Low-Risk Gambling Guideline: A Review of the Evidence

Phase 1

Developed by:
The Responsible Gambling Council
on behalf of

ccgr

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Background

Gambling has become part of the fabric of Canadian society, stretching across each province. It has provided governments with substantial sources of revenue and the public with engaging forms of entertainment. However, gambling can become a risky and harmful activity for some Canadians, posing a challenge for policy makers, public health officials, treatment specialists, operators, gamblers, their families, and others.

Gambling harm can stem from behavioural difficulties that contribute to the excessive spending of money and time on gambling. This phenomenon is often associated with negative consequences and harms for gamblers, their close social relations, and the broader community (Ashley & Boehlke, 2012; Gambling Research Australia, 2005). Negative consequences of risky gambling behaviour for individuals can include psychological problems, financial distress, relationship troubles, criminal activity, poor physical health, and even suicide (Blaszczynski, Parke, Parke, & Rigbye, 2014; Ferris & Wynne, 2001). Problematic gambling behaviour can also contribute to family disruption, sometimes resulting in divorce, as well as broader socioeconomic issues such as job absenteeism, lost productivity and unemployment (Williams, Belanger, & Arthur, 2011). Recent estimates of the burden of harm associated with gambling in Victoria, Australia estimated 111,697 Years-of-Life-Lost to Disability, which is nearly comparable to the burden of major depressive disorders and alcohol use and dependency (Browne et al., 2016).

These issues continue to fuel the development of responsible gambling research and interventions. Blaszczynski and colleagues (2011: 568) provide a reasonable definition of this concept:

> responsible gambling strategies attempt to impose a duty of care to protect the public from gambling-related adverse events by: (1) educating individuals about the nature of gambling as a recreational product containing associated risks, notably the potential to become excessively preoccupied with gambling and developing an inability to cease or control gambling despite negative consequences in domains of social, legal, employment and familial functioning; (2) encouraging players to wager within affordable limits; and (3) providing sufficient information about a game to allow players to exercise informed decisions regarding all aspects of their participation.

To date, research on psychological and behavioural risk factors, including impulsivity and poor coping strategies for monetary loss, have led to promising prevention and harm mitigation developments (Ashley
& Boehlke, 2012; Blaszczynski et al., 2014; Responsible Gambling Council, 2013). For instance, some studies indicate that understanding odds and how games work can have a protective effect against gambling risk and harm (Costello & Fuqua, 2012; Xuan & Shaffer, 2009). Of particular interest has been research surrounding the area of time and money management, which is thought to hold the potential for effective and practical quantitative limits to minimize gambling risk (Currie et al., 2006, 2012; Weinstock, Whelan, & Meyers, 2008). In a preliminary scan of responsible gambling in Canada and abroad, six key domains of interest were most prominent:

1. Money Management
2. Time Management
3. Game Mechanics
4. Balancing Life and Leisure Activities
5. Emotional Awareness
6. Awareness of Gambling Risks and Support Services

Recent efforts to establish domains of gambling risk and harm have yielded several commonalities. For instance, Brown et al. (2016) argue that negative health impacts, emotional and psychological distress, financial difficulties, reduced productivity, relationship troubles, and other broader social impacts represent the key domains of harm. These domains overlap, to a large extent, with the six key domains listed above and provide added rationale for their application in a Canadian context.

These domains represent a starting point in a targeted evidence review for the development of Canada’s first National Low-Risk Gambling Guidelines (NLRGG). Like the past development of national guidelines for low-risk alcohol consumption, the present development of NLRGG seeks to empower Canadians to make informed decisions about their gambling activities and reduce the potential risks and harms in so doing.

As can be inferred, gambling risk can be characterized both intrinsically and extrinsically. Intrinsic risks pertain to vulnerabilities inherent to the individual. This may include problems with self-regulation of addictive behaviour, neurobiological issues, lower education relating to health and mathematics, and a history of mental illness (e.g., anxiety disorders, mood disorders, and personality disorders) (Black & Moyer, 1998; Brown & Newby-Clark, 2005; Potenza, 2013). As well-established topics in the field of psychology, problem and pathological gambling research has traditionally focused on these intrinsic and individual mental health issues that help characterize those at risk and who may experience harm.
This trend in focus is made evermore apparent when examining the key domains of responsible gambling listed above—most of which relate to aspects of self-regulation and monitoring of mental health and well-being.

In addition, extrinsic risks are a more recent focus of responsible gambling research and can be described as game-driven risks or those associated with the gaming environment. Slot machines and electronic gaming machines stand out as an illustrative example of this phenomenon. Slot machines and similar games adopt various design principles that aim to increase entertainment value, but also prolong gambling behaviour and expenditures (Fisher & Griffiths, 1995; Harrigan, Collins, Dixon, & Fugelsang, 2010; Harrigan, 2009; Haw, 2008; King, Delfabbro, & Griffiths, 2010; Ladouceur & Sevigny, 2005; Livingstone & Woolley, 2008). Harrigan and colleagues (2010) provide a useful breakdown of these principles and are presented below, in Table 1.

Table 1: Game Design Principles Associated with Extrinsic Gambling Risks

<table>
<thead>
<tr>
<th>Design Principle</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Rewards**              | • Rewards can be financial, auditory and/or visual  
• False coin sounds can amplify sense of wins and contribute to stress and arousal  
• Large jackpot wins trigger lights and sirens, often leading to peer praise as gaming staff pays out in person  
• Slots provide regular small wins  
• Reinforcement schedule helps maintain gambler interest  
• Small wins help disguise losses  
• A type of non-reward designed to increase entertainment value, but also number of games played  
• 12:1 near miss ratio is considered “sweet spot” to maximize entertainment, reduce walk-aways  
• A win that pays out less than the original wager  
• Physiological response is similar to that of a true win  
• Illusion of control is provided by a “stop” button on slot machines  
• Stop button increases perception that the reel is not random and control can be exercised over it  
• Bonus rounds are designed to periodically stimulate gambler excitement  
• When in bonus round, the player always wins something (e.g., free spin, added prizes, get to play different game)  
• Meta-game rewards allow players to assess overall mastery of a game by comparing themselves to others  
• This can be facilitated by a leaderboard or other forms of recognition and helps to maintain player motivation to gamble |

Source: (Harrigan et al., 2010)
At a fundamental level, the guideline development process will need to clarify and settle on what low-risk gambling is in reference to. While it may be straightforward to assume any form of gambling-related harm would be a reference point, this may be difficult to come to terms with. For instance, there are many forms of gambling-related harm, many of which are difficult to measure at a population level, and providing guidance on the multiple factors that affect each one may not be feasible or practical for the purposes of health promotion. On the other hand, using low-risk gambling as a reference to proximal categories of gambling risk (i.e., non-problem gambler, low-risk gambler, moderate risk gambler, and problem gambler) may not be the most accurate assessment of true risk or the experience of gambling harms. These risk categories and the diagnostic instruments in which they are imbedded often conflate gambling outcomes (i.e., harms) with indicators of addiction (i.e., clinical symptoms) without addressing the possibility that harm can occur without such indicators of addiction (Browne et al., 2016). Ultimately a compromise will need to be made. Likely, acknowledgement that proximal measures of risk, such as the Canadian Problem Gambling Index (CPGI) offer a sufficient, yet imperfect, estimation of gambling risk status and a broad predictor of harm—one that may need to be paired with more precise assessment.

With these issues in mind, this literature review includes an extensive scoping process utilizing the abovementioned domains as its initial framework for considering knowledge of low-risk gambling limits and responsible gambling advice. A review of provincial prevalence studies is also included to explore the alignment between synthesized low-risk limits for time and money from the literature with self-reported gambling across Canada by gambling risk categories. Overall, this review represents a proof of concept exploration and a preliminary guideline development process for Canada’s first NLRGG. The guiding principle behind our vision of NLRGG is a primary prevention tool aimed at all gamblers, not just those experiencing elevated risk or harm. In this sense, this research process adopts the idea that in addition to preventing the development of problematic gambling behaviour, it is also important to reinforce and promote non-problematic gambling (Wood & Griffiths, 2014).

**Scoping Literature Review**

The purpose of the scoping review is to identify and appraise key domains of responsible gambling advice and low-risk gambling limits. Primary considerations for conducting the review included maintaining a balance between available evidence and its relevance to Canadian gamblers—providing a basis on which to promote safer gambling behaviours.
Review Protocol and Sample

The protocol for the review process involved several steps. Firstly, keyword searches (see Appendix A for sample list of terms) of Google Scholar and the University of Toronto’s OneSearch multi-journal-database search system were carried out. These searches were conducted systematically for each of the six key domains of interest (i.e., money management, time management, game mechanics, life and leisure balance, emotional awareness, and awareness of gambling risks and support services) and all articles were retrieved electronically. These domains helped to frame the inclusion and exclusion criteria. No date restrictions were placed on the collection process and most documents were published between 2000 and 2016. Upwards of ten pages of returned search results were scanned for relevant titles and topics. Article abstracts were then screened for collection or omission, again based on relevance to responsible gambling advice and low-risk gambling limits. Retrieved articles were sorted by domain and reviewed individually. Key information summaries for each article and domain were compiled in an Excel spreadsheet. Summaries covered authors’ names, publication dates, document type (i.e., peer-reviewed, grey, empirical, discussion, etc.), topic, methods, key findings, limitations, and applicability to low-risk guidelines. This process was repeated for each of the six domains and preceded second review and spot-check of each included article. Upon this second review pass, several articles were highlighted as very relevant and a few identified as less relevant and removed from the final review sample. The final scoping review represents a synthesis of the aforementioned summaries as well as discussions of strengths, weaknesses, and applicability to the development of the NLRGG.

Table 2: Overview of Literature Sample

<table>
<thead>
<tr>
<th>Low-Risk Gambling Dimensions</th>
<th>Articles Reviewed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money and Time Management</td>
<td>30</td>
<td>All peer-reviewed, empirical studies except 1 grey report</td>
</tr>
<tr>
<td>Game Mechanics</td>
<td>17</td>
<td>All peer-reviewed except 1 grey document. 1 PR literature review, 4 discussion papers and the rest empirical studies</td>
</tr>
<tr>
<td>Life Leisure Balance</td>
<td>19</td>
<td>All peer-reviewed. 1 systematic review, 5 discussion papers and the rest empirical studies</td>
</tr>
<tr>
<td>Emotional Awareness</td>
<td>10</td>
<td>3 grey documents, the rest peer-reviewed empirical studies</td>
</tr>
<tr>
<td>Risk and Support Awareness</td>
<td>9</td>
<td>All peer-reviewed. 1 systematic review and the rest empirical studies</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>85</strong></td>
<td></td>
</tr>
</tbody>
</table>
The total review sample consisted of 85 articles and documents (see Table 2). The vast majority of the sample were from peer-reviewed sources and reflected empirical studies. Money and time management were coalesced into the same review sub-sample due to the overlap in many articles addressing both topics. Further details of the review sub-samples are presented in the Results section below.

**Results**

All review results have been organized according to the six key domains of responsible gambling advice and low-risk gambling limits established previously. Key findings are presented alongside methodological details, limitations, and research context. Discussions of the implications of findings for each domain are also provided.

The general focus of this scoping review and the emergent draft guidelines focus predominantly on the individual gambler. Although it is appreciated and relevant that a broader view of gambling risk and harm has been emerging in the form of *gambling-related harms*—a public health concept accounting for the impacts of gambling on the individuals, groups, and broader civil society—much of the extant literature weighs heavily on the side of individual gamblers. Moreover, it should be noted that even the most recent and extensive applications of the gambling-related harm concept to establish predictive indicators of its key dimensions assert that harms in all categories still accumulate more quickly among individual gamblers than affected others as problems increase (Browne et al., 2016).

**Time and Money Management**

*Time and money management* pertain to the use of personal time and money to gamble in a way that ideally does not place the player at risk for problems. Risk for problems were assessed in most cases using gambling screens such as the Canadian Problem Gambling Index (CPGI) and other diagnostic tools. Rarely, if ever, were impacts of actual harm from gambling activities directly observed or measured.

Research on *time management* show fairly convincingly that the more time one spends gambling, the higher his or her risk becomes for experiencing forms of gambling harm (Currie et al., 2006; McCormack, Shorter, & Griffiths, 2013; Weinstock et al., 2008). With the establishment of this basic consensus, gambling researchers have sought to test the notion of time limit setting to reduce risk and prevent or minimize harm. Table 3 provides a summary of results from some of these efforts.
### Table 3: Low-Risk Limits for Time Management

<table>
<thead>
<tr>
<th>Per Session or Daily Limits</th>
<th>&lt;&lt;60 minutes per session</th>
<th>(Currie, Hodgins, Wang, El-Guebaly, Wynne, et al., 2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;&lt;22.5-33.5 minutes per session</td>
<td>(Quilty, Avila Murati, &amp; Bagby, 2014)</td>
</tr>
<tr>
<td></td>
<td>&lt;&lt;4 hours per session (online)</td>
<td>(McCormack et al., 2013; Nelson et al., 2008)</td>
</tr>
<tr>
<td></td>
<td>&lt;4 bets per day (online)</td>
<td>(Dragicevic, Tsogas, &amp; Kudic, 2011)</td>
</tr>
<tr>
<td>Monthly Limits</td>
<td>&lt;2-3x</td>
<td>(Currie et al., 2006)</td>
</tr>
<tr>
<td></td>
<td>&lt;2x</td>
<td>(Weinstock, Ledgerwood, &amp; Petry, 2007)</td>
</tr>
<tr>
<td></td>
<td>&lt;&lt;2 hours per month (students)</td>
<td>(Weinstock et al., 2007, 2008)</td>
</tr>
<tr>
<td></td>
<td>&lt;4 days per month (online)</td>
<td>(Dragicevic et al., 2011)</td>
</tr>
<tr>
<td>Other Time Limits</td>
<td>1x per week</td>
<td>(Currie, Hodgins, Wang, El-Guebaly, Wynne, et al., 2008; Quilty et al., 2014)</td>
</tr>
<tr>
<td></td>
<td>2-3x per week</td>
<td>(Brosowski, Meyer, &amp; Hayer, 2012)</td>
</tr>
</tbody>
</table>

**Notes:** << implies limits much less than the indicated numeration, which reflected thresholds of problem or pathological gambling.

There are a few aspects to time management that relate to limit setting. *Frequency* is one such aspect and involves the number of times a person gambles during a given period. Frequency is perhaps the most well represented temporal factor in the gambling research literature. It has shown significant association with large representative samples in Canada and more recently using actual behavioural data from online gamblers (Braverman & Shaffer, 2010; Currie et al., 2006; LaBrie & Shaffer, 2011). For instance, Currie and colleagues (2006) found that the optimal frequency among a large sample of Canadians (n=19,012) was no more than 2-to-3 times per month, else the risk of problematic gambling according to the CPGI was found to increase. This limit was very similar to another emerging from Weinstock, Ledgerwood and Petry’s (2007) US study of less than 2 times a month. Currie et al. (2008) followed this up two years later with a replication study using provincial gambling surveys in British Columbia (BC), Alberta, and Ontario and found that despite slight variations across the country, gambling once per week is probably within the low-risk limit for frequency of play. It is noteworthy, however, that Curries’ research examined land-based gambling, predominantly. When considering similar research in the online gambling environment, we see some relative alignment. Behavioural analysis of online casino gambling using GTECH G2 data (random sample of n=546 from 128,788 records) has shown, for instance, that the most moderate gamblers played approximately 4 days in their first month and placed around 15 bets total (or 3.72 bets per day) (Dragicevic et al., 2011). These moderate gamblers, who experienced less monetary loss in
comparison to other analytical clusters (by a factor as low as 4.3 times and as high as 37.9 times), also featured highly variable involvement in game types indicating the broad applicability of this threshold.

Another aspect of limit setting is duration or the amount of time a person plays in one session. This aspect may not be as broadly applicable as frequency, as its relevance can vary according to the game type being played. For example, lottery betting and sports betting do not require continuous involvement, reducing the importance of duration. However, other forms of gambling that do feature continuous forms of gambling activity may benefit from duration-based limits. For instance, using data from an Alberta gambling prevalence survey (n=1804), Currie and colleagues (2008) note that a reasonable low-risk limit is around 60 minutes or less. While no game-specific association is attached to this limit, one can assume it bears most relevance to forms of gambling such as electronic gaming machines (EGMs) where time involvement can be extended by short time periods between wager and outcome and encourage repetitive, continuous play. With regard to online gambling, McCormack et al. (2013) surveyed gamblers (n=1119) from Britain, the US, Canada, Australia and other locations to uncover predictors of problem gambling, noting that players meeting the Problem Gambling Severity Index (PGSI) criteria of the CPGI for problem gambling often gambled 4 or more hours per session. Based on these findings, a low-risk limit for duration of play on a given occasion is likely lower and may fall in line with Currie et al.’s (2008) suggested limit of 1 hour. Limits relating to monthly duration of gambling were also presented in Weinstock et al.’s work (2007, 2008) and specified no more than 1.5 hours or less than 2 hours to remain in the problem-free category of gambling activity.

Time of day represents a less examined aspect of low-risk gambling, but one that may prove to have more relevance now and into the future. Access and availability to gambling opportunities on land at 24-hour casinos and online, where hours of operation are irrelevant, have provided a time of day context for risky gambling. For instance, research into sleep deprivation and gambling shows major impairment on decision making capacity and cognitive function, even with the aid of stimulants such as caffeine, dextroamphetamine and modafinil (Killgore, Grugle, & Balkin, 2012). Another study comparing non-problem gamblers to at-risk and problem Internet gamblers found that the latter were more likely to gamble between midnight and 6:00 AM (Gainsbury, Suhonen, & Saastamoinen, 2014). While it is not clear what a valid low-risk limit for time of day to gamble may be exactly, it is reasonable to consider the impact that engaging in gambling activities during normal hours of rest and recovery can potentially have on risk and harm.
Research relating to money management in gambling has generally focused on 1) establishing clear and reproducible thresholds of risk and harm and 2) testing the effects of setting monetary limits. In both cases, a growing body of literature has provided a degree of confidence for the potential impact of monetary limits to help gamblers reduce excessive expenditures, allowing for a focused examination of which thresholds and limits may be most appropriate in a prospective NLRGG (Gainsbury et al., 2014; Gray, LaPlante, & Shaffer, 2012; Kim, Wohl, Stewart, Sztainert, & Gainsbury, 2014; Wood & Griffiths, 2014). Table 4 presents a summary of evidence on monetary limits relevant to low-risk gambling.

Table 4: Low-Risk Limits for Money Management

<table>
<thead>
<tr>
<th>Monthly Limits</th>
<th>Yearly Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>$30</td>
<td>&lt;$501-$1000</td>
</tr>
<tr>
<td>$33 (Ontario)</td>
<td>&lt;$153.50 - $357</td>
</tr>
<tr>
<td>$11 - $50 (BC)</td>
<td>&lt;$400 (Ontario)</td>
</tr>
<tr>
<td>$85 (Alberta)</td>
<td>&lt;$200-400</td>
</tr>
<tr>
<td>$24.50 (Ontario)</td>
<td>&lt;€29 net losses</td>
</tr>
<tr>
<td></td>
<td>1% annual income</td>
</tr>
<tr>
<td></td>
<td>0.8% annual income</td>
</tr>
</tbody>
</table>

The majority of low-risk monetary limits for gambling have been expressed in terms of monthly and yearly thresholds. Once again, Currie et al.’s (2006) original empirical work provides a predictive monetary limit of $501-$1000 CAD per year or 1% of annual gross income below which low-risk gambling is argued to be sustainable. This study derived its findings from an examination of the 2002 Canadian Community Health Survey (n=19,012) and assessed both gambling expenditure and CPGI score using risk curve analyses. The authors argue that if these yearly limits are exceeded, the risk of harm from gambling can increase 2 to 7.7 times (Currie et al., 2006). Interestingly, subsequent research by Currie and his colleagues (2009) into thresholds of harm from gambling and optimal cut-offs for money spent are much lower, with optimal limits of $153.50 per year for at-risk gamblers and $357 for moderate-risk and problem gamblers, despite
their control group of non-problem gamblers (scoring 0 on the PGSI) spending $459.30 annually, on average. A year earlier, Currie and his research team carried out a replication study (2008) of their original 2006 work using provincial surveys and found an optimal cut-off of $400 or less for Ontario, or $33 a month.

Monthly monetary cut-offs have been a more recent focus of low-risk gambling limit research. For instance, Currie et al.’s (2008) replication study derived monthly limits for Ontario, Alberta and BC from individual provincial surveys, which included $33, $85 and $11-$50, respectively. It should be noted that the higher thresholds for Alberta are argued to be based on a higher level of disposable income. However, Alberta’s survey data precedes the current economic decline in the province—stemming in large part from a collapsing oil industry—and may no longer be an accurate estimate of a low-risk gambling limit. For instance, following the 2014 rapid decline in oil prices, Alberta has suffered over 100,000 lost jobs tied directly to the oil and gas industry and is currently in an economic recession (Government of Alberta, 2016; Healing, 2016). More recent work, again from Currie et al. (2013), suggest a monthly low-risk spending limit of $30 or less, which is comparable to previous limits argued for Ontario and BC. While this 2013 research had the intent of validating PGSI interpretive categories, it does show that low-risk gamblers spend a median of $30 CAD per month, or 0.8% of gross annual income.

Work by Walker et al. (2014) has also produced interesting findings relating to win and loss limits, which introduce an alternate perspective of low-risk spending limits. In this study, the investigators utilized random number generation to simulate 900 casino players each spinning a maximum of 5000 times on virtual slot machines. The results show that a $100 loss and win limit reduced the average loss by 53% and assured players do better than a $100 loss limit alone. However, evidence of win and loss limits are still emerging and the aforementioned simulations may not be generalizable in real betting environment or in non-slot games, at this time.

Discussion

Research relating to temporal and monetary cut-offs for low-risk gambling have yielded general support for national quantitative limits. Currie et al.’s (2008) survey of policy stakeholders and gambling research and service professionals (n=171) show majority (75%) support for low-risk limits; percentage of gross income (58%), frequency (52%), amount (40%), and duration (35%) were viewed as the most important limits. Studies looking at online gambling have demonstrated that voluntary money limits can have a
significant effect on spending among casino and lottery players (random sample n=5000 of 100,000 win2day records) (Auer & Griffiths, 2013). Moreover, research by Wohl et al. (2014) has also shown that setting money limits among EGM players can help decrease expenditures without decreasing the intensity or enjoyment of the games. Although most existing examples of time and money limit tools are voluntary, some researchers point out that players who are proactively asked to set limits are significantly more likely to do so and spend less time and money in the process, as compared to those who are only passively exposed to limit options (Kim et al., 2014).

With regard to time management, frequency was by far the most robust area for the establishment of quantitative limits. The studies reviewed consistently appear to argue for a frequency of play less than 4 times per month (Dragicevic et al., 2011), between or less than 2-to-3 times a month (Currie et al., 2006), and no more than 1 time per week (Currie, Hodgins, Wang, El-Guebaly, Wynne, et al., 2008). In addition, evidence supporting duration of play within the bounds of 1 hour at a given time may hold particular benefits for individuals engaged in continuous forms gambling, such as EGMs, slots, and VLTs (Currie, Hodgins, Wang, El-Guebaly, Wynne, et al., 2008). While the notion of low-risk limits for time of day to gamble is logical in principle, this area of research is still emerging and more evidence is needed to put forth a reasonable recommendation.

*Monetary low-risk gambling limits* demonstrated more consistency at monthly thresholds than yearly. Generally, monthly spending limits fell around $30 CAD among a variety of Canadian samples (Currie et al., 2013; Currie, Hodgins, Wang, El-Guebaly, Wynne, et al., 2008). More variation was noted for annual thresholds as low as $153-$357 and as high as $501-$1000 by the same principal author (Currie et al., 2006, 2009). However, if we take percentage of annual gross income, which was the most consistent expression of this low-risk limit—ranging between 0.8% and 1%—we can extrapolate from Canada’s median *personal income* in 2014 of $32,790 (Statistics Canada, 2016a) that an approximate spending threshold would be $328 or around $27 a month. This figure is not drastically far from annual spending limits presented in the reviewed research literature, but as Currie et al.’s replication study (2008) points out, different Canadian populations may have variable thresholds of risk, depending on their relative affluence. It should also be noted that yearly and even monthly low-risk spending limits may not be
particularly useful for individuals who have difficulty with financial planning. For instance, findings from the 2014 Canadian Financial Capability Survey show that over 60% of Canadians rate their financial literacy as fair or poor and 80% reported not being confident in their financial knowledge (Financial Consumer Agency of Canada, 2014). While monthly limits may be serviceable, they should be expressed in the simplest form. The development of weekly limits was a gap in the studies reviewed and may be beneficial for those having difficulty with longer-term financial planning and budgeting.

In addition to quantitative time and money limits for gambling, recent research from the online gambling environment has provided some important behavioural patterns to take note of that may help to frame responsible gambling advice. For instance, fluctuations between intervals of increasing wager size that are followed by rapid drops—known as a saw-tooth betting pattern—was indicative of at-risk gambling among 530 online gamblers (Adami et al., 2013). Similarly, patterns of increasing wager sizes in the first month of gambling online has been found to be a sign of high-risk gambling in a large sample of gamblers (n=48,114) (Braverman & Shaffer, 2010; Labrie & Shaffer, 2011). Developing responsible gambling advice to help players set and keep to limits as well as avoid risky betting patterns may represent a force multiplier in the prevention of gambling harm.

**Limitations – Surveys and Sampling**

Like all research, studies relating to time and money management featured several notable limitations and considerations for decision making. Most studies in this sub-sample utilized self-reported survey data as a basis for identifying thresholds of low and higher gambling risk (Currie et al., 2006, 2013; Currie, Hodgins, Wang, El-Guebaly, Wynne, et al., 2008; McCormack et al., 2013). While this is a practical option for increasing the size and representativeness of gambling research, the method can be prone to response bias whereby respondents are not entirely truthful when answering question items. In the case of Currie’s various works on low-risk limits, the surveys and the PGSI items used ask participants to respond to their past-year gambling experiences, which can be subject to recall bias affected by imperfect memory or distorted impressions of the past. In other instances, works from Weinstock and colleagues (2007, 2008) are limited by small sample sizes, concerns over attrition compounding sample power, and the use of student cohorts from US populations. These issues appear to drastically limit the utility of Weinstock’s findings for application in a Canadian context, if regarded in isolation from the broader body of literature on time and money management.
**Limitations – Risk Curve Analysis**

The use of receiver operator characteristic (ROC) analysis of areas under the curves (AUC) was present in several studies (Currie et al., 2009; Currie, Hodgins, Wang, El-Guebaly, Wynne, et al., 2008; Weinstock et al., 2007, 2008). This technique is useful for identifying optimal cut-off values related to phenomena such as risk, but also has the potential of yielding results that do not necessarily apply to other populations. This is because the AUC of a test is not a fixed true value and, therefore, is subject to statistical error that when replicated in a different sample with the same characteristics can yield dissimilar results (Park, Goo, & Jo, 2004). Uneven distribution of data across response categories can also yield degenerate findings that may be prone to error. However, above all else, the use of self-report data and other proxies of risk behaviour along with the mixing of categorical parameters (i.e., 2001 versus 2013 PGSI gambler sub-type categories and DSM-4 versus DSM-5 criteria for pathological diagnosis) has presented challenges for consistent, accurate and comparable findings for quantitative gambling limits. Greater consensus on appropriate test parameters as well as emphasis on primary behavioural data is required to advance the field.

**Limitations – Indicators and Variables**

Limitations surrounding indicators and variables of gambling risk for time and money management pertained to behavioural proxies as well as those for risk and harm outcomes. Behavioural proxies were all equally affected by the predominant use of survey methods and self-report, as discussed above. Some indicators such as gambling frequency, intensity and variability have been shown to be fairly consistent in the identification of risk classification. However, more contemporary indicators that include net loss as well as annual limit boundaries require more evidence respective to their scientific and practical utility (Walker et al., 2014).

More importantly, limitations regarding the various proxies for gambling risk and harm outcomes need to be acknowledged and unpacked. There are four major screening tools used to assess gambling risk and harm: the DSM-4/5, the SOGS, the Victorian Gambling Screen (VGS), and the CPGI/PGSI. The DSM is a clinical diagnostic screen meant to identify pathological gamblers; it is a binary assessment and gives little nuance of gambling risk apart from the pathological classification (Reilly & Smith, 2013). As a result, the DSM is not an adequate outcome proxy for discerning low-risk gambling limits.

The SOGS tool is used broadly around the world and provides good comparability among samples and research findings. However, the SOGS may be the weakest measurement tool for examining the
prevalence of problem gambling in general populations (Blaszczynski, Ladouceur, & Shaffer, 2004; Wenzel, McMillen, & Marshall, 2004). Like the DSM, the SOGS is based on an underlying clinical theoretical model—it was developed using DSM-3 criteria and intended for assessing pathological gambling in a clinical setting—unlike the individual and social aspects of harm present in the VSG and PGSI (Derevensky & Gilbeau, 2015). Like the PGSI, the SOGS does not deal with preoccupation or escapism, but does have a strong emphasis on money borrowing. The SOGS tools also has difficulty detecting variation in a general population, indicating weaker measurement and differentiation properties (Wenzel et al., 2004). Factor analysis has shown that the SOGS focuses on six different constructs rather than a single notion of problem gambling, like the VGS and PGSI. Internal consistency and construct validity were also found to be weaker than the VGS and PGSI.

The VGS is a newer problem gambling screening tool, relative to the others listed above, and developed with the Australian gambling public in mind. The tool attempts to capture both individual and social aspects of gambling risk and harm. While it can measure harm to self, it has issues specifying personal consequences (Wenzel et al., 2004). Its homogeneity and consistency reflect good internal consistency and has shown significant associations to all of its correlates of problem gambling (Tolchard & Battersby, 2010). With this said, it is best at uncovering self-ratings of problem gambling and help seeking intentions. However, in comparison to other tools like the PGSI and SOGS, the VGS had greater rates of false positives (difficulty classifying problem gamblers) and false negatives (difficulties classifying non-problem gamblers) (Wenzel et al., 2004).

The CPGI/PGSI stood out as the overall best measurement tool for identifying problem gamblers (Wenzel et al., 2004). Like the SOGS, it has enjoyed broad inter-state and inter-provincial as well as international adoption in prevalence studies. Although it does not capture preoccupation or escapism like the VGS, it does examine personal consequences and habituation. Factor analysis has revealed that the PGSI focuses on a strong single notion of problem gambling, meaning measurement items can become a valid aggregate of problem gambling risk and harm (Tolchard & Battersby, 2010; Wenzel et al., 2004). The tool is internally consistent, due to its homogeneity and scale consistency and features the strongest correlation to theoretical constructs of problem gambling. More recent refinements to the tool by Currie and colleagues (2013) have provided incremental improvements to intermediate risk group classifications for low-risk and moderate-risk gamblers.
None of the established outcome measurement tools are perfect representations of gambling risk and harm and intermediate classifications of risk, such as low-risk and moderate-risk categories (where available) are not wholly reliable. However, given its widespread adoption and stronger performance in validity tests, the CPGI/PGSI appears to be the best gambling risk outcome proxy. As discussed above, the barrier to more accurate assessments of population risk and specifically the identification of risk thresholds and low-risk limits would be primary behavioural and outcome data. This would likely involve the collection of information from behavioural inputs to address question items from the CPGI/PGSI. To a degree, this process is taking place in the online gambling field through the collection and analysis of industry behavioural data to identify risk using predictive algorithms that are often based on the same ROC curve analysis, behavioural indicators of risk such as frequency, intensity and variability, and validated using the CPGI/PGSI.

**Limitations – Other Concerns**

Retention, missing data and response rate were other concerns for a few studies, but this did not appear to be an extensive or excessive problem. Behavioural data from online gambling sites provided the strongest indicators of gambling risk, in comparison to self-report behavioural proxies from survey studies. However, uncertainty about player gambling behaviour outside of those specific gambling sites raise the issue of potential error in which individuals categorized as low-risk are in fact at-risk due to additional, unknown gambling participation. Moreover, the use of k-means cluster analysis in these studies has been known to have difficulty grouping data in light of large outliers or non-normal data (Dragicevic et al., 2011). Appendix B provides a summary of samples, methods and limitations for various low-risk time and money limit gambling studies.

Despite these various limitations, studies related to quantitative limit setting for time and money management in gambling also featured several strengths. First and foremost, the work done by Currie and his research teams have been largely rigorous in their analytical approach and their samples are derived from large Canadian prevalence surveys (Currie et al., 2006, 2013, 2009; Currie, Hodgins, Wang, El-Guebaly, Wynne, et al., 2008). General alignment in findings from these studies as well as other unaffiliated studies (Weinstock et al., 2007) also provide a degree of confidence in the validity of limits, such as monthly low-risk time limits for gambling. The inclusion of online gambling studies using behavioural data have also increased the relevance of some limits (e.g., time limits) given the rapid expansion of gambling into the online space and the currency of these more recently available datasets (Dragicevic et al., 2011; Gray et al., 2012; Nelson et al., 2008).
Game Mechanics

Game mechanics relate to the understanding of and beliefs about how wager-based games work. Responsible gambling research and programming that target game mechanics typically focus on associated gambling problems (e.g., erroneous beliefs and gambling fallacies) and methods of addressing them.

Erroneous beliefs and gambling fallacies are views that stand in opposition to facts about how games work and contribute to risky gambling behaviour, potentially leading to harm. In a recent scholarly review by Leonard, Williams and Vokey (2015), six gambling fallacies in particular were consistently represented in the research literature: hot hand fallacy (i.e., positive recency), Monte Carlo fallacy (i.e., negative recency), luck as a dispositional trait, illusion of control, insensitivity to sample size, and base rate neglect (see Table 5 for details).

**Table 5: Most Prominent Gambling Fallacies and Erroneous Beliefs**

<table>
<thead>
<tr>
<th>Gambling Fallacies</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hot Hand Fallacy/positive recency</strong></td>
<td>Erroneous belief that a winning streak leads to more winning and/or that winning numbers are more likely than others to appear again</td>
</tr>
<tr>
<td><strong>Monte Carlo Fallacy/negative recency</strong></td>
<td>A failure to understand the independence of random events, resulting in the belief that an outcome increases the chance of an opposite outcome occurring in the future</td>
</tr>
<tr>
<td><strong>Belief that Luck is Dispositional</strong></td>
<td>Erroneous belief that randomly determined events consistently favour or disfavour some things over others (e.g., people, time periods, colours, numbers etc.)</td>
</tr>
<tr>
<td><strong>Illusion of Control</strong></td>
<td>Tendency to believe that one’s actions can influence random events</td>
</tr>
<tr>
<td><strong>Insensitivity to Sample Size</strong></td>
<td>Failure to understand that deviations from expected probabilities are common in small samples, but increasingly uncommon in large samples (i.e., winning can be common in small samples, but more rare with extended play)</td>
</tr>
<tr>
<td><strong>Base Rate Neglect</strong></td>
<td>Misjudgement in the frequency of an outcome occurring (e.g., belief that winning lottery is more likely than it actually is due to anecdotal awareness of the number of people who have won over the years)</td>
</tr>
</tbody>
</table>

*Source: (Leonard & Williams, 2015)*
When taken together, one of the underlying issues with erroneous beliefs relating to game mechanics pertains to misunderstandings of the concept of randomness. For instance, a study of irrational gambling-related cognitions in Australian adolescents (n=926) found that more than 50% of both problem gamblers (assessed via DSM-IV gambling criteria and the Victorian Gambling Screen) and non-problem gamblers rated their odds of winning a lottery draw at 8-times greater than of the actual odds; more than 50% of the respondents presented erroneous understandings of randomness; and non-problem gamblers were more likely to subscribe to negative recency (thinking that the odds of an outcome increases if it has not been observed for an extended period of time) (Delfabbro, Lahn, & Grabosky, 2006). Interestingly, studies looking at the effect of mathematical knowledge on erroneous gambling beliefs and risky behaviour have noted that errors do not necessarily stem from a lack of understanding of randomness, but rather the difficulty in applying the concept in practice (Pelletier & Ladouceur, 2007; Williams & Connolly, 2006). In a comparison of two groups (n=60, 50% male) with different levels of mathematical knowledge (one group were mathematics students and the other non-math students at Laval University), Pelletier and Ladouceur (2007) tested participants using coin toss and VLT tasks on their knowledge and informed gambling choices, followed by a questionnaire used to evaluate how the groups perceived the notion of random chance. Findings from this study noted that the advanced math group had higher levels of erroneous perceptions than the non-math group (p<.001) (Pelletier & Ladouceur, 2007). More recent studies, such as one conducted by Spurrier, Blaszczynski and Rhodes (2014) involving interviews with expert clinicians and researchers (n=11) assessing perspectives of moderating and mediating roles of risk perception in decision making, gambling behaviour, and disordered gambling describe a struggle between technical information and dispositional and experiential factors. Findings show that experts considered idiosyncratic beliefs held by gamblers to result from an overall underestimation of risk and loss, insufficient prioritization of needs, and poor planning and implementation of risk management strategies. Other empirical studies, including a 100 item survey of slot players (n=329, undergraduate students at the University of Adelaide, Australia) argue that decision making informed by higher level belief structures help explain how and why the illusion of control is a multi-dimensional construct (Ejova, Delfabbro, & Navarro, 2015). Specifically, the authors note that disregard of game mechanics is a function of the illusions of primary or secondary control—the former being the result of situational factors interacting with beliefs about natural phenomena (e.g., systems of play and games) and the latter stemming from situational factors interacting with beliefs about the supernatural (i.e., the cyclical nature of luck, the effectiveness of ritual, and supernatural intervention).
Similarly, cultural factors can have an effect on erroneous beliefs and provide an indication of the need for a more nuanced approach to addressing risky gambling behaviour. Fong, Law and Lam (2014) examined positive and negative recency among Chinese gamblers (n=2645 betting decisions) at a large casino in Macau. Their study involved non-participatory observation of a dice game whereby investigators recorded the outcome, bets placed, and gambler gender. In contrast to findings in Western cultural contexts, positive recency (i.e., the belief that the next outcome of a game will be the same as the latest one) was dominant, even in the absence of a winning streak (Fong et al., 2014). The author’s speculate that among Asians there can be an orientation towards the search for virtue that promotes the tendency to persevere and resist change, which stands in contrast to what has been observed in Western cultural contexts.

Examinations of gamblers’ misunderstandings of the nature of probabilities and the concept of randomness leading to the over-estimation of winning odds and the illusion of control have prompted efforts to intervene through the provision of information, education and mathematical training (Blaszczynski, Ladouceur, Nower, & Shaffer, 2008). Underlying these types of intervention is the contention that informed choice requires both competence to make reasoned decisions based on factual information and disclosure of the characteristics, operations and nature of the products being used (Blaszczynski, Ladouceur, Nower, & Shaffer, 2008). To this end, information must be relevant to the specific activity, accurate, available, and delivered in a timely manner. Identifying individuals who may benefit from improved understanding of game mechanics, probabilities and randomness, and the capacity to operationalize knowledge may be served by asking players some basic questions, as Smith (2013) points out in his scholarly discussion paper:

- Are you competitive when you play?
- How do you feeling about winning/losing?
- Do you think you can improve if you try hard or practice?
- Do you think you can influence the colour/number/card drawn?
- Do you think you can do anything to become more successful in guessing the colour/number/card?
- If you are ahead, will you be ahead on the next game?

The answers to these questions help pinpoint the erroneous beliefs and gambling fallacies that may be endorsed by players in games of chance. As noted previously, the provision of information and
understanding of mathematics and probabilities alone may not be sufficient to influence safer gambling practices (Monaghan & Blaszczynski, 2010). In light of this, more proactive education and training tools have been the focus of studies examining knowledge improvement and decision making. For instance, Williams and Connolly’s (2006) study of improved knowledge of odds and mathematical expectation on gambling behaviour amongst 470 university students in Lethbridge, Alberta, found that only gambling-specific statistical instruction facilitated improved ability to calculate odds. The investigators devoted a portion (50%) of their probability lectures to gambling and 30% of their laboratory tutorials to hands-on experience with games of chance (i.e., roulette, craps, blackjack, or a combination). Students were then assessed via questionnaire and again, six months later. Findings show that students who received the gambling-specific education and training demonstrated better applied skill in calculating basic gambling odds (p<.01) and more awareness of and resistance to gambling fallacies (p<.05) compared to the control group. However, no significant self-reported decrease in the likelihood to gamble, being a problem gambler, the amount of time and money spent, or attitudes towards gambling among the intervention group were evident.

Barboianu (2013) argues in her discussion paper that in addition to basic education and training on gambling odds and probability—doing so in a practical and applicative manner—interventions should also directly address gambling fallacies and common erroneous beliefs, as well as game-specific strategies for optimal play, and the psychology behind risky play behaviour. To this end, Smith and colleagues (2015) show in their study of adult problem gamblers in South Australia (n=51) that cognitive therapy can be as effective as more expensive and resource-intensive behavioural therapy. In this case, cognitive therapy sessions (12 in total) consisted of the identification of erroneous thoughts, self-monitoring via diary, clarification of games of skill versus games of chance, assisting gamblers in identifying and avoiding gambling traps that lead emotions to take over reason, and practical exercises to help gamblers organize and act upon thoughts. Overall, Smith et al. (2015) show that both treatment groups experienced significant (p<.001) reduction (improvement) in problem gambling diagnostic score during the intervention and follow-up periods.

Animations and pop-up messages were also identified as useful tools in addressing the issues of erroneous gambling beliefs and improving knowledge of game mechanics as well as promoting safer gambling decisions. In Wohl et al.’s (2013) study of responsible gambling tools targeting adherence to monetary
limits, EGM players (n=72, 70.8% female university students) were exposed to educational animations explaining how EGMs work. Those that watched the animation reported significantly fewer erroneous cognitions (p<.001) than participants who watched a neutral video. In addition, participants who were also exposed to a pop-up reminder were more aware of reaching their limits than those who did not get reminded (p<.02). Overall, the sample’s perception of the animation was significantly positive (p<.001). The authors conclude that by highlighting the randomness of EGM wins and dispelling the illusion of control, animations can be effective in decreasing erroneous beliefs held by non-problem EGM gamblers.

In another study (n=123 adult Canadian slot players, 60% male, assessed at 24 hour and 30 day intervals via survey) by Wohl et al. (2013), both 3 minute and 9 minute variations of an educational animation were found to help reduce erroneous cognition relating to how slot machines work (p<.02) and promote adherence to money limits (p<.007).

**Discussion**

A gambling public that is well informed about basic concepts of randomness and probability as well as how specific games work are better equipped to make safer gambling choices. The issues of erroneous gambling beliefs and fallacies can be mitigated by asking gamblers basic questions about their knowledge and providing simple and practical educational information on game mechanics that can be used to reflect and appraise one’s own play and develop optimal play strategies (Smith, 2013). A special focus on teaching the public about specific gambling fallacies may also be helpful for identifying risk and preventing or reducing harm. Importantly, however, the impact of educational information may depend on it being delivered in a manner that is proactive (e.g., interactive activities and engaging animations) and not passive (i.e., brochure or pamphlet).

The framing of educational messages about erroneous beliefs and game mechanics should also account for player psychology that stem from dispositional, cultural, and experiential sources. Providing gamblers with information about specific risks and technical information on assessing (and avoiding) risk and harm has been shown to improve knowledge, but not necessarily the quality of decision making. The presentation of responsible gambling information needs to be framed in a way that is relatable to the beliefs and interests of players. In other words, educating the gambling public about gambling fallacies, erroneous beliefs, randomness, and probabilities must also incorporate information on how other factors, such as emotions, cultural influence, and past experience interfere with responsible gambling. Thus, education may be more effective if presented as a way of making the player a better gambler.
**Limitations**

Research surrounding gambling game mechanics, erroneous beliefs, and gambling fallacies have produced some insightful findings, but have also been subject to several limitations. With regard to sampling and population representativeness, several studies relied upon student samples of young adults or adolescents (Delfabbro et al., 2006; Ejova et al., 2015; Pelletier & Ladouceur, 2007; Williams & Connolly, 2006; Wohl, Gainsbury, et al., 2013). While convenient for investigators, such samples do not necessarily yield results that can be deemed representative of broader, general populations. As well, sample size in some empirical studies raised some concern over the generalizability of findings (Pelletier & Ladouceur, 2007; Spurrier & Blaszczynski, 2014; Wohl, Gainsbury, et al., 2013; Wohl, Santesso, et al., 2013). Finally, the use of self-report methods of data collection, such as survey questionnaires and interviews have already been acknowledged to have limitations in generalizing findings.

Overall, the findings provide several interesting insights that, despite methodological limitations, are generally consistent. This included the recurrent types and variations of erroneous beliefs summarized in Table 4 and interventions showing positive effect, which shared the same general principles of education, mathematical training and the promotion of self-appraisal. With this said, however, questions remain as to the best way of integrating intervention features that have proven some degree of efficacy into a set of low-risk gambling guidelines, given that many interventions involved extended and directed training and feedback (Smith et al., 2015; Wohl, Santesso, et al., 2013). In other cases, the use of animations and pop-up messaging may not be seen as an intrinsic part of low-risk gambling guidelines. Education and training, be it directed by informed individuals or developed into animations, do make the point that proactive methods of conveying knowledge and utility of game mechanics is worthy of exploration—perhaps as a supplement to NLRGG.

**Life and Leisure Balance**

The balance of gambling activities with other leisure activities and life obligations is an important aspect of responsible gambling. In a brief scan of Canadian (n=11) and international (n=5) gambling organizations, including governments, third-party support service providers, research institutes, and operators, balancing gambling with other activities was identified as a key message (see Appendix C). In a problem gambling guide for professionals published by the Centre for Addiction and Mental Health (CAMH 2008), the loss of overall life balance is thought to contribute to gambling problems.
The rationale behind this responsible gambling advice stems from the problems associated with gambling obsession. The impacts of obsessive gambling are numerous, but generally include financial problems, health problems, and relationship problems (Currie et al., 2009). In a study of obsessive passion in leisure activities (e.g., swimming, cycling, soccer, etc.) participants (n=207, 55.5% male) were associated positively with escapism (p<.01) and negatively with satisfaction in activity engagement (p<.01) (Stenseng, Rise, & Kraft, 2011). The authors also point out that obsessive passion was strongly related to activity addiction as a self-regulation deficiency (p<.01). With regard to this latter point, other empirical research has shown that probable pathological gambling was significantly associated (p<.0001) with maladaptive coping, compared to non-gamblers and social gamblers (Gupta, Derevensky, & Marget, 2004). In this study, probable pathological gambling adolescents (n=587, ages 12-17) were assessed via DSM-IV criteria and a validated coping scale. Gupta, Derevensky and Marget (2004) found that maladaptive coping was most reflected in chasing (81.6%), mental fixation (76.3%), excessive gambling spending (55.3%), and gambling as escapism (55.3%). Finally, the authors conclude that individuals experiencing both physical and emotional distress and those who have a tendency to respond to problematic situations by engaging in distraction-oriented activities may be more at-risk for gambling problems (Gupta et al., 2004). Matheson, Wohl and Anisman (2009) make a further, gendered distinction in their study of recreational (n=220), problem (n=157), and pathological (n=23) gamblers (undergraduates at a large eastern Canadian university). In it, they demonstrate that risky gambling among women was associated with reduced social support seeking, while men were most affected by wishful thinking. Positive attitudes were also reported to be associated with more problem-solving and support seeking coping strategies.

Despite the issues associated with obsessive tendencies and maladaptive coping, engagement in gambling can form a balance with other leisure and life activities. In a study of elderly women gamblers (n=478, over 60 years old), investigators noted that for this cohort, individuals generally visited casinos with friends or relatives (Tarras, Singh, & Moufakkir, 2000). The gamblers spent an average of 4.5 hours on casino games and visits were balanced between gambling and non-gambling activities. Assessment of the sample’s gambling experience also revealed that a median of $50 was usually budgeted for gambling and chasing losses was strictly avoided in 90% of the sample (Tarras et al., 2000). Referring back to Gupta et al. (2004), we find that active coping strategies, such as problem solving and positive thinking result in
better gambling outcomes, while avoidance and emotion-oriented strategies are consistently linked to mental health problems, anxiety, and depression that can establish themselves in early childhood and adolescence. To this end, task-oriented approaches to coping with stresses associated with obsessive imbalanced gambling may be a useful self-help strategy. More specific guidance from the grey literature includes creating healthy routines (e.g., eating well, exercising and caring for physical and emotional health) as well as getting support from friends, learning to identify gambling triggers like being bored or lonely (Problem Gambling Institute of Ontario, 2012). In more serious scenarios, CAMH (2008) has suggested counselling as a means of helping gamblers return to normal routines—often replacing gambling with healthier lifestyle activities.

Discussion

Balance and moderation are prudent concepts which can be applied to many activities in daily lives, be they exercise, alcohol consumption, gambling and so on. Balance in the context of gambling is particularly important because the associated risks and harms can be severe. With this in mind, it is important to empower individuals with advice and strategies that can effectively help them maintain a balanced gambling experience. Predominantly, evidence and information supports a strategy of self-appraisal to identify risks, such as negative emotions, obsessive preoccupation, stressful financial loss, relationship conflicts, and poor coping skills (Gupta et al., 2004; Problem Gambling Institute of Ontario, 2012; Stenseng et al., 2011). Seeking support from friends, family and treatment professionals as well as making changes to one’s lifestyle, such as replacing the time and/or money spent on gambling on other task-oriented leisure activities are recommended (Gupta et al., 2004; Problem Gambling Institute of Ontario, 2012).

Limitations

While the message of balancing gambling with other aspects of life is well accepted, research into this area of responsible gambling is still emerging. In addition to the dearth of applied research in this topic area, reviewed studies were limited by sampling issues, such as low recruitment and narrow sub-population foci (i.e., students, youth and seniors) (Gupta et al., 2004; Matheson et al., 2009; Morasco, Weinstock, Ledgerwood, & Petry, 2007; Tarras et al., 2000). Other notable issues challenging the generalizability of findings included the use of cross-sectional research designs, which were only able to infer upon a moment in time within a study cohort given the absence of sufficient retrospective and prospective (follow-up) data to make causal linkages (Gupta et al., 2004; Stenseng et al., 2011). In some
studies, measurement instruments, such as the scale used to assess obsessive passion, were fairly new and in need of further testing to confirm validity and reliability (Stenseng et al., 2011). As with most studies in this scoping review, the use of self-report measures were evident in this sub-sample of literature and have been known to be subject to response bias—no details were provided on how authors controlled for this (Matheson et al., 2009; Morasco et al., 2007; Stenseng et al., 2011).

Despite these limitations, the findings provide some basic evidence to support the message that 1) balancing gambling with other leisure activities is important and 2) doing so involves self-awareness and positive action. It should also be noted that balancing gambling activity is a function of both time and money—subjects that have been more vigorously investigated in the research literature. Leveraging insights from quantitative low-risk gambling limits may be a prudent step towards developing effective strategies to balancing gambling and other aspects of life and leisure.

**Emotional Awareness**

Emotional awareness is a protective factor against gambling risk and harm involving the monitoring of mood that may be interfering with responsible gambling. Gomes and Pascual-Leone (2009) argue that dealing with addictive behavioural issues requires the acceptance of personal and interpersonal experiences, which are modified by levels of emotional awareness. In their study of problem gambling outpatients (n=60) from treatment facilities in Ontario, the authors point out that readiness to change risky gambling behaviour is seemingly influenced by emotional awareness (although not at levels of significance), emotional support, and involvement in Gambler’s Anonymous. Alternative conceptualizations of this mechanism have been described in terms of emotional intelligence. Parker et al. (2008) define emotional intelligence as a skillset including the ability to accurately appraise emotions, express them, and regulate them in a manner that enables safer gambling behaviours. Through the recruitment and survey of adolescents (n1= 209, 13-15 years and n2=458, 16-18 years) from central and eastern Ontario, these investigators examined the relationship between emotional intelligence and several addiction-related behaviours (e.g., gambling, Internet use, and video game playing). Findings from this study show that lower emotional intelligence was a reasonably significant predictor (p<.05) of addiction-related behaviours across both cohorts (Parker et al., 2008). Other studies have attempted to establish a connection between lower emotional intelligence and less self-efficacy—the belief that one can achieve goals and overcome challenges, such as gambling addiction and preoccupation. For instance, Kaur et al. (2006) administered an emotional intelligence inventory assessment and a gambling control
self-efficacy scale to a general sample of adults in Sydney, Australia (n=117, 58% male) from which they noted lower emotional intelligence significantly (p<.001) predicted less self-efficacy to control gambling and more instances of problem gambling.

As with emotional intelligence, self-regulation is a concept emerging from the research literature which relates to self-awareness in gambling. Self-regulation can be defined as the motivation and ability to monitor thoughts and feelings and act to correct potential issues, such as gambling preoccupation that may lead to risky or harmful behaviour (Hofmann, Schmeichel, & Baddeley, 2012). In other words, self-regulation enables people to make plans, control impulses, choose alternative actions, and deal with unwanted thoughts and regulate behaviour (Heatherton & Wagner, 2011). Reviews on the topic of self-regulation have noted that it can be temporarily impaired by several factors, including cognitive load, ego depletion, environmental and social stressors, alcohol, high stakes situations, and other stimuli (Hofmann et al., 2012). Negative emotions are common triggers of self-regulation failure and can result in a relapse of addictive behaviour (Heatherton & Wagner, 2011). Similar to evidence on the topic of game mechanics and erroneous beliefs, self-regulation failure may be associated with false or misleading beliefs, the illusion of control, endorsing the concept of luck, and low self-esteem (Brown & Newby-Clark, 2005). In a study looking at self-regulatory strategies used by social gamblers (n=238) and problem gamblers (n=63), investigators used factor analysis to determine that the most common strategies used were those concerned with reminding oneself of the negative consequences of gambling as well as distraction with other activities (Moore, Thomas, Kyrios, & Bates, 2012).

Far and away the most popular area of gambling research related to emotional awareness focused on the use of mindfulness techniques. Traditionally, mindfulness is a form of meditation involving an active process of self-awareness when experiencing emotional phenomena, such as gambling triggers and preoccupation (Shonin, Gordon, & Griffiths, 2014). More specifically, Loo and colleagues (2014) describe this process as a combination of controlled breathing, acting as an anchor for present-focused attention, self-reflection on thoughts (e.g., about gambling) and the purposeful shifting of attention from harmful thoughts. In an effort to test the efficacy of this process, the authors recruited 801 Chinese participants from Taiwan (52.3% male) and assessed both positive psychological disposition using scales such as the PGSI, South Oaks Gambling Screen (SOGS) and others focused on hope and personal growth. Findings show that PGSI score was negatively correlated with the hope pathway (i.e., planning to meet goals) and
that higher mindfulness, according to the articulated process above, predicted lower PGSI among women (Loo et al., 2014). Another mindfulness study of randomized pathological gamblers in Ontario (n=18) found significant reduction (p<.05) in gambling severity, psychiatric symptoms, and gambling urges among the experimental group, which were maintained after 3 month follow-up (Toneatto, Pillai, & Courtice, 2014). This study included a five-session mindfulness intervention involving 45 minute cognitive therapy and an audio-guided mindfulness routine intended for 15 minute practice sessions. Among 103 treatment seeking problem gamblers in South Australia, mindfulness approaches based on acceptance and commitment therapy and other stress reduction techniques have also demonstrated utility in combatting experiential avoidance—the unwillingness to meet challenges to addictive behaviour (Riley, 2014). Further research from Melbourne, Australia examining the effects of mindfulness on treatment-seeking problem gamblers (n=78), 61% of which played EGMs and 25% who engaged in multiple forms of gambling, noted a significantly negative relationship (p<.01) between mindfulness and all indices of gambling behaviour (i.e., gambling urges, problem gambling severity, gambling expenditure, and gambling frequency) (de Lisle, Dowling, & Allen, 2014). This study (one of two presented in the article), did not appear to train individuals in mindfulness techniques, but rather administered a number of scales (e.g., The Mindfulness Awareness Assessment Scale, etc.) to ascertain tacit awareness and use of such skills. In addition, the authors conducted another study (n=205) of self-identified problem gamblers who were new clients to a metropolitan Melbourne clinic (de Lisle et al., 2014). This second study reported similar results as above, as well as a significantly negative relationship (p<.01) between mindfulness and psychological distress and a significantly positive relationship (p<.01) between mindfulness and distress tolerance (i.e., tolerance, absorption, and regulation). Finally, a recent systematic review and meta-analysis of mindfulness intervention studies between 1980 and 2014 (n=13 studies, covering 463 gamblers) reported moderate to large effects (p<.01) of mindfulness approaches on gambling urges and financial outcomes (Maynard, Wilson, Labuzienski, & Whiting, 2015).

Discussion

The principle of emotional awareness as a dimension of responsible gambling advice is underpinned by the concepts and techniques of emotional intelligence, self-regulation, and mindfulness. At a basic level, there appears to be consistent support for the effectiveness of monitoring negative feelings that may be associated with or manifest from gambling. As the studies of self-regulation and mindfulness have shown, there is no a single way of maintaining or regaining control over gambling-related emotions, such as behavioural triggers, preoccupation, and addictive impulses. On the one hand this lack of consensus on a
preeminent, validated approach or intervention to foster emotional awareness and assist with self-regulation creates some ambiguity for responsible gambling messaging. However, self-regulation and mindfulness approaches all generally emphasize 1) awareness of emotional states, 2) recognition or their meaning and implications on behaviours and outcomes, and 3) strategies for controlling or correcting impulses through techniques such as goal setting, seeking out alternative activities, and meditation and breathing exercises. While variance exists between specific extant tools, this general validated framework is potentially instructive for the development of emotional awareness messaging to support low-risk gambling guidelines.

**Limitations**

The most common limitations amongst this sub-sample of studies included sampling issues. For example, small sample sizes and those recruited based on convenience were most often noted as issues threatening the generalizability of findings (Gomes & Pascual-Leone, 2009; Kaur et al., 2006; Weatherly & Miller, 2013). Similarly, the use of special populations, such as students and problem gamblers in treatment raised questions of the applicability of found effects beyond these groups (Lakey, Campbell, Brown, & Goodie, 2007). The use of cross-sectional data and self-report collection tools presented limitations that have been previously discussed (Griffiths, Shonin, & Gordon, 2016; Riley, 2014). In some cases, the anecdotal presentation of qualitative data without sufficient description of recruitment strategies and procedures reduced the confidence in some results (Toneatto, Vettese, & Nguyen, 2007). Other studies disclosed that while significant associations between variables emerged from analyses, inference and causal directions were not made due to limitations in the data (Lakey et al., 2007). Finally, as discussed above, differences in the concept, content and formulation of mindfulness interventions by several authors fostered more ambiguity than clarity (Maynard et al., 2015).

**Risk and Support Service Awareness**

Risk and support service awareness overlaps with all other areas of responsible gambling advice, but deserves special attention due to its role in the prevention and mitigation of gambling harm. This area of research and program development concerns the awareness and understanding of gambling problem risk factors as well as support services designed to help individuals maintain or regain control of their gambling behaviour. Much of the research in this area has focused on risk perception, its association with gambling problems, and ways of improving it as well as knowledge and use of support services.
Risk perception is perhaps the most directly relatable concept to risk awareness, involving the understanding of gambling risks but also the personal implications of behaviour on outcomes that potentially have real-work impacts. Research looking at young people has provided some clarity on serious deficits in gambling risk perception that may not be adequately addressed until later in life—perhaps after the experience of harm. For instance, Shaffer et al.’s (2000) survey of students in 20 high schools and 10 colleges (n=1437) found that only 9% of these students were aware of gambling problems among students. In Canada, experimental studies of high school students (test group=100, controls=101, ages 15-18) noted that gambling problems are significantly negatively correlated with knowledge of randomness (p<.01), knowledge of coping strategies (p<.01), and self-monitoring skills (p<.001) (Turner, Macdonald, & Somerset, 2008). Spurrier and Blaszczynski (2014) argue that risk perceptions, particularly of harmful gambling consequences, can affect both motivations and behaviours. In their systematic review of risk perception in gambling, the authors point out that heavier, more disordered gamblers have a positive view of gambling, which undermines accurate perceptions of risk and harm. They also note that it may be the case that disordered gamblers do perceive and expect negative consequences through their gambling experiences, but that dominant positive expectancy, urges and impulses overwhelm responsible gambling decision making (Spurrier & Blaszczynski, 2014). Spurrier and Blaszczynski add that perceptions of lower risk have been found to be associated with lower education and occupational status, higher levels of substance use, higher levels of sensation seeking, and beliefs in superstition and luck.

The research literature has also looked at improving levels of risk perception and awareness of coping strategies. In the same study by Turner, Macdonald and Somerset (2008) described above, the application of an intervention, which included training for students on random chance, coping and life skills, and avoidance of problematic behaviour through self-awareness and self-monitoring, showed significant gains (p<.01) in the experimental group and no change in controls. Messaging was another area of research relating to risk perception improvement efforts. For example, one Australian study on the use of dynamic warning messages displayed on EGMs among 667 gamblers who were later surveyed found that 43.5% recalled seeing messages (Gainsbury, Aro, Ball, Tobar, & Russell, 2015). While this appears illustrative of a lower perception of gambling risk messaging, the authors also point out that self-appraisal messages were recalled significantly more frequently (p<.001) than informative messages, indicating a potential leverage point for the development of effective messaging. Munoz et al.’s (2010) investigation of the potential benefits of threatening warning messages yielded evidence of the effectiveness of such
interventions in increasing the depth of information processing, which in turn enhanced attitude change. This study utilized a factorial experimental design to test a model of protection motivation theory—focusing on how fear appeals affect both cognitive and emotional responses—among VLT players (n=258) in Montreal, Quebec followed by a survey and analysis of variance. Changing the focus to gambling staff, Giroux et al.’s (2008) study evaluating the impact of training sessions on responsible gambling in Quebec (n=2432) provided evidence of very significant (p<.0001) improvements in gambling risk awareness concerning the identification of distressed gamblers. The investigators also found strong associations (p<.0001) between employee sentiment on the importance of support service awareness and help resources than those expressed by the control group.

Research looking at awareness of support services was not as extensive as those examining risk perception, but did offer some interesting insights. For instance, Gainsbury, Hing and Suhonen’s (2014) study examining awareness of professional sources of help and help-seeking behaviour amongst regular and problem gamblers in Australia (n=730) found that awareness was generally low. Most participants were aware of gambling helplines (39%), followed by venue assistance (31%), and face-to-face services (27%). The authors conclude that responsible gambling efforts should aim to increase education within the general population about confidential, low-cost and culturally sensitive counselling services. Another study from Ontario surveyed adults (n=4217) on help-seeking for different levels of gambling problems, highlighting that only about 6% of gamblers had ever accessed a service, including a self-help group or self-help materials (Suurvali, Hodgins, Toneatto, & Cunningham, 2008). Generally, those with more severe gambling problems were more likely to report using treatment services and self-help resources. The investigators close by arguing that the inclusion of self-help materials (print and Internet-based) increased the reported proportion of gamblers of all severities reporting knowledge of and access to support resources—although the authors do not elaborate on what the contents of self-help materials are.

Discussion

Awareness of gambling risks and support services relate to risk perception and enablers of self-help resources, respectively. Both of these aspects of awareness are tied to knowledge of randomness, coping skills and strategies, and self-monitoring skills that in part moderate the level of vulnerability a gambler may have to actual gambling risks and harms (i.e., financial, psychological, interpersonal, etc.) (Turner et al., 2008). Enhancing risk messaging and education to increase gamblers’ perceptions of risk and harm
from gambling has been shown to have a positive effect on outcomes (Blaszczynski et al., 2008; Gainsbury et al., 2014). Education, as noted previously, should focus on the basic areas of gambling risk that cover most if not all the preceding sub-sections of this scoping review, particularly coping strategies and self-monitoring skills. For the purposes of low-risk gambling guidelines, conveying this information may be most immediately incorporated through educational messaging that emphasizes self-appraisal and perhaps leverages serious warnings that solicit some degree of fear and threat (Gainsbury et al., 2015; Munoz et al., 2010). As noted above, many severe problem and pathological gamblers know and understand the consequences of risky gambling, but continue to adopt a positive expectancy from their play (Spurrier & Blaszczynski, 2014). Warning messages that encourage honest self-reflection and appraisal of the implications of risky behaviour as practical consequences of gambling and not abstract notions may help promote safer gambling.

**Limitations**

Several limitations emerged from this sub-sample of research literature. As with others in preceding sections of this scoping review, difficulties surrounding the generalizability and representativeness of data was apparent. Some of the issues attached to this limitation included the use of cross-sectional research designs, the reliance on self-report data, and the predominant presentation of descriptive findings in some studies (Gainsbury et al., 2014; Shaffer et al., 2000; Spurrier & Blaszczynski, 2014; Suurvali et al., 2008). While this poses a concern for the application of findings and conclusions, the complimentary and consistent nature of many analyses offers some degree of confidence for evidence-based decision making. Other basic issues limiting the research on risk awareness was the lack of a clear consensus on the definition of risk perception (Spurrier & Blaszczynski, 2014). Although alignment on some fundamental characteristics and mechanisms, such as the understanding of gambling risks and the rational use of knowledge in gambling decisions and actions, was established, consensus on more sophisticated conceptualizations were largely absent. In some intervention studies the use of experimental designs did not reflect real-world conditions and environments, and in others, the absence of control groups for comparisons raised concerns over potential error (Giroux et al., 2008; Munoz et al., 2010).

Despite these limitations, literature on risk and support service awareness make the reasonable argument for the importance of understanding the risks and the mobilization of this knowledge in safer gambling decision making. While research looking specifically at awareness of risks and support resources by
gamblers appears somewhat sparse, the evidence base on gambling risks and their attributable effect on harm outcomes is well established. Together with many, if not all, preceding sub-sections of this scoping review, the credibility of this aspect of responsible gambling advice should be instructive for low-risk gambling guidelines that emphasize clear messaging on the risks of gambling, the practical consequences of risky behaviour, and provide information and education on how to improve coping skills and access external resources, if needs be.

**Canadian Gambling Prevalence Studies**

Gambling prevalence studies provide important data and statistics that help decision makers and the public understand important trends, such as the changing availability of gambling opportunities, government revenue, general participation, and the distribution of problem gambling and other player sub-types. With regard to gambling guidelines, prevalence studies provide an interesting reference point to compare low-risk time and money limits suggested by the research literature with self-reported frequency and expenditures across the country—particularly where it is broken down by CPGI categories. In particular, such a comparison may help to inform a discussion of the practical alignment between research-based limits and representations of real-world time and money expenditures. For instance, if non-problem gambling and low-risk CPGI groups demonstrate spending in general alignment with research evidence, a stronger argument can be made for the codification of national low-risk limits based on research. If wide variation and divergence is evident, further discussion of appropriate and practical thresholds may be warranted.

Most recent prevalence studies from all ten provinces were collected and reviewed individually. The review of studies briefly highlights national statistics on money spent, total average and median provincial money and time expenditures, followed by a more extensive breakdown of spending by gambler sub-types (i.e., non-problem gambler, low-risk, moderate risk, and problem gambler). A discussion of key findings and their implications is also presented at the end.

It should be noted that many provincial prevalence studies are inconsistent in terms of their reporting cycles, methodological approaches, and the findings presented. With the exception of CPGI categories, reported rates of expenditures were found to differ by denominator (e.g., week, month, year) and in some cases data transformation (e.g., presenting time spent gambling as a percentage of weekly or monthly participation) forced the omission of findings from review due to their limited comparative value with research-based limits.
Canada: Money Spent on Gambling

Comprehensive and cohesive data on gambling prevalence in Canada, as a whole, is not yet fully developed. Statistics Canada has included some metrics on gambling expenditure as part of their Labour and Household Surveys, for which data is almost a decade old (Statistics Canada, 2012). Despite this limitation, Statistics Canada has been able to report that at the time of the last collection cycle in 2007-2008 the national average gambling revenue from adult gamblers was approximately $528 per person, annually. Of course, this metric only provides an estimate of revenues from government-controlled gambling sites, minus prizes and winnings, but does give a rough picture of per capita gambling losses among adults. Although this figure is within the original low-risk money limit threshold established by Currie and colleagues (2006), it is conceivable that the total average amounts wagered by Canadians could be higher. More telling, however, is Statistics Canada’s depiction of total annual gambling expenditures as a percentage of total income by after-tax household income. For instance, in all household income categories over $20,000, the percentage spent on gambling did not exceed 1% (Statistics Canada, 2012). The percentage of income spent on gambling also consistently decreased with every step-up in income category, with those households earning $80,000 or more spending an average of 0.4%. With regard to those households earning less than $20,000 annually, the percentage of income spent on gambling was highest, at 1.7% or $229 per year—nearly a fully percentage higher than the recommended low-risk limit.

Provincial Gambling Prevalence: Money and Time

Turning to provincial prevalence surveys, total average and median expenditure data for time and money spent was identified for upwards of six jurisdictions (see Table 6). While minimal consistency in reported metrics was noted (i.e., some provinces reported per session, per month, per year expenditures), data did provide some basis for comparison. For example, by extrapolating from monthly and yearly averages, a more consistent picture of expenditures was enabled. Overall, Ontario demonstrated the highest level of spending with a per person average of $91.51 a month, or $1,098.12 per year (Williams & Volberg, 2013). At the lowest end of the spectrum, Quebec featured a median annual expenditure of $150 or $12.50 per month (Kairouz, Nadeau, & Robillard, 2014). In this case, it should be noted that median spending is often much lower than a calculated average, as it represents the mid-point and most common value in a distribution, whereas an average of a distribution can be skewed by low or high outliers. Generally, the bulk of the provincial averages for money spent fell approximately between $20 and $33 per month or $250 to $400, although these findings emerged predominantly from the Atlantic provinces and may not
be representative of other Canadian jurisdictions (Doiron, 2006; MarketQuest Research, 2009; Nova Scotia Department of Health and Wellness, 2016).

Average and median time spent gambling were not extensively reported with only three jurisdictions presenting relevant data. Manitoba prevalence data indicated an average frequency limit of 5.9 times per month—extrapolated to 70.8 times per year—and an average duration limit of approximately 1 hour (Liquor and Gaming Authority of Manitoba, 2014). Nova Scotia did not report total averages, but did publish average frequencies for visits to First Nations’ (4.3x/month) and non-First Nations’ (2.7x/month) VLT sites (Nova Scotia Department of Health and Wellness, 2016). Finally, Quebec’s most recent prevalence study noted a total median frequency of 25 visits in the previous year, which translates to about 2 occasions per month, on average (Kairouz et al., 2014).

**Table 6: Average or Median Money and Time Spent on Gambling Across Canadian Provinces**

<table>
<thead>
<tr>
<th>Province</th>
<th>Publication Date</th>
<th>Money Spent</th>
<th>Time Spent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manitoba</td>
<td>2014</td>
<td>$53.44/session (average spending limit)</td>
<td>5.9x/month (average frequency limit)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 hour, 5 minutes (average duration limit)</td>
</tr>
<tr>
<td>Ontario</td>
<td>2013</td>
<td>$91.51/month (average total gambling expenditure)</td>
<td>N/A</td>
</tr>
<tr>
<td>Quebec</td>
<td>2014</td>
<td>$150/year (median annual expenditure)</td>
<td>25x/year (median annual frequency)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.3x/month (average frequency to FN VLT sites)</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>2016</td>
<td>$33/month (average total gambling expenditure)</td>
<td>2.7x/month (average frequency to non-FN VLT sites)</td>
</tr>
<tr>
<td>Prince Edward Island</td>
<td>2006</td>
<td>$283/year (average total gambling expenditure)</td>
<td>N/A</td>
</tr>
<tr>
<td>Newfoundland</td>
<td>2009</td>
<td>$255.40/year (average total gambling expenditure)</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Non-Problem and Low-Risk Gamblers

Spending patterns for non-problem and low-risk gambler sub-types were available for upwards of seven provinces. Money spent on all forms of gambling by non-problem and low-risk gamblers was most often reflected in annual or monthly median or average expenditures (Table 7). While non-problem gamblers typically spent a median of between $90 and $200 per year, the jump to the low-risk category illustrated median amounts from $200 to nearly $1300, in the case of Quebec (Kairouz et al., 2014). While this latter figure is curious and exceeds empirical suggestions of safe low-risk limits, the vast majority of financial expenditures for these two gambler sub-types is generally consistent. One possible explanation for Quebec’s high report of spending among CPGI low-risk gamblers could be the higher relative affluence of players in the sample compared to the general population or other jurisdictional populations.1

Time spent on all forms of gambling by non-problem and low-risk gamblers was represented in terms of both frequency and duration. Frequency was only reflected by Quebec’s prevalence study, which indicated a median of 24 times per year, or twice a month. Other representations of frequency were apparent in studies from BC, Saskatchewan, and Nova Scotia, but illustrated gambling participation as a percentage of the population falling into temporal categories such as weekly and monthly gambling (Barry, 2014; Schrans & Schellinck, 2007; Wynne, 2002). These metrics were not deemed useful for comparisons with low-risk limits as they did not provide either total averages or medians for specific sub-types of players. With regard to duration, New Brunswick and Newfoundland and Labrador appeared closely aligned with averages of 1.6 to 2 hours a month (a median of 0.2 hours/month for both) among non-problem gamblers and medians of 1.2 to 2 hours per month among low-risk gamblers (MarketQuest Research, 2009; MQO Research, 2015).

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1 No indications of the sample’s income distribution were found to dismiss this possibility. In addition, the Quebec prevalence study is published in French and was reviewed by a non-native French speaker.
Table 7: Average and Median Money and Time Spent by Non-Problem and Low-Risk Gambling

<table>
<thead>
<tr>
<th>Province</th>
<th>Publication Date</th>
<th>Money Spent</th>
<th>Time Spent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NPG:</td>
<td>NPG:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$195/year (median)</td>
<td>1.6 hours/month (average)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$12 (largest one-time spend, median)</td>
<td>0.2 hours/month (median)</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>2014</td>
<td>Low-Risk:</td>
<td>Low-Risk:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$696/year (median)</td>
<td>4.9 hours/month (average)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$40 (largest one-time spend, median)</td>
<td>1.2 hours/month (median)</td>
</tr>
<tr>
<td>Quebec</td>
<td>2014</td>
<td>NPG:</td>
<td>NPG:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$120/year (median)</td>
<td>24x/year (median)</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>2016</td>
<td>Low-Risk:</td>
<td>Low-Risk:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$1,280/year (median)</td>
<td>121x/year (median)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$21/month (average)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low-Risk:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$52/month (average)</td>
<td></td>
</tr>
<tr>
<td>Newfoundland</td>
<td>2009</td>
<td>NPG:</td>
<td>NPG:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$90/year (median)</td>
<td>0.2 hours/month (median)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$202.30/year (average)</td>
<td>2 hours/month (average)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low-Risk:</td>
<td>Low-Risk:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$200/year (median)</td>
<td>2 hours/month (median)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$484.90/year (average)</td>
<td>5.2 hours/month (average)</td>
</tr>
</tbody>
</table>

Time and money expenditures by gambler sub-types were also represented in game-specific contexts (Table 8). Although the individual financial contributions appear fairly low in these cases (e.g., $10 - $20 on lottery per month), the absence of total average or median amounts preclude a broader representation of expenditure in these jurisdictions. However, in comparing median expenditures of gambler sub-types across different jurisdictions, such as Prince Edward Island and Saskatchewan, interesting patterns do emerge (Doiron, 2006; Wynne, 2002). For instance, spending in both of these provinces among non-problem gamblers were all less than $50 a month and often between $5 and $20. Noticeable increases in per activity expenditures begin to appear in Prince Edward Island’s low-risk category where the median amount for horse race betting was reported as $1,500/month (compared to $10/month in the non-problem group) or $90/month and $100/month for cards and VLT (compared to $13/month and $20/month in the non-problem group). Variation between Saskatchewan’s non-problem and low-risk groups appeared much closer with the highest increases between the groups across game-specific activities being no more than $10.
Time spent on specific gambling activities was only apparent in the Ontario prevalence study. Moreover, only a non-problem gambler category was indicated and scoring included proximal ranges of participation instead of exact measures. For example, non-problem gamblers in Ontario play somewhere around once a month on lottery and less than once a month on instant win games and EGMs. The sample of Ontarians also reported almost never playing casino table games and sports betting.

**Table 8: Average and Median Money and Time Spent on Specific Activities by Non-Problem and Low-Risk Gambling**

<table>
<thead>
<tr>
<th>Publication Date</th>
<th>Ontario</th>
<th>Prince Edward Island</th>
<th>Saskatchewan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money Spent</td>
<td>NPG: $55.85/month (average)</td>
<td>NPG: (median)</td>
<td>NPG: (median)</td>
</tr>
<tr>
<td></td>
<td>Lottery - $10/month</td>
<td>Lottery - $6/month</td>
<td>Lottery - $6/month</td>
</tr>
<tr>
<td></td>
<td>Horse Racing - $10/month</td>
<td>Bingo - $15.50/month</td>
<td>Bingo - $15.50/month</td>
</tr>
<tr>
<td></td>
<td>Cards - $13/month</td>
<td>Cards - $3/month</td>
<td>Cards - $3/month</td>
</tr>
<tr>
<td></td>
<td>Slots - $35/month</td>
<td>VLTs - $10/month</td>
<td>VLTs - $10/month</td>
</tr>
<tr>
<td></td>
<td>VLT - $20/month</td>
<td>Slots - $10/month</td>
<td>Slots - $10/month</td>
</tr>
<tr>
<td></td>
<td>Bingo - $50/month</td>
<td>Sports pools - $3/month</td>
<td>Games of skill - $10/month</td>
</tr>
</tbody>
</table>

| Money Spent      | Low-Risk: (median) | Low-Risk: (median) | Low-Risk: (median) |
|                  | Lottery - $20/month | Lottery - $10/month | Lottery - $10/month |
|                  | Horse Racing - $1500/month | Bingo - $20/month | Bingo - $20/month |
|                  | Cards - $90/month | Cards - $10/month | Cards - $10/month |
|                  | Slots - $50/month | VLTs - $20/month | VLTs - $20/month |
|                  | VLT - $100/month | Slots - $20/month | Slots - $20/month |
|                  | Bingo - $30/month | Sports pools - $5/month | Games of Skill - $15/month |

| Time Spent       | NPG: Lottery - between <1x/month to 1x/month | NPG: Instant Win - between never and <1x/month | NPG: EGM - between never and <1x/month |
|                  | Casino table - Almost never | Sports betting - almost never |
Moderate Risk and Problem Gamblers

Time and money expended among moderate risk and problem gamblers varied considerably across some jurisdictions and in many cases exceeded low-risk limits established in the research literature (Table 8). Yearly spending for moderate risk gamblers was predominantly represented in median amounts and ranged from $400/year in Newfoundland to $1,560/year and $2,827/year in Quebec and New Brunswick, respectively (Kairouz et al., 2014; MarketQuest Research, 2009; MQO Research, 2015). Turning to problem gamblers, annual median spending included $1,723/year (Newfoundland) and $5,344/year (Quebec). Strangely, the money spent by problem gamblers in New Brunswick was lower ($2,359/year) than in the moderate risk sub-sample, which may have been due to self-report bias.²

Some calculated average values for money spent on a yearly basis were provided by select jurisdictions and consistently exceeded median values. Additional averaged values for Nova Scotia (moderate risk: $2,004/year; problem gamblers: $9,528/year) and Ontario (problem gamblers: $7,419.72/year) do give an indication of the potential scope of annual expenditure among this highest risk group (Nova Scotia Department of Health and Wellness, 2016; Williams & Volberg, 2013). Monthly expenditures were represented as averaged values as well. Monthly estimates for some populations were also presented. Moderate risk gamblers in Newfoundland and Nova Scotia ranged from $82.40/month to $167/month, respectively. Monthly spending among problem gamblers reached highs in Ontario and Nova Scotia of $618.31/month and $794/month, while Newfoundland appeared substantially lower at $171.61/month.

Time spent gambling among moderate risk and problem gamblers focused on frequency and duration of play. Frequency was only represented in Quebec with a median participation rate of 106 times per year for moderate risk gamblers and 156 times per year for probable pathological gamblers (Kairouz et al., 2014). Duration rates were provided by Newfoundland and New Brunswick and appeared fairly similar (MarketQuest Research, 2009; MQO Research, 2015). For instance, Newfoundland featured a median duration rate of 3 hours per month for moderate risk gamblers and 10 hours/month for problem gamblers. Moderate risk gamblers in New Brunswick indicated a median rate of participation equal to 4.1 hours per month and 9.4 hours/month for problem gamblers.

² No explanation of this anomaly was found during the review process nor was the issue of bias addressed.
### Table 9: Average and Median Money and Time Spent by Moderate Risk and Problem Gambling

<table>
<thead>
<tr>
<th>Publication Date</th>
<th>New Brunswick</th>
<th>Quebec</th>
<th>Nova Scotia</th>
<th>Newfoundland</th>
<th>Ontario</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Money Spent</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate Risk:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$2,827.78/year (median)</td>
<td>$1,560/year (median)</td>
<td>$167/month (average)</td>
<td>$400/year (median)</td>
<td>$618.31/month (average)</td>
<td></td>
</tr>
<tr>
<td>$187 (largest one-time spend, median)</td>
<td>$651 (largest one-time spend, median)</td>
<td></td>
<td>$990.50/year (average)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PG:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$2,359.14/year (median)</td>
<td>$5,344/year (median)</td>
<td>$794/month (average)</td>
<td>$1,723.77/year (median)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$651 (largest one-time spend, median)</td>
<td></td>
<td></td>
<td>$2,059.30/year (average)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Time Spent</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate Risk:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1 hours/month (median)</td>
<td>106x/year (median)</td>
<td>3 hours/month (median)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.1 hours/month (average)</td>
<td></td>
<td>6.4 hours/month (average)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PG:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.4 hours/month (median)</td>
<td>156x/year (median)</td>
<td>10 hours/month (median)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.8 hours/month (average)</td>
<td></td>
<td>12 hours/month (median)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Discussion**

Overall, there was consistency between research and prevalence studies. Their use of CPGI categories to estimate gambling risk allowed for reasonable comparisons. The purpose in this was to explore trends in self-reported gambling prevalence relating specifically to time and money spent and ascertain if values aligned with synthesized low-risk limits emergent from the research literature. To this end, non-problem and low-risk spending prevalence was generally within research-based limit thresholds highlighted in the literature review (see Chart 1). This provides some confidence that even recent depictions of gambling activities and resource expenditure may not need to diverge significantly to meet or maintain suggested thresholds for low-risk gambling. It also provides further validation for the research literature. However, with this said, findings from Quebec’s prevalence study stood out as a major anomaly. The margins of low-risk gambling exceeded even the most liberal research-based limit of $1,000 CAD annually, using the same PGSI dependent variable gambler classifications. This strange pattern was compounded by a greater
frequency of days gambling per year than even moderate risk gamblers (121 vs 106 days). The prevalence report also did not expand on the distribution of socio-economic status in the sample used, which was stated to be representative of Quebec, though it did note a positive linear pattern of gambling participation among lower (47%), lower-middle (64%), upper-middle (69%), and higher (73%) income categories. Given this generally consistent pattern of gambling participation, and a median household income in Quebec in 2012 of $70,480, it is curious to see low-risk gamblers in the province are noted as spending an annual median amount of nearly twice this figure, using Currie’s (2006, 2013) 1% of income cut-off (Statistics Canada, 2016b). When performing the same comparison, all other provinces presenting low-risk gambling spending generally stay around the 1% annual income threshold.

Moderate risk and problem gambling featured large variation across provincial prevalence data. In all cases, values for money spent greatly exceeded research-based limit thresholds. While this was not an unexpected phenomenon, it does present a challenge for national low-risk gambling guidelines that may have a difficult task in drawing back resource expenditures that sometimes appeared very extreme. In some instances, these extremes were apparent in the seemingly less severe moderate risk category where

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3 Per-day gambling expenditure for low-risk gamblers ($10.58) was double that of non-problem gamblers and $4 less than moderate risk gamblers.

4 Low-risk gambling: New Brunswick ($696/yr median spent; 1% 2012 income=$659), Nova Scotia ($624/yr median spent; 1% 2012 income=$679), and Newfoundland and Labrador ($200/yr median, $484.90/yr average spent; 1% 2012 income=$709)
jurisdictions such as New Brunswick reported spending at almost three times the high cut-off point for low-risk gambling (~$1000).

Unfortunately, prevalence on time spent gambling was subject to considerable limitations. For one, frequency, which is acknowledged to be a strong indicator for predicting gambling risk, was only represented in data from a few provinces and not consistently across samples and gambling sub-types. With regard to duration values, reporting was much more extensive, but was focused almost entirely on monthly rates. The issue with monthly rates is that there is no way to tell if time was distributed evenly across this time period or concentrated in one or a few sessions. This is problematic as several hours of binge gambling at an EGM site can elevate gambling risk and potentially lead to harm (Currie, Hodgins, Wang, El-Guebaly, Wynne, et al., 2008).
Concluding Statement

This literature review has examined several areas of responsible gambling player support relevant to the development of Canada’s first NLRGG. Generally, all key domains of responsible gambling, such as money and time management, game mechanics, life and leisure balance, emotional awareness, and gambling risk and support service awareness were found to have varying degrees of merit for the purposes of health promotion. While still developing, evidence relating to the feasibility and validity of low-risk gambling limits for time and money were noted across several independent studies of representative populations, including those in Canada. Next steps in the solidification and formalization of low-risk gambling limits will require targeted pilot testing to not only validate research findings in more current Canadian samples, across the country, but also test the reliability of these limits and their potential messaging formats. Importantly, it should be acknowledged that Canadian gamblers are not all alike and will differ in terms of their basic financial means, for example. These differences should be accounted for and help determine safe limits across a spectrum of risk.

In addition to low-risk limits, responsible gambling advice should be incorporated into any future gambling guidelines, as evidence of their effect on safer gambling practices have been noted to varying degrees in the research literature. In particular, conveying a clear understanding of game mechanics, randomness and probability can empower individuals to make more informed play choices. While technical and mathematical knowledge alone will not ensure successful maintenance of safer gambling habits, it is an important component to informed decision making. Other emerging areas of responsible gambling, such balancing life and leisure and becoming emotionally aware through mindfulness education and practices, for instance, may be fruitful areas to explore and further develop. Finally, it should be noted that barriers and gaps in knowledge with regard to the development of Canada’s NLRGG may not centre on the effectiveness or merit of guideline content, but rather how this information is formatted and delivered. Uncovering the behavioural motives that influence risky gameplay as well as how and when responsible gambling information is most effective will be critical in nudging Canadians towards safe and sustainable gambling choices.
References


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http://doi.org/http://dx.doi.org/10.1080/14459795.2014.910244

http://doi.org/10.1007/s11469-009-9206-4


http://doi.org/10.1007/s10899-005-3028-5


## APPENDIX A – Sample List of Keywords

<table>
<thead>
<tr>
<th>Gambling</th>
<th>Life balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gambling risk</td>
<td>Leisure balance</td>
</tr>
<tr>
<td>Gambling harm</td>
<td>Leisure activity</td>
</tr>
<tr>
<td>Low-risk</td>
<td>Obsession</td>
</tr>
<tr>
<td>Low-risk limits</td>
<td>Passion</td>
</tr>
<tr>
<td>Low-risk cut-off</td>
<td>Obsessive passion</td>
</tr>
<tr>
<td>At-risk</td>
<td>Healthy routines</td>
</tr>
<tr>
<td>Threshold</td>
<td>Active coping</td>
</tr>
<tr>
<td>Guidelines</td>
<td>Managing stress</td>
</tr>
<tr>
<td>Money limit</td>
<td></td>
</tr>
<tr>
<td>Monetary limit</td>
<td>Prevalence</td>
</tr>
<tr>
<td>Time limit</td>
<td>Rate</td>
</tr>
<tr>
<td>Spending limit</td>
<td>Incidence</td>
</tr>
<tr>
<td>Win limit</td>
<td>Average</td>
</tr>
<tr>
<td>Loss limit</td>
<td>Median</td>
</tr>
<tr>
<td>Frequency</td>
<td>Sub-type</td>
</tr>
<tr>
<td>Intensity</td>
<td>Gambler category/ies</td>
</tr>
<tr>
<td>Duration</td>
<td>Non-problem</td>
</tr>
<tr>
<td>Variability</td>
<td>Moderate risk</td>
</tr>
<tr>
<td>Self-limiting</td>
<td>Problem gambling/ler</td>
</tr>
<tr>
<td>Game mechanics</td>
<td></td>
</tr>
<tr>
<td>Informed choice</td>
<td></td>
</tr>
<tr>
<td>Erroneous beliefs</td>
<td></td>
</tr>
<tr>
<td>Erroneous cognition</td>
<td></td>
</tr>
<tr>
<td>Gambling fallacies</td>
<td></td>
</tr>
<tr>
<td>Gambler fallacies</td>
<td></td>
</tr>
<tr>
<td>Competence</td>
<td></td>
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<tr>
<td>Disclosure</td>
<td></td>
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<tr>
<td>Gambling odds</td>
<td></td>
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<tr>
<td>Probability</td>
<td></td>
</tr>
<tr>
<td>Chance</td>
<td></td>
</tr>
<tr>
<td>Randomness</td>
<td></td>
</tr>
<tr>
<td>Gambling myths</td>
<td></td>
</tr>
</tbody>
</table>
### APPENDIX B – Summary of Samples, Methods and Limitations for Various Low-Risk Time and Money Limit Gambling Studies

<table>
<thead>
<tr>
<th>Author and Date</th>
<th>Methods and Sample</th>
<th>Limitations</th>
</tr>
</thead>
</table>
- 19,012 Canadians  
- CPGI measures  
- 77% response rate  
- Risk curve and logistic regression analyses | - Analytical approach does not show lower limit of harm  
- CCHS self-report subject to response bias  
- 2002 data is dated |
| Weinstock et al. 2007 | - Randomized control trial with 12-month follow-up assessment  
- 178 pathological gamblers in the US  
- 77.1% retention at follow-up  
- South Oaks Gambling Screen  
- Separate receiver operator characteristic curve analysis | - Small sample  
- Type of gambling was not collected at the 12-month follow-up  
- Behavioural indicators may not be limited beyond pathological gamblers |
| Weinstock et al. 2008 | - Diagnostic interviews for gambling severity and Gambling Timeline Followback (retrospective self-report calendar)  
- 159 college students in the US  
- Separate receiver operator characteristic (ROC) curve analysis | - Small sample  
- ROC curve analysis can describe test performance in one population, but not apply to another  
- Student population not necessarily representative of broader populations |
| Currie et al. 2008 | - Gambling prevalence surveys from Alberta, BC and Ontario  
- 7,675 Canadians, total  
- CPGI measures  
- Response rates: AB (64%), ON (37%), BC (27%)  
- Risk curve, ROC curve and logistic regression analyses | - Self-reported data subject to response bias  
- % of household income spent on gambling is prone to recall bias  
- Response rate for BC and ON was <40%  
- Variations across survey questions can produce different estimates |
| Currie et al. 2009 | - Survey data combined from six Canadian provinces (n=12,285)  
- Past year gambling inclusion and PGSI response  
- Response rate ranging from 27% (BC) to 64% (Alberta)  
- ROC analysis (AUC focus) | - Self-reported data  
- Variably low response rate |
| Dragicevic et al. 2011 | - Analytical sample of online casino gamblers (n=546) randomly selected from research sample of 128,788 people  
- K-means clustering analysis | - Uncertain if sampled players used other sites to play or played on land  
- K-means clustering has difficulty in grouping data with large outliers (affected cluster 3) |
| McCormack et al. 2013 | - 976 online survey respondents about Internet gambling participation  
- 81.6% of sample was male  
- PGSI assessment questions  
- Analysis by Chi-square tests and multinomial logistic regression | - Missing data ranged from 2.3% to 25.5%  
- Self-report response bias  
- Sample not large enough to be representative of all Internet gamblers |
| Currie et al. 2013 | - 3 large integrated prevalence surveys from across Canada (n=25,584)  
- Supplementary survey of professionals (n=142) in Canada and the US to comment on the PGSI validity  
- PGSI items of each survey assessed collectively | - Self-report response bias  
- Cross-sectional surveys do not track progression of problems and behaviour |
### APPENDIX C – Environmental Scan of Life and Leisure Balance Messaging

<p>| CANADA |
|------------------|-------------------------------------------------|
| <strong>Responsible Gambling Council</strong> | Balance gambling with other activities – it’s important to enjoy other activities so that gambling doesn’t become too big a part of your life | <a href="http://www.responsiblegambling.org/safer-play">www.responsiblegambling.org/safer-play</a> |
| <strong>Addictions Foundation of Manitoba</strong> | Balance gambling with other leisure activities. Gambling shouldn’t be the only activity you do in your spare time. | <a href="http://Getgamblingfacts.ca/responsible-gambling-tips">http://Getgamblingfacts.ca/responsible-gambling-tips</a> |
| <strong>BC Responsible and Problem Gambling Program</strong> | Balance gambling with other activities – you’re more likely to enjoy the time you spend gambling if gambling isn’t your only form of entertainment. That’s because even when you’re playing for fun, it’s no fun to keep losing money. If you’re playing for fun and you win, it’s nice to use that windfall for other things. If you balance gambling with other activities you are less likely to let it interfere with your work or your relationships with friends and family. | <a href="http://www.bcresponsiblegambling.ca/responsible-gambling/responsible-gambling-tips-strategies">www.bcresponsiblegambling.ca/responsible-gambling/responsible-gambling-tips-strategies</a> |
| <strong>Nova Scotia Provincial Lotteries and Casino Corporation</strong> | Life is about balance. Gambling is much more fun when you balance it with other entertainment activities. Mixing it up makes sure gambling is just one of the things you enjoy doing. | <a href="http://www.yourbestbet.ca/tips">www.yourbestbet.ca/tips</a> |
| <strong>GameSense</strong> | Balance gambling with other hobbies – whether it’s reading, golfing, or just taking some time away from the tables or slots, every break helps | <a href="http://gamesenseab.ca/your_gamesense/facts_about_seniors_and_gambling">http://gamesenseab.ca/your_gamesense/facts_about_seniors_and_gambling</a> |</p>
<table>
<thead>
<tr>
<th>Organization</th>
<th>Message</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Gambling Institute of Ontario</td>
<td>Getting Your Life Back to Balance – When you focus only on gambling problems, your family life gets out of balance. Returning to normal family routines is an important part of healing. Here are some ideas for the whole family to consider.</td>
<td><a href="http://www.problemgambling.ca/gambling-help/support-for-families/back-in-balance.aspx">www.problemgambling.ca/gambling-help/support-for-families/back-in-balance.aspx</a></td>
</tr>
<tr>
<td>Ontario Lottery and Gaming Corporation</td>
<td>Balance gambling with other activities.</td>
<td><a href="http://www.olg.ca/assets/documents/responsible_gaming/quick_guide_to_low_risk_gambling.pdf">www.olg.ca/assets/documents/responsible_gaming/quick_guide_to_low_risk_gambling.pdf</a></td>
</tr>
<tr>
<td>Atlantic Lottery Corporation</td>
<td>Balance gambling with other forms of entertainment.</td>
<td><a href="http://corp.alc.ca/uploadedfiles/wwwalcca/play_responsibly/corporate/AL_RG_brochure_communityresources%20NL_online(1).pdf">http://corp.alc.ca/uploadedfiles/wwwalcca/play_responsibly/corporate/AL_RG_brochure_communityresources%20NL_online(1).pdf</a></td>
</tr>
<tr>
<td>INTERNATIONAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Victoria RG Foundation (Australia)</td>
<td>It’s important to maintain balance with other things in your life. Having time and the money to do other things you enjoy is an important way to keep that balance.</td>
<td><a href="http://www.responsiblegambling.vic.gov.au/awareness-and-prevention/betregret/tips-to-avoid-bet-regret">www.responsiblegambling.vic.gov.au/awareness-and-prevention/betregret/tips-to-avoid-bet-regret</a></td>
</tr>
<tr>
<td>Pathways of Central Ohio</td>
<td>Balance recreational gambling with other healthy activities.</td>
<td><a href="http://www.playitsafeohio.org/safe-gambling-tips">www.playitsafeohio.org/safe-gambling-tips</a></td>
</tr>
<tr>
<td>Gamevy (UK Operator)</td>
<td>Keep up other interests and hobbies – don’t let gambling take over your life.</td>
<td><a href="http://gamevy.com/responsible-gambling.html">http://gamevy.com/responsible-gambling.html</a></td>
</tr>
<tr>
<td>GambleAware (UK)</td>
<td>Whether you are buying a lottery ticket or scratchcard, placing a bet, playing poker or bingo, or playing on a gambling machine or casino game, gambling responsibly means treating the activity as just one form of entertainment in a balanced lifestyle.</td>
<td><a href="http://www.gambleaware.co.uk/responsible-gambling">www.gambleaware.co.uk/responsible-gambling</a></td>
</tr>
<tr>
<td>Malta Gaming Authority</td>
<td>Balance gambling other activities.</td>
<td><a href="http://www.likebetting.eu/holder.aspx?page=content&amp;p=respensiblegaming">www.likebetting.eu/holder.aspx?page=content&amp;p=respensiblegaming</a></td>
</tr>
</tbody>
</table>
## APPENDIX D – Preliminary Draft Guidelines

<table>
<thead>
<tr>
<th>Domain</th>
<th>Guideline</th>
<th>Factoids</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Money Management</strong></td>
<td>Limit the money you spend to 1% of your annual income in order to keep your risk for gambling problems low. For example: &lt;br&gt; <strong>&lt;$20K/year</strong>: no more than $200 a year on gambling or $17 a month &lt;br&gt; <strong>$20K-$40K</strong>: $200-$400 per year or $17 to 33$ per month &lt;br&gt; <strong>$40K-$60K</strong>: $400-$600 per year or $33 to $50 per month &lt;br&gt; <strong>$60K-$80K</strong>: $600-$800 per year or $50 to $67 per month &lt;br&gt; <strong>$80 or more</strong>: $800-$1000 a year, $67 to $83 a month, or an equivalent 1% of annual income</td>
<td>Money limits can help maintain safer levels of gambling. Exceeding suggested limits have been shown to be associated with increased risk of gambling problems. Setting a spending limit <em>before</em> you play involves deciding how much you can afford to lose, taking out a predetermined amount, and leaving ATM cards at home.</td>
</tr>
<tr>
<td><strong>Time Management</strong></td>
<td>Limit the time you spend to 4 times a month and no more than once a week to help reduce your risk for gambling problems. If you play slots or video lottery terminals (VLTs), limit your play sessions to no more than 1 hour at a time to help avoid gambling problems. Gambling when you are tired can be risky. Don’t let gambling interfere with your rest.</td>
<td>Setting time limits can help maintain safer levels of gambling and overall leisure and life balance. Setting a time limit involves deciding how long you want to spend gambling beforehand. Using an alarm on your watch or phone or time limit tools on games, where available, can be helpful. Fast-paced electronic gaming machines like slots and VLTs can reduce awareness of time and money spent gambling. These forms of gambling are also considered the riskiest and most likely to lead to problems. Online gamblers who play between 12:00 am and 6:00 am have been found to experience more gambling problems than those that do not play very late or very early in the day.</td>
</tr>
</tbody>
</table>
### Game Mechanics

The odds of winning and losing a game of chance do not change after an outcome. Your odds of losing will always be much higher than your odds of winning and you cannot do anything to change them. Play for fun, not for money.

**Erroneous gambling beliefs:**

- **Hot hand fallacy** – thinking a random win will lead to another
- **Monte Carlo fallacy** – thinking an outcome will lead to the opposite outcome to occur next
- **Illusion of control** – thinking you or your actions can influence random events

### Life and Leisure Balance

Balance gambling with other leisure activities. Feeling negative emotions, obsession, stress about financial loss, and relationship troubles associated with gambling are some signs of imbalance. Seek support from friends, family and/or professionals if you need to. Replacing time and money spent on gambling with other leisure activities is also useful.

**Balanced gambling means these activities do not negatively affect other aspects of your life by taking time away from other important activities and responsibilities or harm personal relationships.**

**Strategies to Help Balance Gambling with Other Elements of Life:**

- Do something fun (read a book, watch TV, play a sport, go for a walk or run)
- Avoid stores that sell scratch tickets, pay bills immediately, limit access to money
- Call your spouse, talk with kids, hang-out with non-gambling friends
- Call Help Line, talk with therapist
### Emotional Awareness

Be aware of negative emotions when you gamble or think about gambling. Set goals and find ways of limiting those feelings through alternative activities, meditation and breathing exercises.

Reflecting on negative emotions first instead of reacting to them is a helpful practice to avoiding risky gambling decisions and behaviour. Mindfulness techniques can provide a simple yet effective way of responding negative emotions.

**The Process of Mindfulness:**

- Focus on and control your breathing
- As you breathe, relax and release the tension in your body
- As you relax your body, focus on your stressful thoughts and allow them to subside—simply observe the thoughts, don’t elaborate on them

### Gambling Risk and Support Service Awareness

Being aware of gambling risks can help you avoid harm. When gambling begins to affect other aspects of your life, like your emotions, responsibilities at work and home, and the lives of your loved ones, it might be time to seek help. Gambler support services, such as your local Help Line, are free and respect your privacy. They can connect you with the specialized help and information you need.

There are many types of gambling risks and harms that can negatively affect players to different degrees. Being aware of common gambling risks and recognizing them in your own play is a first step to avoiding potential harm. Knowing how and where to seek help for gambling issues is another protective strategy.

**Common Gambling Risks:**

- Betting more than you can afford
- Increasing bet sizes
- Chasing lost bets with more and larger bets
- Borrowing money to gamble
- Thinking you may have a problem
- Health problems associated with gambling (e.g., stress, anxiety, etc.)
- Financial problems influenced by gambling
- Relationship troubles where gambling is a topic of conflict

**Did you know?**

You can get information and help for gambling issues from non-gambling service provider, such as your personal physician, financial counsellors, relationship counsellors, and alcohol and drug service providers.