

# PRE-COMMITMENT AS A STRATEGY FOR MINIMIZING GAMBLING-RELATED HARM

Dr. Robert Williams

Professor, Faculty of Health Sciences &  
Coordinator, Alberta Gaming Research Institute

University of Lethbridge

Lethbridge, Alberta; Canada; T1K 3M4

[Robert.williams@uleth.ca](mailto:Robert.williams@uleth.ca)

Published on July 8, 2010

## Abstract

Pre-commitment is a relatively new harm minimization strategy for problem gambling. To date, its primary use has been in casino self-exclusion programs, a few Internet gambling sites, and to limit land-based EGM play in a few jurisdictions. Empirical research on it is quite limited, but does tend to indicate that it holds significant promise as an additional technique to promote responsible gambling and to limit the harms associated with problem gambling. Drawing on the existing research, as well as lessons of problem gambling prevention research, it is reasonable to surmise that the degree to which pre-commitment is voluntary, revocable, exceedable, of short duration, available for just some EGMs or some Internet sites, available for just some forms of gambling, and does not use biometric ID, is the degree to which the technique is primarily of benefit to non-problem gamblers (which may or may not translate into a decreased future incidence of problem gambling). In contrast, the degree to which all avenues for excessive gambling have been closed, is the degree to which the technique likely has broader utility for problem and non-problem gamblers.

## What is Pre-Commitment?

“Pre-commitment” refers to a harm minimization strategy whereby pre-set limits on time, frequency, or money spent gambling are registered prior to the start of play. Pre-commitment usually refers to player-initiated limits, to distinguish it from the limits that may be imposed by the operator, government, or the actual gambling format. Pre-commitment is believed to be a useful harm minimization strategy because it a) allows the player to make more rational decisions about gambling involvement prior to actually engaging in gambling (Parke et al., 2008) and b) obliges the player to keep to these preset limits. Research indicates it is fairly common for regular gamblers (including problem gamblers) to have budgetary limits in mind prior to gambling (McDonnell-Phillips, 2006). However, research

also indicates that these limits are often exceeded (McDonnell-Phillips, 2006).

## How is pre-commitment currently being used?

### Casino Self-Exclusion

Casino self-exclusion programs represent a form of pre-commitment. Informal self-exclusion programs have been used by various casinos since at least the 1960s. The first formal program was initiated in 1989 in Manitoba, Canada, coincident with the opening of the country’s first permanent, year-round casino. Since that time, many casinos and jurisdictions around the world have adopted self-exclusion programs (Nowatzki & Williams, 2002; Responsible Gambling Council, 2008; Williams, West, & Simpson, 2007; 2008).

The features of these programs vary depending on the jurisdiction. The contract may apply to just one casino, or to all casinos in the jurisdiction. In a few jurisdictions, the exclusion extends to other gambling venues such as bingo halls or racetracks. Self-exclusion programs usually require casino operators to remove excludees from mailing lists. The policy may also require casinos to refer to their list of self-excluded persons before issuing new player loyalty cards, cashing cheques, extending credit, or paying out large jackpots. Self-exclusion contracts are usually irrevocable for the time period covered, although a few jurisdictions have a process for agreements to be revoked before they expire. Some jurisdictions offer a fixed time period, whereas others offer a choice of ban length, ranging from 6 months to lifetime. Requirements for re-entry vary, with some jurisdictions having no requirements and others requiring a waiting period, a formal review process, or a gambling education seminar. Most countries<sup>1</sup> require government issued ID at the entrance which is scanned and compared to the digitized self-excluder list. In countries that do not require ID, security personnel are required to identify self-excluders from a book of photographs. In some jurisdictions, people who breach their contracts are simply asked to leave. In other jurisdictions, they may be subject to a trespassing charge and/or fine.

In addition to absolute bans, certain countries (Netherlands, Denmark), offer casino 'visit limitation contracts' (Williams et al., 2008). The requirement to show ID at Dutch casinos gives Holland Casino the ability to track the frequency of casino visitation. If there has been a significant increase in visitation frequency or

---

<sup>1</sup> For Western countries this includes: Austria, Belgium, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Macedonia, Malta, Moldova, Monaco, Netherlands, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, United Kingdom.

the person has had 20 visits a month over the past 3 months then the person is automatically approached to see whether they would like to sign a visit limitation contract or self-exclusion contract.

### Internet Gambling

Pre-commitment has been offered for several years on a small portion of the ~2,300 existing online gambling sites (Wood & Williams, 2009). Here again, the pre-commitment parameters available to the player vary depending on the site. Most common are deposit limits (e.g., daily, weekly, monthly); bet size limits; loss limits (e.g., weekly, monthly, yearly); short-term exclusion from certain game types (e.g., 6 months); and short- total account suspension (e.g., 6 months). For most sites, deposit and loss limits tend to be revocable, but self-exclusion irrevocable.

Some of the voluntary online gaming regulatory bodies (e.g., e-Commerce and Online Gaming Regulation and Assurance ([eCOGRA](#))) require some form of pre-commitment for site accreditation. In the case of eCOGRA, sites are required to allow the player to set a maximum bet limit as well as to self-exclude for periods of time.

Currently, there is no system in operation which links all Internet gambling sites within a jurisdiction, or across jurisdictions, with an integrated self-exclusion or pre-commitment regime.

### Plastic/Smart Cards for Land-Based Gambling

Most of us are familiar with simple magnetic strip plastic cards with an associated PIN (Personal Identification Number). A 'smart card' is any pocket-sized plastic card with embedded integrated circuits providing some limited memory and/or microprocessor capabilities when interacting with external card-reading devices. They can be used for identification, authentication, data storage, and

application processing. In gambling, these devices have been most common used as a Player Loyalty/Reward card and/or a debit card for cashless gambling. However, a few jurisdictions have used plastic cards and smart cards that enable gamblers to establish limits on their gambling behaviour.

#### Australia<sup>2</sup>

The Crown Casino, in Melbourne, Victoria was the first casino in the world to introduce player pre-commitment monetary limits on their EGMs<sup>3</sup> in 2002 using a simple plastic card with a PIN. However, play did not stop when limits were met and players did not have to carry ID to play. Beginning in December 2010 all new “next generation” EGMs in Victoria will have to have a pre-commitment mechanism that allows a player to pre-set time and loss limits. All EGMs in the state of Victoria (i.e., 30,000 in 550 venues) will have to have such a system by 2013. However, use of pre-commitment by players will be voluntary.

Queensland conducted its first trial of voluntary pre-commitment in 2005 at a single venue. In 2008-2009, Queensland conducted another trial of pre-commitment of time and monetary expenditure in two venues using a cashless gaming system. Currently, pre-commitment card-based gambling is operational across 48 gambling venues. However, use by the player and by the venue is voluntary.

In 2008, Worldsmart Technology conducted a trial of smart card time and spending pre-commitment via their loyalty cards in South Australia. However, similar to Victoria, play was allowed to continue after limits had been had

---

<sup>2</sup> Further details of the Australian pre-commitment systems are contained in the Productivity Commission (2010).

<sup>3</sup> EGMs refers to slot machines, video lottery terminals, electronic keno, poker machines, fruit machines, fixed-odd terminals, etc.

been reached and players were not required to use their loyalty card to play. In 2009, Global Gaming Industries conducted a similar trial using player cards with radio frequency ID tags (RFID) in two venues.

New South Wales has some provision for pre-commitment on loss limits on cashless / card-based gambling.

#### Nova Scotia, Canada

The Nova Scotia Gaming Corporation (NSGC) piloted the use of pre-commitment smart card between 2005 to 2007. As a result of this research, NSGC is currently in the process of installing an ‘Informed Player Choice System’ – more recently referred to as ‘My-Play’ - on all of the province’s 2,800 video lottery terminals (VLTs). Players begin by registering with the system using their driver’s license or other government-issued ID to obtain a plastic card and an associated PIN.<sup>4</sup> This information is used to create a unique identifier, with no personally identifying information retained on the central system. The card is then placed into a VLT to use the machine as well as to access player information tools. These tools allow the player to a) determine amount spent in the past day, week, month, or year; b) set daily, weekly, monthly, or yearly limits on spending; c) set daily, weekly, monthly, or yearly limits on amount of time they wish to play; and d) lock themselves out for 1-3 days.

Use of a card is currently voluntary. Limits are irrevocable. NSGC has indicated that Non-problem gamblers are the primary target of this system in an effort to reduce the future incidence of problem gambling.

#### Sweden

The state owned gambling operator, Svenska Spel, began offering a smart card in 2006 coincident with the launch of its online poker site. This card can now be used for its online

---

<sup>4</sup> Venue-assisted enrollment is possible with 2 pieces of ID (e.g., Health Card/Phone Bill).

poker and sports betting, as well as for land-based bingo, lotteries, and sports betting. Card use is mandatory only for online gambling. To use the card, the card number, username and password are required. The card allows players to a) transfer money onto the card from their bank account; b) see a summary of their past 12 months of gambling behaviour; c) set monetary spending limits; d) set time limits; e) exclude themselves for brief periods of time; and f) obtain a risk assessment of their behaviour. 'PlayScan' is the risk assessment tool that compares the player's behaviour against known problematic gambling behaviour. It allegedly can determine whether a player is currently experiencing problematic levels of gambling behavior and/or is at risk for future problems. For online poker, it is mandatory for players to set their own limits regarding day, week, and month money spending, as well as session, day and month time limits. However, there is no maximum time or monetary limit. If the customer wants to increase their limits, they need to wait 24 hours whereas decreased limits take immediate effect. Players are kept informed of how close they are to their limits.

#### Norway

In 1992 Norway's state owned gambling operator, Norsk Tipping, introduced a magnetic strip player card allowing lottery purchases to be directly made from a person's bank account and any winnings directly deposited. By 2005 all of these cards were replaced with smart cards for enhanced security. Since February 2009 the use of these smart cards has become mandatory for all forms of gambling (online gambling, sports betting, EGMs) except lotteries and instant win tickets. Players can use the cards on their home computers with the use of an accompanying card reader. Because the cards are connected with the player's bank account, money can be put directly onto them. Players can also add money to their card by giving cash to retailers, who then put a credit for that amount onto the card. Norsk Tipping limits the amount that can be put on the card to 400 kroner per day or 2200 Kroner per month.

The card provides play summaries, money and time limit setting (i.e., players can set lower limits than mandated by Norsk Tipping), exclusion for up to 100 days, and risk assessment. For EGMs (called Interactive Video Terminals, IVT) <sup>5</sup> players must insert their card, verify their player ID, and then remove the card before they can start playing. After one hour of continuous play, the EGM refuses that player's bets for a 10-minute cooling off period.

#### New Zealand

The New Zealand online lottery (which commenced in 2008) requires players to set weekly and monthly spending limits, with a maximum of NZ \$150/week and \$300/month. Self-exclusion for certain types of lottery games is also available.

#### Singapore

The government of Singapore has mandated pre-commitment for all forms of gambling within their two casinos by 2011. The limits that are set also apply across all forms of casino gambling. Singapore also employs casino self-exclusion (with ID checks at the door).

#### **How effective is pre-commitment?**

There is very limited research on the effectiveness of casino self-exclusion, and that which exists tends to be of poor quality and conducted in jurisdictions without effective detection systems (Williams & Nowatzki, 2002; Productivity Commission, 2010; Responsible Gambling Council, 2008; Williams, 2010). A full discussion of self-exclusion effectiveness is beyond a scope of this paper. However, suffice to say that evidence tends to indicate that a) only a small portion of at risk and problem gamblers are aware of casino self-exclusion programs and an even smaller percentage ever utilize them; b) most people who self-exclude tend to report that the program was helpful in

---

<sup>5</sup> IVTs were privately operated until 2003 and then taken over by Norsk Tipping.

reducing or stopping their gambling for a short period of time (and a small minority for longer periods of time); c) in jurisdictions that do not require ID, a large percentage of people re-enter the casino during their ban without being detected; d) the overall effectiveness of the program is presumed to be much higher in jurisdictions that require ID for entry (Williams & Nowatzki, 2002; Productivity Commission, 2010; Responsible Gambling Council, 2008; Williams, 2010).

Anecdotally, problems have been expressed about the effectiveness of pre-commitment when non-pre-commitment EGMs are also readily available (as is the case in New South Wales (NSW)) (Nisbet, 2005). There is also a concern that because of the significant amount initially put on the card (e.g., \$200 in NSW) gamblers may increase spending, either due to more money being readily available or because they require less embarrassing interactions with cashiers and other gambling venue staff (Parke et al., 2008). That being said, people who have opted to use cards for the purposes of pre-commitment and have agreed to report on their use tend to indicate that the card helped them manage their spending (Nisbet, 2005).

Schrans, Grace and Schellinck (2004) found that a feature allowing players to set a time limit on their VLT play was only effective in influencing one of the six behaviours being targeted for improvement.

Focal Research Consultants (2007) tracked VLT play for a 6 month period in a region of Nova Scotia that only had player-card activated machines available (~51 EGMs in 9 locations played by 1,824 players). Roughly 71% of regular players (i.e., playing once a month or more) opted to try one of the responsible gambling (RG) features these cards permitted (i.e., spending limit, time limit, 2 day exclusion, or playing history). Roughly 65% of these people continued to use one or more RG features in subsequent sessions. A subsample of these RG adopters (n = 122) had a baseline

period of non-RG use that allowed for a pre-post comparison. These individuals were found to have a significant decrease in per session expenditure (\$47 to \$40), an increase in play length (82 min to 98 min), and no change in frequency of play per month (9.3 to 9.3). Examination of individuals with high risk characteristics found no decrease in expenditure for high frequency players (18+ times in 6 months), and a tendency toward decreased per session expenditure that was offset by a tendency toward increased frequency of play for people with Canadian Problem Gambling Index (CPGI) scores of 5 or higher. It was also found that approximately 37% of players swapped cards and/or obtained them from venue staff to circumvent the system, with this being particularly true for people with higher CPGI scores (Bernhard et al., 2006; Omnifacts Bristol Research, 2007).

Preliminary results from the 2009 Worldsmart South Australian (SA) trial showed that less than 1% of loyalty card holders had voluntarily activated the pre-commitment options on their card (Productivity Commission, 2010). For those who did, the most popular options were limits on: daily spending (59% of cards); breaks in play (19%); weekly spending (14%); monthly spending (12%); daily duration of play (10%); monthly duration of play (8%); fortnight spending (6%); weekly duration of play (4%); fortnight duration of play (4%); and spending history (3%). Utilization of pre-commitment features tended to increase with time. Among the 94 individuals with 3 months of baseline data, there was a 25% reduction in daily turnover subsequent to utilization of pre-commitment. However, it is possible these individuals continued to gamble and just decreased use of their voluntary card. There were also 600 instances where players exceeded their pre-established limits (in the SA system, when a limit has been met it can be overridden by venue staff). It is unknown what percentage of pre-commitment breaches this 600 figure represents (Productivity Commission, 2010).

Results from the 2009 Queensland Maxgaming's Simplay system showed that only 15% of Simplay cardholders opted to use pre-commitment, although this percentage may be higher for at-risk groups (Productivity Commission, 2010). The most popular option (used by 45 out of 340 people) was a daily spending limit. No one set playing time limits. Thirty of the 45 people setting spending limits exceeded them on at least one occasion. There was tentative evidence that expenditure may have decreased subsequent to limit setting. However, here again, this assumes that players did not continue playing using cash (i.e., once a limit was exceeded the only consequence was the inability to use the card for cashless gaming). Since the system has been expanded throughout Queensland approximately 14,000 people have opted to use this voluntary system. Of these people, 9% have set spending limits (with this percentage increasing over time).

Results from the Odyssey trial in Queensland were similar, with only 5% of players ( $n = 66$ ) opting into cashless gaming (that would also allow pre-commitment), and 28% of these latter individuals opting to set a daily spending limit. Sixty percent of users reported that pre-commitment was useful, with this percentage being higher for high-risk players. There was also a 40% reduction in spending by players who set limits compared to a 3% reduction in players who did not set limits. However, this reduction might be offset by increased cash-based play, as this option continued to be available (Productivity Commission, 2010).

Because of the mandatory nature of the Swedish and Norwegian systems, a large percentage of the gambling population have obtained smart cards (in 2008 this was roughly 1.3 million Swedes and 1.9 million Norwegians) (Responsible Gambling Council, 2009).

The Internet Poker Committee (2008) (cited in Responsible Gambling Council, 2009) surveyed approximately 3,000 participants of the Swedish

online poker pre-commitment system. Participants reported that a) monetary limits were more useful than time limits; b) 1/3 of players set monetary limits that were excessively high and 40% set time limits that were excessively high (essentially disabling the pre-commitment system); c) for individuals who hit their limits, 37% went to another online site and 32% simply changed their limits; d) 5% of players barred themselves for a period of time, with one week being the most common length (25% of people who barred themselves also began playing online poker at other sites); e) 26% used the risk assessment option and 52% of these individuals found it useful.

Although there is no available empirical research on the effectiveness of the Norwegian system, it is instructive to note that Norway has one of the world's lowest documented rates of problem gambling (significantly lower than other Nordic countries such as Finland and Sweden) (AGRI, 2010).

In summary, the empirical research on the effectiveness of pre-commitment is fairly limited, but that which does exist indicates that it holds promise as a harm-minimization technique. Part of the problem in evaluating pre-commitment concerns the many different ways of implementing it (i.e., mandatory or voluntary; exceedable vs. nonexceedable limits; revocable vs. nonrevocable limits; short vs. long duration of limits; presence on all or just some EGMs; etc.). Similar to research on other problem gambling prevention initiatives, the 'devil is in the details' and the actual effectiveness of a technique is usually very much dependent on how it is applied (Williams et al., 2007; 2008). Drawing on the lessons of problem gambling prevention research (Williams et al., 2007; 2008), it is reasonable to surmise that the degree to which pre-commitment is voluntary, revocable, exceedable, of short duration, available for just some EGMs or some Internet sites, available for just some forms of gambling, and does not use biometric ID, is the degree to which the

technique is of primary benefit to non-problem gamblers (which may or may not translate into a decreased future incidence of problem gambling).<sup>6</sup> In contrast, the degree to which all avenues for excessive gambling have been closed, is the degree to which the technique likely has broader utility for problem and non-problem gamblers.<sup>7</sup> Similar to what is found for other products with some risk of harm (alcohol, tobacco, firearms, motor vehicles), the most effective overall harm reduction strategies are ones that unfortunately also tend to constrain and restrict the behaviour of people who are not at risk of developing problems (Williams et al., 2007; 2008).

### **Elements of an Effective Pre-Commitment Regime (for all gamblers)**

1. *Pre-commitment should be available on all EGMs jurisdiction-wide.* EGMs are the most problematic form of gambling in western countries and are the devices where pre-

---

<sup>6</sup> With reductions subsequent to limit setting in problem gamblers having more to do with a resolve to decrease gambling, as opposed to any constraints imposed by the self-commitment. This is very similar to the presumed mechanism for reduced gambling seen in casino self-exclusion programs where no effective mechanisms for enforcement of the contract/program exist. In other words, the act of self-exclusion (or pre-commitment) is reflective of a recognition that a problem exists and an intent to do something about it, with the self-exclusion contract (or act of pre-commitment) being a convenient documentation/proclamation of this intent. Hence, the primary driving force behind the reduction in gambling is this new-found motivation and recognition, rather than the imposed constraints (Nowatzki & Williams, 2002).

<sup>7</sup> One of the defining features of problem gambling is 'impaired control' (Neal et al, 2005). Hence, it is naïve to think that simply providing problem gamblers with information about their gambling and/or 'choice' will be sufficient to curb their gambling.

commitment has the most harm minimization potential. If pre-commitment implementation is not pervasive, problem gamblers will tend to seek out geographic locations or EGMs where their pre-commitment does not apply.

2. *Pre-commitment is best applied across all forms of gambling.* Problem gamblers will seek out less preferred forms of gambling if their limits have been met on EGMs. Pre-commitment is most easily extended to other forms of gambling with existing electronic interfaces (e.g., Internet gambling; casinos that require ID for entry). However, electronic interfaces could potentially be created for other forms of gambling as well. The biometric USB key by Responsible Gaming Networks Pty Ltd is particularly well suited for broad application across gambling formats because of its built in connectivity to the Internet, TV set-top boxes, wagering terminals, lottery terminals, and mobile phones (Productivity Commission, 2010; Responsible Gambling Council, 2009; Ryan, 2010).

3. *Pre-commitment will be much more effective if it is mandatory.* Voluntary use of pre-commitment is likely to be low. Although many people indicate they would utilize pre-commitment if it was available, actual usage when it is available is much lower (Parke et al., 2008). The effort involved initiating it, stigma, privacy concerns, and failure to appreciate the benefits are all contributing factors. Although most gamblers do not need to use pre-commitment, they may find some benefits if they did, particularly at-risk and problem gamblers. On the other hand, it is also true that there is clinical utility in coming to the realization that pre-commitment is needed. If a voluntary or opt-out system is used, it will be important that once a person begins using pre-

commitment that they be obliged to continue using it.<sup>8</sup>

4. *Pre-commitment should offer a range of limit types, values and durations.* Monetary limits appear to be the most important, but there may be a small percentage of people who would benefit from time or frequency limits. A wide range of available limits for money, time, and frequency would accommodate all types of gamblers. This would include the option of setting zero values that would act as a form of exclusion. A recommended duration range for these parameters would be 1 day to 5 years. The shorter durations would give people the opportunity to try different parameters before settling on ones that are best for them. The longer durations would enable problem gamblers to establish more enduring constraints. Similar to casino self-exclusion, most jurisdictions currently only offer a selection of short pre-commitment durations, which sends the wrong message to problem gamblers (the majority of whom will have life-long propensities to gamble excessively and should be establishing long-term constraints).

5. *Pre-commitment parameters should not be exceedable or revocable.* In the case of problem gamblers, pre-commitment is an attempt to put external constraints on behaviour usually after internal limits/constraints have been repeatedly broken. Thus, it defeats the purpose of pre-commitment to have exceedable or revocable limits (otherwise it simply becomes a resolution rather than a commitment).

---

<sup>8</sup> The medication disulfiram (Antabuse) is a somewhat analogous harm minimization strategy for alcohol abuse. People who take this medication become ill if they consume alcohol within the next day or two. Hence, a person takes disulfiram as a form of pre-commitment not to use alcohol. However, 50 years of research has demonstrated disulfiram to have very poor clinical efficacy because alcohol abusers have poor resolve to take the medication on a consistent basis (Hughes & Cook, 2006).

6. *A biometric identification system is needed.* Some sort of identification system is needed so that all versions of the gambling format(s) within the jurisdiction recognize the individual and his/her preset limits. It is also important that this identity system be biometric, otherwise some people (particularly problem gamblers) will endeavour to use other identities/cards when their own limits have been met. Smart cards with PINs are an improvement over regular cards, but still do not prevent card swapping, borrowing, or selling. Unless the card is used for other important purposes, then some gamblers (or potentially venue staff) will give away or loan their PIN smart card to other players. A biometric system is also the best protection against underage gambling.

7. *Central storage of pre-commitment information is less preferable to storage on the player's pre-commitment interface device.* Utilization of pre-commitment tends to be fairly low, which is partly related to concerns that one's play is being recorded or monitored by someone else (Bernhard et al., 2006; Omnifacts, 2007; Parke et al., 2008). Significantly greater utilization will occur if the player is confident his/her gambling behavior is confidential. Privacy laws in some jurisdictions will also require this (IGA, 2005). Non-central storage also ensures that the gambling provider does not use this player data for purposes inconsistent with player protection (e.g., marketing).

8. *Loyalty/reward cards should not be used for the purposes of pre-commitment.* These two things are incompatible, in that traditional loyalty/reward cards encourage play, whereas pre-commitment technologies constrain play.<sup>9</sup>

---

<sup>9</sup> In general, Loyalty/Reward cards are not conducive to responsible gambling. However, if they are to exist they should be rewarding responsible play, rather than amount of play.



## My Background

I am a full professor in the Addiction Counselling Program, Faculty of Health Sciences, University of Lethbridge (Alberta, Canada) as well as a Coordinator for the Alberta Gaming Research Institute. I have published widely in the area of gambling; teach courses on the subject; provide frequent consultation to government, industry, and the media; presented my work at many national and international conferences; and am currently co-editor of *International Gambling Studies*, which is one of the two primary journals in this field. I am one of the world's best funded gambling researchers and also recognized as a leading authority in the areas of: prevention of problem gambling; Internet gambling; the socioeconomic impacts of gambling, the proportion of gambling revenue deriving from problem gamblers; the prevalence and nature of gambling in Aboriginal communities; and the etiology of problem gambling.

## References

Alberta Gaming Research Institute (2010). *Problem Gambling Prevalence: Canada, U.S., International*. [http://www.abgaminginstitute.ualberta.ca/library\\_reference.cfm](http://www.abgaminginstitute.ualberta.ca/library_reference.cfm)

Bernhard, B.J., Lucas, A.F., Jang, D. (2006). *Responsible Gaming Device Research Report*. International Gaming institute. University of Nevada, Las Vegas.

Focal Research Consultants. (2007). *Assessment of the behavioural impact of responsible gaming device (RGD) features: Analysis of Nova Scotia player-card data - the Windsor trial*. Report prepared for the Nova Scotia Gaming Corporation. Retrieved November 14, 2007, from <http://www.nsgc.ca/pdf/Focal%20Research%20Report%20 2 .pdf>

Hughes, J.C. & Cook, C.C.H. (2006). The efficacy of disulfiram: a review of outcome studies. *Addiction*, 92 (4), 381-395.

Independent Gambling Authority (IGA). (2005). *Inquiry into smartcard technology: Report*. <http://www.iga.sa.gov.au/pubcons/smartcrd/SCTInqRep-final-web.pdf>

McDonnell-Phillips (2006). *Australian National Survey of Gambler Precommitment Behaviour 2005*. Commissioned by Gambling Research Australia.

Neal, P., Delfabbro, P., & O'Neil, M. (2005). *Problem gambling and harm: Towards a national definition*. Commissioned for the Ministerial Council on Gambling. Prepared by the SA Centre for Economic Studies with the Department of Psychology, University of Adelaide. November 2005. <http://www.adelaide.edu.au/saces/gambling/publications/ProblemGamblingAndHarmTowardNationalDefinition.pdf>.

Nisbet, S. (2005). Responsible gambling features of card-based technologies. *International Journal of Mental Health & Addiction*, 3(2), 54-63.

Nowatzki, N. R., & Williams, R. J. (2002). Casino self-exclusion programmes: A review of the issues. *International Gambling Studies*, 2(1), 3 - 25.

Omnifacts Bristol Research. (2007). *Nova Scotia player card research project: Stage III research report*. Retrieved May 30, 2007, from <http://www.nsgc.ca/pdf/Omnifacts%20Bristol%20Research%20Report.pdf>

Parke, J. Rigbye, J., Parke, A. (2008). *Cashless and card-based technologies in gambling: A review of the literature*. December 2008. Commissioned by the U.K. Gambling Commission.

Productivity Commission (2010). *Australian Government Productivity Commission Inquiry Report*. February 2010.

Responsible Gambling Council (2008). *From Enforcement to Assistance: Evolving Best Practices in Self-Exclusion*. March 2008. Responsible Gambling Council, Toronto, Ontario.

Responsible Gambling Council (2009). *Play Information and Management Systems*. Responsible Gambling Council, Toronto, Ontario.

Ryan, P. (2010). *Recent Global Developments in Player Pre-Commitment Policies to Reduce Problem Gambling*. Presentation at the New Zealand International Gambling Conference 2010. February 26, 2010. Auckland, New Zealand.

Schrans, T., Grace, J., & Schellinck, T. (2004). *2003 NS VL responsible gaming features evaluation: Final report*. Report prepared by Focal Research Consultants Ltd. for the Nova Scotia Gaming Corporation, Halifax, Nova Scotia, October 2004. Retrieved August 12, 2006 (and URL updated February 26, 2009), from <http://www.nsgc.ca/pdf/RGFeatureEnhancementStudy.pdf>

Williams, R.J., West, B., and Simpson, R. (2007). Prevention of problem gambling. In G. Smith, D. Hodgins, and R.J. Williams (eds.), *Research and Measurement Issues in Gambling Studies*. pp. 399-435. San Diego, CA: Elsevier. <http://hdl.handle.net/10133/414>

Williams, R.J., West, B., and Simpson, R. (2008). *Prevention of Problem Gambling: A Comprehensive Review of the Evidence 2008*. Report prepared for the Ontario Problem Gambling Research Centre, Guelph, Ontario, Canada. Dec 1, 2008. <http://hdl.handle.net/10133/414>

Williams, R.J. (2010). *Peter A. Dennis & Zubin P. Noble versus The Ontario Lottery & Gaming Corporation (OLG)*. (Report on the effectiveness of casino self-exclusion.) Submitted to the Ontario Superior Court of Justice. Court File No.: CV-08-00356378-000. Date heard: Jan 13 – 15, 2010.

Wood, R.T. & Williams, R.J. (2009). *Internet Gambling: Prevalence, Patterns, Problems, and Policy Options*. Final Report prepared for the Ontario Problem Gambling Research Centre, Guelph, Ontario. January 5, 2009. <http://hdl.handle.net/10133/693>