gamblers*. Amityville, NY, South Oaks Institute.
McCready, J. & Adlaf, E. (2006). *Performance and Enhancement of the Canadian Problem Gambling Index (CPGI): Report and recommendations*. Ottawa: Canadian Centre on Substance Abuse.
McMillen, J., & Wenzel, M. (2006). Measuring problem gambling: Assessment of three prevalence screens. *International Gambling Studies, 6*, 147-174.
McMillen, J., Marshall, D., Ahmed, E., & Wenzel, M. (2004). *2003 Victorian longitudinal community attitudes survey*. Canberra: The Centre for Gambling Research, Australian National University.
McMillen, J., Wenzel, M., Marshall, D., & Ahmed, E. (2004). *Validation of the Victorian Gambling Screen, Gambling Research Panel Report Number 7*. Australian National University.
Neal, P., Delfabbro, P., & O'Neil, M. (2005). *Problem Gambling and Harm: A National Definition*. South Australian Centre for Economic Studies, Adelaide.
O'Hara, J. (1998). *A Mug's Game: A History of Gambling and Betting in Australia*. New South Wales, University Press.
Petry, N. M. (2003). Validity of a gambling scale for the addiction severity index. *Journal of Nervous Mental Disease, 191(6)*, 399-407.
Petry, N. M. & Tawfik, Z. (2001). A comparison of problem gambling and non-problem gambling youth seeking treatment for marijuana abuse. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*, 1324–1331.
Productivity Commission (1999). *Australia's Gambling Industries, Report No 10*, Canberra: Author.
Queensland Treasury. (2005). *Queensland household gambling survey 2003-04*. Brisbane: Queensland Government.
Queensland Treasury. (2001). *Queensland household gambling survey 2001*. Brisbane: Queensland Government.
Rosecrance, J. (1985). Compulsive gambling and the medicalization of deviance. *Social Problems, 32(3)*, 275-284.
Roy Morgan Research. (2006). *The fourth study into the extent and impact of gambling in Tasmania with particular reference to problem gambling: Follow-up to the studies conducted in 1994, 1996 and 2000.* Hobart, Tasmania: Gambling Support Bureau, Human Services and Housing Division, Department of Health and Services.
Scull, S. & Woolcock, G. (2005) Problem Gambling in Non-English Speaking Background Communities in Queensland, Australia: A Qualitative Exploration. *International Gambling Studies, 5(1)*, 29-44.
Shaffer, H. J. (2003). A public health perspective on gambling: the four principles. *AGA Responsible Gaming Lecture Series, 2(1),* 1-27. Chicago, Illinois.
Shaffer, H., & Korn, D. (2002). Gambling and related mental disorders: a public health analysis. *Annual Review of Public Health, 23*, 171–212.

Shaffer, H., Hall, M., and Vander Bilt, J. (1999). Estimating the prevalence of disordered gambling behavior in the United States: A research synthesis. *American Journal of Public Health, 89(9)*, 1369-76.
Sproston, K., Erens, B. & Orford, J. (2000). *Gambling behaviour in Britain: Results from the British Gambling Prevalence Survey*. London: The National Centre for Social Research.
Stinchfield, R. (2002). Reliability, validity, and classification accuracy of the South Oaks Gambling Screen (SOGS). *Addictive Behaviours 27(1)*, 1-19.
Strong, D. R., Breen, R. B., & Lejuez, C. W. (2004). Using item response theory to examine gambling attitudes and beliefs. *Personality and Individual Differences, 36*, 1515–1529.
Thomas, Jackson A., & Blaszczynski, A. (2003). *Measuring Problem Gambling: Evaluation of the Victorian Gambling Screen, Gambling Research Panel Report No 4*. Melbourne Enterprise International.
Thomas, S. A., & Yamine, R. (2000). *The impact of gaming on specific cultural groups*. Melbourne: Victorian Casino and Gaming Authority.
Volberg, R. A. (2001). *When the chips are down: Problem gambling in America*. New York: Century Foundation.
Volberg, R. A. (1996). Prevalence studies of problem gambling in the United States. *Journal of Gambling Studies, 12(2)*, 111–128.
Volberg, R.A., Abbott, M.W., Ronnberg, S. & Munck, I.M. (2001). Prevalence and risks of pathological gambling in Sweden. *Acta Psychiatrica Scandinavica, 104 (4)*, 250-256.
Volberg, R. A., & Bernhard, B. (2006). *The 2006 study of gambling and problem gambling in New Mexico. Report to the Responsible Gaming Association of New Mexico*. Northampton, MA: Gemini Research.
Walker, M. (1992). *The Psychology of Gambling.* Oxford: Butterworth-Heinemann.
Walker, M. B. and Dickerson, M. G. (1996). The prevalence of problem gambling and pathological gambling: a critical analysis. *Journal of Gambling Studies 12(2)*, 233-49.
Wenzel, M., McMillen, J., Marshall, D., & Ahmed, E. (2004). *Validation of the Victorian Gambling Screen*. Victoria: Gambling Research Panel.
Wynne, H. (2003). *Introducing the Canadian Problem Gambling Index*. Edmonton: Wynne Resources.

GAMBLING AND DEPRESSIVE COGNITIONS: ASSOCIATION BETWEEN SELF-EFFICACY AND DEPRESSION IN TREATMENT SEEKING PROBLEM GAMBLERS

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ABSTRACT

It has been observed that problem gambling and mood disorders are often co-morbid and that this has clinical implications. Moreover, theory and research has focused on the role of gambling related cognitive distortions in problem gambling and negative thoughts in depression. There are limited investigations, however, into the presence of gambling related cognitive distortions and depresive thoughts in problem gamblers. The present study investigated whether the level of gambling related cognitive distortions are linked to the frequency of depressive thoughts experienced in problem gamblers. The current study analysed self-report data consecutively collected at initial assessments of 50 problem gamblers voluntarily presenting at a specialised outpatient program. A general positive association between gambling related cognitive distortions and negative thoughts was observed. Furthermore, the strongest relationship was found between the frequency of negative thoughts and cognitions regarding a perceived inability to stop gambling.

Introduction

Mood disorders are commonly found to be co-morbid with problem gambling and clinicians are commonly faced with the dilemma of how to most appropriately structure their intervention. The apparent junction between mood disorders and problem gambling behaviour has received much attention, with consideration given by Crockford and el-Guebaly (1998) that problem gambling may form part of an "affective spectrum disorder". Similarly, psychological treatments for both mood disorders and problem gambling have been designed to address distortions in thinking patterns. Attention has been given to the reduction of negative thinking in depression (e.g. Beck, 1963; Hollon & Beck, 1979) and gambling related cognitions in problem gambling (e.g. Ladouceur & Walker, 1998; Toneatto, 1999). Surprisingly, there has not been a focus on distorted patterns of thinking across both gambling related and negative cognitions.

The extent to which problem gambling and mood disorders co-occur is well documented. Early findings indicated that 72% of problem gamblers had experienced at least one episode of major depression prior to treatment (Linden, Pope, & Jonas, 1986) and that depression has frequently been observed post successful problem gambling treatments (Taber, McCormick, Adkins & Ramirez, 1987). With a large coalesce between problem gambling and depressive symptoms across the lifespan, it has been concluded that the

mechanisms underlying the psychiatric co-morbidity of problem gambling are very complex (Skokauskas, Satkevičiūtė, & Burba, 2003).

Psychological states comprise of cognitive, behavioural, affective and physiological components (McCormick, 1988). Moreover, it is posited by Borkavec (2002) that treatments, which can successfully target one of these systems, may lead to change in all of them. While distorted negative thinking has been proposed to be at the core of depression (Beck, 1963), irrational beliefs related to influence over and ability to predict gambling outcomes have been cited as a system for change (May, Whelan, Meyers & Steenbergh, 2005). While distorted gambling beliefs are observed to be common for problem gamblers, the influence of these cognitions on gambling behaviour remains unclear (Dannewitz & Weatherly, 2007).

There is a growing acceptance of heterogeneity in terms of the development and maintenance of problem gambling such that there has been a focus on pockets or pathways of similarity in terms of experience (Blaszczynski, 2000). The search for a clear connection between problem gambling and the experience of depression is not yet complete. The current study attempted to uncover associations between gambling related and depressive (negative) cognitions in a problem gambling treatment seeking population. It was hypothesised that problem gamblers with increased gambling related cognitive distortions would also experience more negative thoughts. The purpose of the investigation was as a launch pad to enable treatment plans to be constructed using the specific components of commonality across thinking styles as junctions for change of both problem gambling and co-morbid depression.

Method

Participants

A total of 50 treatment seeking problem gamblers (35 male, 15 female) were consecutively recruited from a specialised outpatient treatment program. The mean age of the sample was 37.5 years (*SD* = 11.1).

Measures of depression

Two self-report inventories were used to assess levels of depression. The Beck Depression Inventory – 2nd Edition (BDI-II) is a 21-item questionnaire based on the diagnostic criteria of the American Psychiatric Association, and has been observed to have good concurrent validity when compared to psychiatric ratings of depression (Beck & Steer, 1984). Derived from the original 30-question inventory, the Automatic Thought Questionnaire – 8 (ATQ-8; Netemeyer, Williamson, Burton et al, 2002) is a short eight question self-report, designed to measure the frequency of negative automatic thoughts in a treatment or consumer sample. The ATQ-8 has been shown to have high reliability with the longer measures (Netemeyer et al, 2002).

Measure of problem gambling

In order to assess distorted thinking styles synonymous with non-adaptive gambling, the Gambling Related Cognitions Screen (GRCS; Raylu & Oei, 2004) was administered. The GRCS is a 23 item self-report with five sub-factors (illusion of control, predictive control, gambling related expectancies, perceived inability to stop gambling) plus a global measure (total). Two measures of gambling related behaviour were administered to the clinical sample. Chosen for its ability to be used pre/post treatment, the South Oaks Gambling Screen – Revised, three months version (SOGS-R3; Wulfert, Hartley, Lee, Wang et al, 2005) was employed. The SOGS is the most widely adopted screener for pathological gambling in research literature and has been shown to have sound psychometric properties (Gambino & Lesieur, 2006). A second gambling behaviour self-report was given, the Canadian Problem Gambling Index (CPGI; Ferris & Wynne, 2001). The CPGI has nine scoring items about behaviour in the last year, and was designed to be a more holistic assessment of gambling related problems than the SOGS.

Procedure

At the completion of the initial assessment interview, each participant completed all the above questionnaires as a battery of self-report questionnaires. The participants were informed that the psychometric battery consisted of materials collated to capture both the behavioural and cognitive experience of the participant in terms of both problem gambling and other mental health issues. Participants were subsequently instructed to complete the tests according to standard instructions.

Results

TABLE 1: Descriptive Statistics for psychometric measures

Measure	**Mean (*SD*)**
BDI-II	25.67 (*12.63*)
ATQ-8	23.63 (*9.62*)
SOGS-R3	9.61 (*3.68*)
CPGI	16.39 (*6.10*)
GRCS-TOTAL	46.20 (*18.29*)
Illusion of control	33.45 (*23.30*)
Predictive control	40.78 (*20.47*)
Interpretative bias	52.70 (*25.65*)
Gambling related expectancies	49.33 (*19.80*)
Perceived inability to stop gambling	53.22 (*26.28*)

Table 1 (above) shows that the sample was by and large that of problem gamblers. Given the general tendency for females to report higher on self-report inventories (Sigmon, Pells, Boulard et al, 2005) an independent samples t-test was conducted comparing males and females across measures. Females generally tended to score higher on the measures,

and had significantly greater responses for the BDI-II (t = 2.14, p = 0.04), ATQ-8 (t = 2.31, p = 0.03) and Perceived inability to stop gambling (t = 2.09, p = 0.04). The sub-factor 'Perceived inability to stop gambling' received the highest endorsement in this treatment-seeking sample.

Correlations between cognitions and behaviour

Negative thoughts (ATQ-8) were significantly correlated with depressive behaviour (BDI-II; r = 0.65, p < 0.001), while gambling related cognitive distortions (GRCS-TOTAL) were positively related to problem gambling symptomology (SOGS-R3, r = 0.56, p < 0.001; CPGI, r = 0.47, p < 0.001)

Correlations between problem gambling and depressive measures

Similarly, depressive behaviour (BDI-II) was positively associated with increases in problem gambling symptomology (SOGS-R3, r = 0.49, p < 0.001; CPGI, r = 0.44, p = 0.002), while gambling related cognitive distortions (GRCS-TOTAL) were positively related to increases in negative automatic thoughts (ATQ-8, r = 0.63, p < 0.001). Table 2 (below) presents the associations between the sub factors of the GRCS and the ATQ-8. All subscales of the GRCS had significant positive associations with negative automatic thoughts ranging from r-values of 0.40 to 0.72.

TABLE 2: Associations between depressive and gambling related cognitions

	Informational bias	**Gambling expectancies**	**Illusion of control**	**Predictive control**	**Perceived inability to stop gambling**
Correlation (ATQ-8)	0.54	0.42	0.40	0.40	0.72
Significance (p)	<0.001	0.003	0.005	0.005	<0.001

Discussion

A battery of five psychometric self-report measures has confirmed the well known coalesce between problem gambling and depression. The findings reveal that cognitions and behaviour are closely related across both problem gambling and depression. Moreover, for the first time we have observed that as depressive (negative) automatic thoughts increase, problem gamblers increasingly agree with cognitive distortions related to gambling behaviour. More specifically, it is apparent that for problem gamblers who have voluntarily attended treatment, an agreement for a perceived inability to stop gambling and negative automatic thoughts are highly correlated and explain each others variance by more than 50 percent.

The sample used in this study were observed to be problem gamblers with high mean

SOG-R3 and CPGI scores, moreover they were experiencing moderate levels of depression (BDI-II; Beck & Steer, 1984). The associations observed are therefore found to take place at the higher end of both the problem gambling and depressive spectrums compared to non-clinical or normal populations. The findings therefore should be observed with high significance for treatment seeking populations. The observation that the degree to which a client perceives that they cannot control their gambling related behaviour (i.e. self-efficacy) is a moderator of psychopathology (depression) has commonly been posited in theory and research into mental health disorders (Bandura, 1995). The implications for clinical practice may include an increased need for self-efficacy screening in problem gambling treatment programs an/or direct interventions regarding instilling beliefs that a client can control their behaviour.

It should be noted that this study has largely referenced correlational data and no treatment or experimental manipulations have been made. It would be pertinent to trace gambling related and negative cognitions across treatment using pre- and post- ratings as indicators of treatment moderators. Moreover, although there is a suggestion that perceived inability to stop gambling refers to self-efficacy, no direct measure of this construct was utilised. Future gambling research may wish to pay attention to the influence of this construct on treatment outcomes as it has been done with substance abuse research (Brown, Carrello, Vik & Porter, 1998)

Summary

For the first time cognitions related to depression and problem gambling behaviour have been shown to be positively associated in a treatment seeking problem gambling population. It is observed that perceived control over behaviour is a significant junction between gambling and depression for problem gamblers. Moreover, the findings indicate that specific attention should be made to tracing the effects of self-efficacy on client outcomes in regards to both depressive and problem gambling symptomology, including cognitions.

References

Bandura, A. (1995). *Self-efficacy in changing societies.* New York: Cambridge Press.
Beck, A. T. (1963). Thinking and depression: I. Idiosyncratic content and cognitive distortions. *Archives of General Psychiatry*, 9, 324-333.
Beck, A. T., & Steer R. A. (1984) Internal consistencies of the original and revised Beck Depression Inventory. *Journal of Clinical Psychology*, 40(6), 1365-1367.
Blaszczynski, A (2000), Pathways to Pathological Gambling: Identifying Typologies, *eGambling*, 1, 1-14.
Borkovec, T. D. (2002). Psychological aspects and treatment of generalized anxiety disorder. In D. J. Nutt, K. Rickels, & D. J. Stein (Eds.), *Generalized anxiety disorder: Symptomotology, pathogenesis, and management*. London: Martin Dunitz Ltd.
Brown, S. A., Carrello, P. D., Vik, P. W., & Porter, R. J. (1998). Change in alcohol effect and self-efficacy expectancies during addiction treatment. *Substance Abuse,* 19(4), 155-167.

Crockford, D. N. & el-Guebaly, N. (1998). Psychiatric comorbidity in pathological gambling – A critical review. *Canadian Journal of Psychiatry*, 43, 43-50.
Dannewitz, H. & Weatherly, J. N. (2007). Investigating the illusion of control in mildly depressed and nondepressed individuals during video poker play. *The Journal of Psychology: Interdisciplinary and Applied,* 141(3), 307-320.
Ferris, J. & Wynne, H. (2001). *Canadian Problem Gambling Index: Final report.* Ottawa: Canadian Centre on Substance Abuse.
Gambino, B. & Lesieur, H. (2006). The South Oaks Gambling Screen (SOGS): A rebuttal to critics. *Egambling,* 17, 1-16.
Hollon, S. D. & Beck, A. T. (1979). Cognitive therapy of depression. IN P.C. Kendall & S. C. Hollon (Eds.), *Cognitive-behavioral interventions: Theory, research and procedures.* New York: Academic Press.
Hollon, S. D. & Kendall, P. C. (1980). Cognitive self-statements in depression: Development of an automatic thoughts questionnaire. *Cognitive Therapy and research,* 4(4), 383-395.
Ladouceur, R., & Walker, M. (1998). The cognitive approach to understanding and treating pathological gambling. In A. S. Bellack & M. Hersen (Eds.) *Comprehensive Clinical Psychology,* 588-601, New York: Pergamon Press.
Linden, R. D, Pope, H. G., & Jonas, J. M. (1986) Pathological gambling and major affective disorder: Preliminary Findings. *Journal of Clinical Psychiatry.* Vol 47(4), 201-203.
May, R. K., Whelan, J. P. Meyers, A. W., & Steenbergh, T. A. (2005). Gambling-related irrational beliefs in the maintenance and modification gambling behavior. *International Journal of Gambling. 5*, 155-167
McCormick, R. A. (1988). Pathological gambling: A parsimonious need state model. *Journal of Gambling Studies,* 3(4), 257-263.
Netemeyer, R. G., Williamson, D. A., Burton, S., Biswas, D., Jindal, S, Landreth, S., Mills, G., & Primeaux, S. (2002). Psychometric properties of shortened versions of the automatic thoughts questionnaire. *Educational and Psychological Measurement,* 62(1), 111-129.
Sigmon, S., Pells, J., Boulard, N., Whitcomb-Smith, S., Edenfield, T., Hermann, b., LaMattina, S., Schartel, J., & Kubik, E. (2005). Gender differences in self-reports of depression: The response bias hypothesis revisited. *Sex Roles,* 53(5-6), 401-411.
Skokauskas, N., Satkevičiūtė, R., & Burba, B. (2003). Psychitric comorbidity in pathological gambling. *Medicina (Kaunas),* 39(9), 838-844.
Taber, J.I., McCormick, R.A., Adkins, B.J. & Ramirez, L.F. (1987). Follow-up of pathologic gamblers after treatment. *American Journal of Psychiatry*, 144, 757-761.
Toneatto, T. (1999). Cognitive psychopathology of problem gambling. *Substance use and Misuse,* 34(11), 1593-1604.
Wulfert, E., Hartley, J., Lee, M, Wang, N., Franco, C., & Sodano, R. (2005). Gambling screens: Does shortening the timeframes affect their psychometric properties? *Journal of Gambling Studies,* 21(4), 521-536.

APPLYING SOME 'BACK-ADDING' TO GAMBLING STATISTICS

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ABSTRACT

It was Benjamin Disraeli that advised the world: 'There are three kinds of lies: lies, damned lies and statistics'. This paper examines some examples of the use of statistics in selected commentary, assertions and conclusions on Australian gambling practices. Using both a tool known as 'back-adding' and basic reasoning the selected commentaries, assertions and conclusions are shown to have apparent flaws. The tool 'back-adding' is briefly described before it is applied to excerpts of well-known publications.

The paper concludes with a plea for consideration to be given to the adequate funding of sociological research into gambling in Australia as distinct from studies of problem or pathological gambling.

Introduction

The subject of gambling studies appears to attract many who want to express a view but who have a lack of understanding of the basics of the activity and its associated mathematics. This researcher has frequently been dismayed by the obvious failure of even long-term observers who reveal this flaw through their utterings on the topic. Often these observers then compound the problem by adding statistics about the extent of gambling and firm views as to why people gamble. Imagine the derision that would flow if a politician said that Australia should have no concern with its problem gamblers as they represent only 0.0044338 per cent of the world's population while the percentage of persons across the globe with HIV/AIDS is approaching a full one per cent. Yet these are fairly precise and apparently validated statistics, albeit lacking comparative balance, while this paper will note numerous examples where imprecise and completely unbalanced numbers about gambling are published and then, it appears, accepted as if proven facts.

Examples of Incorrect Odds

In the Media

The highest circulation newspaper in Sydney is the *Daily Telegraph.* In September 2006 it published an article on the odds of winning at gambling. Lotto (Tattslotto) was quoted with odds of 452,503 to one. The true odds are 8,145,060 to one from the sum (45*44*43*42*41*40) / (6*5*4*3*2*1). Incorrect and distinctly understated odds were also quoted for Oz Lotto and Powerball. (Dillon:2006) While not acknowledged it was

obvious the incorrect figures had been sourced from the NSW Lotteries web site. On the site there are pages recording the odds for winning the various games. There is an entry giving the odds as 452,503 to one for Lotto but it is an entry within a table and the column involved is clearly headed 'Odds based on 18 games'. (NSW Lotteries). It can be concluded that neither the writer nor her/his editor understood the games and how the odds were calculated. This researcher drew the error to the attention of the editor but no correction has ever been published.

A competitor for the *Daily Telegraph* in the city is the *Sun Herald.* Less then three weeks later it had its own article on gambling odds. Not to be out done by its rival it also had errors. (O'Brien:2006) The figures were quoted as sourced from the Australian National University. A google for 'gambling odds Australia' did bring up an ANU page giving numerous incorrect numbers. It was obvious the page had been prepared many years earlier. (Note: the University page has since been updated) Once again, however, the article writer and her editor obviously did not understand their subject. The *Sun Herald* ignored another polite note pointing out the errors.

Government Agencies

It might be suggested that the words credibility, coupled with total accuracy, and the popular media are not necessarily synonymous. The population, however, is seen to expect higher standards from its government agencies. Unfortunately this does not seem to be the actual position. At the NAGS Sydney Conference in 2006 one agency, Multicultural Problem Gambling Services of NSW, placed its latest pamphlet for distribution. This researcher picked up a copy and noted that the back cover read as follows:

What are the odds of winning?

- *winning Powerball is one chance in 54 million*
- *winning the Big Win on the pokies is one chance in 52 million*
- *winning Keno on the 10 game is one chance in 8 million*
- *winning Lotto - Division one is one chance in 7 million*
- *winning a 13 horse race, the odds against picking a trifecta at random is one chance in 7 thousand.*

(DHI:2006)

The final bullet point caught the attention of this researcher who knew that the calculation for a 13 runners trifecta is 13*12*11 or one chance in 1,716. To approach one chance in 7 thousand the runners would need to total 20. The other numbers were then examined with the following outcome:

- Winning Powerball is one chance in 54,979,155 or rounded one chance in 55 million.
- Winning the big win on the pokies is one chance in 52.5 million or rounded one chance in 53 million.
- Winning Keno on the 10 game is one chance in 8,911,711 or rounded one chance in 9 million.

- Winning Lotto – Division One is one chance in 8,145,060 or rounded one chance in 8 million.

Thus all five of the illustrations were inaccurate. The compiler obviously did not fully understand the subject. Checked in November 2007 this page remained unamended.

A few weeks later this researcher was invited to look at a newly created 'odds in gambling' page on a government agency website in another State. Implicit in the invitation was the theme that this agency had 'got it right'. Unfortunately a cursory examination of the site showed numerous errors. (Gambler's Help:2007) It was plain for several of these faults that the compiler had not understood the two meanings or uses of the word 'odds'. That is: 'the odds of winning are one in ten' as opposed to 'the bookmaker was giving odds of ten to one'. Checked in November 2007 this page had been removed from the site.

Examples of Media Statistics on the Extent of Gambling

How Many Gaming Machines?

It would seem the most frequently used gambling statistic in Australia is 'Australia has more than 20 per cent of the world's gaming machines'. Added to this will often be 'about half of these are in New South Wales' and thus 'New South Wales has more than ten per cent of the world's gaming machines'. These 'facts' are presented without use of expert reference or any form of sourcing. This is probably because the 1999 Productivity Commission report contained the numbers. (Productivity Commission:1999) The Australian Gaming Machines Manufacturer's Association has endeavoured to correct the statistics with its own analysis that found Australia had only 2.4 per cent of the world's gaming machines. (AGMMA:2001) This analysis, however, does not appear to have come to the attention of the media although it was acknowledged by the Productivity Commission. The difference in the numbers lies with the definition of a gaming machine and the availability of confirmed data on the spread of machines across the globe. The Productivity Commission acknowledged that it ignored Pachinko machines in Japan and lacked the data for a number of other world regions. This researcher has studied Pachinko Hall activity in Japan and finds it strange that the Commission overlooked machines that, as reported by Professor Tanioka of Osaka University, had a turnover of $US 175 billion in 1998. (Tanioka:1999)

Who is an Expert for the Media?

The following represents printed works collected at random from the media in Australia in recent months. The headline for each article is first noted along with a précis of the point or points under examination together with the comment of the selected 'expert'. Finally there is an observation by this researcher shown in italics:

'Habit of those who can least afford it'. "The greatest gambling losses per person across NSW are in the council areas of Murray (south-west region) and Fairfield (western suburb of Sydney)." The Mayor of Murray declared the problem lay with the Mexicans (Victorians) crossing the border to do their gambling in NSW. The acting Mayor of

Fairfield said the local large population of Asian-Australians created the situation. (Pearlman:2007) *Perhaps both explanations had some validity, albeit without apparent reasonable amounts of research, but the writer made no test and sought no alternative views.*

'When fortune smiles'. "A multi-facetted article embracing psychology, comments on gambling in Australia and a theory that some people are luckier than others." "Australians' perceptions of luck come from our Irish origins… almost 90 per cent of Australians gamble… gambling is a recession proof industry (the latter quoting Professor Jan McMillen)… almost 5 per cent of people in NSW are problem gamblers but this figure underestimates the prevalence (again quoting Jan McMillen)." (Dow:2007) *Only up to thirty per cent of Australians claim some degree of Irish ancestry according to the Australian Embassy in Dublin. (Australian Embassy:2007) The figure of 90 per cent of Australians gambling equates to almost 19 million. Perhaps the writer meant adult Australians but even this number is considerably higher than any other estimate this researcher has encountered. The recession of 1991 saw gambling on racing in Australia fall by one per cent after many years of strong growth. The situation was paralleled in New Zealand. (TAB Statistics:1999) The population of NSW is about 7 million. Thus 5 per cent equates to 350,000. The Productivity Commission 1999 estimate of problem gamblers for the whole nation was less than 300,000. At a 5 per cent rate there would be more than a million problem gamblers across the nation. The 'almost 5 per cent' figure presumably comes from an incorrect reading of a 2006 study conducted for the NSW Office of Liquor, Gaming and Racing. (OLGR:2006) The report actually found only 0.8 per cent were problem gamblers while almost 5 per cent were to some degree 'at risk'.*

'The love of losing'. "Eighty per cent of the population will gamble at some stage, while 20 per cent gamble regularly… Problem gambling is on the rise… NSW is home to 10 per cent of the world's poker machines… an industry trading in the meticulous and inevitable business of loss… Although there is a lay belief that gambling is an addiction, most experts do not classify gambling as such." (Lowndes:2007) *Perhaps the babies in the population are gambling on whether they should cry on a wet or dirty nappy. The 90 per cent has at least come back to 80 per cent. Regular gambling is not defined. There is no support for the assertion that problem gambling is on the rise. AGMMA and its analysis of gaming machine penetration in Australia has obviously not reached this writer. At the Crown Casino complex in Melbourne the Palms theatre will be charging similar prices for tickets as other venues in the city. Are they all then not trading in the business of loss? The experts denying addiction in gambling are not referenced.*

'Hard Luck'. "Like habitual drinking or drug taking, gambling can be addictive… the nearly 3 per cent of all Australians and 15 per cent of regular gamblers who do have a significant gambling problem affect on average between five and 10 people around them – potentially a staggering 3 million people (referenced to the Productivity Commission Report)… gamblers get an adrenaline rush that is like the effects of some drugs (quoting Ms Kate Roberts of the Gambling Impact Society)." (Croshaw:2007) *This researcher regarded the article as lacking any form of balance or support for most of the numerous assertions and sent the paper a critical review. There was an almost immediate response of an oddly constructed e-mail. The response opened with an attack on this researcher*

and his motives. A rejoinder went unanswered. Note that gambling is now addictive contrary to the preceding comment from a newspaper of the same group.
The flaws were not the sole domains of the print media. 'One third of all gamblers are problem gamblers'. This researcher heard Professor Patricia Apps, Sydney University Law School: make this statement 24 September 2007. On Monday afternoons 5.30 to 6.00 Richard Glover, ABC Radio 702 Drive Time presenter, chairs a three person panel to discuss contemporary political issues. His first issue on this day concerned the NSW government moving to allow additional gambling in the state. *If this assertion is correct then Australia has around four million problem gamblers.*

None of the above is intended to be a personal criticism of the various commentators or to imply they have been accurately quoted but rather to illustrate the inaccuracies and misunderstandings that abound in publications about the activity of gambling in Australia. Obviously the media has difficulty finding or comprehending an expert and a definitive reference work. There is some reliance on the Productivity Commission Report of 1999 but certain of its data, especially it seems related to the number of problem gamblers, is in dispute. The Commission was precise in its findings that the total of 292,736 problem gamblers represented 2.1 per cent of all Australian adults. That these problem gamblers comprise 15% of regular (non-lottery) gamblers who have an annual expenditure of $3.5 billion and who lose an average of $12,000 each compared to $650 for other gamblers. It would seem though there are many that wish to challenge this conclusion by finding that far many more problem gamblers exist in the nation. The difficulty that arises is the method of collection of the data and the extent of collection. Problem gamblers do not usually readily define themselves, behavioural surveys often rely on questions that may lend themselves to imprecise or biased answers, the size of any survey and its method of process may cause an unbalanced sample, and findings will sometimes be brought into question as a consequence of the funding for the research.

'Back-adding' the Numbers

The back-adding process

Leaders of commerce frequently find themselves with very similar circumstances to those who wish to more precisely define elements related to the extent of gambling. For example the executive of a food manufacturer receives a proposal for a new product. There is an extensive business case showing an annual profit outcome. The cost and sales calculations are supported by detailed data and market research involving focus groups. The last line of the case shows a net annual profit of $n. Given that the case has reached the executive level it can be assumed the numbers are apparently logical and accurate based upon the data in the case. The executive leader, however, still needs to question the finding because of the potential impact of a failure on the overall business. A tool frequently used in such cases is sometimes called 'back-adding'. In back-adding the last line of the business case: $n, becomes the first line of the review. Using a mixture of data from the case, simple logic and industry knowledge the executive attempts to locate another path back to the described raw first numbers in the case. At each step 'what if?' questions are applied. The cost of fuel to be used in raw materials collection, processing,

and product distribution might be checked against a range of possibilities. Marketing might be accepted as a charge containable within budget but raw material availability and cost could be questioned against prior experience. Essentially back-adding is aimed to test the overall logic of the case by turning it upside down. If uncertainties are detected then the business case is subjected to a new evaluation.

Back-adding on problem gambling

The basic numbers selected for back-adding from the Productivity Commission report are the already noted: 292,736 or 2.1 per cent of adults are problem gamblers; 15 per cent of regular gamblers are problem gamblers; problem gamblers have an annual expenditure of $3.5 billion representing an average of $12,000 each compared to $650 for other gamblers. The implications of any errors in the amount findings are that there could be a greater or lesser number of problem gamblers and they could be spending more or less than the estimates. The scale of gaming machine gambling in Australia is such that a back-adding exercise must involve a great effort in time and other resources. Therefore the second form of gambling: racing, singled out by the Commission was used in the task. Appendix A sets out the steps involved in the work. It is concluded that the selected Commission numbers do not sit well with those of the exercise. In commerce the outcome would be a new evaluation before the recommendations were considered for adoption.

Qualifying the Numbers

The Productivity Commission had its own concern with the problem gambling numbers of its report noting at Chapter 6.34:

Population surveys of problem gambling will tend to underestimate the number of people with extreme problems requiring counselling help.

The report then gives an extensive list of why the survey results will be biased. These reasons are paraphrased here:

- Gamblers are out gambling and are not at home to answer surveys.
- Gamblers may have had their phone cut off.
- Gamblers may be in jail.
- Gamblers may refuse to take part in the survey.
- Gamblers may give distorted or dishonest answers to survey questions so as to avoid stigmatisation.

References to academic studies on the topic are provided to add weight to the point. As if to lend further emphasis to its concerns the head of the Productivity Commission covered the issue again in a subsequent paper:
*It should be borne in mind that **all** survey screens are likely to understate the extent of problem gambling…simply because people have a natural reluctance to reveal the facts…Arguably the biggest practical challenge facing prevalence studies is…the extent*

to which the design and presentation of the questionnaire can counter this inherent downward bias. (Banks:2003)

Undoubtedly this qualified approach to its findings has since provided considerable support for those who are convinced that the number of problem gamblers far exceeds the estimates that have been made.

Yet the Commission did not attempt to provide similar qualification to its survey findings when it dealt with public perceptions of gambling. For example at Table 10.3 the results of the survey question:

What do you think of the statement that overall, gambling does more good than harm for the community?

are noted by State and Territory. The results had, for example, 44 per cent of Victorians strongly disagreeing and only 16 per cent agreeing. But what would have happened to the numbers if people who like to gamble were not out gambling? As well they may have been respondents who did not wish to be 'stigmatised' as gamblers or those supporting gambling.

Responsible Research

Responsible gambling has been a catch cry for the past decade but the extent of the flaws noted above in these notes suggests there is also a need for more responsible research. All attention seems to be devoted to the 'tip of the iceberg' with the major part of the gambling activity in society almost completely ignored. The Australian Gaming Council has an excellent web site that contains, along with other information, a list of gambling research being undertaken in Australia. (AGC:2007) Accessed in August 2007 the list had 61 entries. A search of the research titles on the terms: 'problem gambling', 'prevention of gambling', 'impacts of gambling', and 'harm minimisation' found matches amongst 30 of the titles. A parallel in a major public hospital would see all medical resources dedicated to the intensive care area with the bulk of other attendees left to fend for themselves. Another valuable research web site is maintained by the COAG established body Gambling Research Australia. It notes that its Ministerial Council has nominated six priority areas for research. Amongst these six there are four concerning problem gambling, one relating to harm minimisation and the last concerning to the consequences of restrictions on the operation of electronic gaming machines. Research in the problem and pathological gambling area appears to have become especially pronounced over the past decade while sociological studies on the general use of gambling within society have correspondingly gone into decline.

It might be found that general academic research into the sociology of gambling could be listed on a single A4 page compared to the volumes written on a single 'problem' topic such as the use of the screen SOGS. While there has been some efforts in Australia: for example by Michael Walker and others, it is difficult to locate studies of the like of those by Erving Goffman and John Rosecrance in the USA. This researcher's theme is: If you

do not study and understand gambling as a human activity how can you hope to offer informed comment, provide counselling, or study the implications of the existence of a problem with the activity?

Appendix A: The Productivity Commission Report of 1999

(Report findings in italics)

Part 3 Consumption of Gambling

In 1997/98 Australians had a gambling expenditure of $10.8 billion.

Total gambling expenditure was $11.3 billion but $500 million of this was estimated to have come from foreign visitors especially to casinos.

This gave an expenditure or spend of $760 per Australian adult.

Therefore the number of Australian adults was 14,211,000.

80% of Australians gamble (obviously adults).

Therefore the number of adults gambling was 11,368,800 and their average spend was $950.

Source: Box 3.1

Electronic gaming machines represent 59% of total gambling expenditure.

Therefore the expenditure on EGMs was $6.372 billion.

Racing represents 15% of total gambling expenditure.

Therefore the expenditure on racing was $1.620 billion (a).

Lotteries represent 13% of total gambling expenditure.

Therefore the expenditure on lotteries was $1.404 billion.

Casinos represent 8% of total gambling expenditure.

Therefore the expenditure on casinos was $864 million.

Other gambling represents 4% of total gambling expenditure.

Therefore the expenditure on other was $432 million.

Source: Figure 3.2.

Expenditure on racing was $120 per Australian adult (b).

Therefore the expenditure on racing was $1.705 billion. Difference to (a) $85 million.

Source: Figure 3.3

Expenditure on racing was $1.684 billion. Difference to (a) $64 million.

Racing expenditure was calculated at 14% of turnover.

Turnover was $11.861 billion.

Therefore at 14% on turnover racing expenditure was $1.661 billion. Difference to (a) $41 million.

Source: Table 3.1

A separate source declared racing turnover to be $11.779 billion.

Therefore at 14% on turnover racing expenditure was $1.649 billion. Difference to (a) $29 million.

Source: TAB Chief Executives' Statistics 1997/98

Note while all these variations in estimated racing expenditure represent considerable sums of money they are not seen to be critical in a 'back-adding' exercise.

Australian Adults Gambling

80% gamble: 11,368,800 refer previous page of this appendix.

24.3% of gamblers bet on racing.

Therefore the number betting on racing was 2,762,618.

70.9% bet less than once per month.

Therefore the number of these infrequent bettors was 1,958,696.

13.6% bet one to three times a month.

13.4% bet one to three times a week and 2.2% bet more than three times a week.

Therefore the number of these frequent bettors was 803,922.

Source: Table 3.3

TAB turnover represented 77% of total racing turnover.

Source: TAB Chief Executives' Statistics

TAB Sales and Race Meetings Covered by Day of Week

Day of the Week	% of Meetings Covered	% of TAB Sales
Monday	14	9
Tuesday	12	9
Wednesday	17	14
Thursday	16	12
Friday	17	12
Saturday	19	38
Sunday	5	6
Week	100	100

Melbourne Cup is on a Tuesday, an otherwise low sales day for TAB.

TAB Melbourne Cup Day turnover in 1997 was $154.2 million.

Therefore total racing turnover for Melbourne Cup Day was likely to be ≈$200 million.

The day of the average week with the highest racing turnover was Saturday.

A typical Saturday saw total racing turnover of $100 million.

Thus total turnover for Melbourne Cup Day was double that of a typical Saturday.

The mean average bet for the year was $9.43.

The legal minimum bet was $0.50.

Source: TAB statistical reports

Problem Gambling

There were 292,736 problem gamblers in Australia.

15% of regular (non-lottery) gamblers are problem gamblers.

Regular (non-lottery) gamblers therefore total 1,951,573.

Source: Table 5.6

Total racing expenditure was $1.600. Difference to (a) $20 million.

33.1% or $529 million of expenditure on racing was problem gambling.

Source: Table 5.7

Hypotheses and Assumptions

A bettor indulging less than once a month is likely to be a Melbourne Cup Day and other special events or annual holidays period type of racing gambler.

These infrequent bettors totalled 1,958,696. Say they bet on Melbourne Cup Day and four Saturdays across the year.

Frequent bettors amounted to 803,922 and the data suggests that they bet most, if not all, Saturdays.

If the infrequent bettors are spread evenly across the year and melded into the frequent bettors then the number of bettors each Saturday is about 1 million.

For the year all bettors accounted for the expenditure of $1.600 billion: an amount of $1990 on a turnover of $14,214 each.

On a weekly basis their individual expenditure was $38 on a turnover of $273.

At an average of $9.43 per bet this represents 29 bets in a week.

A typical Saturday saw 14 race meetings with an average of 9 events. The bettor thus had 126 events available. More than 29 bets could be made by a single outlay on each race on the major meeting in four capital cities.

The Productivity Commission, however, found that $529 million of expenditure on racing was problem gambling.

While a weekly expenditure of $38 may have represented a problem for a very small number of persons on the lowest incomes it is doubtful that it did for the majority.

Therefore the majority of problem gamblers must have been spending more than the average $38 per week.

Summation of the above by critical points from the Commission Report:

Number of Problem Gamblers: 292,736.

Number of Problem Gamblers on racing: not stated.

Amount spent by Problem Gamblers on racing: $529 million.

Amount spent by all Gamblers on racing: $1.6 billion.

Number of Practicing Gamblers on racing as estimated above: 1 million.

These critical points are tested in the following table:

% Problem Gamblers on racing	Number of Problem Gamblers on racing	Problem Gambler Average weekly spend $	Problem Gambler Average annual spend $	Number of other Practicing Gamblers on racing	Other Practicing Gambler Average weekly spend $	Other Practicing Gambler Average annual spend $
100	292736	35	1820	707264	29	1508
75	219552	46	2392	780448	26	1352
50	146368	69	3588	853632	24	1248
25	73184	139	7228	926816	22	1144
15	43910	232	12064	956090	21	1092
10	29274	348	18096	970726	21	1092
5	14637	695	36141	985363	21	1092

In 1998 gross average male weekly earnings were $744 or say $600 after tax.

Therefore average annual after tax income was about $31,000.

Source: ABS statistics

The percentages of 100, 75 and 50 in the table can initially be put aside as the 100 per cent spend is below the calculated average of $38 and the spending levels at 75 and 50 are unlikely to create a significant problem for the average person. The percentage 5 can be dropped because the spending exceeds earnings by a significant amount.

The median of the remaining three percentages of 25, 15 and 10 is 15. Remarkably the calculated average spend at 15 per cent per problem gambler on racing is $12,064. This equates almost exactly to the Productivity Commission finding of an annual expenditure of $12,000 per problem gambler. It also aligns well with the Commission finding that 15 per cent of regular gamblers are problem gamblers. The annual expenditure of $1,092 for other racing gamblers does not look unreasonable.

Note, however, that these calculations mean that problem gamblers on racing either do not indulge in other forms of gambling or do not have a problem with those other forms. Based on the impact on race betting turnovers whenever electronic gaming machines were introduced or expanded this seems unlikely. The second worry is that if 15 per cent of regular racing gamblers are problem gamblers then the number of problem gamblers on racing should be 150,000 not 43,910.

If the 50 per cent level is adopted then the number of problem gamblers connected to racing in Australia is 146,368. But at this level, with a weekly expenditure of $69, the extent of their problem with gambling on racing is reduced in significance. That is if

these are problem gamblers then their expenditure on other forms, primarily gaming machines, is $162 weekly. Should the number of problem gamblers increase above the figure of 292,736 then the spend level per problem gambler quickly equates to the spend level for other racing gamblers. This can be illustrated by the following table where the number of problem gamblers is set at 5 rather than 2.1 per cent of the adult population of Australia.

% Problem Gamblers on racing	Number of Problem Gamblers on racing	Problem Gambler Average weekly spend $	Problem Gambler Average annual spend $	Number of other Practicing Gamblers on racing	Other Practicing Gambler Average weekly spend $	Other Practicing Gambler Average annual spend $
100	697000	15	759	303000	68	3535
75	522750	19	1012	477250	43	2244
50	348500	29	1518	651500	32	1644
25	174250	58	3036	825750	25	1297
15	104550	97	5060	895450	23	1196
10	69700	146	7590	930300	22	1152
5	34850	292	15179	965150	21	1110

References

AGMMA, 'Australian Gaming Machines: Do you know the whole story?' http://www.agmma.com/pdf/gamingmachines.pdf (accessed August 2007)

Australian Embassy, Dublin. http://www.ireland.embassy.gov.au/dubl/relations.html (accessed August 2007)

AGC (Australian Gaming Council), 'Overview of Current and Future Gaming Research in Australia.' http://www.austgamingcouncil.org.au/images/pdf/Research_Status/agc_rs_30aug07.pdf (accessed August 2007)

Banks, Gary, 'The Productivity Commission's Gambling Inquiry: 3 Years On', *Gambling Research* 15(1), pp. 7-27.

Croshaw, Perrie, 'Hard Luck', *Sydney Morning Herald*, Enterprise insert within Money liftout, 20 June, 2007, p.8.

DHI: Diversity Health Institute. 'What are the odds of winning?' http://www.dhi.gov.au/mpgs/faqs.htm (accessed August 2007)

Dillon, J. (ed, Money&You), 'What are the odds of winning', *Daily Telegraph*, Sydney, 4 September, 2006, p.60.

Dow, Steve, 'When fortune smiles', *Sydney Morning Herald*, Spectrum liftout, 4 August, 2007, pp. 21-22.

Gambler's Help, 'Like Your Chances? The Odds are against you!' http://www.problemgambling.vic.gov.au/firststep/resources/like_your_chances.htm (accessed August 2007)

Goffman, Erving, (1969) *Where the Action Is*, Allen Lane – The Penguin Press, London
Lowndes, Peter, 'The love of losing', *The Age*, Melbourne, 23 June, 2007, p. 7.
NSW Lotteries, 'Responsible Gaming'. http://www.nswlotteries.com.au/gaming/LotteryOdds.html (accessed August 2007)
O'Brien, Kerrie, 'For gamblers the odds are a little … dicey', 'Investor lift out', *Sun Herald,* 20 September, 2006.
OLGR. NSW Office of Liquor, Gaming and Racing, 'Prevalence of Gambling and Problem Gambling in NSW'. http://www.olgr.nsw.gov.au/pdfs/rr_prevalence_gambling.pdf (accessed August 2007)
Rosecrance, John, (1988) *Gambling Without Guilt*, Brooks/Cole Belmont California

(1985) *The Degenerates of Lake Tahoe*, Peter Lang New York
Pearlman, Jonathan, 'Habit of those who can least afford it', *Sydney Morning Herald*, 19 June, 2007, p. 6.
Productivity Commission (1999), *Australia's Gambling Industries*, Report No. 10, Ausinfo, Canberra, November, passim.
http://www.pc.gov.au/inquiry/gambling/finalreport/index.html
TAB Chief Executives' Statistics, published annually by NSW TAB from 1970 to 1998.
Tanioka, Ichiro, (1999), 'The Gaming and Gambling Market in Japan'. Paper to the 1999 Asia Pacific Casinos and Gaming Conference, Manila, Philippines.
Walker, Michael, (2004), 'The Seductiveness of Poker Machines' *Gambling Research* 16 (2), pp. 52-56.