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In this issue

This issue of the *Journal of Gambling Issues* examines the phenomenon of problem gambling through a variety of theoretical lenses and with a range of methodological tools. This issue's diversity provides a partial reflection of the scope of ideas and orientations to problem gambling that exists within the field.

In their article "An evaluation of two United Kingdom online support forums designed to help people with gambling issues," Wood and Wood examine the internet as a cutting-edge treatment medium for problem gamblers. Using both qualitative and quantitative methods, we hear from problem gamblers themselves about the experience of receiving support from their peers online.

Ladouceur and Sévigny, in their article "Electronic gambling machines: Influence of a clock, a cash display, and a precommitment on gambling time," examine three responsible gambling features that have been included on video lottery terminals (VLTs) in the Canadian province of Québec. By reporting on the perceptions and behaviours of gamblers who use VLTs, they provide a much-needed contribution to the limited evidence base that concerns the preventive utility of responsible gambling features aimed at reducing the harm of VLTs.

In one of two articles related to public health in this issue, the opinion piece "Should gambling be included in public health surveillance systems?" by Blase Gambino provides a framework for future discussion on the importance of including indicators of the effects of gambling on provincial/state epidemiological surveys. In the second article, David Marshall's "Gambling as a public health issue: The critical role of the local environment," the argument is made that the circumstances unique to any given geographic place will have major implications for the way problem gambling should be addressed, prevented, and treated.

In Ferentzy, Skinner, and Antze's article, "Gamblers Anonymous and the 12 Steps," we are introduced to the mutual aid environment of Gamblers Anonymous and its divergences from other 12-Step programs; notably, we learn that GA differs from groups like Alcoholics Anonymous in the amount of attention it pays to financial issues, particularly for new members experiencing the pressures associated with a heavy debt burden. Peter Ferentzy also co-authors a second article in this issue with colleague Nigel Turner, entitled "Gambling and organized crime — A review of the literature." This article is an ambitious synthesis of the current knowledge regarding the historical and contemporary relationship between gambling and organized crime, gleaned from a wide variety of sources including law enforcement reports, governmental commission reports, the scientific literature, and film.

Harrigan and Dixon's contribution to this issue, entitled "PAR Sheets, probabilities, and slot machine play: Implications for problem and non-problem gambling", is an

examination of the game design information for several video slot machines (i.e., electronic gambling machines (EGMs)) offered in Ontario, Canada. The authors provide an inside look at the structural characteristics of video slot machines, examine the video slot machine gambling experience for infrequent and frequent gamblers, and discuss the implications that video slot game design might have for engendering and maintaining problematic gambling behaviours.

I hope the diversity and quality of the scholarship in this issue helps expand your thinking on gambling-related issues.

Daryl Boshart
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An evaluation of two United Kingdom online support forums designed to help people with gambling issues

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Abstract

The study examined two United Kingdom online forums designed to support people with gambling problems and people affected by problem gambling (e.g., partners, relatives, and friends). The methods utilised were content analysis of 60 forum posts, online semi-structured interviews (n = 19), and an online survey (n = 121). The study found that the forums helped members to better understand and cope with their own gambling problems or with those of others. A lack of other alternative support, ease of access and availability, need for additional support, insight gained through posting and hearing other's stories, help in resisting urges to gamble, and perceived anonymity were all given as benefits of the forums. The forums were most popular with online gamblers, and had a higher ratio of females to males (with gambling problems) than any other comparable service. Significantly more females than males suggested that the forums helped them to cope better with their gambling problem. The utility of online forums for helping people dealing with gambling problems is discussed.

Keywords: online forums, problem gambling, online gambling, female gamblers, coping

Background

To date, there has been only one empirical study (world-wide) that has specifically investigated the utility of online forums for helping people with gambling problems, and that study focused on the international, although predominantly North American, Gamblers Anonymous (GA) web forum. Cooper (2004) collected both quantitative and qualitative responses to an online survey received from 50 people with gambling problems who used the forum. Cooper found that the majority of clients (70%) had previously avoided seeking face-to-face treatment because of an unwillingness to disclose information about themselves. This appeared to relate to a perceived high level of stigma associated with having a gambling problem. Several studies have found that the issue of stigma has caused some people with gambling problems to avoid seeking treatment (Gupta & Derevensky, 2000; Hodgins & el-Guebaly, 2000; Marotta, 2000).

Cooper (2004) also found that lurking (i.e., visiting but not registering a presence to other users) at a problem gambling support group Web site made it easier for many people to consider seeking further help, including face-to-face services. Cooper observed that this was particularly true for the female clients in the study. A similar finding was also noted by Wood and Griffiths (2007a), who found that the one-to-one online guidance and support service GamAid, where a client chats directly to an advisor, was used by far more females with gambling problems (relative to males) than any other comparable United Kingdom (UK) service. Wood and Griffiths (2007a) speculated that this was due to females perceiving problem gambling as more stigmatising than their male counterparts do. This may be because gambling has traditionally been seen as a largely male pursuit in the UK, with the exception of bingo.

Cooper (2004) noted that 20% of the sample in his study reported that they used GAweb as the exclusive means for helping them deal with their gambling problems. Cooper suggests that for some people, online forums may be the only support that they can receive because of financial, geographical, transportational, and/or emotional constraints. Given that Internet gambling is the fastest growing form of gambling, online support may prove to be an extremely useful way of helping those who develop problems with online gambling. Wood and Griffiths (2007a) found that the GamAid service was used by more Internet gamblers than any other comparable UK service. This is perhaps not surprising considering that Internet gamblers have access to, and are usually comfortable using, online services more generally.

Overall, there is a paucity of empirical data that assesses the efficacy and feasibility of online forums for helping people with gambling problems and those affected by people with a gambling problem. Consequently, the present study is the first to examine an online peer support programme for people with gambling problems within the UK.

Currently, there are two national forums in the UK for persons with gambling problems and both of these were examined in the present study. Both forums have been operating for several years and are run by organizations that provide several other types of support service for people with gambling problems. These services include telephone help lines and face-to-face counselling, and one organization also provides residential treatment facilities. At the time this study was conducted, there were approximately 8,000 registered members across both forums. Around half of those members were considered "active" in that they had logged on to the forum at least once in the last 6 months. However, it is difficult to determine how many members visit the forum on a more regular basis and also how many members only read posts as opposed to write their own posts.

The project aimed to investigate both the features of UK support forums and the communication processes that may facilitate or hinder users in abstaining from, or controlling, their gambling behaviour. The research examined the nature of problem gambling support forums through content and thematic analysis, as well as the experiences and motivations of those clients who use those services through interviews and a questionnaire. Participants were self-defined as persons with gambling problems rather than

being identified with screening tools such as the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association). For the purpose of this project, it was felt that if a participant believed that they had a problem with their gambling behaviour, then it was highly likely that this was actually the case. Also, these forums offer support to those getting over gambling problems who may no longer meet the criteria for pathological gambling.

Ethical considerations

The researcher was introduced to the online communities by the respective moderators and made clear the research intentions before any data were gathered. The researcher answered questions about the project, via the forums, for 2 weeks before the study began in order to ensure that the forum members were fully informed. There were no objections registered to the research taking place. The names of all participants remain confidential and were known only to the researcher for the purpose of arranging the online interview procedures. All references to persons in the analysis and subsequent reports were made by using pseudonyms that were different from their actual usernames. It has been argued that online identities should be afforded the same guarantee of anonymity as physical identities (Wood, Griffiths, & Eatough, 2004). To ensure informed consent, the researcher fully advised the participants about the nature of the study and the use of the subsequent findings and reassured them that they were free to withdraw their consent at any time during or after the study if they so wished. Contact details for follow-up questions were provided.

The study was designed and carried out in accordance with The British Psychological Society Code of Conduct, Ethical Practises and Guidelines. All participants were required to indicate that they were over 18 years of age as part of the (informed) consent procedures. However, it is important to note that there was no independent means of verifying the age of participants. Online, people largely define who they are through text, and as a result the study relied on people telling the truth about who they were. Every care was taken to verify age, given these limitations. See Wood et al. (2004) for a more detailed discussion of ethics in online research.

The ethics of the project were examined and approved by the Research Committee of the Responsibility in Gambling Trust.

Study 1: A content analysis of 60 posts

The purpose of this phase of the project was to gather secondary data in order to both broadly define the usage of the forums and to give an indication of the content of the discussions that take place. By defining the content of the forums, it was possible to show how they were mostly used. More important, this phase of the research process helped identify the areas that needed to be discussed in more detail during the interviews conducted during Study 2.

Method

Participants

Participants were all members of one of two UK-based forums set up to help people who are dealing with either their own gambling problems or the gambling problems of partners, relatives, or friends. The data gathered were secondary in that they were derived from previous posts on the forums. Therefore, it is not possible to give demographic information such as age and gender, as this was not known. Actual usernames are also not given in order to respect the anonymity of those forum members whose posts were selected as examples.

Design and procedure

In order to gauge a basic understanding of the types and content of posts on the forums, a brief microanalytic content analysis was conducted of 60 posts by randomly selecting 15 posts on 4 separate days. New posts and subsequent responses are often qualitatively different from each other. For example, a new post may be a question or a request for help, whereas a response is more likely to be an answer to a question or a message of support. Therefore, half of the posts selected represented the first post of a new forum topic and the other half were randomly selected responses to previous posts. Each topic (sub-forum) across both forums was equally represented in the analysis.

Analysis

Emergent coding procedures were followed (Stemler, 2001) and two researchers independently read through all of the selected posts (with all usernames removed) and compiled a list of global thematic categories. Comparison of the lists showed a high level of initial similarity (92% agreement). A composite list of categories was collapsed into a final set of coding categories that were then applied to the selected posts. Two of the researchers coded all of the questionnaires independently. Inter-coder agreement was high, with kappa values ranging from 0.77 to 0.87 across the categories identified. Landis and Koch (1977) report that kappa values of 0.61 to 0.81 show a substantial strength of agreement, and values of 0.81 and above can be considered almost perfect.

Results

The analysis of forum posts identified that the forums contained a variety of different types of messages that were utilised to support both members with gambling problems and members seeking help for others with problems. Results show the percentage of categories that appeared in all 60 posts; several categories could appear in a single post.

Forum members providing advice or information to another member (38% of posts)

How to deal with an issue relating to problem gambling was the most frequently occurring category of post on the forums. Sometimes these posts were in response to a specific question or request for help from another member. For example:

> *The answer to your question is only if she is willing. The two things a compulsive gambler needs is opportunity and means. Self exclusion limits the opportunity, and it's a good idea if you can handle the finances in order to limit her means.*

However, some of these posts provided more general information to all forum members on strategies for dealing with gambling issues. For example:

> *It is not the experience of today that drives people mad — it is the remorse or bitterness of something which happened yesterday and the dread of what tomorrow may bring. Let us, therefore, LIVE BUT ONE DAY AT A TIME.*

A supportive statement (37% of posts)

A supportive statement was another frequently occurring category of post. Such messages usually related to a specific forum member, but sometimes messages were aimed at forum members in general. For example:

> *Keep posting and reading, we are all here to help you. God Bless*

Personal stories (25% of posts)

Personal stories accounted for a quarter of the content of all the posts examined. Such stories usually detailed how the member had developed either a gambling problem of their own or had to deal with a partner, relative, or friend's problem. Such complete personal stories were usually accompanied by an introductory statement. For example:

> *It all started for me last year when I was in a bad bout of severe depression…*

Other personal stories related to a particular incident in the member's (usually) recent history, such as an incident where a relapse occurred. For example:

> *I looked forward to the Cheltenham festival more than Christmas as a child and in fact I had been off gambling for 8 weeks until Cheltenham came around this year and I felt that I couldn't miss out on the carnival atmosphere that takes over my family for that week. Needless to say, I took a hammering over the week but never mind as I got stuck in again and again after it until I stopped 3 days ago.*

Requests for help and answers to specific questions (24% of posts)

Requests for help and answers to questions were present in almost a quarter of all the posts examined. Therefore, more than half of the posts contained either an answer to a forum member's question or a request for help or information. For example:

> *Keep reading time and time again about partners taking over credit cards and monetary matters. Is that a good thing in the long run? Surely taking responsibility is the best. Won't feel like you own decision if it feels like it is being enforced by a*

> *loved one. I just think it would only work short time, feeling like your doing it for someone else. You can only really control yourself? Am I wrong?*

Personal statements (10% of posts)

Personal statements were concerned with a particular belief or view, often relating to a specific gambling operator or a particular treatment provider. For example:

> *I think for every one new member of GA [Gambler Anonymous] there must thousands waiting to reach their rock bottoms, before they have to admit they have lost, and can never ever win.*

Introductions by new members (8% of posts)

An introduction was the final category of post identified and simply provided a means by which new members could introduce themselves and receive a welcome response from the other forum members.

The categories identified helped to formulate the topic areas for the interview guide that aided the dialogue in Study 2.

Study 2: Online interviews with forum members

This study was designed to gain a more in-depth understanding not only of the experiences and motivations of forum members, but also the utility of the forums in helping members to gain better control over their gambling behaviour. In addition, the interviews provided the information that was needed to construct the survey for Study 3.

Method

Participants

Nineteen participants took part in the study in response to posts placed on dedicated threads on both forums over a period of 2 weeks. Ten participants were female and 9 were male; age was not ascertained, as the majority of interviews were conducted on the forum, and it was considered that asking age could compromise anonymity. Seventeen of the participants had or were experiencing gambling problems. Two participants were married to someone with a gambling problem (see Table 1 for a full list of participants). All 19 participants were self-selected and represented everyone who responded to a request to participate in this part of the study.

Table 1
Participant details from Study 2

Participant #	Pseudonym	Male/Female	Status*
1	One Step	M	GP
2	Jill	F	GP
3	Sally	F	GP
4	Sparrow	M	GP
5	A Fresh Start	M	GP
6	Dave	M	GP
7	Fantasy	M	GP
8	Bill	M	GP
9	Lisa	F	Rel
10	Steph	F	GP
11	Bin	F	GP
12	Marg	F	GP
13	New Me	M	GP
14	Trevor	M	GP
15	Bruce	M	GP
16	Helen	F	GP
17	Mel	F	GP
18	Sparky	F	GP
19	Dancer	F	Rel

Note. M = male; F = female; GP = gambling problem; Rel = relative of a person with a gambling problem.

Design and procedure

The aim of the study was to examine the role of the forums in helping participants with a gambling problem, as well as those with a partner, relative, or friend with a gambling problem. There was a specific focus on the communication processes that could facilitate or hinder users in abstaining from, or controlling, their gambling behaviour. One researcher undertook all of the interviews, and an interview guide was used to ensure that certain topics were covered, as identified in the literature and in response to the content analysis in Study 1. Participants were also encouraged to raise any other topics that they considered pertinent.

Discussions focussed on the following areas:

- The experience of communicating with other people who have had similar experiences
- Sharing personal experiences
- Reading other people's stories
- The difference between posting online and interacting via phone or face-to-face
- The meaning behind usernames
- Perceived benefits and drawbacks of using a forum
- Suggestions for change and improvement
- The times when the forum helped most
- The extent to which the forum has helped with a gambling problem or a problem experienced by a partner, relative, or friend

An e-mail address was given for those who did not want to discuss issues in a public arena, and 5 participants responded in this way. Responses were analysed using thematic analysis, and exemplar quotes are provided to illustrate the findings using pseudonym usernames.

Results

Feeling less alone through sharing personal experiences

One of the most universally reported benefits was the ability of the forums to help members feel less alone with their problems. The discovery that other people were experiencing similar difficulties was for many participants a revelation that was expressed as an intense relief. Prior knowledge of others with gambling problems was often sparse or completely absent, and when members realised that they were not alone, it made the possibility of recovery seem more attainable for them. Gambling problems were often kept hidden away from partners, friends, and family, as the symptoms were not usually directly observable. A person experiencing gambling problems must often make a conscious decision to confide in others. Taking the first step towards admitting a problem to others was reported as extremely difficult, and the forums appeared to help their members to move towards a situation where talking to others was possible.

> As this is called the hidden addiction, talking to others and finding out you are not alone in this addiction has helped me so much. I feel their pain when I read their stories. We are from different walks of life, different countries, their story is my story. We are all at different levels of recovery, but in away [*sic*] we are like one big family. (Helen, female, has experienced gambling problems)

> There is some comfort in knowing that you are not the only one, this is some sort of phenomenon and you are not a 'freak', if you will…….When people come here hurting, I *know* what that feels like. (Jill, female, has experienced gambling problems)

> To begin with the prospect of telling anyone was daunting, but once out in the open it felt like a huge weight had been lifted. (Sally, female, has experienced gambling problems)

The revelation that others were suffering similar problems was also reported as a relief by a participant who was helping her partner with a gambling problem.

> It is vital as the wife of a compulsive gambler. I didn't know where to turn when I found out the extent of the problem/illness. When you find out, you feel a mixture of emotions and it helped me so much to find that my mixed up hurt and pain was shared by others and was 'normal'. There was no judgement by those who had similar experiences. (Dancer, wife of a person with gambling problem)

Community and friendship

Not only was the discovery of others in similar situations often a revelation, but it also provided a means of mutual support. Forum members supported each other and suggested that they could be more honest and open with other forum members than they had been with their family and friends. This support was ongoing and helped to build a sense of community.

> We are here for ourselves to get help, but also by posting and telling our stories, we are helping others. Also I have made some wonderful friends on this forum, who have helped me and pulled me through some rough times. (Helen, female, has experienced gambling problems)

> You may not know them by face but a lot of times you get to know them better than their family do. You can feel their pain when they first post and being a gambler yourself your heart goes out to them. (Marg, female, has experienced gambling problems)

> Many life issues connect back to gambling which is why the diaries on here work so well. You can visit people you feel a little more connected to in their diary space and vice-versa. (Bill, male, has experienced gambling problems)

Support did not just relate to issues directly concerned with gambling, but also extended to other aspects of participants' lives. For some, the opportunity to talk about non-gambling issues was seen as important and there was a sense that gambling problems went deeper than just the actual activity. For these people, talking about other things was a vital step in their recovery and necessary in order to fill the gap that appeared when their gambling behaviour ceased. However, some participants did not feel that there was any need to talk about non-gambling matters. In this respect, the participants were fairly evenly split; although no one objected to the presence of non-gambling posts, some did not see them as relevant to themselves.

> I think talking about non gambling matters can sometimes help us, when we are down and feeling low, a smile or hug, or a joke, can make you have a laugh. When we were in the throws [*sic*] of gambling I never laughed or smiled. (Helen, female, has experienced gambling problems)

> I personally find it helps me a lot to get my feelings into my diary, a lot of which do not have a direct relation to gambling (e.g., my relationship). Although initially this was linked directly to the gambling, as time passes this link is getting less and less, but my need to write about it still remains. (Fantasy, male, has experienced gambling problems)

> Talking about non-gambling matters is very important, as life is not just about gambling, and it brings a smile to my face as it can be so much fun. (Sparky, female, has experienced gambling problems)

Self-discovery and insight

The realisation that other people were experiencing similar problems invariably led to a journey of personal self-discovery. By discussing personal issues and by reading the posts of other forum members, participants reported that it helped them to better understand the nature of their own problem and the possibility of recovery. Insight appeared to work in two ways. One way was through reading other people's posts.

> Reading so many personal testimonies has changed my perception about my own relationship to gambling and allowed me to be more objective about my approach to recovery. I am very heartened and grateful for the sharing that takes place here. (Bill, male, has experienced gambling problems)

> It has helped me a lot, it helps me to stay focused as I log on and read something every day, as I have done for about a year now. (Sparrow, male, has experienced gambling problems)

Another way that insight was achieved was through the process of writing thoughts down. This helped some participants to gain more clarity about what they were thinking and enabled them to make their thoughts more concrete. This process was also reported by the wife of a person with a gambling problem, who found the clarity gained useful in dealing with her husband's problem:

> Posting on the forum you can write to your hearts content and then edit your reply, so it is helping to organise your thoughts in a way you cannot do on the phone or face-to-face. Also, you can take the time to reflect on what you read before replying. Looking at written words I think you process the information slightly differently. (Dancer, wife of a person with gambling problem)

> Posting gives me a real opportunity to 'see' what I am thinking. I often have difficulty in sorting out my thoughts if I am just 'thinking' them so by posting I can take my time to sort out my thoughts. Essentially, it's very therapeutic for me. (Bin, female, has experienced gambling problems)

Accountability to self and other forum members

Regularly posting on the forum, sometimes in the form of a diary, increased feelings of accountability, both to the individual themselves and to other forum members. Having to report a relapse was seen as letting other forum members down, as well as a personal failure.

> Being able to post and put something on the record and thereby make myself accountable for my actions in respect to my gambling addiction has been helpful for me. (One step, male, has experienced gambling problems)

> Writing about my experience and how I actually felt after the latest binge was a lifesaver. Compulsive gamblers forget how they felt when at the bottom of each cycle of binging. Having a permanent record has been extremely helpful. (New Me, male, has experienced gambling problems)

Reminders of how bad it can get

Reading other members' accounts was seen as a deterrent to a potential relapse. Sometimes, these accounts would be older archived posts, or they would represent the posts of new members who were just starting their own voyage of recovery. Occasionally, they might also come from established members who had relapsed. As 2 participants put it:

> Hearing others share THEIR stories is a deterrent...sharing MINE is healing. (Jill, has experienced gambling problems)

> It is nice to have reminders of what can happen if I was to return to my gambling ways, and it allows me to think on a logical level, unlike the illogical reasoning that occurs when in gambling 'mode'. (Fantasy, male, has experienced gambling problems)

Resisting urges

Such reminders also helped the participants to resist urges to gamble. By logging on and reading other members' posts or conversing with other forum members more directly, participants found that the urge to gamble often subsided. In this way, the forum appeared to act, for some members at least, as an effective relapse prevention strategy. The efficacy of the forums for reducing urges appeared to be particularly true for those participants who predominantly gambled online, as it was convenient for them to go to a forum when they were online and feeling vulnerable and/or tempted to gamble. However, other types of gamblers, and ex-gamblers, also found the forum useful for resisting urges.

> I know a lot of people find it useful if they are tempted to gamble, but it's usually the online gamblers that find this (they come on here instead of the gambling site). My temptation comes when I am not in my home (fruit machines). (Steph, female, has experienced gambling problems)

> When I have the urge to gamble I log on and read the postings, and I feel like I have friends who understand and don't judge, and by the time I have done that the urge is gone. I feel good about myself instead of the pain that I put myself through when I gamble. (Mel, female, has experienced gambling problems)

> If I get an urge [to gamble], I log on and read the posts, just to remind myself why I cannot gamble ever again. (Helen, female, has experienced gambling problems)

However, several participants noted that it would also be good if there were some more positive stories on the forum. Although reading about other people's problems was a reminder of how bad things could get, it was also important that there were examples of how recovery was possible.

> THINGS CAN GET BETTER, YOU ARE NOT ALONE, YOU ARE WORTH IT, THIS IS DOABLE. Those are all things that I *really* needed to hear and now I can help others by telling them -THERE IS HOPE. (Jill, female, has experienced gambling problems)

> To read there is hope and others have stopped gambling and so can you is so important to a compulsive gambler. (Marg, female, has experienced gambling problems)

> The majority of the time it makes me feel quite sad [reading other people's stories], as there is 'nothing' positive with long term gambling. (Fantasy, male, has experienced gambling problems)

Choices and the option to try different approaches and strategies

The forums offered a chance to learn about problem gambling and to find out about different strategies for dealing with problems. Several participants reported that they were not comfortable with the idea of attending face-to-face services or using a telephone service. For other members, the forums offered an alternative to Gamblers Anonymous groups, which was sometimes the only other support available to them.

> I haven't tried a phone call but I know I could not handle GA meetings. I was very aware that I did not want to tell strangers about my problem. In addition, the twelve steps, while usual to many, seems way too rigid and unthinking too me. (New Me, male, has experienced gambling problems)

> Perhaps in a way this site assesses your personality for free by offering lots of different types of motivation and lots of different types of suggestions and maybe that's why it has helped me. (One step, male, has experienced gambling problems)

> Being anonymous, you can't get that anywhere else. People are a lot more honest here. Not that they lie in GA meetings but you don't always feel comfortable when it's live and in person. I think both have their advantages. (Bruce, male, has experienced gambling problems)

> I'm not interested in counting the number of days since I last gambled and taking one day at [a] time forever on end, I don't want to have to attend a meeting on a regular basis for the rest of my life, I just want to stop gambling and forget about it, I want it to be like a type of fruit I can't eat. (One step, male, has experienced gambling problems)

Convenience and accessibility

Convenience and accessibility were reported as essential reasons for forum use by participants who were either geographically remote, or who could not attend other services because of commitments such as child care. The forums offered these people a lifeline where no other service was accessible.

> I know I would not have come this far without it. I have a long way to go and it's been a bumpy road. This has been my only form of group support due to my location and I would still be gambling, miserable and ill had I not found this site. (Steph, female, has experienced gambling problems)

> To some of us there is no other support available, the forum is all I have living in a rural area. (Marg, female, has experienced gambling problems)

> For me posting on this forum, is like having a helpline available 24/7, there is usually someone around most times whether it is early hours of the morning or late at night. With all the different time zones, help is here when you need it. Gambling isn't a 9 to 5 problem. Also, there are a lot of people out there that cannot get to meetings, they have other problems which prevent them leaving their houses or interacting with people. (Helen, female, has experienced gambling problems)

> I am supported at anytime day and night and I don't need babysitters. (Sparky, female, has experienced gambling problems)

The fact that the forums were always available, and did not require a one-to-one dialogue, was reassuring for those who did not want to feel as though their problem could be an imposition on others.

> GA tells me to use my phone list...I never do. Calling someone, I have no idea what's going on in that persons life, and honestly I have a family and there aren't many occasions where someone could call me and it wouldn't be an inconvenience. I don't want to do that to anyone, but I can come online ANYTIME and the folks here they can read and respond ONLY if they want to and AT THEIR convenience so I don't feel like

> I'm burdening anyone by coming here, here, people will only give if they have the time and the inclination, that works for me. (Jill, has experienced gambling problems)

The significance of usernames

For half of the participants interviewed, their username held no significance other than it was actually their real name or something they picked simply because they liked it. For others, usernames helped to maintain anonymity and allowed participants to speak freely and openly about their problems without incriminating themselves or their partners, friends, and relatives. For some participants, their username was reported as symbolic of their state of recovery or their hopes for their future life beyond gambling. Several participants reported that their username had changed over time to reflect the positive changes that had occurred since joining the forum. It would not be ethical to divulge the specific usernames as examples, although similar pseudonyms are given below as examples:

Down and out	changed to	*Back on track*
Big Loser	changed to	*New me*
Hopeless case	changed to	*One step forward*

Study 3: An online survey of forum members

Themes that were developed from Study 2 were used to construct an online questionnaire in order to quantitatively examine the extent to which those themes appeared to be universal across a larger sample of forum members.

Method

Participants

A total of 126 participants submitted the online evaluation questionnaire. Five surveys were excluded from the study, as they were only partially completed, leaving a total of 121 participants (53 male; 52 female; 16 unknown).

Materials

A 41-item questionnaire was designed containing questions that related to previous literature, data from the content analysis in Study 1, and analysis of the interviews in Study 2. The questionnaire went through five modifications, with two stages of input from the project advisory group.

Online survey procedure

The online survey was posted on both forums, and moderators once again introduced the researcher to the forum and requested that members help the project by completing it. The survey was posted on the forums for a period of 1 month. The researcher made it clear that the survey was completely anonymous and voluntary. The online data collection software automatically coded all responses into a format ready for analysis.

Results

Demographic information

Demographic information was requested as an entirely optional part of completing the survey, as the researchers did not want to exclude participants who did not feel comfortable divulging this sort of information.

Age

The participants were aged between 18 and 61 years and had a mean age of 41 years (*SD* = 11 years). The males' ages ranged between 18 and 61 years (mean = 39 years; *SD* = 12 years) and the females' ages ranged between 24 and 61 years (mean = 42 years; *SD* = 9 years).

Ethnicity

The participants were mostly white in ethnic origin (96%). The remaining participants' ethnic origins were black Caribbean (*n* = 1), Chinese (*n* =1), and mixed parentage (*n* = 2).

Nationality

Data were also collected on which country the client was accessing the forums from. Two thirds of the participants (66%) were from the UK. However, a significant minority of participants (33%) accessed the forums from other (mostly) English-speaking countries and jurisdictions, including the United States (14%), Australia (11%), Canada (7%), Sweden (1%), and Finland (1%).

Finding a forum

The majority of the participants (62%) found one of the forums by searching for help on the Internet. The next most frequently reported way that a forum was found was through referral from a gambling Web site (15%), followed by referral from a Web site for problem gambling issues (10%), from a friend or relative (6%), from a telephone helpline (3%), from a professional such as a counsellor or doctor (3%), and from a sticker on a gambling machine (1%).

Membership duration and forum usage

Most participants had been a member of one of the forums for several months (40%) or for a year or more (31%). Just under a third of participants reported that they had been a member for 1 month or less (30%). Half (50%) of the participants reported that they used one of the forums every day, and over a third (39%) reported using a forum a few times a week. Those who reported using a forum a few times a month or a few times a year accounted for 12% of the participants. There was no significant association between gender and frequency of forum use (χ^2 = 3.29, *df* = 3, *p* = .349). The amount of time that

participants reported spending on the forums during an average session varied, with the most frequent duration being 11 to 30 min (45%), followed by 31 min to 1 hr (43%), then several hours (9%), and then less than 10 min (4%). Again, there was no significant association between gender and the amount of time spent during an average forum session ($\chi^2 = 3.97$, $df = 3$, $p = .271$).

Reason for first using one of the forums

Most participants went to one of the forums because they were personally experiencing some kind of gambling problem (67%; $n = 81$). The remainder of the participants went to one of the forums because they no longer experienced gambling problems and wanted some support (17%), or because they were seeking help for a partner, relative, or friend (16%).

There was a significant overall association between gender and the reported reasons for using the forum ($\chi^2 = 24.17$, $df = 2$, $p > .005$). Female participants (15%) were more likely to be seeking help for a partner, relative, or friend than were males (1%). Males (15%) were also much more likely than females (2%) to be no longer experiencing a gambling problem and seeking support. However, there was no significant gender difference between the percentage of males (34%) and females (32%) seeking help for a current gambling problem.

Participation in other problem gambling services

Just over half of the participants had contacted another support service at some time in the past (58%). The most frequently reported other service was a face-to-face support group such as Gamblers Anonymous (30%), followed by a telephone helpline service (27%), face-to-face counselling (17%), their own doctor (9%), and then residential treatment (3%). There was no overall significant association between gender and preferences for seeking other forms of help (see Table 2).

Table 2
Reported participation in other problem gambling helping services

Participation in other helping services	Total %	Male %	Female %
Never contacted another service	42	17	25
Telephone helpline	27	15	11
Residential treatment	3	2	1
Face-to-face counselling	17	9	8
Face-to-face support group (e.g., GA)	30	17	13
Doctor	9	3	6

Note. GA = Gamblers Anonymous.

For those who had used another service (n = 73), there were a variety of reasons given for why they also used one of the online forums. The most frequently given reason was that they specifically wanted help online (56%). This was closely followed by the assertion that the forum was used as additional help (48%). Reasons of convenience and accessibility meant that 17% could either not travel to attend another service or did not have time to attend another service. Although 15% suggested that they were not satisfied with another service that they had tried, 9% wanted a second opinion.

Almost half of the total participants (49%) suggested that it would be either fairly difficult or extremely difficult for them to get alternative help instead of the forum, whereas just under a third (31%) reported that it would be fairly easy to get other help and 9% that it would very easy. However, 11% did not know how easy it would be for them to get another form of help.

Specific reasons for using the forums

Participants were able to rate the importance of a variety of reasons as to why they decided to use one of the forums. Some of these responses related to aspects such as the ease of access (80%) and that the service was available 24 hr a day, 7 days a week (70%). Other reasons related to the fact that participants could talk to others in the same situation as themselves (73%) and that they felt on an equal footing with everyone else (46%). Anonymity was cited as an important factor for around half of the participants (49%). Just under a third of participants (27%) suggested that they did not like talking about gambling issues on the phone, and 21% did not like talking about gambling issues in a face-to-face setting.

Reported utility of the forums

Participants were very positive about the efficacy of the forums in helping them with their problems (see Table 3). Almost all of the participants suggested that the forum helped them to feel less alone (98%), including both those with a gambling problem and those seeking support for others. Similarly, most participants either agreed or strongly agreed that the forum (a) helped them to understand their own thoughts by writing them down (82%); (b) helped them to vent or offload their feeling (84%); (c) served as a reminder for how bad things could get (91%); (d) provided a sense of community and/or friendship (89%); (e) provided new ideas on how to cope (92%); (f) helped to reduce the impulse to gamble (60%); (g) helped them plan for the future (52%); (h) made them more confident about seeking other forms of help (50%); (i) made them more positive about the future (69%); (j) gave them a sense of satisfaction from helping others (66%); and (k) helped them to gain better control over their gambling behaviour (72%).

There were two significant associations between gender and what participants reported that they got out of using the forums. Females (32%) were more likely than males (20%) to agree or strongly agree that the forum helped them to reduce the impulse to gamble (χ^2 = 11.18, *df* = 5, *p* > .05). Similarly, more females (39%) than males (23%) reported that they agreed or strongly agreed that the forum helped them to gain better control over their gambling behaviour (χ^2 = 17.60, *df* = 4, *p* > .05).

Table 3
*Participants' views on what they got out of using the forum (*n = *121)*

What do you get out of the forum?	Strongly Agree (%)	Mostly agree (%)	Not sure (%)	Mostly disagree (%)	Strongly disagree %	N/A (%)
I feel less alone with my problem	68	30	0	0	0	2
Helps me to understand my thoughts by writing them down	36	46	13	1	0	5
I can vent or offload my feelings	41	43	10	1	0	6
Reminds me of how bad things can get	62	29	3	1	0	4
A sense of community and/or friendship	44	45	6	1	0	3
Provides new ideas on how to cope	48	43	8	0	0	2
Reduces the impulse to gamble	35	25	19	2	2	17
Helps me plan for the future	18	34	31	9	1	8
Makes me feel more confident about seeking other help	18	32	31	9	2	9
Makes me feel more positive about the future	30	39	24	4	0	3
Gives me a sense of satisfaction from helping others	31	35	24	1	0	9
Has helped me to gain better control over my gambling behaviour	45	27	10	2	0	17

Note. N/A = not applicable.

Reported utility of specific forum features

Participants were very positive about the utility of various features of the forum (see Table 4). The vast majority of participants found the following features either somewhat useful or very useful: (a) being anonymous (90%); (b) writing a continuous personal diary (57%); (c) telling their own story (88%); (d) asking for help from other members (81%); (e) getting professional advice (56%); (f) reading other people's stories (98%); (g) having 24-hr, 7-days-per-week access to the forum (97%); (h) having a specific section to discuss non-gambling issues (40%), although 30% were not sure; (i) discussing Gamblers Anonymous

matters (42%), although 30% were not sure; and (j) writing responses to other forum members (87%). There were no significant gender differences in relation to the utility of any of the forum features.

Table 4
*Reported views about specific forum features (*n = *121)*

How useful are each of these forum features for you?	Very useful (%)	Somewhat useful (%)	Can't decide (%)	Somewhat useless (%)	Completely useless (%)	N/A (%)
Being anonymous	59	31	5	2	1	2
Writing a continuous personal diary	34	23	20	2	0	21
Telling your story	47	41	8	0	0	5
Asking help from other members	41	40	14	1	0	5
Getting professional advice	32	24	27	8	0	9
Reading other people's stories	73	25	2	0	0	0
Having 24/7 access	78	19	3	0	0	0
A specific section to discuss non-gambling matters	19	21	30	16	6	8
Writing responses to other forum members	54	33	9	0	0	4

Note. N/A = not applicable.

Discussion

Both of the forums appear to provide a good deal of support for people experiencing gambling problems, as well as for those who were no longer experiencing gambling problems. The support offered on the forums was also utilised by partners, friends, and relatives of people with gambling problems. Foremost, the forums provided a means of mutual peer-based support that allowed the members to feel less alone with their problems. This support is in line with findings from previous studies of support forums in other health-related settings (e.g., Buchanan & Coulson, 2007; Coulson, 2005; Coulson & Knibb, 2007; Finn, 1999). Furthermore, by reading other members' posts and by engaging in a dialogue with other members, participants reported that a better insight and understanding of gambling problems was achieved. The mutual peer support that the forums offered helped members to consider how they might take steps towards confronting their problems. These findings both support and extend the evidence presented in the pathways disclosure model developed by Cooper (2004).

The anonymity of the forums appeared to help the members to express themselves openly, and for some members, this was the first time that they had ever talked about their problems. Gambling problems are frequently accompanied by other psychological problems such as anxiety and depression. Although these other problems may be a symptom of the gambling problem and/or a contributing factor, the need to talk openly to others is an essential step in dealing with the gambling problem. Furthermore, it was found that for some members, the process of reading and posting helped them to resist urges to gamble and to more effectively control their gambling behaviour on a day-to-day basis. In this respect, non-gambling topics were considered important by around half of the participants as an essential way of moving beyond their gambling problem. Filling the "void" that can appear when gambling ceases is an important part of the recovery process (Wood & Griffiths, 2007b). Developing non-gambling sub-forums may be a useful strategy to help those who wish to go in that direction. Having specific areas where discussion does not focus on gambling would be one way to achieve that goal.

The forums also helped some members to consider various options and strategies for dealing with their problems. These options ranged from simply writing down and organising their thoughts to considering other treatment options and/or day-to-day strategies for coping. For a number of members, the forums were used in conjunction with other services as an extra form of support that was available whenever they felt that they needed further help.

Reading other members' posts served to remind forum members of how bad things could get and served as a deterrent to further gambling. However, some participants noted that these posts could also be quite depressing and that more positive stories would be useful to provide hope. Developing a sub-forum dedicated to success stories might be helpful for those who cannot face reading about examples of failure to stop gambling. Similarly, providing a sub-forum dedicated to successful strategies for dealing with gambling problems may be helpful for those specifically looking for such information.

Access was also seen as an important reason for using the forums and was linked to the use of the forums in reducing urges. This may be particularly true for online gamblers who can divert their attention to the forum when they are online and feel a strong urge to gamble. The peer-based nature of the forums means that they are available 24/7, even though some participants still felt alone when few (if any) people were actually online. Sometimes this problem related to different time zones and it was interesting to observe that a third of the participants were based outside of the UK in other (mostly) English-speaking countries. The concept of a UK-based forum appears to be a misnomer, given that the forums are available internationally and that this is reflected in their membership. This is despite the fact that both of the forums are based in the UK and do not actively advertise their services internationally. Most participants found the forums through search engines such as Google and, as a result, international memberships are probably inevitable. It is worth noting that no member complained about the presence of international members, and several members cited the involvement of international members as a positive aspect of the forums.

Similar to the findings of Cooper (2004), the present results indicate that, for around half of the participants, a forum appeared to be the only possibility for them to receive any help for their problem. This was due to geographical location and lack of transport, or lack of opportunity because of time constraints such as childcare considerations. It may also be the case that some participants would not consider other help services because of fears of attending face-to-face encounters or telephone services. The role that forums can play for people who fear other forms of help is an interesting area that warrants further in-depth investigation.

There were some noticeable gender differences in how the forums were used, with far more females than males seeking help for others, and more males than females seeking support while no longer experiencing gambling problems. However, when it came to members seeking help for their own problems, there were virtually no gender differences in the frequency of those seeking help. This is unusual, considering that more males than females are usually identified as experiencing gambling problems, a finding that was reconfirmed (for the UK at least) in the latest prevalence study (Wardle et al., 2007). The conclusions drawn from the results of the present study suggest that females are more likely than males to seek help online and/or more females than males have online gambling problems and prefer to use the media of online help. The latest UK prevalence study found that more males than females bet online with a bookmaker (6% vs. 1%) and that more males than females participate in online gambling (4% vs. 1%; Wardle et al.). However, a recent world-wide investigation that focused exclusively on online gamblers noted that more females than males reported playing online casino games (Parke et al., 2007). Similarly, the GamCare services report for 2006 (GamCare, 2007) noted that more females than males called the helpline to report personal problems related to online gambling.

A recent evaluation of GamAid (Wood & Griffiths, 2007a), a UK-based online help service that provides one-to-one chats with an advisor, suggested that the GamAid service appealed to women more than other comparable services did (i.e., telephone helplines and face-to-face counselling). Why this was the case was not altogether certain. However, the authors put forward several speculative reasons. For instance, women may favour online gambling, as it is more gender neutral than more traditional modes of gambling, which (on the whole) are male oriented (with the exception of bingo halls). The same logic could also be applied to the use of online help forums. Women experiencing gambling problems may feel more stigmatised than men and less likely to approach other support services, which tend to be predominated by men (e.g., face-to-face support groups). If this is the case, then the high degree of anonymity offered by online help services such as forums may also be one of the reasons that they are preferred by women.

There is also some evidence to suggest that women's expressive styles may be more suited to e-mail communication than are those of men. For instance, Boneva, Kraut, and Frohlich (2001) collected both quantitative and qualitative data relating to gender differences in e-mail communication over a 4-year period. They found that women were more likely than men to use e-mail to keep in touch with people who lived far away and that their messages contained more personal content, exchanged in short bursts.

Despite the lack of certainty about the prevalence of women who have problems with online gambling, the present study identified that the ratio of females to males seeking help on the forums was higher than for any other comparable service (i.e., telephone helplines and face-to-face counselling). Furthermore, female participants reported higher levels of satisfaction with the forums on two important aspects. Females were more likely than males to report that the forums had helped them to resist urges to gamble, and females were more likely than males to report that the forums helped them to control their overall gambling behaviour. Given that females appear to derive more benefit from online help services than males do, this could also explain why these services are the preferred mode of help for females. This assertion is of course speculative and further research is needed to explore these issues further.

Strengths and weaknesses of the study

Before the study commenced, we observed that one of the forums had 1,783 registered members and the other forum had 2,295 registered members. On the basis of response rates from a similar study evaluating GamAid (another online service dealing with gambling problems; Wood & Griffiths, 2007a), we estimated that 200 to 400 responses might be expected. However, after a month of posting the survey, only 126 responses were collected (121 completed surveys). There are several reasons that this may have occurred. First of all, there is no way of telling how many of the registered forum members regularly use the forum. Indeed, some members may have posted only once or twice in order to ask a specific question or to find that the forum did not suit their needs. This would be particularly true of a person who was seeking some specific information such as the location of face-to-face services in their area. Some members may no longer use, or feel the need for, the forum once they perceive that their gambling problem is resolved. Furthermore, the survey identified that the majority of the members who responded suggested that anonymity was very important to them. Therefore, it is conceivable that some forum members would be concerned about maintaining their anonymity to the extent that they decided not to fill out the survey.

Despite the lower than anticipated response rate for the survey phase, it is worth noting that the response rate for the interview phase was almost double the proposed estimate of 10 interviewees. Therefore, what the study may have lost in frequency of responses it may have gained in depth of understanding ascertained from the interviews. One of the key strengths of this evaluation was that it used a variety of methods to collect data and information, including secondary data, online interviews, and an online survey.

Furthermore, although it could be argued that the number of participants in the online survey was relatively small (n = 121), the data were fairly consistent and came from one of the largest ever UK samples of people with gambling problems in one study (i.e., the survey study, n = 81). For instance, the UK's latest national prevalence study identified only between 45 and 54 problem gamblers from a sample of 9,003 participants (see Wardle et al., 2007).

Although there are clearly issues surrounding self-selection in this kind of study, relatively large numbers of participants can take part with no increased consequences in terms of expenses. Online questionnaires are particularly useful for the discussion of sensitive issues that participants may find embarrassing in a face-to-face situation (such as problem gambling). The nature of this medium means that a relatively high degree of anonymity can be maintained, and participants may feel more comfortable answering sensitive questions on their computer than in a face-to-face situation. The disadvantages of online methods (e.g., potentially biased samples, validity issues) are in many ways no different than those encountered in more traditional research approaches. For a more detailed discussion of the advantages and disadvantages of online research methods, see Wood et al. (2004).

Conclusion

Overall, it appeared that the forums examined in this study provided useful support for the people who used them, whether they were personally experiencing gambling problems, getting over gambling problems, or seeking help or coping with others with gambling problems. Currently, there are only a handful of similar forums world-wide despite the fact that they are extremely cost effective to run compared with more traditional helping services. Given the positive findings of this project, and the ever-growing proliferation of Internet-based gambling, it is hoped that the long-term utility of forums for supporting people with gambling problems becomes an area for continued investigation and development.

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Contributors: Richard Wood designed the studies, administered the content analysis, interviews and questionnaire, conducted the analysis, and wrote the final report. Sabrina Wood assisted with the design, administration, and analysis of the three studies.

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Sabrina Wood has many years of experience managing online forums, organising electronic databases, and developing Web-based materials. Sabrina also worked as a healthcare professional in both Canada and the UK, giving her an excellent understanding of the issues related to unhealthy behaviour patterns and vulnerable populations. Sabrina coordinates all of the online resources and activities that GamRes undertakes and is the chief moderator of www.GamTalk.org.

Electronic gambling machines: Influence of a clock, a cash display, and a precommitment on gambling time

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Abstract

This study investigated the influence of three features of electronic gambling machines (clock, cash display, and precommitment on gambling time) on gambling behaviour. Participants gambled with their own money in their natural environment. Using behavioural and self-reported measures, the study found that a majority of players reported the cash display as being a helpful feature for controlling gambling activities, but neither the clock nor the precommitment on gambling time device as being helpful. The authors concluded that the clock and precommitment on gambling time device may not be instrumental in promoting responsible gambling.

Keywords: EGM, responsible gambling, clock, precommitment, display

Introduction

The electronic gambling machine (EGM) is the most popular game among gamblers (see Ladouceur, Jacques, Chevalier, Sévigny, & Hamel, 2005). Although some EGM structural features may have a positive impact on gamblers' behaviours or thoughts (Blaszczynski, Sharpe, & Walker, 2001; Griffiths, 1993, 1999; Ladouceur & Sévigny, 2002, 2003; Loba, Stewart, Klein, & Blackburn, 2001), other features may have either no impact or may even produce harmful effects (Dickerson & Baron, 2000; Griffiths, 1990, 1993, 1999; Ladouceur & Sévigny, 2005; Nova Scotia Department of Health, 1998).

Internationally, various stakeholders have begun suggesting within their jurisdictions that the modification of EGM structure and/or features could help gamblers control their gambling activities and eventually prevent gambling-related problems (Loto-Québec, 2002, p. 10). These new options are often embedded within a responsible gambling framework. For example, in Quebec, patrons can find the following devices on all video lottery terminals (VLTs): a permanent clock, a display of the amount of money remaining in terms of credits or cash, and four precommitment gambling time periods (15, 30, 45, or 60 min). In New Zealand, poker machines automatically stop at intervals of no more than 30 min and provide the gambler with certain information, such as the length of the gambling session, the total amount of money won or lost, and the opportunity to continue or to stop gambling (New Zealand Department of Internal Affairs, 2005).

In 2002, the Nova Scotia Lottery Corporation installed a permanent on-screen clock, cash display instead of credits, pop-up reminder of time spent playing, and mandatory cash-out after 150 min of continuous play. Focal Research Consultants (2002) showed that the clock, the cash display, and the pop-up reminder had a positive impact on gamblers' behaviours, attitudes, and perceptions. However, the mandatory cash-out feature did not affect the gamblers' behaviour. The most effective feature was the 60-min pop-up reminder, which resulted in a decrease in the length of time spent gambling. About 40% of players felt that the clock helped them to better manage their gambling time. Almost 50% reported that the cash display feature helped them keep track of the money spent.

Although these features could be useful for some players, few studies have examined the influence of the features on gamblers' perceptions and behaviours. The goal of this study is to examine the usefulness of the following three EGM features: a clock, a cash display, and the selection of a precommitment on gambling time.

Permanent clock

Increasing awareness of the notion of time spent gambling may have a positive influence on gamblers' behaviours. Keeping track of time could help a player respect their time limit and facilitate an informed choice as to whether the individual wants to continue or to stop gambling. In the context of promoting responsible gambling (Blaszczynski, Ladouceur, & Shaffer, 2004) and informed choice (Blaszczynski, Ladouceur, Nower, & Shaffer 2008), one can presume that the information conveyed by a clock could help players decide if they want to continue or to stop gambling. Furthermore, individuals are frequently influenced by situational conditions when making judgements about time (see Fraisse, 1984). Therefore, the availability of a permanent clock may decrease the possibility of underestimating the length of a gambling session and, ultimately, losing track of time.

However, this information could have less impact than expected if the patrons are more focused on the money spent rather than on the time they spent playing. The clock could even have a negative or an iatrogenic impact. At times, the clock could possibly be used by players in such a way that they would think they did not play long enough. Few empirical data have been published on the impact of a clock on gambling. This study will first assess whether players use the clock, and, if so, whether it has any impact on their decision to continue or to stop gambling.

Cash or credits display

Gambling with tokens instead of money might obscure or mask the amount of money lost (Griffiths, 1999). With regard to EGMs, a credit instead of a cash display could be harmful to the gambler. Loba et al. (2001) showed that displaying cash information helps pathological gamblers end their gambling session sooner compared with displaying credits. Haw (2000) stipulates that displaying credit points may be a risky feature when gambling. However, Haw limited his observations to gamblers using only high-denomination bill machines and he did not compare credit with cash display. No research has yet confirmed the potential effect of various displays. This study examines the

proportion of players using the cash as compared with the credit display, as well as players' perceptions of the usefulness of this feature in controlling gambling behaviours.

Selection of a precommitment on gambling time

In many jurisdictions worldwide, EGMs display a device forcing the players to select a precommitted gambling period. Players can usually choose between 15, 30, 45, and 60 min. Once the time is up, a pop-up message invites the players to continue to play for an additional period or to stop. How many gamblers actually stop playing after the first time limit has been reached? This study examines whether the players find this feature beneficial in controlling their gambling activities.

Method

Participants

The research team visited 12 bars with VLTs, all located in Quebec City. In each bar, the owner or manager was asked for permission to conduct the study, and two accepted. Several days after acceptance, an experimenter returned to these two bars and invited all individuals who were playing a VLT to take part in the study. A convenience sample was formed comprising 38 adults. The participants' mean age was 52.4 years (*SD* = 17.8, min. = 22, max. = 74) and two thirds of the sample was composed of men (64%). The South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987) revealed that the sample included 24 no-problem gamblers (score of 0, 1, or 2 on the SOGS), 7 at-risk gamblers (score of 3 or 4 on the SOGS), and 7 probable pathological gamblers (score of 5 or more on the SOGS). The mean gambling frequency was 4.9 times a month (*SD* = 5.0, min. = 1, max. = 30), and the gambling session lasted an average of 81.1 min (*SD* = 65.3, min. = 5, max. = 360).

Procedure

Participants gambled in their natural environment (local bars where the VLTs were located) using their own money. After a player sat down at a VLT machine to begin gambling, interviewers introduced themselves and asked if the player would like to participate in a study. For those interested, at the end of the gambling session, the interviewers (a graduate student speaking French as the mother language, trained and supervised by the second author) asked the gambler to tell them the time without looking at a watch, as well as the amount of time spent gambling. Then, the gambler was asked the reason that he or she had stopped gambling. Those who reported having considered the time in their decision to stop gambling were asked how they had estimated the amount of time they had gambled. For all participants (including those who did not consider the time when deciding to conclude their gambling session), the study questionnaire was then administered, which included questions concerning the use of the cash versus credit display and the estimate of the amount of money spent. The questionnaires used are presented in Table 1. A $20 CAD gift certificate, to be used at a popular shopping center, was offered as compensation.

Table 1
Items presented to participants

Items related to the dependent variables

Cq6. Did you notice a clock on the machine screen?
Cq9. Do you use the machine clock to check the time?
Cq10. How many times did you look at the clock while playing?
Cq11. When did you look at the clock?
Cq13. In general, is time an important factor for you when you gamble?
Cq13a. Did you consider the time when you decided to stop gambling today?
Cq13b. Why did you consider the time today?
Cq13c. When you decided to stop gambling, did you use the machine clock to check the time?
Tq14. Which time period did you select at the beginning of the session?
Tq15. Did you select additional time periods during the session?
Tq16. Which ones?
Mq17. Did you notice that the credit display could be changed to a cash display?
Mq18. Do you prefer to use the credit display or the cash display?
Mq19. Why?

Items about perceptions

P1. Do you believe that the cash display is more useful than the credit display?
P2. Why?
P3. Does the cash display help you to better control your gambling activities?
P4. Please explain:
P5. Do you believe that the machine clock can be useful to you?
P6. How?
P7. Does the machine clock help you to better control your gambling activities?
P8. Please explain:
P9. Is the option of choosing a time period at the beginning of the session useful to you?
P10. How?
P11. Does the option of choosing a time period help you to better control your gambling activities?
P12. Please explain:
P13. Does the action of choosing a time period at the beginning of the session help you in respecting that period of play?

Items for the meeting (sub-sample)

MET_q1. When you decided to come meet me, what did you use to know that the time had come?
MET_q2. How important was this meeting to you?

Note. The items were translated from the original French version.

After the gift certificate was presented, the interviewer asked the participant if he or she intended to continue gambling on the VLT. Those who intended to continue playing were asked if they would suspend their upcoming VLT play in 20 min in order to engage in a supplementary interview consisting of a few questions (see Table 1). A total of 16 participants agreed to meet. The interview was conducted in French, the native language of the participants. Their mean age was 47.5 years (*SD* = 21.3, min. = 22, max. = 74) and the group was composed of 12 men and 4 women. This group included 10 non-problem gamblers, 3 at-risk gamblers, and 2 probable pathological gamblers (1 missing value). Participants gambled 6.6 times a month (*SD* = 7.4, min. = 1, max. = 30) and their gambling session lasted an average of 57.3 min (*SD* = 36.74, min. = 5, max. = 120).

Dependent Variables

Clock

Some of the questions were intended to determine whether gamblers noticed the clock, and if so, whether they used it (yes/no, moment, and frequency) and whether it played a role in their decision to stop or to continue gambling. The clock was also evaluated for whether it was helpful for the participant being on time for the optional appointment if he or she had agreed to this portion of the study. Two measures were taken: (1) Was the participant at least 5 min late or not, and (2) if so, how late was the participant (in minutes)? Finally, participants were asked about their perceived importance of the appointment (very important, important, not that important, not important).

Cash display

In order to determine the potential effect of the cash display, we asked the participants a number of questions, such as the following: Did you notice that the credit display could be changed to a cash display? Do you prefer to use the credit display or the cash display? After these questions, we inquired about the participants' perceptions of the usefulness of the credit and cash displays.

Selection of the length of the gambling session

Gamblers were asked to report on the precommitment on gambling time feature. How many separate precommitments were made before quitting the gambling session? Did gamblers find this feature useful for controlling their gambling activities?

Results

Clock

The majority of participants noticed the presence of the clock (89%). Two thirds reported using it sporadically. Concerning how frequently they used the clock, some participants stated that they never used it, whereas others used it as many as 10 times during their gambling session. For 73% of the participants (27 of 37), time was not considered an important factor when they gamble. For those who considered time as a factor for stopping their gambling (n = 10), reasons given were "being on time for an event" (70%) or "respecting a gambling time limit" (30%). The last questions about the clock assessed gamblers' perceptions. Although 54% reported that the clock could be useful, 74% of the participants reported that it could not help them control their gambling activities.

Among the 15 participants (one missing value) who agreed to meet with the interviewer in 20 min, 6 (40%) were more than 5 min late (M = 30.5, SD = 13.6, min. = 15, max. = 53). In fact, only five of the participants used the clock on the EGM to report for the appointment. Among them, three were on time and two were 25 min late. The two participants who were late reported the appointment as "important," two participants on schedule said it was "very important," and the other participant reported it was "not important."

Cash display

The majority of participants were aware that the money could be displayed either in cash or in credits (37 of 38; 97%). Also, 86% reported using the cash rather than the credit option, and two thirds of the sample (61%) reported the cash display to be more useful, practical, easier for calculating the amount remaining, and more accurate than the credit display. More than half of the participants (58%) concluded that the cash display helps to control their gambling activities.

Precommitment on gambling time

At the beginning of the gambling session, 17 gamblers chose a 60-min period, 5 chose a 45-min period, 9 chose a 30-min period, and 6 chose a 15-min period. The 60-min period was clearly the most popular choice (see Table 2). Furthermore, 7 players selected a second session, 3 players played three sessions, 2 players continued to play four sessions, and 3 played five sessions. Twenty-two players of 37 stopped playing after their first session (59%). When asked about the usefulness of this device, 74% of the sample (28 of 38 participants) said it was not useful and 79% mentioned that it does not help them to control their gambling activities. Most participants (82%) said that selecting a period of time did not generally make them stop playing once that period had expired.

Table 2
The number and percentage of participants according to their precommitment on gambling time

Initial time period	*N*	Reporting additional sessions (*N*)	Reporting additional sessions (%)
15 min	6	3	50
30 min	9	5	56
45 min	5	4	80
60 min	17	3	18
Total	37	15	41

Discussion

The study showed that the clock and the precommitment on gambling time appear to have little impact on helping gamblers to control their gambling activities. However, a majority of gamblers reported that the cash display feature is, at times, useful in controlling their gambling activities. The majority of gamblers used the cash rather than the credit display. The cash display appears to be informative about the amount of money played and could help control gambling activities. Because the cash display was the only one of the three features directly related to the participants' money, one could hypothesize that features related to money could help players more than features targeting time variables could. Losing money would appear to be a pertinent reason to stop gambling, whereas losing time was less important. As previously mentioned by Focal Research Consultants (2002), findings showed that the cash display helped gamblers keep track of the money they spent.

The clock was not perceived as a useful instrument to control gambling, even though it could provide relevant information and prevent underestimating the time spent gambling. As previously indicated by Focal Research Consultants (2002, 2004), the clock had no beneficial effects in helping gamblers in general to manage their play. Indeed, 60% and 71% of all players included in the Focal Research studies felt that the clock had no effect in helping them to manage the amount of time they spent gambling. The current study also showed that only 5 of 15 participants used the clock for their appointment, and two of them ended up being late. Thus, the majority of gamblers did not use the clock as a tool to help them stop gambling during that session. In the context of promoting responsible gambling (Blaszczynski et al., 2004), information conveyed by the clock did not seem to be a useful feature.

The same pattern emerged with the selection of a precommitment on gambling time. Participants used it because it was mandatory but it was considered as a non-significant tool in shaping their gambling pattern. Once the time period was over, the gambler could easily reactivate the EGM for another session. Few players used it to make an informed choice about whether to continue or to stop gambling. This feature could not be considered as a very effective tool for promoting responsible gambling; players did not report it as useful in controlling their gambling activities. Because these conclusions are based on the perceptions of the participants, objective or behavioural measures will be needed to support this interpretation.

Conclusion

This study explored the usefulness of three EMG features: the clock, the cash display, and the precommitment on gambling time device. Although some EGM structural features may influence gamblers' behaviours or thoughts (Blaszczynski et al., 2001; Griffiths, 1993, 1999; Ladouceur & Sévigny, 2002, 2003; Loba et al., 2001) and contribute to the development of problem gambling (Dickerson & Baron, 2000; Griffiths, 1990, 1993, 1999; Ladouceur & Sévigny, 2005; Nova Scotia Department of Health, 1998), the current results suggest that two of the three features investigated, the clock and the precommitment on gambling time device, did not influence players' gambling patterns, whereas the cash display feature seemed to be helpful for controlling gambling activities.

Thus, contrary to our expectations that these structural features would influence gambling activities, results showed that the impact of these features is modest or even non-existent. Because these structural features were designed and implemented in the context of promoting responsible gambling (Loto-Québec, 2002, p. 10), further research will need to provide empirical evidence before labelling them as preventive tools. However, other tools might be useful. Because the sample size was small and not randomly selected, and because the group comprised mainly non-problem gamblers, these conclusions must be interpreted with caution and generalization should be limited. Future studies using pathological gamblers need to be conducted before a definitive conclusion can be formulated on the usefulness of these features.

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Gamblers Anonymous and the 12 Steps: How an informal society has altered a recovery process in accordance with the special needs of problem gamblers

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Abstract

This paper discusses how Gamblers Anonymous (GA) members approach the 12 Steps of recovery, originally advanced by Alcoholics Anonymous (AA) as a spiritual solution to alcoholism. GA's approach finds unique expression in its fourth step, which in AA involves a written "moral inventory." In GA, members are expected to make a financial inventory alongside the moral one. Pecuniary matters are important to gamblers given the debt loads many of them carry. Debt, which is technically a Step 4 and Step 9 (making amends) issue, in practice is typically addressed early in the program, with preceding steps addressed later. The spiritual process central to 12 Step programs will normally not proceed in the expected manner when gamblers are substituted for substance abusers. For one, the process is not as linear for gamblers. GA members often work on the ninth step well before addressing those coming before it. The process assumes a pragmatic, and even haphazard, flavor. GA has altered a time-honored process of recovery — by means of grassroots wisdom and practice — to apply to the realities of problem gambling. While the paper's primary focus is GA's unique approach to the 12 Steps, this is addressed in the context of the changing nature of GA as a whole. Shifting spousal and gender roles along with a greater appreciation of the 12 Steps themselves are all endemic to a GA fellowship that seems to be in transition. While these changes have had some effect, many aspects of GA's approach to the 12 Steps remain intact: the focus on debt entails solutions seemingly unique to the special needs of problem gamblers.

Keywords: Gamblers Anonymous, recovery, problem gambling, 12 Steps, financial issues, spirituality

Introduction

Gamblers Anonymous (GA) was founded in the United States in the 1950s. It is a 12 Step, mutual aid fellowship modeled upon Alcoholics Anonymous (AA). GA has groups in most North American locales and has established itself worldwide. GA differs from formal treatment in that it involves peer support rather than professional intervention, yet its goals are similar: to help members refrain from gambling and address character "defects" such as self-centeredness, which are thought to buttress the behavioral disorder (Custer & Milt, 1985).

Drawing upon interviews with GA members, this paper discusses GA's approach to the 12 Steps, a spiritual endeavor first advanced by AA and designed to assist with goals such as life satisfaction and the maintenance of abstinence (AAWS, 1976; GAISO, 1999; see Appendix C). A key difference involves GA's Step 4. In AA, and most other 12 Step fellowships, Step 4 involves a written moral "inventory." In GA, a financial inventory is also expected (GAISO, 1999). Challenges entailed by this added feature are discussed with an eye on how pecuniary matters are important to gamblers given the debt loads many of them carry. One implication is that debt — technically a Step 4 issue, and also a Step 9 (making amends) issue — is typically at the forefront of one's recovery, while many preceding stages in the 12 Step process are neglected, perhaps to be dealt with subsequently. While the GA approach can be criticized (Browne, 1991, 1994; Ferentzy, Skinner, & Antze, 2004, 2006b, 2007; Lesieur, 1990; Mark & Lesieur, 1992) — and often is by its own membership — it seems that members have managed through trial and error to alter a process originally designed to address substance abuse, thereby accommodating the special needs of problem gamblers. Authors have noted, for example, some of the infighting that goes on over spiritual matters and the very suppression at meetings of talk not directly pertaining to money and abstinence (Browne, 1991; Ferentzy, Skinner, & Antze, 2004). GA members have been critical as well, and there is evidence that the harsher side of this reality is far less oppressive than it may once have been (Ferentzy, Skinner, & Antze, 2006a).

GA has its own recovery culture, setting it apart from fellowships such as AA and Narcotics Anonymous (NA). Traditionally, GA members have devoted less attention to engagement with the 12 Steps (Browne, 1991, 1994; Ferentzy, Skinner, & Antze, 2006a, 2006b; Lesieur, 1990), favoring instead a more direct focus on issues such as abstinence, debt load, and legal problems. Many reasons can be given for how GA developed. GA's ethnic composition, for example, weighted heavily in favor of Italian and Jewish members, has been identified as one possible reason for an aversion to religious proselytizing and hence a more secular approach (Browne, 1994; Livingston, 1971).

Though several plausible explanations can be offered for GA's unique evolution (Ferentzy, Skinner, & Antze, 2006a, 2006b), one unavoidable theme involves the financial challenges many gamblers (and most GA newcomers) must confront: GA devotes much time and energy to guiding members through financial and legal difficulties (Browne, 1991, 1994; Ferentzy, Skinner, & Antze, 2006b; Lesieur, 1990).

This, on its own, can entail a neglect of matters — emotional, interpersonal, spiritual — often taken as key targets for recovery within other 12 Step organizations.

GA, however, has been changing in many ways over the last two decades, albeit slowly. Notably, there has in recent times been a shift away from a somewhat single-minded focus upon abstinence and debts in favor of greater emphasis upon emotions in general and the 12 Steps in particular. Arguably, a longstanding hypermasculine orientation has been changing in ways consistent with changes in larger society (Ferentzy, Skinner, & Antze, 2003-2004, 2006a).

This is related to another change. GA has been described as a predominantly male fellowship, both in its makeup and priorities (Mark & Lesieur, 1992; Ferentzy, Skinner, & Antze, 2003-2004). Browne (1991, 1994) has suggested that GA's sidelining of spirituality and psycho-emotional issues inhibits women's involvement. Lesieur (1988) has argued that the opportunity to discuss a host of compulsions (rather than merely the targeted addiction) is important to women. More recent studies have vindicated these suspicions (Crisp et al., 2000; Ferentzy, Skinner, & Antze, 2003-2004, 2004, Lesieur & Blume, 1991). Mark and Lesieur (1992), critical of GA as male dominated, argue that its tendency to produce a "men's club atmosphere" should be taken into account by researchers (p. 1). They suggest, for example, that "war stories" (graphic and often disturbing recollections of one's addictive career), usually shared by male GA members, may alienate women. Ferentzy, Skinner, and Antze (2003-2004) support these observations regarding gender-based differences in responses to war stories yet have found that such monologues are no longer as prominent, due at least in part to the influence of women. Sociodemographic shifts are key to this change. Custer (1982) once observed that only about 4% of GA members were women. Later, Strachan and Custer (1993) claimed that, at least in Las Vegas, over half of GA members were women. Ferentzy, Skinner, and Antze (2003-2004) noted that in the Toronto area, the percentage of women in GA stood at about 20% and rising. Just as GA's original recovery culture can, at least in part, be attributed to gender, so recent changes probably owe something to the rising number of women attending. In any case, interview-based studies of GA members suggest strongly that this interpretation has some merit (Ferentzy, Skinner, & Antze, 2003-2004, 2007).

Another distinguishing feature involves GA's close association with its sister fellowship, GamAnon — the latter in principle open to relatives and others affected by someone's gambling though in practice mainly comprising wives of male GA members. Traditionally, GamAnon has been linked more tightly to GA than has been the case with similar related support groups, with GamAnon and GA meetings often held simultaneously in adjacent rooms. Many GA members we interviewed insisted that they would not have achieved and maintained abstinence if not for the presence of their wives in GamAnon, and others even held to the (startling) view that recovery from pathological gambling is impossible without a spouse in that fellowship.

Today, however, GamAnon is in decline. Wives are less inclined today than in past decades to join this association, often opting instead to part with troubled husbands (Ferentzy, Skinner, & Antze, 2007). With more women in GA, another change has been apparent: their husbands are disinclined to join GamAnon, leaving the women in GA on a different footing from the start. Our interviews and informal discussions with GA members suggest that the 12 Steps have become more popular for this reason as well: in the absence of such of spousal support, members instead turn to the 12 Step program for deliverance.

Regardless of how one explains it, the 12 Step process is becoming more important to GA. This paper delivers, despite some interpretation, a primarily empirical account of GA's unique approach to the 12 Step endeavor. Though we refer to recent changes within GA, the primary focus is not upon these changes but upon the 12 Step process itself. As mentioned, GA members will often be well into the fourth and ninth steps before having given much thought to the others (with the exception of the first step, which involves an admission of "powerlessness" and essentially an admission that one has a serious problem). The process assumes a pragmatic, even haphazard, flavor, arguably inconsistent with the linear and spiritual purity originally invoked by AA. Difficulties associated with debt load are endemic to pathological gambling and certainly not specific to GA. The ensuing financial struggles have clinical implications pertaining to the transposition to pathological gambling of solutions originally designed for substance abusers. Here we have one example: an approach that has been altered — by means of grassroots wisdom and practice — to apply to the realities of problem gambling.

Methodology

This study was designed to explore common themes as well as variations in approaches to recovery in GA. Though certain study questions guided our efforts (please see Appendix A), an open-ended methodology allowed us to pursue additional unanticipated questions that arose as we began to gather data.

The current study was essentially a continuation of a previous 16-month (February 2003–May 2004) inquiry into the nature of GA. The original study (Ferentzy, Skinner, & Antze, 2004) was ethnographic in orientation, involving interviews with 23 GA members and participant observation at 42 GA meetings. The goal was to generate the most empirically-grounded account of GA's recovery culture to date. Prior to engaging in that endeavor, two of the study's authors (Ferentzy & Skinner, 2006) had compiled an annotated bibliography comprising literature dealing with GA, mutual aid, and co-occurring substance abuse problems. A literature review was also published (Ferentzy & Skinner, 2003).

This second study was also qualitative and drew most of its data from semistructured interviews with GA members based on a protocol that was refined as the inquiry progressed. Analysis of the data sought to identify general patterns in the ways members engage in the "program" and its 12 Steps, as well as significant differences. We attempted to correlate some of these differences with specific background characteristics of members and with differences in self-reported outcome. A grounded theory approach to data analysis entailed that hypotheses were generated primarily through considering the data themselves, rather than superimposed at the outset. Both during and after the interview stage of this study, data were examined for the purpose of identifying recurring clusters, semantic as well as conceptual. For the purpose of this paper, a key consideration would be the ways in which financial issues consistently marked, and at times dominated, discussions pertaining to working the 12 Steps. It became clear early on that for most GA members (especially those in early recovery) a spiritual journey unencumbered by pecuniary matters was simply unrealistic. This consideration guided data analysis as the study proceeded and also helped to inform the development of the interview protocol (see below).

Individual interviews

While we planned to, and indeed did, conduct 40 interviews, the more substantive goal of interviewing to saturation governed our efforts. Every effort was made to ensure that women were properly represented. Volunteers were remunerated. With the written consent of the participants, the interviews were audiotaped. The qualitative interviews were conducted by the Principal Investigator (identified as PF in the transcripts). Study participants' initials, in each case, have been altered to help protect anonymity.

Sample recruitment

As a result of our previous study (Ferentzy, Skinner, & Antze, 2004), we had extensive GA contacts in Toronto and elsewhere in southern Ontario, Canada. Most of those interviewed in our first study indicated a willingness to be interviewed again, and others had also indicated a willingness to participate. We began with close to 50 potential informants — a substantial base that was expanded through word-of-mouth referrals. Participants were also chosen according to theoretical sampling guidelines (Glaser, 1978). We began with more experienced members in order to learn as much as possible about GA's core ideas and practices before moving to a more representative sample; in doing so, we tried to ensure that a wide range of demographic and situational factors were represented.

The focus upon experienced members is a key consideration for a paper such as this. Given that a qualitative sample — even a relatively extensive one such as that generated by our two studies — would fall short in statistical terms, it was important simply to ask experienced members to describe GA as best they could. The very first quotation in this paper, for example, comes from a member who had been in GA for 41 years at the time of the interview and testifies as to how GA's approach to the 12 Steps has changed (mainly in the form of more engagement). On this score, there seemed to be a consensus

among the "oldtimers" we interviewed — indicating a viable observation. With each participant quoted in this paper, information is provided pertaining to years spent in GA, as well as Canadian province or US state of residence, in order to clarify the overall applicability of these observations, which, while clearly preliminary, result from a concerted attempt to offer a representative account (admittedly limited to North America; see Research sample, below). The paper is weighted in favor of more seasoned members, who share not only their personal recovery experiences but also their impressions pertaining to GA as a whole. Gender is also identified for each informant.

Toward the end of the study, a number of participants were chosen for background characteristics or approaches to recovery deemed to warrant special scrutiny. Of note was the age of our youngest interviewee: 35. In part, this reflects one of GA's features and potential weaknesses: difficulties attracting, or at least retaining, younger pathological gamblers. Possibly, however, an emphasis on word-of-mouth referrals (which began with older members) also affected the final sample. The interviews were conducted in a fashion designed to facilitate the free emergence of participants' own ideas within a semistructured format.

While the study focused mainly on the Toronto area of Ontario, Canada, telephone interviews conducted with GA members from various North American locales made possible the delivery of a more complete picture of GA on this continent (see Research sample, below).

Interview protocol development

Our interview protocol consisted of three parts, corresponding to the three fields of information bearing on our study: (1) participant's background characteristics, (2) participant's experience with the 12 Steps and GA's program more generally, and (3) participant's self-report of current success in abstinence and overall life satisfaction. We made significant changes during the course of protocol development as a result of testing and of consultations with other experts in the field as well as with GA members. The final version can be found in Appendix B. Yet even the original version was based on what had been learned in the prior study and from serious engagement with the literature. For the purpose of this paper, an important theme is the focus we placed upon engagement with the 12 Steps of recovery. It was in the first study — after interviews, meeting observations, and informal communications with GA members from various North American locales — that the significance and uniqueness of GA's approach to this process became apparent. In this second study, we follow through on that observation and provide what is probably the first detailed account of the ways in which GA members pursue the 12 Steps.

Research sample

Forty semistructured interviews were conducted with 39 participants (one was interviewed twice). Of the participants, 26 were men and 13 were women. The average age was 56.5 years, with a range of 35 to 80 years. About half of the participants were married (*n* = 20), and 11 were divorced (9 men, 2 women). One man and two women were separated, two women were widows, and two men described themselves as single.

Seven participants reported they were childless, and 32 reported being parents. For women, the average was 1.3 children, with a range of 0–2, and for the men the average was 2, with a range of 0–5.

Reported income ranged from $0 to $220,000 (U.S.), with an average of $60,700. This domain presents the most striking difference between men and women in the sample. Men reported an average income of $82,700 (range: $12,000–$220,000), and women reported an average income of $25,600 (range: $0–$50,000).

Approximately half (*n* = 21) of our sample reported no other 12 Step involvement. Of the other eighteen who did, four reported two other affiliations. Five reported involvement with Overeaters Anonymous (OA). AA was identified by six participants. Two participants mentioned NA, and two mentioned Codependents Anonymous (CODA). Three respondents mentioned AlAnon. One each mentioned Adult Children of Alcoholics (ACA), All Addictions Anonymous (AAA), Synanon, and Debtors Anonymous (attended only three meetings in all).[1]

By region, 13 lived in the Toronto area, 6 in other Ontario communities, 2 in other Canadian provinces, and 18 in the United States.

It should be noted that an effort was not made to probe, but to allow respondents to answer demographic questions in their own way. This led to difficulties in organizing responses to occupation, ethnicity, and education.

Ethnically, the sample was diverse, although hard to characterize. The majority (*n* = 23) identified themselves as European in various ways (e.g., Caucasian, Norwegian, Irish, French, English, and Italian). Eleven said they were Jewish. One identified as Jamaican, another as East African. Two identified as Canadian, and another as white.

Eleven participants reported having a high school education. The remainder reported education beyond that level, with seven reporting bachelor's degrees, three master's level degrees, and one a doctoral degree.

More than half of the participants (*n* = 22) indicated no religion, while five indicated Judaism, one Islam, and eleven Christianity (one Anglican, four Christian, two Protestant, and four Roman Catholic).

Canadian Problem Gambling Index (CPGI — lifetime frame) scores for the sample averaged 19.2 (men: 18.6; women: 20.1). The range was 7–26 (out of a maximum score of 27).

Methodological limitations

Despite efforts made to represent GA in a general fashion, this was a qualitative study designed to generate findings that could be complemented by statistical analysis.

As well, causal relations identified in this paper are sometimes based upon the testimonies of members. Anyone wishing to evaluate such explanations would require a different approach. Intuitively, many of the participants' accounts ring true. For example, when a participant (FL) claims that he first pursued recovery with an eye on pecuniary matters because debt to criminal elements jeopardized his safety, there seems little reason to doubt the explanation. Nonetheless, a study such as this — designed to provide an account of how participants view their own situations — is likely to achieve that goal yet at the same time leave questions pertaining to how accurate the accounts really are.

Finally, our claim that this is the first *detailed* description of GA's approach to the 12 Steps also entails that information stemming from prior literature is scant. One might consider this a preliminary endeavor designed in part to assist anyone wishing to pursue the topic in even greater detail.

Preliminary discussion: The nature of 12 Step recovery

We have chosen, prior to a discussion of GA's application of the 12 Steps, to introduce the reader to some ideas of what these steps entail. For discussions of GA's early history and how characters involved changed the wording of the original AA version, with reasons ranging from personal to ideological and religious (or antireligious), see Browne (1991) and Brubaker (2004). For a discussion of how many of these changes in phrasing are perhaps better suited to the needs of gamblers, see Ferentzy, Skinner, and Antze (2006b). The 12 Step approach has been used in many ways, and even within the same organization different personalities will apply them differently. The approach is, for this reason, hard to codify or schematize. In a research report related to our earlier study, we offered the following as a general guide, a liberal (non-dogmatic) application of which might be useful to the reader:

> Perhaps the most telling feature — whether for gambling, alcohol, or illicit drugs — is that the vice in question, in this case gambling, is mentioned once in the First Step and then no more. The 12 Steps are not about addiction. They are about recovery. In a sense, working the Steps is the opposite of telling a war story — the latter is about the past, while the former is more about the present and future. The 12 Steps deal with the past, but only in order to move beyond it. A popular ritual among 12 Step proponents of all stripes is the burning of one's Fourth Step [moral] inventory (and maybe any other writing that went with the 12 Steps) after the process has been completed.

> In themselves, the 12 Steps are not psychological even if they can be bent in such directions. The First Step is an admission of powerlessness and unmanageability, and from the perspective of someone in 12 Step recovery, it is a purely empirical endeavor: one is simply admitting what is true, and the reasons for it are irrelevant. The AA Big Book treats any attempt to explain why one became an alcoholic as making excuses, and states that the only honest answer an alcoholic can give is that he does not know [AAWS, 1976]. The GA Combo Book says that discovering why one became a compulsive gambler may be important, but does not insist that it is, and points out that abstinence is possible without such knowledge [GAISO, 1999]. This has something to do with the essential mystery associated with the disease conception of addiction. Any explanation could render the condition situational rather than absolute. The First Step involves what is, and not why — a statement of Being best understood as the start of an ontological journey which as such can render the psychological irrelevant. To say that one is an alcoholic or a compulsive gambler is to make an inviolable claim. There are no "degrees" of illness according to the disease model. One either is or is not an alcoholic or a compulsive gambler — it involves an absolute statement of Being. Step Four follows a similar tack. It is a moral inventory (and in GA's case a financial one as well). The moral is about right and wrong. There is no mention of a "psycho" inventory, or anything of that nature. Step Four was designed to get one's moral house in order, and not to reveal any truth about why one became addicted (even if some have tried to use it for that purpose). To turn one's life and will over to the care of a Higher Power can involve putting one's feelings, and psyche, aside. One need not deny the existence of the psychic world — though many 12 Steppers do — in order to render it mostly irrelevant by means of a process designed to change one's personality through prayer, meditation, and commitment to kindred sufferers. 12 Step recovery was designed to get past "self" — self-centeredness, self-will, self-seeking — even if this is difficult for those who participate in a self-obsessed, therapeutic culture to accept or even comprehend. The Big Book states clearly that all the knowledge and insight in the world cannot help the alcoholic. What can help is a journey designed to render knowledge and insight marginal. (Ferentzy, Skinner, & Antze, 2004, pp. 48–49)

Having considered our position, the reader may also refer to Toneatto (2008). Here the 12 Steps are discussed in terms of their compatibility with a psychological approach, cognitive-behavioral therapy (CBT). In many ways, the overlaps are hard to deny. For example, Toneatto points out that each approach involves deference to one or more transcendentals: the Higher Power in the 12 Steps approach, and values, motivation, and rationality in CBT. Toneatto also mentions that changing the way one thinks is central to each process.

One can easily hold to our original interpretation as a more pure rendition of the 12 Steps and still endorse its merger in practice with seemingly divergent interventions. Arguments have also been made in favor of GA's compatibility with psychoanalytic approaches (Rugle & Rosenthal, 1994; Whitman-Raymond, 1988). There is no inherent conflict between our own position as stated above and certain attempts to merge 12 Step approaches with psychological ones. It is important to understand the inherent flexibility of such journeys, be they psychological, spiritual, or both. It is possible to agree on all the facts in question yet choose to emphasize different aspects. Such flexibility is, in fact, perhaps a good explanation for why GA has managed to alter the 12 Step process and yet, somehow, to maintain much of its integrity.

Findings: GA and the 12 Steps in practice

This section contains extensive quotations from the GA members themselves. Partly, the paper has been designed to enable the reader to identify with the participants. There is a passion to their words — feelings and attitudes abound — and much of this cannot be reduced to formulas or preconceptions. Another point to consider is that, in place of a standard separation of results and interpretations, this section addresses the two in conjunction with an eye on selected themes. While perhaps less desirable with respect to identifying and categorizing a researcher's efforts, the approach seemed a far better way to do justice to the subject matter itself.

GA has changed and continues to change, yet financial issues still dominate

The first thing to keep in mind is that GA's recovery culture is in transition. As mentioned in the Introduction, there is now more attention given to the 12 Step aspect of GA's program.

> PF: Tell me, do you think that the 12 Steps of recovery are getting less attention or more attention than they did say 20 years ago?
> GH: Much more.
> PF: Much more?
> GH: When I came in the program, there was hardly any mention of Steps 2 through 11. It was always 1 and the 12. And was for a long, long period of time. When I first came in the program the people, almost everyone, just talked in their therapy about Step 1, and very rarely did you hear — at least the meetings I went to — any discussions of, you know, the spirituality of the program. And that's dramatically changed, I believe, in the last 20 years and continues to do so. (GH, male member, 41 years in GA, New York, USA)

The member is referring to Step 1 (admission of one's addiction) and then Step 12 (working with others). In our previous study, we discussed members going straight from one end of this journey to the other, neglecting the steps in between (Ferentzy, Skinner, & Antze, 2006b). Today, however, this is less common.

Yet even to this day perhaps the most striking aspect of GA's approach to the 12 Steps hinges upon a practical consideration: debt load. With the financial pressure confronting members in early recovery, debt is usually the first issue that must be addressed. Recall that GA's fourth step involves a financial as well as a moral inventory. This is where recovery — out of necessity — normally begins in GA. While the 12 Steps were originally designed to be worked in their proper order, with the first three steps involving admission of one's addiction along with the need for principles such as hope, faith, surrender, and willingness, in GA these considerations tend *not* to precede the addressing of financial issues. Certainly, the latter nonetheless contains a moral dimension given that debts must be paid and hence obligations must be met. Accordingly, the principles mentioned may be invoked. Yet in GA the process rarely follows a linear sequence of Steps 1 through 12. To be sure, the first step — admission of one's addiction and of unmanageability — is often addressed immediately. GA's 20 Questions, a diagnostic tool developed by members to establish one's status as a compulsive gambler, are often administered to individuals at their first meeting and can lead to what is essentially an acceptance of Step 1. But from there the member will likely address what is essentially a part of the fourth step — often in conjunction with *Pressure Relief*. The latter is unique to GA and involves a meeting with one's spouse and knowledgeable GA members, with the goal of discussing one's financial (and sometimes legal) situation and developing realistic strategies. Ideally all debts, and even minor assets and possessions, should be disclosed. This entails work on what amounts to Step 5 (admission to another person) and Steps 8 and 9 (identifying those one has wronged and making amends — in this case, paying debts). All the while, a gambler may be working on — or perhaps not even giving much thought to — Step 1 or 2.

> PF: What did you do for Step 4? Did you write it down, or…?
> LT: Oh yes! Oh yes! At the beginning it was really just a financial inventory.
> PF: Ah! OK, you started with that.
> LT: Yeah. And it wasn't until my second step — my second time through doing Step 4 that I actually started looking at character defects and …
> PF: And who you had hurt?
> LT: Oh yeah. (LT — male member, 31 years in GA, Ontario, Canada)

Only the second time through the process did this person have enough freedom from material concerns to get on with the moral and spiritual aspects of the program:

> And I thought at the time I wasn't quite willing and courageous enough to look at the emotional or the moral side of Step 4. But I did the Step 4 financial because I had asked for a Pressure Relief meeting. (LT)

Again, this is evidenced later in the interview:

> PF: How did you do Step 8? Was it written?
> LT: Oh, yes. And that was you know, that came out in dribs and drabs. I … for whatever reason I wasn't ready to be completely honest or I wasn't and … my mind was blocking out certain people that I had harmed. I remember

> doing Step 8 in a couple of pieces, you know, two or three at a time just before I finally I think got everybody … And yet you know there are, years later, I'd still remember more people that I had harmed. (LT)

The testimonies of experienced GA members suggest that the 12 Step process received little attention when (and before) authors such as Browne (1991) and Lesieur (1990) discussed the matter and hence that these authors were accurate in their descriptions of GA. The participant just quoted, LT, is an unusual case in that he took the 12 Steps seriously in the late 1970s when most of his GA peers did not. One thing that has remained constant, regardless of whether a member opts to pursue the spiritual side of GA's program, is that financial issues are normally addressed first:

> PF: And how did you go about working Step 4?
> LE: I didn't in the beginning 'cause it wasn't encouraged to make a personal, moral inventory like there was in AA. But I did have a personal financial inventory after I was in the program three weeks when I had the budget meeting [Pressure Relief]. So that happened. And I kind of followed that. I did what they said and amazingly it worked.
> PF: And later, did you do a moral inventory?
> LE: Yes I did. I did a written moral inventory. (LE — male member, 35 years in GA, New York, USA)

However, moral and interpersonal dividends often come immediately with the financial honesty, helping to explain the importance of GA's approach from a perspective that transcends the financial: beyond any peace of mind achieved through dealing with debts, addressing finances can have some direct therapeutic merit. As one woman explains:

> Being single back then, it wasn't like I took too many people down with me. What I did is … I took a lot of money from the credit cards. So the financial Pressure Relief took care of those ends. And what was interesting, it took me probably three months then I told my parents that I was in GA. As a result of that a pretty exciting thing happened. I was in GA and I finally let all my guard down in GA and got off of this "don't let anyone know that you have any weakness, any problems at all." In GA I could be really open about all that and figure out how it wasn't working. I … was able to share all my problems and foibles, and also with a spiritual counselor in addition to that once a week … But what I found, which was interesting, is I could go to a meeting and after the meeting I could hug somebody and say "have a good week." But I never hugged my dad in my whole life. I never told him verbally that I loved him. He never told me, either. And after 90 days in the program, I went down to my brother's house in Florida and told them at the hotel that … what had happened, what I was doing. I was finally for the first time able to hug my dad and tell him I loved him, verbally.
> (AC — female member, 3 years in GA, Ontario, Canada)

Emphasis on money as a function of desperation

While each case is different, it is safe to say that, overall, financial concerns are pressing for most new GA members and that often they have no time to "recover" in peace by putting off these matters:

> I was working 4 and 9 before I even looked at Step 1. I had to … I had four bookies … You can't compare an AA or an NA. These are real things you have to address. You don't address them, you may not be walking the earth.
> (EP — male member, 21 years in GA, Florida, USA)

> PF: … Pressure Relief was important. You told me it helped you.
> KJ: Yeah. It was a frightening thing, once I disclosed myself. The first thing that did was disclose all my money that I owed … They [creditors] wrapped a chain around my neck, in front of my wife! You don't borrow $10,000 from the neighborhood bank. This was a criminal element. A chain around my neck! (KJ — male member, 38 years in GA, Nevada, USA)

Note that in 12 Step recovery, Step 4 is often considered the "courage step." In GA, Pressure Relief — connected to GA's fourth step, and entailing that one face financial reality without any denial — often takes more courage than anything else. The following quotation comes from someone only 90 days into the program, yet already in the process of confronting harsh reality and dealing with aspects of Steps 8 and 9:

> PF: And what was your main motivation for recovery?
> IT: Tired of being, tired of living a lie. That's probably the … the money, I mean I … Shit. A year ago I knew I was in a financial mess. I just kept … you know. And I mean, standing here talking to you, I'm in the same financial mess I was in, you know. You don't recover from this in 90 days. So, yeah, I've paid a few bills off, but I got a few people not phoning me any more cause they know what's going on and we're working on putting a program together. But I'm not living a lie any more. I've come clean with the people that I need to come clean with. There's a few people that I should come clean with, but I don't need to. I have … I'm not bragging or patting myself on the back, but I've done a lot of house cleaning in the last 90 days. (IT — male member, 90 days in GA, Ontario, Canada)

The last quotation, involving the need for patience in dealing with one's problems, highlights a central aspect (along with one of the purported weaknesses) of GA's approach to 12 Step recovery — a topic to which we will return (see *The need for patience*, below).

Difficulties specific to GA as aggravated by a recovery culture in transition — Struggling with new realities

As mentioned, commentators such as Browne (1991, 1994) and Lesieur (1990) have made observations about the importance of financial matters in GA. Quite a few members have vindicated these observations in our interviews:

> PF: And can you tell me how you went about working the steps?
> PT: Well, actually when I started in GA the focus was on the financial, most of it was on the financial restitution. I mean you had to do Step 1, obviously. The powerlessness. But the emphasis of my first year or actually my first year and a half, was on the financial … it's very difficult because it's unlike the alcohol and the drug situation in AA and NA. Because the financial problems are so much greater than they would be in the other programs. But I really feel wholeheartedly, I really think … I don't think I truly understood recovery until I did a good second and third step and then 10, 11, and 12; those maintenance steps became part of my everyday life. But 2 and 3, I think that's where GA loses a lot of our people … They go from 1, admitting they're powerless and their life's unmanageable, and jump right to 4 and do the financial restitution.
> (PT — male member, 25 years in GA, New York, USA)

When asked whether he saw a way out of dilemmas that financial issues impose upon recovery in GA, PT had no answer and simply said that, in a sense, he was fortunate that his experience in AA and NA got him to a better understanding and practice of the 12 Steps. This is quite typical: members with experience in other 12 Step fellowships are often more keen on the 12 Steps and also responsible for changing attitudes within GA. On this score as well, our own findings have been consistent with available literature (Browne, 1991; Lesieur, 1990). We have found, in fact, that practicing this spiritual endeavor usually translates into positive responses with respect to life satisfaction measures (Ferentzy, Skinner, & Antze, 2004, 2006a). Working the 12 Steps seems to improve people's lives. Ironically, another addiction may be a boon to many GA members.

With the need for financial peace identified as crucial to most GA members, it is worth exploring the many ramifications of this reality. One interviewee, who actually had made an effort to work the steps in their proper order, claimed to have had no experience with Pressure Relief (AZ — female member, 12 years in GA, Alberta, Canada). Despite dire financial circumstances when first coming to GA, this woman worked her steps in the "proper" way (with allowances made for paying off certain debts, which is, of course, technically a Step 9 endeavor).

Pressure Relief, while often necessary, seems at times to inhibit a concerted effort in the 12 Step process. Also, serious attention to the 12 Steps is only beginning to flourish in GA, and the approaches are seemingly unique to that fellowship: members tend to work the 12 Steps at designated step meetings rather than with their sponsors (a notable difference from the norm in AA and NA, where such meetings are typically adjuncts to a more private process).

> PF: OK, and Step 3. Did you turn your will and your life over?
> MT: Somewhat. Not too much.
> PF: Not too much. Did you do a Step 4? Moral inventory? Financial inventory?
> MT: Yeah, when I was in the pressure group, yes.
> PF: In the pressure group you did a financial inventory. Did you ever sit down and write up a moral inventory?
> MT: I never did the written part of it.
> PF: But you did … did you do something like a Step 9? Making amends to people that you've wronged?
> MT: "Make amends to people that we've hurt, except when to do so would injure them or others."
> PF: You did that?
> MT: Off the top of my head.
> PF: But you never really got into the steps in a big way.
> MT: No I never … really into the step meetings. I've been to some meetings where you walk in and … step meeting … they all talk, if they want to, about that step. I've never really … into the steps.
> (MT — male member, 35 years in GA, Florida, USA)

We have found that step meetings often stay on a certain step for one month, and then move on to the next one. This can make things hard (or at least confusing) for members who rely upon them:

> And they have step meetings, and you have to work on that step that month. And some people may not be caught up to that step or whatever and not be at that … you know they may be new into the program and they're coming in June.
> (BO — male member, 8 years in GA, New Jersey, USA)

In 12 Step fellowships, members typically work with a more experienced member: a sponsor. With a sponsorship system seemingly still in its formative stages, replies such as the following are common:

> PF: Did you write a (fourth) step?
> FH: Yeah. I did fourth step work, with therapists along the way.
> (FH — male member, 21 years in GA, New Jersey, USA)

If we recall the role of GamAnon, this may be easier to understand. Some of the longstanding male GA members we interviewed identified their wives as their sponsors (Ferentzy, Skinner, & Antze, 2007). This is practically unheard of in AA and NA, and currently GA is in transition, with GamAnon seemingly in decline. Yet for many years, and quite different from normal 12 Step practice, the partners of male GA members provided an interpersonal foundation for recovery. This may indeed have served as a substitute for practices taken as necessary in other 12 Step fellowships. However, no matter how one explains it, to this day there is often a lack of awareness of what working a step might mean, as well as ambiguity pertaining to one's own efforts in this regard:

PF: Did you work Step 3?
OS: I think so, yeah ….
(OS — male member, 9 years in GA, Ontario, Canada)

PF: And did you work the steps? Do you work the steps?
TT: I think I do.
(TT — male member, 44 years in GA, New York, USA)

It is worth noting that participant TT, beyond his many years in GA, is one of the founders of the Pressure Relief system itself — he is a well-respected and knowledgeable member of the fellowship. Other members, whether long in GA or relatively new, often display a measure of ambiguity:

PF: Do you work the 12 Steps, RO?
RO: I don't say I work it as diligently as I should. But when I review the steps, there are some that you can take in order. And there are some that you can be working at the same time.
PF: Have you written a fourth step, for example?
RO: I have, I believe I have.
PF: You believe you have?
RO: I mean I don't remember … the fourth step is to make amends?[2]
(RO — male member, six months in GA, Ontario, Canada)

PF: Did you work the 12 Steps?
KJ: Yeah I guess at some point I did.
(KJ — male member, 38 years in GA, Nevada, USA)

The need for patience — A theme that remains unchanged

Financial questions are not the only reason for this seemingly lax approach to 12 Step work. Elsewhere, we have discussed why patience is likely even more important to gamblers than it is to substance addicts in recovery (Ferentzy, Skinner, & Antze, 2006b). In short, beyond the need to avoid the temptation of enjoying the quick thrill or quick release that the addictive behavior may offer, gamblers must also be on guard against the temptation to *solve problems* quickly by means of winning huge amounts of money while gambling. The latter temptation does not haunt alcoholics and crack addicts, and the need

for a concerted focus upon the virtue of patience sets GA apart from other 12 Step fellowships. GA's entire recovery program is strongly geared toward teaching patience (see GAISO, 1999, p. 17) — with a slow-paced approach even to the 12 Steps as a natural result. Things are done slowly, which, while perhaps necessary, can lead to procrastination and even neglect. GA members have even suggested that this slow-paced approach can impede recovery for new members and is in fact responsible for retention rates that are lower than desirable (Ferentzy, Skinner, & Antze, 2006b). Either way, while there is no denying the need for patience in recovery from substance abuse or other difficulties, there is a focus on the virtue of patience that, to the best of our knowledge, is specific to GA. The following statement comes from a GA member after a year and a half in recovery. Beyond Step 2, and the inescapable need to pay debts, little has been done:

> I haven't gotten … no, it's really slow. You have to be really patient. I mean, I may [have] gone ahead and realized … like there's the one about the financial and moral inventory. (CA — female member, 21 months in GA, Ontario, Canada)

Yet what may appear to be a slack, and at times confused, approach to certain aspects of 12 Step recovery can only be understood in relation to difficulties that distinguish pathological gamblers from substance addicts. GA offers a disciplined approach to debt counseling, was arguably ahead of its time in its grasp of how important spousal support can be — ahead, in fact, of the research and treatment communities — and is currently struggling with changing realities. This interesting mix of issues has generated an approach to 12 Step recovery unseen anywhere else. For more than a few, it does seem to work.

Conclusion

This paper provides a brief account of the ways in which the 12 Steps are approached in GA. While offering an admittedly preliminary glance at several issues, many of which could be studied on their own and elaborated in separate articles, one inescapable observation is that debt looms large and obviously affects the ways in which GA members approach a recovery model originally designed to address substance abuse. Many conclusions can be drawn from the observations made in this paper. Issues pertaining to money, and how they affect the lives of problem gamblers trying to alter their situations, could on their own generate volumes. One lesson, though, is unmistakable and pertains to the application to pathological gambling realities of wisdom drawn from substance abuse. Here we have an example of how such a solution has, with some success, been transplanted from one realm to another. The most important thing to keep in mind, whether one's field is research or treatment, is that this becomes possible only when those involved are flexible enough in their thinking to make the necessary adjustments. Such a process may, at times, seem clumsy or whimsical. Closer scrutiny of GA suggests, instead, a concerted and creative adjustment to complex and difficult realities.

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Appendix A

Study questions

1. *What are the common features that best describe GA's approach to recovery?* The study looked closely at the ways in which members work the 12 Steps and at other aspects of the GA program in an effort, first of all, to identify features that seem to be inherent to practically all successful recovery in GA. In this respect it built upon the results of our previous study, which identified some general features of GA's approach to recovery without examining them in detail.
2. *Which of these features are uniformly valued by members? Which are sources of controversy?* For example, while patience is a virtue often emphasized in GA, some members feel that this emphasis can encourage procrastination and sabotage recovery by delaying important steps. Not getting to the 12 Steps, or Pressure Relief, soon enough has presented itself as an area of concern. In addition to identifying the core features of GA that most members see as essential, our study sheds light on some of these contested aspects of the program.
3. *How can we characterize the most important approaches that members take to working the GA program and the 12 Steps in particular? How do these approaches differ?*
4. *To what extent do different ways of engaging with GA reflect prior differences in client characteristics?* This aspect of the study examines the idea that differences in background may explain some differences in the ways members work the 12 Steps and the overall GA program. While gender would be an obvious area for scrutiny, we also considered the role of such factors as age; severity of gambling problem; types of gambling pursued; comorbidity; debt load; and outside support, both informal and professional.
5. *What relationship, if any, can be found between client characteristics and modes of engagement with GA on the one hand, and recovery outcomes on the other?* This was the most ambitious and inherently difficult question posed by our study, and here we have no illusions about finding definitive answers. The aim at this stage is rather a heuristic one: to determine which hypotheses are most plausibly supported by our data. We must emphasize that this study makes no claim to assess "outcome" in the strong sense of the word. We are, however, interested in the relationship between client characteristics, ways of working the program, and self-reports regarding success in abstinence and current life satisfaction.

Appendix B

Interview protocol

Note that severity of gambling problem and types of games pursued were covered by the CPGI (Canadian Problem Gambling Index), which was given to all participants.

Part One:

1. Why don't we start with an introduction? Could you please tell me a little bit about yourself?
2. When did you first enter GA?
3. How long have you been abstinent?
4. When you first entered GA and took the 20 Questions, how many "yes" answers did you give?
5. Have you ever had any substance addictions?
6. What kind of professional therapy did you receive either before or during GA?
7. When you first entered GA, what was your financial situation?
8. What kind of support for your recovery did you receive from family and friends?
9. What kind of relationship did you have with family members when you first entered GA?
10. Would you mind telling me your views on religion, or spirituality?
11. In your view, what is compulsive gambling? (Do you see it as a disease?)
12. Has viewing compulsive gambling as a disease helped your recovery?
13. What are compulsive gamblers like, in your view? What is a gambler?
14. What does a gambler need to do to recover?
15. Do you have any thoughts on what you have in common with other compulsive gamblers?
16. Any thoughts on how you may differ from other compulsive gamblers?
17. Do you have any thoughts on why some people leave GA?
18. In your view, has GA changed significantly over the years? (In what way?)
19. How do you feel about war stories? (Has their importance diminished or increased over the years?)
20. How has GamAnon been doing in your view?
21. The Combo Book talks about the "dreamworld" of the compulsive gambler. Does this apply to all compulsive gamblers?

Part Two:

1. When you came into GA, what was the very first thing you did for your recovery? What did you do after that?
2. What was your main motivation for recovery?
3. Please tell me what recovery means to you. (After, ask about "normalcy" or sanity).
4. How many meetings do you go to in an average week?
5. Has this changed over time?
6. What aspects of GA do you find most helpful? Which are least helpful?
7. What are the most important things you do for your recovery?
8. What aspects of your recovery are dealt with outside of GA, and in what way?
9. Do you go to many GA events, such as conferences?
10. Do you associate with many GA members in your private life?
11. (If so) please describe the activities.
12. Is GA your main social support for recovery?
13. (If not) what is your main social support?
14. What kind of service work are you involved in?[3]
15. What experience have you had with Pressure Relief? (Has GA's approach to Pressure Relief changed over the years?)
16. Could you describe the role that phone contact with other GA members plays in your recovery?
17. Do you use a phone list?
18. Do you call more often than you are called?
19. Do you have a sponsor?
20. Could you describe your relationship?
21. How many sponsees do you have?
22. How do you help your sponsees? How does the relationship work?
23. What role has the Serenity Prayer played in your recovery?
24. What has Page 17 meant to your recovery?
25. And can you tell me how you went about working the steps?

Part Three:

1. What is your financial situation like today?
2. Do you miss gambling?
3. How successful have you been in maintaining abstinence?
4. How content are you with your life as it is?
5. How well do you like your work?
6. What kind of relationship do you have with family members today?

Appendix C

GA's 12 Steps (GAISO, 1999, pp. 4–5)

1. Admitted we were powerless over gambling — that our lives had become unmanageable.
2. Came to believe that a power greater than ourselves could restore us to a normal way of thinking and living.
3. Made a decision to turn our will and our lives over to the care of this Power of our own understanding.
4. Made a searching and fearless moral and financial inventory of ourselves.
5. Admitted to ourselves and to another human being the exact nature of our wrongs.
6. Were entirely ready to have these character defects removed.
7. Humbly asked God (of our understanding) to remove our shortcomings.
8. Made a list of all persons we had harmed and became willing to make amends to them all.
9. Made direct amends to such people wherever possible, except when to do so would injure them or others.
10. Continued to take personal inventory and when we were wrong promptly admitted it.
11. Sought through prayer and meditation to improve our conscious contact with God as we understood Him, praying only for knowledge of his will for us and the power to carry that out.
12. Having made an effort to practice these principles in all our affairs, we tried to carry this message to other compulsive gamblers.

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[1] That Debtors Anonymous (DA) is the only instance wherein a GA member attended only a few meetings (three), and then ceased to participate, is telling. Unlike overeating and codependency, debt is one issue that GA tackles in earnest, and the debt advice this member received in GA made the DA meetings seem redundant.
[2] Note that the fourth step is a "searching and fearless moral and financial inventory," and that amends are made in Step 9 (GAISO, 1999, pp. 4–5).
[3] "Service" refers to any activity on behalf of GA, from helping to make coffee at meetings to helping arrange conferences and working on the GA phone-line.

Gambling as a public health issue: The critical role of the local environment

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Abstract

This paper discusses gambling as a public health concern and outlines why local circumstances are central to such concerns. Using the framework of compositional and contextual factors to frame discussions, it is argued that the local circumstances of individuals and communities are critical to whether gambling activity is problematic. Unlike other similar public health issues for which there are clear parameters defining what is a problem and how severe the problem is, it is argued here that gambling-related problems are determined almost entirely by the circumstances in which the activity is occurring. As such, strategies designed to prevent or minimise gambling-related problems should target the local contextual environment and not just focus on the gamblers themselves, as has tended to occur to date.

Keywords: gambling, problem gambling, public health, contextual, compositional, local environment

Introduction

In Australia and indeed worldwide, gambling activity has reached unprecedented levels. Total annual gambling expenditure in Australia now exceeds A$17.5 billion (Office of Economic and Statistical Research, 2007). As a percentage of household disposable income, gambling increased from 1.5% in 1980/81 to 3.0% in 2005/06 (Office of Economic and Statistical Research, 2007). Many other jurisdictions are also following this trend (e.g., New Zealand, Britain, some parts of Canada and the United States). Public casinos operate in all Australian capital cities as well as in other large urban areas. Electronic gaming machines (EGMs) (gambling devices similar to fruit machines and slot machines) are permitted in hotels and clubs in all states and territories except Western Australia. These machines offer very high intensity gambling with high speeds, high stakes, and large prizes. Because of their omnipresence and simplicity and the attraction of large jackpots, EGMs operating in clubs and pubs now dominate the Australian gambling landscape, accounting for well over half of all gambling revenue nationwide. EGMs have also been the gambling format most closely associated with gambling-related problems.

With such unprecedented growth, the effects of gambling are coming under intense public, political, and academic scrutiny. In particular, the issue of problem gambling has been the most focussed upon. Although much debate surrounds how to define, measure, and understand problem gambling, for the purposes of this paper, the following definition is used: 'Problem gambling is characterised by difficulties in

limiting money and/or time spent on gambling which leads to adverse consequences for the gambler, others, or for the community' (Neal, Delfabbro, & O'Neil, 2005).

In addition, concern has also been expressed about the economic, social, cultural, moral, and political implications of widespread availability and consumption of gambling. As such, a wide range of academic disciplines have sought to examine gambling from their particular perspective. Only recently has gambling fallen into the scope of geographers (e.g., Marshall, 2002) and just as recently into the domain of public health (e.g., Korn & Shaffer, 1999; Productivity Commission, 1999). As Raento and Berry (1999) highlight, the study of gambling is an area which can benefit enormously from the rich methods such researchers now have at their disposal. In particular, given the emerging evidence of a link between the growing accessibility of gambling products and increases in problem gambling and related public health concerns, there is great potential to exploit recent advances in geographical and public health approaches to better understand the consequences of widespread gambling proliferation. Identifying how, where, and in what format public health implications of gambling occur and formulating policy to address the emerging concerns are clear avenues for investigation.

Indeed, one of the key reasons supporting the argument that gambling problems need to be addressed from a public health and geographical perspective is that certain areas and population groups appear to exhibit higher levels of gambling activity than do other areas. Numerous authors (e.g., Doughney & Kelleher, 1999; Livingstone, 2001; Marshall, 1999; Marshall & Baker, 2001a, 2001b, 2002; Productivity Commission, 1999; Ministry of Health, 2008) have pointed to the higher per capita expenditure on gaming machines in suburbs which have higher per capita concentrations of the machines. As such, it has been argued that gambling-related problems will also reflect vast regional variations (e.g., Hames Sharley, 1997; Marshall, 1998, 2005; Marshall & Baker, 2001a, 2001b; Melbourne Institute of Applied Economic and Social Research, Deakin Human Services Australia, & National Institute of Economic and Industry Research, 1997; Productivity Commission, 1999; Wheeler, Rigby, & Huriwai, 2006), although this link is not yet well established. Such findings parallel those in other public health areas, with epidemiological studies of a wide variety of other public health issues finding residents of certain neighbourhoods disproportionately affected. Cohen et al. (2000) cite a multitude of examples.

Despite the recognition of widespread and sometimes vast spatial variations in gambling activity and associated problems, and the recognition of gambling as an emerging public health concern, few attempts have been made to understand such issues within a public health framework. In an effort to better conceptualise gambling as a public health issue, this paper first outlines gambling's credentials as a public health concern, before discussing the critical influence of local circumstances on emergent problems. Using the concepts of contextual and compositional influences to guide the discussion, the paper outlines why public health issues of gambling are more contingent upon local circumstances than are other similar public health concerns and discusses how the relationship between gambling problems and local circumstances can be understood.

Gambling as a public health issue

A wide range of gambling-related public health issues have been identified. In particular, the prevalence of problem gambling for individuals — which is reported to affect between 1% and 3% of the population in Australia (Productivity Commission 1999, p. 2) — has become a major focus. As is implied by the definition of problem gambling adopted earlier in this paper, implications of problem gambling include concerns for individual gamblers, as well as for those affected by gamblers (Korn, 2002). This is because some gamblers participate in the activity to an extent that it disrupts their families and employment situation (Productivity Commission, 1999, pp. 734–735; Walker, 1996, p. 223). At an individual level, family dysfunction and domestic violence, alcohol and drug problems, psychiatric conditions, and suicide are all traditional public health issues which have recently been linked to gambling (Korn & Shaffer, 1999, p. 323). One Australian study found that persons experiencing gambling-related problems also have higher rates of poor to fair general health, greater levels of smoking and alcohol use, more mental health concerns, and increased psychological distress than is evident amongst the wider population (Centre for Population Studies in Epidemiology, 2001, p. 9). A national inquiry into Australia's gambling industries conducted at the request of the Federal Government concluded that emotional distress, depression, suicide, and counselling for problem gamblers, as well as for their friends and families, all appear to be of a magnitude to warrant serious policy attention (Productivity Commission, 1999, pp. 9.11–9.15). Although findings of gambling problem comorbidity with a variety of other health problems are increasingly common, the relationships are complex and to date have not been explored in great detail.

There appears little doubt then that gambling is an issue which should be of interest as a public health concern. Not only are there direct health and well-being implications associated with problem gambling but there is also evidence of indirect consequences for gamblers and their friends, families, and communities. However, certain factors render gambling different from other public health concerns. Primarily, gambling is not an issue that fits neatly into traditional health-related discourse. Although in its most extreme form, understanding of problem gambling has been medicalised as an addiction (Wheeler et al., 2006, p. 86), in general terms, gambling per se does not constitute a biomedical health problem. Where gambling is permitted, it is usually a legal consumer product which for the vast majority of participants has no discernable negative externalities. However, for a minority of individuals and indeed for some population groups and/or communities, the extent of gambling participation can become problematic and its consequences far reaching.

Such circumstances appear to render gambling in a similar public health basket to that of alcohol or fast food consumption in contrast to tobacco consumption or AIDS. Alcohol and fast food are widespread, legal, and generally safe consumer products when utilised in a responsible and moderate fashion, but both have come under serious scrutiny from public health and medical researchers due to the potential for undesirable consequences of excessive consumption. However, gambling stands apart from these issues in public health terms. Although the definition of problem gambling adopted earlier recognises the potential for harm beyond the scope of the individual gambler, it remains rooted in an understanding based upon the behaviour of the individual gambler. It is arguable, however, that the impacts of gambling and whether they

constitute health issues or not is contingent more upon local circumstances of individuals rather than upon any objective behavioural benchmark or criterion. This is because there is no universal point at which benign gambling behaviour can logically be demarcated from problem gambling behaviour. In contrast, excessive fast food or alcohol consumption will rapidly lead to measurable deteriorations in the health of overindulgent individuals, regardless of their personal or environmental contexts. There are also relatively clear indicators of what constitutes overweight or intoxicated and what the side effects are likely to be. Extending this argument to problems at a wider community level, neighbourhoods with high rates of poor diet or alcohol consumption in the population will also have high levels of associated diseases and other health problems. No such measures or benchmarks exist for gambling. An acceptable level of gambling for most people may be a major problem for some. What is problematic gambling behaviour in one context may be nonproblematic in another context. Whilst some efforts are being made to develop responsible gambling limits (Currie, Hodgins, Wang, El-Guebaly, & Wynne, 2008), which might then be utilised for consumer protection purposes, such limits are in a developmental stage. Arguably, such measures will never apply to all gamblers or all communities in all circumstances.

Better understanding of the circumstances in which gambling activity may be problematic, both at an individual and at a community level, thus emerges as an important issue. Despite this, risk factors for problem gambling are often attributed only to individuals rather than their environmental or social influences, as is the case for many other public health issues (Diez-Roux, 1998, p. 216). This has certainly been evident with regards to gambling and problem gambling. A substantial body of the current research into problem gambling tends to follow the medicalised model (Wheeler et al. 2006, p. 86), either explicitly or implicitly. As such, much research has been directed towards the psychological and neurobiological understanding of gambling. Problem gambling prevention and treatment approaches have thus been dominated by such approaches. However, in Australia and some other jurisdictions (e.g., Canada, New Zealand), problem gambling is increasingly being addressed from a public rather than an individual health perspective. Responsible gambling policies which encompass consumer protection, education, and community awareness facets are common (Dickerson, 2003, p. 29). This is because, as is the case for many public health problems, biomedical explanations of problem gambling alone are insufficient and thus are not suited for treatment, management, and prevention objectives (Moon, 1995, p. 2). Indeed, for some issues (e.g., obesity), it is widely agreed that environmental rather than biomedical explanations are most applicable (Hill, Wyatt, Reed, & Peters, 2003, p. 853). This is a very important step because the logical correlate of the doctrine that individuals hold the key to their own health is that research is best conducted on the individual rather than on groups, because it is individuals who truly influence their personal well-being (Diez-Roux, 1998, p. 216). Research which assumes that individual risk factors are at the heart of health problems is likely to overlook important sociological and environmental processes and may result in approaches which don't provide the best possibility for a remedy (Link & Phelan, 1995, p. 90). Whilst gambling is increasingly being understood from this perspective, there has to date been little attempt to understand exactly how the environmental circumstances interact and influence gambling and its public health outcomes.

The role of the local environment — Contextual and compositional factors

The public health concepts of compositional and contextual influences are useful for examining the influence of local area dynamics on variations in gambling-related problems. Compositional factors are those related to characteristics of the area's population, whereas contextual features refer to the social and physical environment in which the subjects live (Reijneveld, 1998, p. 33). As Frohlich, Potvin, Gauvin, and Chabot (2002, p. 155) note, a growing body of research has emerged focussing on the respective contributions of contextual and compositional effects in public health research. They cite many examples. Whilst compositional and contextual influences are inextricably linked, it is still important to distinguish between them (Curtis & Rees Jones, 1998, p. 647). This is because a purely compositional explanation would posit that the sorts of people who live in a given area determine what their behaviours are, whereas a contextual explanation would highlight features of the environment which influence their actions (Curtis & Rees Jones, 1998, pp. 647–648; Ecob & Macintyre, 2000, pp. 261–262). Such contextual variables, also known as group, ecological, macro, and aggregate variables (Diez-Roux, 1998, p. 217), are assumed to have an effect on individuals' behaviour over and above their own characteristics (Frohlich et al., 2002, p. 156). However, as Curtis and Rees Jones (1998, p. 655) observe, many of the processes of contextual and compositional influences on health are self-reinforcing and thus need to be viewed together.

To explain why gambling problem prevalence varies between regions, a compositional approach might focus on the people in the regions and their sociodemographic characteristics. Whilst most gambling studies report that the characteristics of individuals experiencing problems tend to reflect the socioeconomic and demographic characteristics of the population overall, numerous studies have identified specific groups which appear to be slightly more heavily represented. These include people who are separated, divorced, unemployed, and from single-person households (Productivity Commission, 1999, p. 6.56); people from lower socioeconomic groups (Welte, Barnes, Wieczorek, Tidwell, & Parker, 2001); young people (Productivity Commission, 1999, p. 6.55; Shaffer, Hall, & Vander Bilt, 1997, p. iii); and people from immediate family environments with drug, alcohol, and/or gambling problems (Queensland Government Treasury, 2001, pp. 2–3). Therefore, small area variations evident in gambling activity and/or problems might reflect spatial differences in these sociodemographic characteristics of the population.

In contrast, a contextual approach to understanding spatial variations in gambling problems would ask what environments (e.g., types of gambling on offer, regulatory measures, size and number of venues, and alternative recreational activities in the region, to name just a few) tend to be more conducive to the emergence of gambling problems than others. To this end, gambling researchers have long argued that increased availability and accessibility to gambling products leads to an increase in the prevalence of problem gambling (Abbott & Volberg, 1999, p. 108). The links between gambling, problem gambling, and accessibility to gambling have been examined in a number of recent studies (e.g., Productivity Commission, 1999; Marshall, 2004; Marshall, McMillen, Niemeyer, & Doran, 2004; Ministry of Health, 2008; Wheeler et al., 2006), all of which have found evidence of positive relationships. While these relationships are complex and multidimensional, with accessibility being influenced by

a wide range of factors (e.g., social, spatial, cultural, and economic, among others), the most common finding has been that regions with relatively high concentrations of gambling facility supply tend to have higher levels of gambling activity amongst the local population.

Such findings are reflective of other public health issues. Indeed, a growing body of evidence suggests that public health outcomes for a range of issues are affected to a degree by the local characteristics of place. Widespread obesity, for example, is a concern which has been in part blamed on the ready availability of fast foods (e.g. Reidpath, Burns, Garrard, Mahoney, & Townsend, 2002), whilst excessive alcohol consumption is linked to a wide range of physical and mental health issues and has also had the availability of the product highlighted as a possible risk factor (e.g., Gruenewald, Remer, & Lipton, 2002; Weitzman, Folkman, Folkman, & Wechsler, 2003; Livingston, 2008a, 2008b). Such findings are not surprising because the general public and its actions and behaviours are influenced by a wide range of social, economic, cultural, and environmental factors and are not simply driven by individual characteristics such as genetics, access to services, and education (Burris, Kawachi, & Sarat, 2002; Burris, Lazzarini, & Gostin, 2002; Reynolds, 1995). There is no logical reason why such a range of determinants should not also apply to gambling behaviour.

Local influences on public health outcomes of gambling

Neoregional geography recognises that local-level phenomena are complex outcomes of regional, national, and global forces interacting with and within the local complexities of any given place (Jarosz, 1996, pp. 42–45; Marshall, 1996, p. 24; Murphy, 1991, p. 25; Urry, 1986, p. 239). Therefore, although the impact of heightened levels of gambling experienced by state and national economies may be reflected at the local level, the precise character of the final impact will depend upon a range of issues and characteristics unique to that place (Marshall, 1996, p. 24). Essentially, then, the understanding outlined here recognises that public health implications of gambling activity are unlikely to manifest uniformly in a straightforward manner. There will not be a standard range of problems across the board for an entire nation, state, or indeed community when a new gambling industry emerges. The emergence of gambling-related problems — indeed whether they emerge at all; their extent, type, and severity; and the capacity and way in which they are responded to in any given community — will be critically dependent upon the configuration of contextual and compositional features of the local area.

On the basis that public health issues function along a continuum from the roots of a problem through the emergence and nature of a problem and ultimately to the remedy of the problem, in general terms, local circumstances — both contextual and compositional — can influence public health outcomes of gambling in three broad ways along the continuum:

- *They create the conditions* in which the problem can first emerge (e.g., presence and type of gambling opportunities and how they are regulated).

- *They influence the gambling activity and behaviour in the area* and thus the type, extent, and severity of gambling-related problems.

- *They affect the response capability* with which the community can/does deal with emergent problems.

In other words, the impact of local level factors on public health outcomes of gambling is not confined to a single point on the public health continuum. The presence of gambling facilities or even high levels of gambling activity in a community will not automatically lead to public health problems in a passive relationship. Simply because gambling opportunities are present and being used by the local population does not necessarily mean that problems will emerge. Rather, the ultimate public health outcomes of gambling in an area depend upon the cumulative impact of relevant contextual and compositional factors as they manifest over time and at different points on the continuum. For example, when considering the compositional factor of economic well-being, high levels of gambling expenditure are less likely to result in public health concerns if the expenditure can readily be sustained by those involved (i.e., those who can afford it). In contrast, relatively low gambling participation rates amongst many households in poor neighbourhoods may lead to heightened local public health concerns. Even within the same area, harms can occur across the community in different ways (Gruenewald et al., 2002, p. 47), depending upon the characteristics of the individuals who are gambling and the cumulative and multiplier effects on their families, friends, and colleagues. However, if the local community has high levels of resilience and a capacity to respond to emergent problems, the implications may be less severe. As Macintyre, Maciver, and Sooman (1993, p. 221) suggest, the extent of community integration and political activism, the reputation of the area, and the ability to generate community spirit can all influence the local capacity to improve conditions or attract services and facilities.

Another issue which needs to be recognised is that different compositional factors could influence outcomes in different ways depending on contextual variables (Curtis & Rees Jones, 1998, p. 648). For example, ethnicity may have a different influence in a minority context than occurs in a majority situation (Curtis & Rees Jones, 1998, p. 648). Such a situation has been recognised in recent gambling research. Scull, Butler, and Mutzleburg (2003, pp. 43–47) point to the possibility that recently arrived migrants may see gambling as a means by which to become involved in mainstream society or perhaps use it as an expression of freedom, particularly if gambling was banned in their homelands. In other cases, compositional characteristics might act as a mediator. This is because different population groups can be subjected to different socioregional influences than others (Karvonen & Rimpelä, 1996, p. 1473). For example, Frohlich et al. (2002, p. 164) proposed a recursive relationship between compositional and contextual factors in the uptake of smoking in an area — characteristics of the population reinforce the contextual features of the neighbourhood through increased outlets, advertising, or availability of the product. They go on to suggest that the local social structure is an arrangement of compositional and contextual chances which interact recursively to provide the overall environment in which adolescents are exposed to and take up smoking (Frohlich et al. 2002, p. 164). Evidence from Australia suggests similar outcomes are occurring in the supply and consumption of gambling. The relationship previously identified between gaming machine expenditure and gaming machine provision has also been found to have a socioeconomic element — namely higher concentrations of machines and expenditure on the machines in many less advantaged neighbourhoods (e.g., Doughney & Kelleher, 1999; Livingstone, 2001; Marshall, 1999; Marshall & Baker, 2001a; Productivity Commission, 1999). However,

explanations for this outcome have been contradictory. As Marshall and Baker (2001b) discuss — in relation to Melbourne, Australia — numerous factors influence these relationships, for example, the composition of the local populations or the contextual features of the environment.

Responding to public health outcomes of gambling

As Macintyre and Ellaway (1998, p. 94) argue, when framing health and welfare policies, account should be taken of the differential access to and uptake of potential health-promoting activities amongst different social groups and, importantly, areas. Just as the environment promotes obese lifestyles through the provision of frequent opportunities to purchase large quantities of cheap, highly palatable, and energy-rich food (Hill & Peters, 1998, p. 1371), the omnipresence of easy-to-use, socially accessible, and cheap forms of gambling can be implicated as one factor leading to overconsumption of the product and thus the emergent public health concerns in some places.

If it is accepted that local circumstances are an important factor influencing population gambling behaviours and related problems, the logical outcome of this is that public health issues will differ from place to place and thus responses to public health problems need to recognise that difference. However, in general, regulations and harm minimisation policies for public health concerns tend to be implemented at a global level (Gruenewald & Treno, 2000, p. s538). Whilst this may be a suitable approach for public health concerns which do not differ in nature from place to place, gambling does not fit into standard public health frames with objective measures of what constitutes a problem and what does not. As has been outlined here, depending on the particular issue, different responses may be appropriate for different areas and for different groups and may depend on a range of issues. Whether the problem is uniformly experienced, uneven but widespread, or locally severe might all have an effect on the response required (Ecob & Macintyre, 2000, p. 273). In some circumstances and under certain conditions, global or regional interventions may be most appropriate, whilst in other situations local responses may be best (Gruenewald & Treno, 2000, p. s542). As Reijneveld (1998, p. 38) argues, efforts to improve specific public health outcomes in communities need to consider the existence of contextual effects. Regardless of whether responses are local or global, the arguments presented here suggest that improvements to public health should not involve just the targeting of individuals but also needs to treat the local environment (Duncan, Jones, & Moon, 1999, p. 503; Hill & Peters, 1998, p. 1371; Karvonen & Rimpelä, 1996, p. 1474; Reijneveld, 1998, p. 33).

Greater attention must therefore be paid to basic social and environmental conditions if public health reforms are to have maximum effect (Macintyre et al., 1993, p. 219; Link & Phelan, 1995, p. 80). Such sentiments must also apply to initiatives addressing gambling-related problems. Whilst such an argument does not nullify approaches which target individuals experiencing gambling problems, it should be recognised that measures which target only individuals may not be effective if aspects of the local physical and social environment which influence the problems are not simultaneously targeted (Curtis & Rees Jones, 1998, p. 668). Indeed, it may well be most effective to 'cure' the environment first (Hill & Peters, 1998, p. 1371). Improving the contextual conditions in which residents live could lead to healthier behaviours or, at the very least, less unhealthy activity (Macintyre et al., 1993, pp. 229–230). Indeed, it is

plausible to argue that aspects of the local environment provide the best possible means by which to have an effect through policy and regulatory approaches. This is because developing policy designed to influence the gambling behaviour of populations and individuals will be quite difficult and in some circumstances impossible if the environment in which they are living does not change.

Conclusion

As this paper has argued, gambling and problem gambling are growing worldwide issues which warrant serious attention as a potential public health concern. As with other public health problems, the implications of gambling in any given community will depend upon a multitude of environment/behaviour relationships occurring at a local level. However, unlike other public health issues, it is these relationships, rather than any straightforward measure of the level of gambling activity occurring, which determine whether gambling is in fact a problem in any given area. This is because the emergence of public health problems in any given region will depend not only upon the type or size of gambling facilities operating in the region, nor only upon the level of gambling activity or individual gambling behaviours in the region. Rather, whether gambling leads to public health problems in a region will depend upon the relationships between the gambling facilities, the gambling activity, and the compositional and contextual circumstances of individual gamblers and the local community. The consequences of gambling and whether problems emerge are thus entirely dependent on the circumstances of the individual(s) or communities involved and not upon the level of gambling activity or type of behaviour.

In communities with newly established gambling facilities, Marshall (1996) argues that the preexisting social and economic conditions of a region are likely to be critical in determining the ultimate outcome for the region. Specifically, precincts with preexisting social and community problems may provide the platform for more severe implications of gambling activity, particularly if the local population is the primary source for the revenue. In cases where gambling facilities cater predominantly to tourists, outcomes are likely to be very different (Eadington, 1995, p. 4). However, during the current phase of gambling proliferation largely involving gaming machines, it has been well identified in parts of Australia (Marshall & Baker, 2001a) and elsewhere (e.g., New Zealand (Wheeler et al., 2006) and Canada (Gilliland & Ross, 2005)) that gaming machines tend to be disproportionately sited in disadvantaged locales. This situation could potentially be influencing the emergence of higher levels of gambling-related problems in areas which can least afford them, and amongst populations that have a lesser capacity to respond to them (Wheeler et al., 2006, p. 95).

However, this does not suggest that problems will always emerge in less-advantaged areas with higher concentrations of gambling facilities. This is because processes influencing experiences and outcomes may operate differently in different places (Curtis & Rees Jones, 1998, p. 645). In other words, it should not be expected that similar circumstances in two distinct places will result in similar outcomes. There may be mediating factors which result in one set of outcomes in one location and a quite different range of consequences in another. Alternatively, it should not be considered unusual for vastly different circumstances to produce very similar results. This is supported by Marshall's (2002, p. 260) examination of gambling at a local level in Australia, which reported vastly different levels of gambling activity amongst

populations with similar compositional characteristics but living in different gambling supply environments. As such, public health approaches need to recognise these possibilities and be prepared to tailor solutions and approaches to suit the local circumstances and conditions of the communities for which they are designed. Strategies which target both the persons experiencing gambling problems and the circumstances which led to those problems, and which can adjust to the dynamic nature of a proliferating gambling environment, are likely to be critical to addressing public health harms associated with gambling.

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PAR Sheets, probabilities, and slot machine play: Implications for problem and non-problem gambling

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Abstract

Through the Freedom of Information and Protection of Privacy Act, we obtained design documents, called PAR Sheets, for slot machine games that are in use in Ontario, Canada. From our analysis of these PAR Sheets and observations from playing and watching others play these games, we report on the design of the structural characteristics of Ontario slots and their implications for problem gambling. We discuss characteristics such as speed of play, stop buttons, bonus modes, hand-pays, nudges, near misses, how some wins are in fact losses, and how two identical looking slot machines can have very different payback percentages. We then discuss how these characteristics can lead to multi-level reinforcement schedules (different reinforcement schedules for frequent and infrequent gamblers playing the same game) and how they may provide an illusion of control and contribute in other ways to irrational thinking, all of which are known risk factors for problem gambling.

Keywords: problem gambling, slot machines, video slots, PAR Sheets, structural characteristics, reinforcement schedules

Introduction

Slot machines are a very popular form of gambling in North America. For example, Ontario, Canada, has approximately 23,000 slot machines, which in the fiscal year 2002-2003 generated approximately three billion dollars "after prizes/winnings but before operating expenses" (Williams & Wood, 2004, p. 25). This revenue is greater than that from all other types of gambling in Ontario combined (Williams & Wood, p. 25). According to Williams and Wood, approximately 60% of slot machine revenue, around 1.8 billion dollars annually, is generated from problem gamblers. This percentage is higher than that for horse racing (53%), casino table games (22%), bingo/raffles (22%), and lotteries/instant-win scratch tickets/sports betting (19%).

In an effort to understand the popularity and addictiveness of slot machines, one approach is to investigate what potential effects the slot machine's structural characteristics have on the player. The underlying math and computer algorithms for the design of many of the structural characteristics, such as hit frequency, payback percentage, and odds of winning, are contained in the manufacturers' design documents, called probability

accounting reports (PAR Sheets; sometimes called paytable and reel strips [PARS]). To date, the study of slot machine structural characteristics has been hampered by the fact that researchers have not had access to the manufacturers' PAR Sheets to see how the games are designed. We have been successful with requests for PAR Sheets through the Freedom of Information and Protection of Privacy Act (FIPPA, 2007) for four slot machine games that are approved for use in Ontario.

We analyzed the PAR Sheets and played the four games for approximately 60 hr at an Ontario casino, Grand River Raceway, which has 200 slot machines. This paper begins with a detailed description of the structural characteristics of the slot machine games, and then discusses these characteristics in terms of their potential implications for problem gambling. To our knowledge, this is the first report in problem gambling literature that has drawn on actual PAR Sheets for games that are approved and being used in a North American jurisdiction.

The design of slot machine games

In response to our FIPPA requests, we were given copies of the following 23 PAR Sheets, all of which were provided by the North American slot machine manufacturer International Game Technology:

- One version of *Double Diamond Deluxe*
- Eight versions of *The Phantom of the Opera*
- Seven versions of *Lucky Larry's Lobstermania*
- Seven versions of *Money Storm*

Double Diamond Deluxe and *The Phantom of the Opera* are traditional mechanical three-reel slot machines with physical reels that spin. On both games, the player can see a 3 x 3 matrix of symbols, with the middle row being the payline. The player plays the game by using buttons and/or the handle on the slot machine. *Lucky Larry's Lobstermania* and *Money Storm* are five-reel video slots games that have a touch screen on which an animation of five spinning reels is displayed in a 3 x 5 matrix (three rows, five columns). Both video slots games have a bonus mode that a player enters infrequently, but once there, the player always experiences frequent wins (from the gambler's point of view, the bonus mode is a very good place to be). Players play the video slots games by using the touch screen and/or buttons on the cabinet.

Detailed descriptions of PAR Sheets for traditional mechanical three-reel slot machine games are contained in the gaming industry trade magazine *Slot Tech Magazine*; these descriptions are a useful reference source (Locke, 2001; Wilson, 2003, 2004a, 2004b, 2004c, 2004d, 2004e, 2004f). However, they are limited in that (a) the audience for *Slot Tech Magazine* is slot machine technicians and so the articles focus on the practical issues of how the information contained in PAR Sheets can be used by individuals who are servicing slot machines, (b) the descriptions cover only traditional mechanical three-reel slots, and (c) the descriptions use PAR Sheet examples without indicating whether those games are actually used in a specific jurisdiction.

Research has been published in the problem gambling literature related to the information included in PAR Sheets for traditional mechanical three-reel slot machine games (Harrigan 2007, 2008, 2009; Turner & Horbay, 2004), but the authors of these papers did not have access to actual PAR Sheets for games that are approved for use in a North American jurisdiction. Also, Griffiths (1993, 1994, 1995, 1999) and Parke and Griffiths (2004, 2006) have written extensively about the structural characteristics of slot machines in Britain. Although slot machines in Britain are similar to slot machines in North America, a significant difference, with respect to the present paper, is that British machines "use a compensator which monitors the payout ratio game by game and initiates action, as necessary, to influence the random selection of wins and thereby attempt to hold the ratio at all times close to the preselected level" (British patent GB 2 165 386A, as cited in Parke & Griffiths, 2006, p. 153), whereas in North America the machines do not have a compensator and the result of every spin is determined by a random number generator (for a detailed discussion of the differences between British and North American machines, see Parke & Griffiths, 2006, pp. 152-153). This paper focuses specifically on slot machines in Ontario, Canada, as we have obtained PAR Sheets for Ontario slot machine games.

Observations from actual play

As we studied the PAR Sheets, we frequently visited a casino to play, and to watch others play, the four games to (a) observe several structural characteristics, focusing on the bonus mode, to ensure that our understanding of the PAR Sheets reflected the way that slot machines actually behave; and (b) observe several structural characteristics that are not contained in the PAR Sheets, including speed of play, stop buttons, and "hand-pays." In this section, we provide details on the structural characteristics that we observed.

Speed of play

We estimated the speed of play by using the second hand on a watch. On the two traditional mechanical reel slot machine games, the player can play approximately every 6 s, which is approximately 10 spins per minute, or 600 spins per hour. On the two video slots games, the player can play approximately every 3 s, which is 1,200 spins per hour.

Stop buttons

Both *Money Storm* and *Lobstermania* provide two methods to speed up the game by approximately 50% (i.e., approximately 1.5 s per spin). One method is for the player to press "spin" to begin play, and then press spin again as the reels begin to spin, which causes the reels to stop quickly. The second method is for the player to touch one or more of the reels as they are spinning, which causes the touched reel(s) to stop quickly.

Hand-pays

At the casino we frequently visited, the games are configured so that when the outcome of a spin is a win greater than a certain amount (the amount is $125.00 for *Lobstermania*), the following occurs:

- the screen freezes and thus the player cannot play the machine
- the light on the top of the machine lights up
- the machine makes a sound of a bell ringing
- an attendant comes by and adjusts the machine to silence the bell
- the attendant leaves
- the attendant returns with cash and pays the player the winning amount in cash
- the attendant makes further adjustments to the machine so that normal play can be resumed

Collectively, this procedure is called a "hand-pay." We observed over 20 hand-pays and we estimate that it takes an average of 5 min from the time the screen freezes until the game returns to normal play. These five min are usually a very social time during which fellow players gather and speak to the winning player. The amount required for a hand-pay varies from game to game and, in general, the amount is higher for games that allow the player to make higher wagers.

Summary of PAR Sheet analysis

In this section, we provide a brief description of various structural characteristics from the PAR Sheets, as summarized in Table 1, and then describe several structural characteristics in detail:

- The first column in Table 1 provides the game name, the number of reels, and the number of lines and indicates whether or not there are scatter wins.
    - The game name is abbreviated: "DD" for *Double Diamond Deluxe*, "P" for *The Phantom of the Opera*, "L" for *Lucky Larry's Lobstermania*, and "M" for *Money Storm*. If there are multiple versions of the game, the game abbreviation is followed by a number, such as L1, L2, and L3, to indicate the different versions of *Lucky Larry's Lobstermania*.
    - "Reels" refers to the number of reels, which is three for the mechanical reel slots and five for the video slots.

  - "Lines" refers to the number of lines that can be wagered upon. The mechanical reels slots are single-line games, whereas the video slots are multi-line games. To illustrate how multiple lines are designed, the top of Figure 1 shows the 15 lines in *Lucky Larry's Lobstermania*. To be a win, identical symbols on a line must start on the leftmost reel and be consecutive. For example, in *Lobstermania* a winning combination is three, four, or five consecutive "BOAT" symbols. The game outcome BOAT-BOAT-BOAT-CLAM-CLAM is a win, whereas BOAT-BOAT-CLAM-BOAT-BOAT is a loss, as there are not three consecutive BOAT symbols starting from the left.
  - On the lower panel of Figure 1, the "S" symbol denotes a "scatter" symbol. *Lucky Larry's Lobstermania* and *Money Storm* afford "scatter" wins. A scatter win is different from a line win in that scatter wins occur when the scatter symbol occurs three, four, or five times anywhere on the 3 x 5 matrix. Figure 1 shows two examples of scatter wins. Scatter wins occur frequently. As an example, the PAR Sheets show that in one version of *Lobstermania*, scatter wins account for 25.7% of all wins.
- "Min/max wager" refers to the minimum and maximum bet that a player can wager per spin. Both traditional slots games are "quarter" games and the player can wager 25, 50, or 75 cents. Both video slots games are "nickel" games and the player can wager 5, 10, 15, 20, or 25 cents per line, resulting in a maximum wager per spin of $3.75 for *Lobstermania* (25 cents x 15 lines = $3.75) and $5.00 for *Money Storm* (25 cents x 20 lines = $5.00).
- "Symbols per reel" denotes the number of symbols on each reel. On mechanical reel slots, this refers to the virtual reels (virtual reels are described later in this paper). Multiplying the number of symbols on each reel yields the total number of possible combinations. For example, *Lobstermania's* five reels have 47, 46, 48, 50, and 50 symbols, yielding a total of 259,440,000 possible combinations.
- "Payback %" is the payback percentage, which is the percentage of the wager that the player will receive back, on average, per spin. Payback percentage is the major distinguishing characteristic between multiple approved versions of the same game. Despite the fact that all versions of *Lucky Larry's Lobstermania* look identical to the gambler, a row of these machines in a casino could contain a range of payback percentages varying from a low of 85% to a high of 96.2%.
- "Hit freq" is the hit frequency, or the percentage of times, on average, that the player will win something on each line. Table 1 shows that this varies from a low of 4.9% for the 85% version of *Lobstermania* to a high of 16.7% for *Money Storm*. The hit frequency does not vary significantly between versions of the same slot machine game. For example, all versions of *Money Storm* have a hit frequency of approximately 16.6%.
- "Plays per jackpot" is the average number of plays before a jackpot is won. The maximum jackpot can be won only when the player has made the maximum wager on the winning line.

- "Jackpot amount" is the amount of the highest prize. On the mechanical reel slots, there is a bonus for wagering the maximum number of credits. For example, on *The Phantom of the Opera*, a wager of one credit pays a bonus of 1,000 credits, two credits pays 2,000, and three credits pays 5,000. The amount of the jackpot for both video slots games is linear in that the jackpot is 10,000 times the credits wagered and thus varies from 10,000 to 50,000, as the wager can vary from one to five credits.
- "Plays per bonus" is the number of plays, on average, before bonus mode is entered. Only video slots have bonus mode, with *Money Storm* having two bonuses.
- "VI" stands for "volatility index," and is an indication of how much the game's payback percentage will vary for a given number of games played. Games with a high volatility index have a larger variance in the payback percentage per gambling session than do games with a low volatility index. Only the PAR Sheets for the mechanical reel slots games include the volatility index. Table 2 describes the calculation of volatility index and the resulting confidence interval.

Multiple approved versions of the same game

As shown in Table 1, Ontario approves multiple versions of the same slot machine game, with the major difference between versions being the payback percentage. The differences in payback percentages have a direct effect on playing time. In *Lobstermania*, a player wagering $1.00 per spin would lose, on average, 3.8 cents per spin on the 96.2% game and 15 cents per spin on the 85% game. Thus, the player loses approximately four times more money per spin on the 85% game than on the 96.2% game (15 ÷ 3.8 = 3.95). A player arriving with a "bankroll" of $10.00 and wagering $1.00 per spin, who gambles until the bankroll is depleted, would make, on average, 263 one-dollar wagers on the 96.2% game ($10.00 ÷ $0.038 = 263), but only 67 one-dollar wagers on the 85% game ($10.00 ÷ $0.15 = 66.7); thus a player with a specific bankroll would have approximately four times more gambling time on the 96.2% version versus the 85% version (263 ÷ 66.7 = 3.95).

Table 1

Summary of PAR Sheets for 23 versions of two traditional mechanical reel slot machine games and two video slots games

Game / reels / lines/ scatter	Min/max wager ($)	Symbols per reel (virtual reels for DD and P)	Pay-back %	Hit freq (%)	Plays per jackpot	Jackpot amount (credits)	Plays per bonus	VI
DD/3/1	0.25/0.75	72/72/72	92.6	14.3	46,656	800/1,600/2,500	n/a	10.5
P1/3/1	0.25/0.75	256/256/256	98.0	13.6	114,131	1,000/2,000/5,000	n/a	16.3
P2/3/1	0.25/0.75	256/256/256	97.4	13.6	114,131	1,000/2,000/5,000	n/a	16.2
P3/3/1	0.25/0.75	256/256/256	95.0	13.0	114,131	1,000/2,000/5,000	n/a	17.4
P4/3/1	0.25/0.75	256/256/256	94.0	13.0	114,131	1,000/2,000/5,000	n/a	17.3
P5/3/1	0.25/0.75	256/256/256	92.5	12.9	133,153	1,000/2,000/5,000	n/a	16.1
P6/3/1	0.25/0.75	256/256/256	90.0	12.8	155,345	1,000/2,000/5,000	n/a	14.9
P7/3/1	0.25/0.75	256/256/256	87.5	12.3	155,345	1,000/2,000/5,000	n/a	15.6
P8/3/1	0.25/0.75	256/256/256	85.0	11.7	155,345	1,000/2,000/5,000	n/a	17.1
L1/5/15/S	0.05/3.75	47/46/48/50/50	96.2	5.2	8,107,500	10,000-50,000	1,730	n/a
L2/5/15/S	0.05/3.75	47/46/48/50/50	95.0	5.2	8,107,500	10,000-50,000	1,730	n/a
L3/5/15/S	0.05/3.75	47/46/48/50/50	94.0	5.2	8,107,500	10,000-50,000	1,730	n/a
L4/5/15/S	0.05/3.75	47/46/48/50/50	92.5	5.3	8,107,500	10,000-50,000	1,730	n/a
L5/5/15/S	0.05/3.75	47/46/48/50/50	90.0	5.0	8,107,500	10,000-50,000	1,730	n/a
L6/5/15/S	0.05/3.75	47/46/48/50/50	87.5	5.0	8,107,500	10,000-50,000	1,730	n/a
L7/5/15/S	0.05/3.75	47/46/48/50/50	85.0	4.9	8,107,500	10,000-50,000	1,730	n/a
M1/5/20/S	0.05/5.00	35/35/35/35/35	96.2	16.7	2,188,411	10,000-50,000	536/1,429	n/a
M2/5/20/S	0.05/5.00	35/35/35/35/35	95.0	16.7	2,188,411	10,000-50,000	536/1,429	n/a
M3/5/20/S	0.05/5.00	35/35/35/35/35	94.0	16.7	2,188,411	10,000-50,000	536/1,429	n/a
M4/5/20/S	0.05/5.00	35/35/35/35/35	92.5	16.7	2,188,411	10,000-50,000	536/1,429	n/a
M5/5/20/S	0.05/5.00	35/35/35/35/35	90.0	16.7	2,188,411	10,000-50,000	536/1,429	n/a
M6/5/20/S	0.05/5.00	35/35/35/35/35	87.5	16.5	2,188,411	10,000-50,000	536/1,429	n/a
M7/5/20/S	0.05/5.00	35/35/35/35/35	85.5	16.5	2,188,411	10,000-50,000	536/1,429	n/a

Note. DD = *Double Diamond Deluxe*; freq = frequency; L = *Lucky Larry's Lobstermania*; M = *Money Storm*; S = scatter wins are available; max = maximum; min = minimum; n/a = not applicable; P = *The Phantom of the Opera*; VI = volatility index.

Figure 1. Line and scatter wins in *Lucky Larry's Lobstermania*. The top shows the 15 lines and the bottom shows two sample scatter wins, one with three scatter symbols and one with four.

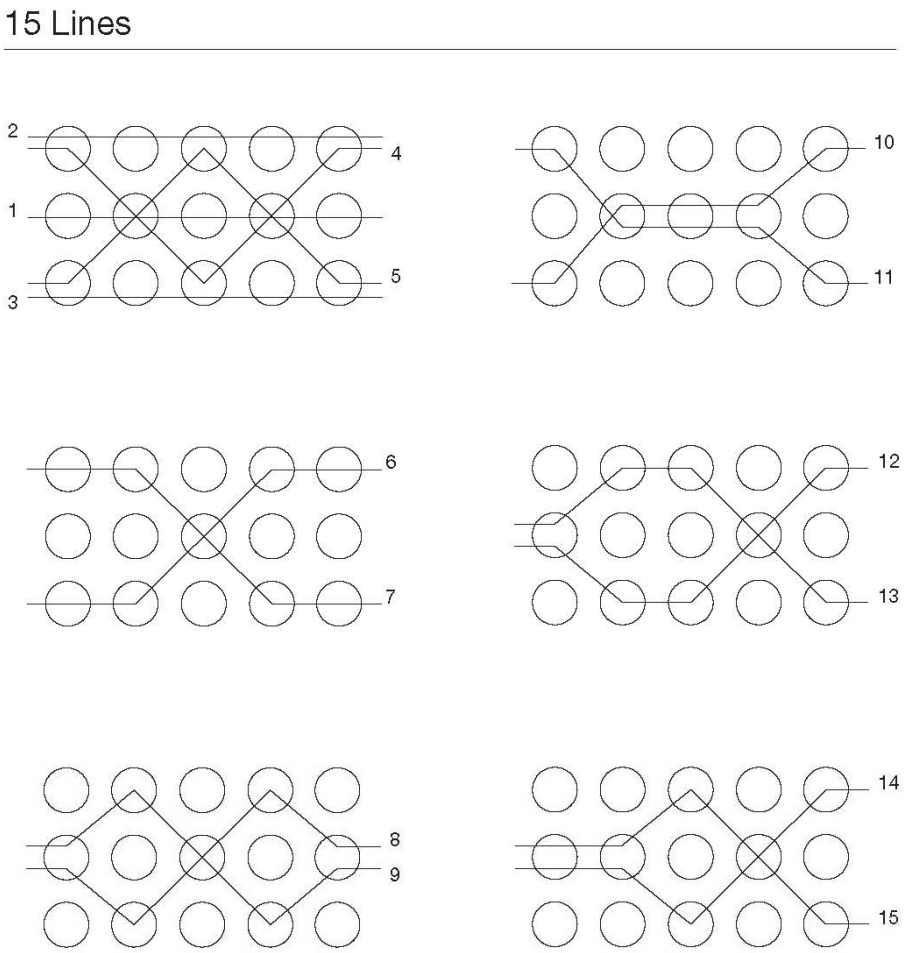


Table 2

Calculation of volatility index for the 92.5% version of *Double Diamond Deluxe*, for a three-credit wager of $0.75

For each possible win or loss, the casino's profit is recorded in column A. The amount of the win/loss is then compared with the expected value to determine the variance and standard deviation. The expected value is the Hold.

	A	**B**	**C**	**D**	**E**	**F**	**G**
Max pay	Net pay	# of hits	Probability	Expected values	A-D	E^2	C x F
0	1	319,928	0.85714592	0.07416	0.92584	0.8571797	0.7347281
6	-1	18,960	0.05079733	0.07416	-1.07416	1.1538197	0.058611
15	-4	24,354	0.06524884	0.07416	-4.07416	16.59878	1.0830512
30	-9	7,198	0.01928477	0.07416	-9.07416	82.34038	1.5879149
60	-19	1,510	0.00404557	0.07416	-19.07416	363.82358	1.4718729
75	-24	336	0.00090021	0.07416	-24.07416	579.56518	0.5217279
120	-39	274	0.00073410	0.07416	-39.07416	1526.79	1.120811
150	-49	362	0.00096986	0.07416	-49.07416	2408.2732	2.3356988
240	-79	110	0.00029471	0.07416	-79.07416	6252.7228	1.8427413
300	-99	104	0.00027864	0.07416	-99.07416	9815.6892	2.7349957
480	-159	80	0.00021433	0.07416	-159.07416	25304.588	5.4236515
960	-319	24	0.00006430	0.07416	-319.07416	101808.32	6.5463168
2500	-832	8	0.00002143	0.07416	-832.40749	692902.23	14.8513
						Variance	40.313421
		Combinations	373,248			Standard deviation	6.349285

Volatility index = (z-score for confidence interval) * (standard deviation of the game)
z-score for a 90% confidence interval is: 1.65
Volatility index: 10.476 i.e., 6.349285 x 1.65

To determine the upper and lower limits for a given number of games:
Payback percentage plus/minus (VI/(sqrt(games played)))

90% Confidence interval		
	Lower	Upper
Plays	percentage	percentage
1,000	59.45	125.71
10,000	82.11	103.06
100,000	89.27	95.90
1,000,000	91.54	93.63
10,000,000	92.25	92.92

Note. max = maximum; sqrt = square root; VI = volatility index.

In the games for which we have the PAR Sheets, the different payback percentages of the same game are achieved by changing the symbols on the reels while maintaining the number of symbols per reel. As an example, Table 3 shows the number of occurrences of each symbol on the five reels in the 85% and 96% versions of *Lobstermania*. The number of occurrences of the highest-paying wild card symbol (WS) and other special symbols (LO and LT) do not vary between versions (2-2-1-4-2, 2-5-6-0-0, and 2-2-2-2-2, respectively). The game designers have manipulated the number of occurrences of all other symbols, such as having 10-3-10-7-8 occurrences of the low-paying SF symbol on the 85.0% version and only 5-5-6-8-7 on the 96.2% version. The right-hand side of Table 3 shows the amount paid for two, three, four, or five occurrences of each symbol. *Lobstermania* is a nickel slot machine; hence, one credit equals one nickel. As can be seen in Table 3, two WS symbols pay five credits, and five WS symbols pay 10,000 credits. All of these payouts are for a wager of one credit on the winning line and are multiplied by the number of credits wagered. If five credits are wagered, two WS symbols pay 25 credits and five WS symbols pay the jackpot of 50,000 credits. Because this is a five-cent game, the jackpot is $2,500.00 (50,000 x $0.05). As shown in Table 1, one result of this manipulation is that the hit frequency is 5.2% in the 96.2% version and slightly lower at 4.9% in the 85.0% version. Table 4 shows a breakdown of the prize structure (i.e., the number of occurrences of each winning amount) for three versions of *Lobstermania*. Most prizes are small, with prizes of two and five credits accounting for approximately 70% to 75% of all winning hits.

Table 3
Game designers manipulate the symbols on the reels to achieve different versions of the same game

Lobstermania: Comparison of reels on 85.0% and 96.2% versions.														
Symbol	85.0%					96.2%					Payout (credits)			
	Symbols per reel					Symbols per reel					2	3	4	5
WS (wild)	2	2	1	4	2	2	2	1	4	2	5	100	500	10,000
LM Lobstermania	4	3	3	3	4	4	4	3	4	4	2	40	200	1,000
BU Buoy	3	4	3	8	5	4	4	5	4	5	0	25	100	500
BO Boat	4	3	4	3	4	6	4	4	4	4	0	25	100	500
LH Light House	3	4	6	3	7	5	4	6	6	7	0	10	50	500
TU Tuna	4	3	6	6	6	6	4	5	6	7	0	10	50	250
CL Clam	10	8	3	4	7	6	6	5	6	6	0	5	30	200
SG Sea Gull	3	9	4	10	5	5	6	5	6	6	0	5	30	200
SF Star Fish	10	3	10	7	8	5	5	6	8	7	0	5	30	150
LO (bonus)	2	5	6	0	0	2	5	6	0	0	0	331	n/a	n/a
LT (scatter)	2	2	2	2	2	2	2	2	2	2	0	5	25	200
Total	47	46	48	50	50	47	46	48	50	50				

Note. n/a = not applicable.

Table 4
The prize structure in the 85.0%, 92.5%, and 96.2% versions of *Lobstermania*

	85.0%		92.5%		96.2%	
Pays	Hits (%)	Pays (%)	Hits (%)	Pays (%)	Hits (%)	Pays (%)
2	22.50	2.59	25.77	2.93	26.23	2.82
5	52.65	15.17	48.18	13.71	44.66	12.01
10	6.73	3.88	7.25	4.13	8.56	4.60
25	6.36	9.16	6.88	9.78	9.05	12.16
30	4.78	8.27	4.53	7.73	3.47	5.60
40	1.96	4.52	2.15	4.90	2.19	4.71
50	1.15	3.30	1.43	4.07	1.75	4.71
100	0.88	5.08	0.86	4.90	1.22	6.53
150	0.57	4.93	0.36	3.11	0.28	2.22
200	0.83	9.55	1.02	11.61	0.86	9.22
250	0.13	1.89	0.17	2.39	0.19	2.58
330	1.18	22.45	1.10	20.63	1.12	19.84
500	0.24	6.79	0.25	7.12	0.38	10.10
1,000	0.04	2.27	0.05	2.87	0.05	2.76
10,000	0.00	0.15	0.00	0.13	0.00	0.13
Total	100.00	100.00	100.00	100.00	100.00	100.00

Mechanical reel slots: Virtual reel mapping, nudges, and near misses

Virtual reel mapping

The PAR Sheets show that the two traditional mechanical reel slot machines games use virtual reels, whereas the two video slots games do not. Physical reels on traditional mechanical reel slot machines have a limited number of stops, usually 22, which limits the number of possible outcomes to 10,648 (22 x 22 x 22 = 10,648). *Double Diamond Deluxe* and *The Phantom of the Opera* use virtual reels, with 72 and 256 stops, respectively, as shown in Table 1, which increases the number of possible outcomes to 373,248 and 16,777,216, respectively (72^3 = 373,248 and 256^3 = 16,777,216). Table 5 shows the mapping of Virtual Reel 1 to Physical Reel 1 for *Double Diamond Deluxe*:

- For each spin, the computer generates a random number between 1 and 72, which corresponds to a position on the 72-stop virtual reel. Each position on the virtual reel has an equal probability of occurring (i.e., 1 in 72).
- A weighted mapping is used to map each of the 72 stops on the virtual reel to one of the 22 stops on the physical reel, which will be on the payline at the end of a spin. As examples, the three Virtual Stops 1 to 3 are mapped to Physical Stop 1, which is a blank; Virtual Stop 4 is mapped to Physical Stop 2, which is the "7"

symbol; and the five Virtual Stops 5 to 9 are mapped to Physical Stop 3, which is a blank.
- Because of the weighting, each stop on the physical reel does not have an equal probability of occurring on the payline; the blank on Physical Stop 1 occurs on the payline 3 out of 72 times, the 7 on Physical Stop 2 occurs 1 out of 72 times, and the blank on Physical Stop 3 occurs 5 out of 72 times.

Nudges

Double Diamond Deluxe and *The Phantom of the Opera* are both "nudging" games. In these two games, the reels spin for approximately 5 s and then, 1 s later, one or more reels may nudge up or down. If the reels do nudge, a blank is always nudged away from the payline and a paying symbol is nudged to the payline. The design of nudges will be explained using Table 5:

- If the virtual stopping position is 10, 11, or 12, then Reel 1 will stop with Physical Stop 4 (i.e., a One Bar) on the payline and there will be no nudge.
- If the virtual stopping position is in the range of 13 to 19, then Physical Stop 5 (i.e., a blank) will stop on the payline after approximately 5 s.
- Then 1 s later, the reel will nudge so that Physical Stop 4 (i.e., the One Bar) will be on the payline.
- Thus, in this game, the blank in Physical Stop 5 is never on the payline at the end of a spin.
- The game's probabilities are not affected by the nudging, as the probabilities are calculated by using the final stopping position after the nudge.
- Importantly, not all physical stops containing blanks get nudged off the payline. Some physical stops associated with blanks do appear on the payline, a fact that contributes to near misses.

Near misses caused by clustering

A near miss is a failure that is close to a win, such as when the high-paying *Double Diamond* symbol appears on the payline on two reels and just above or just below the payline on the third reel. Wilson (2004a) and Harrigan (2007, 2008, 2009) show in detail how manufacturers of traditional mechanical reel slot machine games create this type of near miss by using virtual reels and a technique called clustering, a technique that is used in both *Double Diamond Deluxe* and the *Phantom of the Opera*. This technique is described briefly here with reference to Table 5:

- Using the clustering technique, game designers put a high ratio of blanks adjacent to the high-paying symbols in the virtual reel. As an example, the five virtual stops 22 to 26 are mapped to Physical Stop 7, which is a blank; Virtual Stop 27 is mapped to Physical Stop 8, which is the high-paying *Double Diamond* symbol; and the five Virtual Stops 28 to 32 are mapped to Physical Stop 9, which is a blank.
- This creates near misses as follows:

- Physical Stop 7 (a blank) appears on the payline 5 times out of 72 and when it does, Physical Stop 8 will be below the payline. Thus, the *Double Diamond* in Physical Stop 8 will appear below the payline 5 times out of 72.
- The *Double Diamond* on Physical Stop 8 will appear on the payline 1 time out of 72.
- Physical Stop 9 (another blank) appears on the payline 5 times out of 72 and when it does, Physical Stop 8 will be above the payline. Thus, the *Double Diamond* in Physical Stop 8 will appear above the payline 5 times out of 72.
- This clustering technique results in a near miss, in that the player sees the high-paying *Double Diamond* symbol five times more often in the non-winning position (i.e., above and below the payline) than it appears on the payline.

Table 5

Reel 1 of *Double Diamond Deluxe*: Virtual reel mapping, nudges, and near misses caused by clustering

Random Number Generator (RNG)	72 Stops on the Virtual Reel	# of Virtual Reel Stops Mapped to a Physical Reel Stop		Physical Reel Stop Number	Symbol on the 22-stop Physical Reel	
The Random Number Generator (RNG) generates a number between 1 and 72 which corresponds to a virtual reel stop position.	1 to 3	3		1	~ ~	
	4	1		2	7	
	5 to 9	5		3	~ ~	
	10 to 12	3	→	4	One Bar	Nudge
	13 to 19	7	→	5	~ ~	Nudge
	20 to 21	2		6	Cherry	
	22 to 26	5		7	~ ~	Clustering
	27	1		8	Double Diamond	Clustering
	28 to 32	5		9	~ ~	Clustering
	33 to 35	3		10	One Bar	
	36 to 39	4		11	~ ~	
	40	1	→	12	Three Bar	Nudge
	41 to 42	2	→	13	~ ~	Nudge
	43	1		14	7	
	44 to 51	8	↘	15	~ ~	Nudge
	52 to 54	3	↘	16	One Bar	Nudge
	55 to 59	5		17	~ ~	Clustering
	60	1		18	Double Diamond	Clustering
	61 to 65	5	↘	19	~ ~	Nudge
	66 to 67	2	↘	20	Two Bar	Nudge
	68 to 70	3		21	~ ~	
	71 to 72	2		22	One Bar	

Near misses caused by asymmetric reels

Lobstermania, *Money Storm*, and *The Phantom of the Opera* create another form of near miss with another technique called asymmetric reels. In this form of near miss, when there are several occurrences of a high-paying symbol on one line, it is frequently in non-winning combinations. As an example, in *Lobstermania*, the number of lobster symbols is 2-5-6-0-0 and lobster symbols on Reels 1, 2, and 3 on a played line initiate "Lobster Buoy Bonus." The player sees the lobster symbols 2.5 and 3 times more often on Reels 2 and 3 than on Reel 1. The fact that Reel 1 is "starved" of the lobster symbol (yet it is necessary to get into Lobster Buoy Bonus) elevates the occurrence of near misses (and simultaneously lowers the number of wins).

Near misses caused by wins less than the wager

In our computer analysis, we were also interested in outcomes in which the win is less than the wager, such as when the player wagers $0.75 by wagering $0.05 on each of the 15 lines and wins $0.45. The result of this play is a loss of $0.30 on the spin, but the slot machine game indicates that it is a win. In Table 6, the column "Wins < Wager" shows our results. As an example, when wagering on all 15 lines, the player wins something on 33.52% of the spins and of these wins, 60.73% are less than the wager. This situation can be construed as yet another form of the near miss, as the player sees one or more wins on the spin and yet has actually lost money on the spin. We also show "Wins = Wager," which is a unique situation, as the game outcome is neither a win nor a loss, but the game indicates that it is a win.

Hit frequency: Multi-line wins and scatters

As noted, *Lobstermania* and *Money Storm* are multi-line games. The PAR Sheets show the math for one line only, and as such, the PAR Sheets treat each line as a separate game. For example, as shown in Table 1, the PAR Sheets show that the hit frequency *per line* for the 92.5% version of *Lobstermania* is approximately 5.3%. Hit frequency is defined as "the percentage of time that a machine will give any payout" (Brisman, 1999, p. 258). For a simple single-line game, such as *Double Diamond Deluxe*, the hit frequency reported in the PAR Sheets accurately reflects the percentage of time that the game will give any payout.

However, for multi-line games with scatter wins, the hit frequency in the PAR Sheets does not reflect "the percentage of time that a machine will give any payout." When a player wins two or more times on the same spin, this adds one to the number of hits in the hit frequency for each winning line, as shown in the PAR Sheets, but it adds one only to "the percentage of time that a machine will give any payout" on the spin. To determine this percentage per spin, we wrote a computer program to analyze all 259,440,000 possible outcomes (47 x 46 x 48 x 50 x 50 = 259,440,000), for each potential number of lines wagered, in the 3 x 5 matrix in the 92.5% version of *Lobstermania*. In Table 6, the column "Spins ≥ 1 hit" shows that "the percentage of time that a machine will give any

payout" per spin varies from 5.25% for one line to 33.52% for 15 lines. If there were no scatters and the 15 lines were independent of one another, a player wagering on all 15 lines with a 5.25% hit frequency would expect to win something on 55.5% of the spins (calculated as $1-((1-0.0525)^{15})$). The fact that our analysis of all 259,440,000 possible outcomes shows that the percentage of times that a player wagering on all 15 lines wins something is only 33.52% is accounted for by two factors. First, scatters are counted only once per spin regardless of the number of lines wagered. Second, the 15 lines are not independent of one another. The outcome of a spin is determined by five random numbers that represent the middle row in the 3 x 5 matrix. As an example of the non-independence, if the middle row starts with two wild symbols, then we see from Figure 1 that this guarantees that Lines 1, 14, and 15 will all be wins, as they will all begin with two wild symbols and then some other symbol, which is always a win. Another example occurs when Line 1 begins with two non-wild symbols that are not the same, and then this guarantees that Lines 1, 14, and 15 will not be wins.

Hand-pays

Finally, in our analysis, we calculated the number of wins that are hand-pays. The right-hand side of Table 6 shows our results. The amount won is multiplied by the wager, so that players who make higher wagers will get more hand-pays. For example, when wagering on only one line, there are 32 wins that pay 2,500 (which is $125 and triggers a hand-pay on *Lobstermania*) or more, whereas there are 41,074 outcomes that pay 2,500 or more for a player wagering five credits. Thus, a player wagering five credits has 1,284 times the chance (41,074 ÷ 32 = 1,284) of getting a hand-pay as a player wagering one credit. This large increase in hand-pays is explained by the fact that when wagering one credit in *Lobstermania*, there are 32 wins of 10,000 credits, 6,880 wins of 1,000 credits, and 34,162 wins of 500 credits. Thus, a wager of one or two credits yields 32 wins that are greater than 2,500 credits. A wager of three or four credits yields 6,912 wins (32 + 6,880 = 6,912) of 2,500 credits or greater, as the 6,880 wins of 1,000 are multiplied by the wager and become wins of 3,000 and 4,000. A wager of five credits yields 41,074 wins (32 + 6,880 + 34,162 = 41,074) of 2,500 or greater, as the 34,162 wins of 500 are multiplied by five and become wins of 2,500.

With a maximum bet of five credits on all 15 lines (a total of 75 credits, or $3.75), there are 649,847 outcomes that are hand-pays, which means that, on average, a player gets a hand-pay every 399 spins (259,440,000 ÷ 649,847 = 399). When playing continuously every 3 s, 399 spins take 20 min (399 x [3 ÷ 60] = 20). We considered a scenario in which a player arrives with a bankroll of $100 and makes maximum wagers of $3.75 until broke. On average, the player would make 356 plays on the 92.5% version ($100 ÷ [$3.75 x .075] = 356) and thus have an 89% probability of getting a hand-pay ([356 ÷ 399] x 100 = 89%).

Table 6

The 92.5% version of *Lobstermania*

Lines wagered	Spins ≥ 1 hit (%)	Wins < wager (%)	Wins = wager (%)	# of hand-pays per credits wagered				
				1	2	3	4	5
1	5.25	0.00	0.00	32	32	6,912	6,912	41,074
2	8.77	0.00	29.45	64	68	13,824	13,952	82,632
3	12.16	31.66	0.00	96	119	20,811	21,322	124,102
4	15.34	32.53	0.00	128	215	27,725	28,943	165,298
5	18.37	32.95	28.25	160	445	34,877	37,094	206,184
6	19.93	60.31	0.00	192	511	41,821	45,179	247,457
7	21.50	57.63	1.19	224	590	48,857	53,411	288,615
8	24.07	58.35	0.00	256	703	55,833	62,094	332,858
9	26.51	57.86	0.60	288	848	64,318	72,278	375,890
10	27.72	56.43	6.83	320	1,133	71,678	82,158	419,168
11	28.86	64.34	0.00	352	1,627	80,018	94,174	461,667
12	30.08	62.72	0.44	384	1,804	87,299	104,283	505,445
13	31.34	61.74	0.00	416	2,178	94,907	114,658	549,036
14	32.44	60.20	1.10	448	2,661	103,173	127,610	600,288
15	33.52	60.73	0.81	480	3,439	112,447	142,517	649,847

Note. The table shows (a) the percentage of spins on which the players wins one or more prizes, (b) the percentage of times the win is less than or equal to the wager, and (c) the number of hand-pays of 2,500 credits or more.

Bonus mode wins

Both *Lobstermania* and *Money Storm* have a bonus mode that contributes to the winning hits and winning amounts. In this section, we will describe in detail the bonus mode in *Lobstermania* and note any significant differences compared with the bonuses in *Money Storm*.

Bonus mode wins (*Lobstermania*)

The PAR Sheets do not include any information about the sounds, graphics, and animations, and so in order to observe them, we played and watched others play the games. In particular, as bonus mode is not entered frequently, it took many hours before we entered bonus mode enough times to observe the sounds, graphics, and animations. Also, it took some time to understand the game play within bonus mode and to see how it correlated with the math and computer algorithms as shown in the PAR Sheets.

In *Lobstermania*, the Lobster Buoy Bonus is initiated when the lobster symbol occurs on Reels 1, 2, and 3 on a played line. The number of lobster symbols per reel is 2, 5, 6, 0, and 0, yielding 150,000 possible combinations to initiate the Lobster Buoy Bonus (2 x 5 x 6 x 50 x 50 = 150,000). Thus, the bonus mode is entered, on average, every 1,729 plays (259,400,000 ÷150,000 = 1,729). By playing one line every 3 s, it would take 86.5 min, on average, to enter the bonus mode and 5.8 min if playing all 15 lines. Note that using the "stop-spin" button would cut those times by approximately half.

Figure 2 shows line drawings of the screens that we observed in Lobster Buoy Bonus and is described as follows:

A. When the three lobster symbols appear on Reels 1, 2, and 3 of a played line, the lobster symbols change to contain the words "Pick Me," and they become active in that the screen waits until the player touches one of the lobster symbols (Figure 2A).

B. After the player touches one of the lobster symbols, the screen changes to reveal the numbers 2, 3, and 4 randomly placed behind the three lobster symbols, with the number behind the selected lobster being the only one used in Lobster Buoy Bonus (Figure 2B). The screen stays in this state for approximately 3 s before automatically moving on to the next screen.

C. The next screen is the main screen for the Lobster Buoy Bonus and is broken into two parts. The top part shows an animated, talking lobster fisherman in a boat. The bottom part of the screen shows nine buoys in the water. The player touches a number of buoys corresponding to the number revealed behind the selected lobster in the previous screen (Figure 2C).

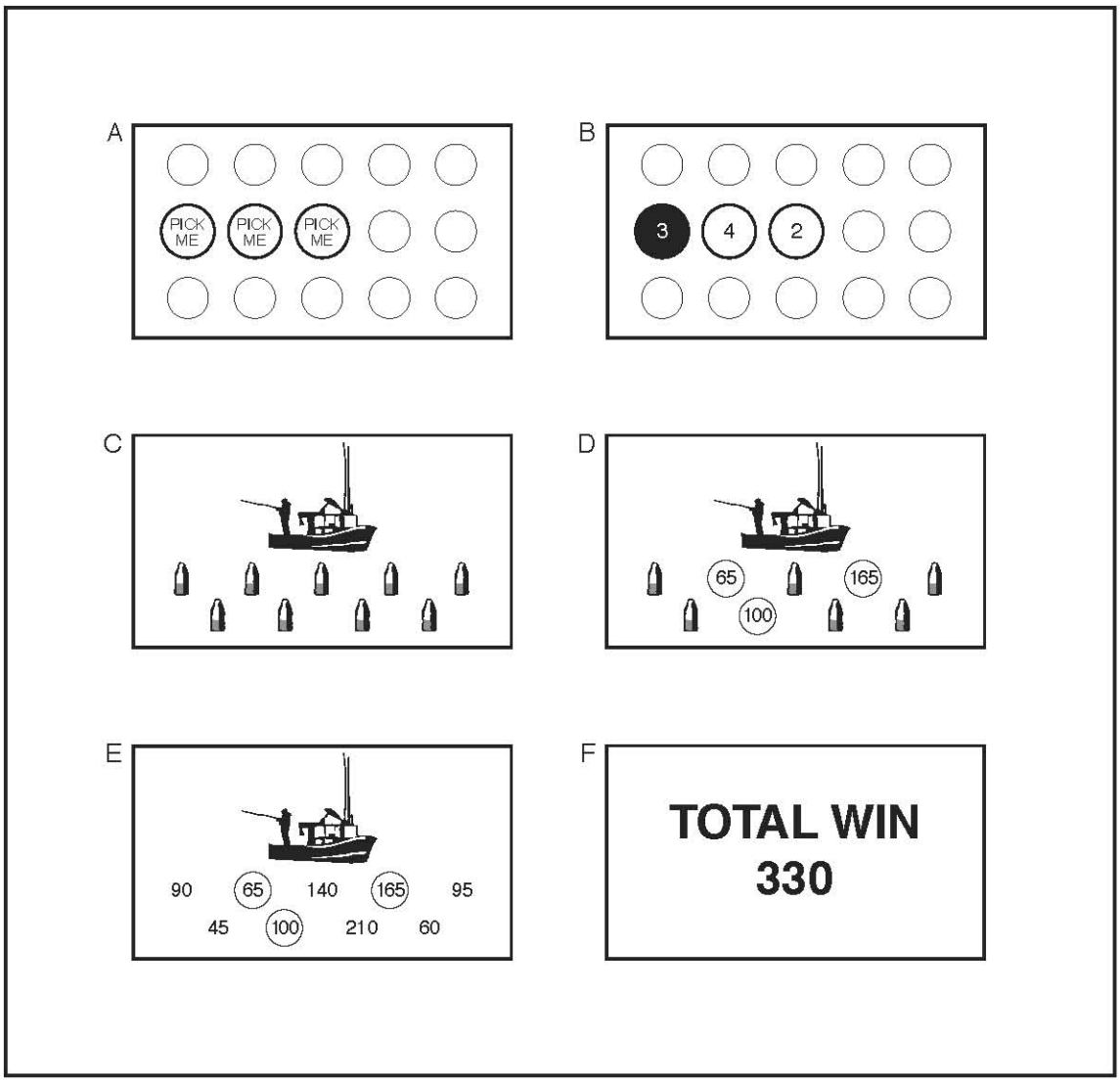
D. The animated and talking lobster fisherman then reveals prizes won within each buoy (Figure 2D).

E. The prizes in the unselected buoys are also shown (Figure 2E).

F. After all prizes are revealed, a screen appears showing the total amount won (i.e., credited to the player’s account; Figure 2F). All wins are multiplied by the bet on the initiating line.

G. The game then automatically returns to the standard game mode.

Figure 2. Various screens in Lobster Buoy Bonus *in Lucky Larry's Lobstermania*.



The PAR Sheets reveal the following:

- In Figure 2B, after the player selects a "Pick Me" shown in Figure 2A, the revealed numbers are always 2, 3, and 4 and the probability of each is equal at one third.
- In screens 2C and 2D, the number of prizes behind each selected buoy has an equal probability of being two or three. Thus, the total number of prizes can vary from a low of 4 (two prizes in each of two buoys) to a high of 12 (three prizes in each of four buoys).
- The amount of each of the two or three individual prizes within a buoy is determined by a random lookup table, with replacement. This is a weighted pay table, which is shown in Table 7. It has the following features:
    - A random number between 0 and 321 is generated and the computer determines where that number is within the lower bounds and upper bounds of the range columns (columns 1 and 2).
    - The corresponding prize column is what the player wins and this win can vary from 5 to 250 (times the wager). For example, if the random number is 100, the prize is 25 (times the wager), whereas a random number of 200 yields a prize of 45 (times the wager).
    - The weight and probability columns reflect the fact that the lookup table is weighted. As an example, the prize of 12 occurs 10 times out of 322, whereas the prize of 250 occurs 5 times out of 322.
    - The contribution column shows, on average, the amount that each potential prize in a buoy will contribute to the average amount won for that prize.
    - The average amount won in Lobster Buoy Bonus is 330.16 credits times the number of credits wagered on the initiating line.

The top half of Table 8 shows a detailed breakdown of all the wins in *Lobstermania* when wagering on one line only. Line wins and scatter account for approximately 90% of all wins. Lobster Buoy Bonus is initiated on 1.01% of all winning hits, but initiating the bonus does not in and of itself generate any winning amounts. Once in the Lobster Buoy Bonus, the player gets wins that account for 7.61% of all winning hits and 21.63% of the total winning amount.

Table 7

Weighted lookup table for determining prizes in *Lobstermania's* Lobster Buoy Bonus

Range		Prize	Weight	Probability	Contribution
Lower	Upper				
0	9	10	10	0.0311	0.3106
10	14	5	5	0.0155	0.0776
15	19	6	5	0.0155	0.0932
20	24	7	5	0.0155	0.1087
25	29	8	5	0.0155	0.1242
30	39	10	10	0.0311	0.3106
40	49	12	10	0.0311	0.3727
50	59	15	10	0.0311	0.4658
60	79	20	20	0.0621	1.2422
80	99	22	20	0.0621	1.3665
100	119	25	20	0.0621	1.5528
120	139	27	20	0.0621	1.6770
140	158	30	19	0.0590	1.7702
159	180	35	22	0.0683	2.3913
181	204	45	24	0.0745	3.3540
205	223	50	19	0.0590	2.9503
224	238	55	15	0.0466	2.5621
239	253	60	15	0.0466	2.7950
254	268	65	15	0.0466	3.0280
269	283	70	15	0.0466	3.2609
284	298	75	15	0.0466	3.4938
299	308	100	10	0.0311	3.1056
309	316	150	8	0.0248	3.7267
317	321	250	5	0.0155	3.8820
				Average number of buoys	3.00
				Average number of prizes per buoy	2.50
				Average pay per prize	44.02
				Lobster Buoy Bonus average pay	330.16

Table 8

Summary of calculations of the various forms of wins when wagering on one line in the 92.5% versions of *Lucky Larry's Lobstermania* and *Money Storm*

	Total Hits		Total Pays	
	Hits	Percentage	Pays	Percentage
Lobstermania				
Line wins	9,382,500	63.46	162,889,616	67.86
Scatter wins	4,126,464	27.91	27,617,760	11.51
Combinations to initiate Lobster Buoy Bonus	150,000	1.01	-	0.00
Lobster Buoy Bonus wins	1,125,000	7.61	49,524,000	21.63
All wins	14,783,964	100.00	240,031,376	100.00
Money Storm				
Line wins	5,164,600	55.42	26,351,150	54.79
Scatter wins	3,238,803	34.76	7,564,140	15.73
Weather Beakon Bonus wins (base)	294,000	3.15	983,920	2.05
Weather Beakon Bonus wins (bonus mode)	1,851	0.02	371,766	0.77
Combos to initiate Free Storm Scatter Bonus	36,750	0.39	1,094,250	2.28
Free Storm Scatter Bonus wins	582,891	6.25	11,733,233	24.39
All wins	9,318,895	100.00	48,098,459	100.00

Bonus mode wins (*Money Storm*)

Money Storm, like *Lobstermania*, has line wins, scatters, and two types of bonuses with the percentage of each winning type, as shown in the bottom half of Table 8. *Money Storm* has a simple bonus called "Weather Beakon [*sic*] Bonus," which has no additional screens and gives instant wins. In *Money Storm*, the combination that initiates the "Free Storm Scatter Bonus" generates instant wins as well as the subsequent wins that are won in Free Storm Scatter Bonus. Free Storm Scatter Bonus wins account for 6.25% of all wins and contribute 24.39% to the payback percentage.

Potential implications for problem gambling

Reinforcement schedules

The founder of the behaviourist movement in psychology, B.F. Skinner, believed that gambling behaviour could be explained by using principles of reinforcement. Of particular importance were the reinforcement schedules forming the patterns of wins and losses. He concluded that "the long-term net gain or loss is almost irrelevant in accounting for the effectiveness of this schedule" (Skinner, 1953, p. 104). Skinner did not, however, explain why some people gamble at problematic levels whereas others do not.

The more recent pathways model of problem and pathological gambling (Blaszczynski, 2000) includes various pathways that may account for problematic gambling, but states that all players, regardless of their pathway into gambling, go through "common processes," including classical and operant conditioning.

Slot machine play involves both operant and classical conditioning. In terms of operant conditioning, pushing the spin button is intermittently reinforced by using a random-ratio reinforcement schedule (the type of reinforcement schedule that yields high rates of responding and is impervious to extinction). One of the consequences of winning is that one becomes aroused. This arousal response is then involved in classical conditioning. The arousal itself serves as an unconditioned response and the proximal cues in the environment (e.g., the lights, the machines themselves) become conditioned stimuli. The upshot of this classical conditioning is that just seeing the machine will begin to trigger the (rewarding) arousal response. Thus, a seasoned gambler approaching a slot machine would be expected to show states of arousal before play has even commenced. As summarized by Blaszczynski and Nower, "Operant conditioning occurs when intermittent wins delivered on a variable ratio produce states of arousal often described as equivalent to a 'drug-induced high,' while with repeated pairings, this arousal is also classical conditioned to stimuli associated with the gambling environment" (Blaszczynski & Nower, 2002, p. 491).

We find it interesting to consider how the various structural characteristics of slot machines revealed by an analysis of the PAR Sheets, and by our field observations, might impact arousal, classical and operant conditioning, and reinforcement schedules.

Not all wins are created equal

In slot machine play, wins are accompanied by characteristic sights and sounds. The majority of these wins are low in value. For example, Table 4 shows that in the 85% version of *Lobstermania*, approximately 82% of the wins are for 10 credits (50 cents) or less (22.5% + 52.7% + 6.7%). Nevertheless, the sounds and sights associated with a win, even if it is for a small amount, serve as sensory cues that differentiate in the gambler's mind winning spins from losing spins.

Some of these small wins are actually losses. Recall that players on a nickel machine such as *Lucky Larry's Lobstermania* can wager on up to 25 cents per line and can wager on up to 15 lines per spin. For those playing the maximum, this translates to $3.75 per spin. For a gambler playing this maximum, two-thirds of their spins (66.48%) will result in losses, but one-third (33.52%) of the time, the lights and sounds of the machine will indicate a win. Crucially, however, on 60.73% of these wins, the amount gained will be *less than the amount that they wagered on that spin*. In other words, on these spins, the sensory cues (flashing lights and sounds that are so important to classical conditioning) point to a win, even though the net outcome of the spin is in fact a loss.

Hand-pay wins

Hand-pays occur when a relatively large amount of money is won (e.g., $125 for *Lobstermania*). Additional sensory stimuli accompany the hand-pay win (the rotating light atop the machine turns on and a siren-type sound begins). Also, the machine stops so that no further play can commence until the person receives the winnings from the attendant. Studies of slot machine gambling suggest that wins lead to increases in arousal (Coventry & Constable, 1999; Coventry & Hudson, 2001). Furthermore, when a gambler's spin results in a relatively big win, the gambler tends not to spin again right away but to pause in play (the so-called post-reinforcement pause – see, for example, Delfabbro & Winefield, 1999). Insofar as arousal is associated with wins, the pauses in game play may give the player adequate time to focus on the pleasurable feelings associated with the win, thereby increasing the reward value. The hand-pay may artificially lengthen this post-reinforcement pause and maximize the rewarding value of the win. In addition, the recipient of the hand-pay may receive reinforcing accolades from fellow players. Such a situation may be especially reinforcing to those who see themselves as skilled players. Our analysis reveals that for those who continuously make the maximum wager, the frequency with which the gambler will experience a hand-pay during an extended gambling session is surprisingly high (a player on a 92.5% *Lobstermania* machine who gambles until the $100 bankroll is gone will have an 89% chance of experiencing a hand-pay.

Bonus mode

The bonus mode is uniformly associated with wins (rewards) and hence likely associated with high levels of arousal. Just as arousal causes the sight of the machine to become classically conditioned (i.e., the machine becomes a conditioned stimulus), the heightened arousal in the bonus mode will also cause conditioning to occur. In the bonus mode, there is a very salient change in the context from regular game play (the animated fisherman appears along with the bonus buoys). In an experienced player, the sight of the animated fisherman, his boat and the bonus buoys would all become prime candidates for conditioning (i.e., these animated elements that appear in the bonus mode would become conditioned stimuli that would trigger the positively rewarding arousal). Thus in the bonus mode, classical conditioning leads to (rewarding) arousal, and the wins in the bonus mode also lead to further (operant) reward. In sum, the bonus round is indeed, in the words of the gambler, "a very good place to be" – it is operantly and classically rewarding. We note that it is unlikely that gamblers would habituate to the extra arousal associated with the bonus mode because the bonus mode lasts only a relatively short period of time and because entering the bonus round occurs only intermittently. From a reinforcement schedule point of view, gamblers know that the bonus mode is a very good (and arousing) place to be, yet they experience the bonus mode only on a random-ratio schedule. This multi-level reinforcement schedule (of wins and the less frequent, but more rewarding, bonus mode) is of potential concern for problem gambling. Recall that only those who are *repeatedly* exposed to the bonus mode will experience the classical conditioning that enables the animated fisherman to become a conditioned stimulus. Hence, only those who are repeatedly exposed to the bonus mode will experience the two

(operant plus classical) triggers of arousal associated with the bonus mode. Thus the very nature of the bonus mode may have preferential effects on problem (as opposed to novice) gamblers.

Near misses

Speculation has also been put forth that near misses are misinterpreted by problem gamblers as a form of win in which "the player is not constantly losing but constantly nearly winning" (Parke and Griffiths, 2004, p. 407). Our analysis shows how clustering techniques and starving certain reels of winning symbols preferentially elevate the instances of near misses. If, indeed, problem gamblers interpret near misses as wins, then one might surmise that they experience rewarding arousal to these near misses. If so, this would change the nature of reinforcement for problem and non-problem gamblers. To whit, problem gamblers would receive rewarding arousal on more spins than would non-problem gamblers. It may also be the case that the relatively big wins associated with hand-pays and the gamblers responses to near misses are not orthogonal in their contributions to problem gambling. We speculate that the highly arousing hand-pays may sensitize the anomalous responses to near misses. Concretely, a near miss involving the symbols that were associated with a recent hand-pay win may prove to be more arousing (and rewarding) than the same near miss occurring before a hand-pay win. Although at present this is mere speculation, we are currently conducting empirical investigations to better understand the relations among big wins and near misses, and their relation to problem gambling.

Illusion of control

Walker's sociocognitive theory of gambling involvement (Walker, 1992, p. 147) states that some potentially heavy gamblers maintain and increase their involvement in gambling by engaging in irrational thinking. The irrational thinking is characterized by three well-known psychological processes, one of which is the illusion of control – a perception that there is more skill in the game than is objectively the case. Langer (1975) defines skill as a situation in which there is a causal link between behaviour and outcome. She conducted six experiments showing that when a person is allowed to make choices in a random event, a perceived skill factor is introduced for the person and thus fosters an illusion of control. In one experiment, Langer allowed half of the subjects to choose their raffle ticket, whereas the other half were not given a choice (choice was the skill factor). Later, the subjects were asked to sell back their ticket or trade it for a ticket in a different raffle that had better odds. People who were able to choose their tickets valued their tickets as being worth significantly more than did those people who did not get to choose their tickets, although both groups clearly understood that the outcome of the raffle was random.

With respect to our analysis of the four games, there are multiple points at which players can make choices, including pressing the stop button to speed up game play and making several choices in bonus mode. The stop spin does not affect the game outcome, but using the button on the video slots provides the gambler with an illusion of control, as it

gives the player the impression that the stop spin button is somehow a factor in determining the stopping position of the reels (Ladouceur & Sévigny, 2005). When the Lobster Buoy Bonus feature is triggered in *Lobstermania*, the player chooses between three lobster traps to enter the feature (see Figure 2A). Then, within the feature, the player has to choose several of nine buoys (see Figure 2C). The result of both choices is random, with the result determined by a lookup table (shown in Table 8). However, the fact that the player consciously chooses some of the buoys and not others provides a situation conducive to an illusion of control, similar to the Langer lottery example described earlier.

Myths and irrational thinking: Multiple versions of the same game

Ontario approves multiple versions of the same game, with the payback percentage being the most notable difference between different versions. One slot machine may be running one version of a game, whereas another identical-looking slot machine, in the same or a different Ontario gambling facility, may be running a version of the same game with a different payback percentage. Importantly, this is concealed from the player – the games look identical and are played in the same way – because three lobsters in a row wins in both games. The player's experience varies significantly from game to game because, on average, the player loses four times more money per spin on an 85% version compared with a 96.2% version, which means that for a given bankroll, the player can gamble four times longer on the 96.2% version.

Gamblers commonly believe that some slot machines are "hot or loose" (i.e., ready to payout), whereas others are "cold." Indeed Turner and Horbay (2004) cite this belief as one of the common myths held by gamblers, namely, that "some machines are set to be loose." Turner and Horbay acknowledge that "machines do indeed vary in payback percentage and hit frequency" but state that the odds are not typically posted and it "would be impossible to determine which machines were actually set to pay out more." However, given the wide variation in payback percentage (85% vs. 98%) of the different versions of the games approved in Ontario, it is not beyond the realm of possibility that an experienced player could discriminate between a loose machine (i.e., a 98% version) and a machine with a much lower payback percentage (i.e., an 85% version). Indeed Haw (2008) showed in a laboratory setting that a subset of his participants were sensitive to payback percentage – after sampling two machines for 40 spins each, 80% of this subsample chose to gamble on the machine with the higher payback percentage.

If there really are instances of loose and tight machines (as predetermined by the payback schedules), and experienced gamblers can (eventually) tell the difference between them, this may feed into the gamblers self-attribution of "gambling skill." One nefarious consequence of this self-attribution is that problem gamblers may develop a faith in their skill and apply this skill to choosing things such as the bonus buoys in the bonus mode. They win, and despite the fact that their choices are irrelevant (the lookup table determines what they win), they will likely attribute their winning to their skill level. Such mentations will likely generalize to other situations where perceived skill is applied to other chance outcomes (hot vs. cold blackjack tables, dealers, etc.). The bottom line is

that having visually identical machines with different payback percentages may start gamblers down the road of seeing their winning as evidence of ability – a situation that may make it harder for them to realize that with enough plays, everyone loses, regardless of a particular machine's payback percentage.

Our analyses of the PAR Sheets have implications not only for research, but also for policy and clinical interventions in problem gambling. Consider a person who gambles twice per week and always plays the same machine. Given that it is legal to have a range of payback percentages in Ontario, and given that payback percentage can be easily changed by the owners through the machine settings options, it is theoretically possible for this person to gamble on a machine with a high payback percentage early in the week and on one with a low-payback later in the week. One questions the fairness of this practice from the consumer's perspective.

Furthermore, a number of problem gambling prevention campaigns cite that mistaken beliefs about the odds of winning at gambling constitute a key risk factor for developing problem gambling. Information-based treatment approaches often will try to teach gamblers that outcomes on slot machines are random and that if gamblers play any machine long enough, they will ultimately lose. Although this is true, it is also true that players are more likely to experience more wins on a high payback percentage machine than on a low payback percentage machine. Problem gamblers may focus on this latter information, and, to their detriment, fail to focus on the fact that if you play any machine long enough, you will invariably lose. Thus, having identical-looking machines with different payback percentages may serve to muddy the waters in the minds of problem gamblers when it comes to the messages they are receiving from information-based intervention strategies and may even serve to undermine these campaigns.

Conclusions

In this research, we have used information provided in PAR Sheets to learn more about the structural characteristics of slot machine games. Where such information was lacking (e.g., the bonus mode of *Lucky Larry's Lobstermania*) we either played or observed others playing slot machines in a real gambling venue to gain a further understanding of these slot machines. In particular, the PAR Sheets show detailed information about the overall design of slot machine games and provide specific information about the frequency of wins, losses, and near misses. The analysis provides a number of intriguing findings. These include the following: (a) With a bankroll of $100.00 and making the maximum wager, one has an 89% chance of encountering a hand-pay of at least $125.00 (assuming one continues to play until the bankroll is depleted); (b) a substantial number of wins are actually losses. For gamblers placing the maximum bet on 15 lines of a nickel machine, 35% of their signalled wins will be less than their wager per spin; (c) the myth that there are loose and tight slot machines is actually true and could contribute to the evolution of gamblers' "systems" and other faulty cognitions; (d) bonus modes are highly salient environments associated with wins that are in the view of the gambler a very good place to be. Because entering these arousing and highly rewarding bonus environments is

rare, only those who gamble frequently will become classically conditioned to these environments and experience the combined effects of operant and classical conditioning – a situation that could preferentially target problem gamblers.

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Kevin A. Harrigan, PhD, is a Research Associate Professor at the University of Waterloo in Canada. His research explores why there is such a high prevalence of problem gambling amongst those who play slot machines and video lottery terminals (VLTs). Topics of research interest include limitations of random number generators (RNGs), game design documents (called PAR Sheets), near misses, mathematics of gambling games, computer algorithms used in gambling games, and gaming regulations. He was involved in the design of software related to problem gambling on slot machines, including being the Executive Producer of the safe@play Slot Machine Tutorial. He acts as an expert witness in cases involving slot machines and video poker. He teaches computer game design.

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conducted award-winning research on how brain damage (stroke, Alzheimer's disease) can influence visual identification. Recently, he has begun to conduct research on how stimuli of which we are not fully aware can influence our decision making, and how physiological (bodily) reactions to events in our world can shape the cognitive decisions that we make. In problem gambling, Dr. Dixon's research is aimed at identifying those elements of the gambling experience that lead to measurable changes in behaviour – changes that may, potentially, lead to problem gambling.

Gambling and organized crime — A review of the literature

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Abstract

This paper was written to review the literature on the historical relationship between gambling and organized crime (OC) in the 19th, 20th, and 21st centuries; examine the current state of affairs; point out gaps in the knowledge; and above all draw attention to this understudied topic. The paper begins with an examination of the different sources of information examined, including law enforcement reports, participant observation studies, psychological and economic studies of the links between gambling and crime, historical studies of gambling and crime, and a number of commission reports. The paper then provides an overview of OC and definitions of OC and gambling. This is followed by a discussion of the history of OC and its historic links to gambling. The paper ends with a discussion of the contemporary setting and directions for future research. Our literature review was written in part to facilitate further research and thereby help rectify a shortcoming in overall efforts to understand and document gambling-related issues.

Keywords: organized crime, gambling, literature review, history.

Introduction

This project began when a colleague asked the second author for an academic reference on the relationship between problem gambling and organized crime (OC). He could think of several films, but not of any academic paper that explicitly examined the topic. This paper is the result of an attempt to answer that request.

Under Canadian law, only the government (and its licensed agents), charities, and the horse-racing industry are legally entitled to offer gambling to the public. Although private bets between individuals (e.g., card games, sports bets) are legal, any game in which an unlicensed third party (e.g., a bookie or the owner of a card room) makes a profit from the betting is illegal. Privately run sports books, card rooms, numbers games (lotteries), and unlicensed casinos are therefore illegal. In the United States, legal gambling is often run privately but operates under license by the state. In Canada, Australia, the United States, and the United Kingdom, the laws regulating gambling deal

mainly with controlling legal and illegal gambling operations rather than controlling the gambler per se. That is, the focus is on restricting the venue, not the player. An examination of the literature on gambling suggests that illegal gambling is often linked to OC. In this paper, we examine the links between gambling and OC by reviewing the available literature.

A gambling venue is a complex business that requires a number of specialized workers, such as dealers, maintenance workers, supervisors (e.g., pit bosses), managers, security staff, financial officers, cashiers, and marketing staff. An illegal gambling venue will also employ lookouts to spot potential police raids, "ropers" to bring in the people and shills or cappers to encourage customers to bet, and debt collectors (Asbury, 1938, pp. 182–184). Given the number of specialists, it is perhaps not surprising that illegal gambling venues have often been associated with OC. In fact, a certain level of organization would be necessary to run most illegal gambling operations. Illegal gambling venues often rely upon OC for finance, protection, security, and the collection of debts (Asbury, 1938; de Champlain, 2004). There have been historical links between gambling and OC (Asbury, 1938; de Champlain, 2004; Pileggi, 1986, 1995), and this history has been depicted in movies such as *The Godfather* (Ruddy & Coppola, 1972) and *Casino* (de Fina & Scorsese, 1995; see Turner, Fritz, & Zangeneh, 2007, for reviews).

OC, especially that dominated by Italian and Jewish figures, has long been discussed and portrayed, romanticized and vilified, in both books and films (see Turner et al., 2007; Thompson, 1997). Any source dealing with OC in general is likely at least to touch on the theme of gambling, and the sources discussed in this paper are nowhere close to exhaustive in that respect. Instead, we offer up the following as a sample of sources that deal directly with OC's relation to gambling.

In the wake of the legalization of many forms of gambling throughout most of North America, it has become increasingly important to understand all aspects of gambling. Given the ongoing importance of gambling profits to organized criminals, understanding the links between OC and gambling presents itself as a research priority. Four scientific journals are now publishing research specifically on problem gambling (*Journal of Gambling Studies*, *Journal of Gambling Issues*, *International Gambling Studies*, and *Gambling Research*), plus several journals in the addictions field that regularly publish papers on problem gambling. An examination of the content of these journals found very few references to OC. We have chosen this topic precisely because it has, despite all the folklore, received little in the way of serious scholarly attention.

It is our hope that this literature review will draw attention to this understudied topic and that our preliminary efforts will be of use to those endeavoring to fill this gap in the current state of knowledge. The length of the reference section of this paper suggests that in fact there is a rich literature on the link between gambling and OC. However, few of these sources specifically focus on the link. Instead we had to pull information together

from a variety of sources. Information on the relationship between gambling and OC can be divided into six main types of sources:

1. accounts that can loosely fall under the heading of "participant observation" or are detailed accounts of the lives of crime figures (e.g., biographies);

2. information provided by law enforcement agencies;

3. academic studies (e.g., psychology, sociology, and economics) that either look at crimes committed by pathological gamblers or assess the impact on crime rates of expanding legal gambling;

4. summaries of historical information;

5. commission reports that summarize information from various sources and make recommendations regarding policy; and

6. films that have provided relatively accurate depictions of traditional OC.

In Table 1, the sources cited in this paper are grouped into these six general categories. None of these sources is ideal. Participant observation reports, such as Henry Hill's description of his life in a mafia family (e.g., Pileggi, 1986), offer a rich source of information. These can range from popular story-telling, such as the account given by Clarke (1929), to texts that are far more scholarly (Ianni & Reuss-Ianni, 1972). However, such accounts are often suspect given that personal contact is unavoidably opportunistic and anything but systematic, and also that authors may not be free to divulge everything they know. The approach does, however, generate information that could not be gathered in any other way. Conversely, reliance upon reports and the testimonies of law enforcement officials entails, essentially, reliance upon information compiled for purposes other than scholarship: the apprehension of criminals. This alone is a huge limit, as the information offered is invariably selective. Another limit involves an unavoidable professional bias: law enforcement agents will have emotional as well as budgetary reasons to exaggerate the extent of crime in any sphere. Without meaning to disparage any individual's integrity, one should at least take this *possible* bias into account when combing through such material. Academic research papers tend to focus on crime in general rather than on OC. They often involve computing the number of charges laid in an area to determine the impact of a new gambling facility or estimate the portion of crimes by pathological gamblers committed to finance their addiction. As such, they deal with the reported crime itself, rather than the organization that may lurk in the background. In addition, studies of prison samples typically combine pathological gamblers with subclinical problem gamblers and as such may not differentiate between the prey and the predators who take advantage of them. Summaries of historical information range from the sensational to the scholarly. Commission reports often encompass a range of information from anecdotes to statistical summaries. Their

information is usually second-hand in that it summarizes information from other sources; however, these reports are invaluable for bringing together the various sources of information and for their role in setting policy. In addition, we discuss a few of the films that have examined OC. In this paper, we only examine films that are largely based on historical evidence. These are used, in part, to add color to the paper, but also to highlight popular conceptions. The latter, if nothing else, has generated an atmosphere that may have affected scholarship. This literature review has been designed to provide the reader with a range of sources and hence the opportunity to reach informed conclusions.

This review has eight sections: 1. An overview of OC; 2. Definitions of OC and gambling; 3. History; 4. Gambling and its relation to crime in general; 5. Scope and nature of OC involvement; 6. Social impact; 7. The contemporary setting; and 8. Directions for future research.

An overview of OC

Crime and the emergence of order

Organized gangs of criminals, such as pirates, have existed throughout history (Banting, 2006). However, in the early 1950s, the well-known Kefauver report on OC (U.S. Senate Special Committee, 1951) identified what was then a new, and sophisticated, approach to criminal behavior. While texts emphasizing the continuity of OC practices throughout the last few centuries can be found (Asbury, 1938; Banting, 2006; Johnson, 1992; Peterson, 1983), and though some continuity is clearly undeniable, current discussions of OC tend to focus on this early and mid-20th century manifestation of OC. The new form of organization emerged primarily during alcohol prohibition and often achieved monopoly control over illicit products and services such as drugs, gambling, and prostitution. It was a form of criminal organization made possible through advances in travel and communication technologies, such as the wire services integral to bookmaking.

Organization

By its nature, OC is opportunistic. According to Schelling (1967), criminals organize in response to how strongly the laws against an activity are enforced. If a product is too widely available, criminal monopolies cannot be formed. In this view, there is some optimal degree of enforcement that attracts criminal monopoly. On the other hand, Skaperdas (2001) has discussed how OC "emerges out of a power vacuum that is created by the absence of state enforcement," and how it in fact provides "primitive state functions" in lieu of legitimate authority (p. 1). If a product is in high demand, but is prohibited, contracts along the supply chain from primary producer to consumer cannot be enforced through the normal legal channels, creating a power vacuum that is filled by OC (Skaperdas, 2001). One can also view OC's role in economic terms. For instance,

Boulding (1973), though not directly focusing on OC, has discussed in general terms how the absence of legitimate enforcement of contracts (in spheres where there is no legal legitimacy) provides an opportunity for enforcement by alternative actors. In addition, immigrant and other socially disadvantaged groups may not feel that they have access to legal authorities and government services. The police and the justice system are often viewed at best as indifferent to their welfare or even as agents of repression (Skaperdas, 2001). As a result, the people may be willing to cooperate with an alternative system of ethnically based gangs. This theme is depicted in the film *The Godfather* (Ruddy & Coppola, 1972).

There were important differences between the new organized groups that emerged at the beginning of the 20th century and older forms of OC, such as pirates, including the hierarchical structure of the newer organization, the specialization of members into different roles, and the strict code of conduct observed by members (de Champlain, 2004). For example, in an Italian Mafia group, or "family," the members had only limited knowledge of the hierarchy of the family, and only the most trusted associates were made into official members (de Champlain, 2004). As well, the management of the family was usually not involved directly in crime, thereby insulating the management from police authorities. This is the type of OC, popularized in movies such as the *Godfather* (Ruddy & Coppola, 1972) and *The Godfather II* (Coppola, 1974), that has come to be known as Mafia or Cosa Nostra. Interestingly, some authors have argued that the very existence of the Mafia is debatable (Albanese, 1989; Drzazga, 1963), a view also expressed by some alleged members of the organization.

Understanding OC requires a grasp of its structures, networks, and hierarchies. Contrary to some cinematic depictions (e.g., *The Godfather*, Ruddy & Coppola, 1972), according to de Champlain (2004), Italian crime "families" were not usually related to each other by blood. Instead, membership and progress through the hierarchy was determined by merit. At the bottom were the associates who worked for the various enterprises run by the family. Close associates would run businesses and pay their tribute to the local family. A soldier was an official member of the family. Men of Italian descent would be invited to join a crime family based on merit and loyalty. To become a soldier or a *made man*, the initiate would have to swear an oath of secrecy and loyalty. The soldiers worked under the directions of a *capo*. The capo in turn reported to the underboss, who reported directly to the boss. The boss ran the family with the help of the underboss and *consigliere* (an advisor). The consigliere was also available to the ordinary member as an advisor or advocate. In some cases, the local boss would report to the boss of another family (usually one of the New York families), and all families respected the commission of families also known as the Syndicate. De Champlain's (2004) description of the organization of the Italian Mafia is based on accounts by former members and associates who had turned state's evidence and then written accounts of their criminal activities (e.g., Henry Hill, whose criminal career was described by Pileggi (1986) and depicted in the movie *Goodfellas* (de Fina & Scorsese, 1990)).

Visibility and ethnicity

Some organized criminal groups are easily identified (e.g., outlaw motorcycle gangs), others wear clothing to make themselves easy to spot for those familiar with the gang (e.g., the Bloods wear red bandanas; Banting, 2006), while other gangs try to be inconspicuous (e.g., the Italian Mafia). Traditional organized crime (TOC) often refers to activities governed by Italian mobsters (Criminal Intelligence Service Canada (CISC), 2003). Some Italians have rightly objected to the strong emphasis placed on Italian organized criminals in the media (Albanese, 1989; Drzazga, 1963; Woodiwiss, 1988). In fact, OC is a worldwide phenomenon that involves many different groups. Banting (2006) describes a number of groups, including gangs originating in the former Soviet Union, Japan (Yakuza), China (the Triads), Columbia (drug cartels), and Jamaica (the Yardies). Less is known about the detailed hierarchy of many of these other crime organizations. Banting (2006), however, does describe the history of the Yakuza and the Triads and lists the 36 rules of conduct for the Triads.

Canadian authorities (Ogrodnik, 2002) identify several groups as running organized criminal activities within Canada. These include Asian, Italian, Aboriginal, and Eastern European-based OC groups, as well as outlaw motorcycle gangs and street gangs. In recent years, law enforcement has become aware of cooperation between various criminal groups and also of emerging criminal groups of a multiethnic nature.

Underreported crimes

According to Ogrodnik (2002), OC is often underreported. First, many of the crimes are consensual, as the target is a willing partner in the offence. These include crimes such as running a gambling house, selling drugs, running a house of prostitution, corrupting authority figures (e.g., the police), illegally importing and exporting, loansharking, smuggling illegal immigrants, and selling guns. The customers are typically willing participants and may not view themselves as victims (p. 33). Second, by their very nature, OC groups operate in secrecy. This secrecy is often enforced by intimidation and violence. Third, it is often difficult to determine if a particular crime is related to OC, in part because the links between a particular crime and the overall structure of the organization are intentionally obscured by the criminal organization. For example, a police officer might not necessarily know if a motor vehicle theft was a case of joyriding or perpetrated by a street gang on behalf of a larger criminal organization for export (Ogrodnik, 2002, p. 12).

Definitions of OC and gambling

OC

For the purposes of this paper, a single exhaustive definition of OC is unnecessary. Our goal, after all, is to introduce the reader to a range of sources rather than to any kind of consensus. We will, however, start with a definition provided by Jay Albanese after that author surveyed the many opinions on this topic: "Organized crime is a continuing criminal enterprise that rationally works to profit from illicit activities that are in great public demand. Its continuing existence is maintained through the use of force, threats, and/or the corruption of public officials" (Albanese, 1989, p. 5). Interpol (2007) defines OC as "Any enterprise or group of persons engaged in a continuing illegal activity which has as its primary purpose the generation of profits irrespective of national boundaries." In the United States, the Federal Bureau of Investigation (FBI) (2007) offers the following: "The FBI defines OC as any group having some manner of a formalized structure and whose primary objective is to obtain money through illegal activities. Such groups maintain their position through the use of actual or threatened violence, corrupt public officials, graft, or extortion, and generally have a significant impact on the people in their locales, region, or the country as a whole." The National Criminal Intelligence Service (NCIS) in the United Kingdom specifies that the group must consist of at least three people, be involved in serious criminal offences for a prolonged or indefinite period of time, and be motivated by profit or power (Banting, 2006, p. 2). These definitions are useful but do not necessarily differentiate OC from other criminal activity. For example, the Bonnie and Clyde gang fits the NCIS definition (see Banting, 2006), but their disorganized spree of bank robberies was very different from what we normally think of as traditional OC. Typically, definitions will hinge upon a party's interests, be they intellectual, economic, political, or other. As noted in one U.S. policy document, "there are as many definitions of organized crime as there are reasons to define it" (U.S. National Commission, 1976, p. 170).

The difficulties in distinguishing between OC and "regular" crime need not, on their own, preclude a discussion of OC. Scientific inquiries, for example, have a long tradition of accepting what are called "working definitions" — the idea being that despite a lack of consensus on the meaning of terms and concepts, one can still proceed with a study. Essentially, there is more than one way to define OC — and given the fact that a degree of organization is endemic to most criminal activity, such confusion should not be surprising. Our intention here is simply to review the literature, thereby directing readers to a range of opinions. Nonetheless, we offer four considerations that should not be overlooked.

1. Anderson (1979) has pointed out that, unlike a business firm, an OC operation can simply be a group of individuals dealing with assorted ventures (Anderson, 1979; Ianni, 1971a, 1971b). That is, the group need not be thought of as a single business. In fact, according to de Champlain (2004), a crime "family" runs a wide assortment of small-

scale enterprises. The day-to-day operation of these businesses or rackets might be run by the low-level members (soldiers) directly, or by associates who pay tribute to the family. The wide variety and small-scale nature of the operations insulate the family from legal prosecution. If the police raided any one business, the loss would be small. The business operated by a family may be legal (e.g., a bar or nightclub) or illegal (e.g., an underground casino or drug distribution network), or it might be a legal operation that also engages in illegal activities (e.g., importing legal and illegal products).

2. Perhaps the central defining characteristic of modern OC is the sophistication made possible by modern technologies. This is evidenced by how, since its inception in the early 20th century, OC activity has necessitated comparable sophistication in the sphere of law enforcement. Tactics such as prolonged surveillance and wiretapping have consistently been necessary (Woodiwiss, 1988).

3. Another necessary feature seems to be corruption: without cooperation from at least some politicians, police, or other key figures, OC as we have come to know it could not exist (Peterson, 1983).

4. As noted below, numerous studies have shown a strong link between criminal behavior and gambling. For the field of gambling studies, it is important to distinguish the extent to which offenders gamble because they have a psychiatric disorder (the prey) from the extent to which they gamble or offer gambling opportunities in order to take advantage of others (the predators). Organized criminals are often the suppliers of illegal gambling opportunities, and pathological gamblers are (for obvious reasons) an important part of their client base.

Gambling

Gambling can be viewed as the act of risking money (or equivalent) on an uncertain chance of winning a larger amount of money (or some other good). Gambling may involve some element of skill (e.g., poker, horse track bets) or be determined by pure chance (e.g., slot machines, lotteries) (see Turner & Fritz, 2007). In nearly all cases, the long-term expected result for the player is a loss. The percentage taken from various games ranges from around 1% of each bet for some popular table games to about 50% for a typical lottery. In this paper, we use the term *gambling* specifically to refer to games of chance such as lottery tickets, raffle tickets, instant lotteries, bingo, horse race betting, sports betting, and casino games such as roulette, blackjack, poker, and electronic gambling machines. In addition, speculative investments on the stock market (e.g., shorting commodities) can often be a form of gambling. Gamblers Anonymous (GA) advises its membership: "Don't gamble for anything and this includes the stock market, commodities, options, buying or playing lottery tickets, raffle tickets, flipping a coin or entering the office sports pool" (Gamblers Anonymous International Service Office (GAISO), 1999, p. 17).

Illegal gambling

In Canada, gambling itself is not illegal. As mentioned, private bets between individuals (e.g., card games, sports bets) are legal. Rather, the Criminal Code of Canada (2008) focuses very much on controlling the venues that are allowed to offer gambling. Typical examples of illegal gambling venues are sports books, cards rooms (often located in the back rooms of or above restaurants), numbers games (e.g., unlicensed lotteries), underground casinos, dogfighting rings, and unlicensed gambling machines.

The legal issues related to gambling are complicated by the differences in the legal status of different games in different provinces (Smith, Wynne, & Hartnagel, 2003). Smith et al. (2003) state that "gambling is an elusive legal term in Canadian society because, depending on the game and circumstances surrounding it, a variety of legal statuses are possible" (p. 8). For example, "eight of the ten provinces allow video lottery terminals (VLTs), but Ontario and British Columbia … forbid the machines."

Enforcement is also complicated by the public's attitude toward a game. The police rely heavily on public tips and complaints in order to determine that a crime has occurred (Campbell & Marshal, 2007). However, for a variety of reasons many people may participate in illegal gambling schemes that they do not perceive as illegal, such as 50/50 draws organized for a wedding (see http://www.mgcc.mb.ca/charitable_raffle_faqs.html), locally organized numbers games (Anderson, 1979; Dunstan, 1997), or sports books run by friends.

For the purposes of a study of OC's relation to gambling, the most important definitional consideration is probably a practical one. As the following sections will make clear, gambling has long been the linchpin of OC. Even if loansharking has at times been comparable to gambling in importance, gamblers are often a loan shark's most important clients. Clarke (1929) provides insight into this matter: typically, *organized criminals prey upon those who want something for nothing* (pp. 58–59). Gambling can be thought of as an attempt to substitute risk for labor in the pursuit of gain, a pursuit that often backfires. Consequently, gamblers are often the best customers of OC.

History of gambling and crime

As mentioned, OC as we have come to understand it emerged with the advent of modern communication and travel technologies. Yet there has been some continuity and, whether organized or "disorganized," and whether or not gambling served as the main source of income, the criminal underworld has been dominated by gamblers since well before the 20th century (Asbury, 1938; Clarke, 1929; Peterson, 1952, 1983; Schwartz, 2006). Given that crime is a risky endeavor, this should not be surprising. More important, attitudes toward gambling have certainly been affected by its popularity among criminals. And the current state of available literature on gambling and OC cannot be understood without at least some grasp of these attitudes. From popular stories and romanticized outlaws to

prohibitory legislation, North America has found many ways to express its ambivalence toward vice. Bloch (1962, p. 355) discusses this longstanding ambivalence to gambling and states that Americans who may be against "gambling within their own jurisdictions do not hesitate to enjoy and encourage such facilities elsewhere" (p. 355). Turner et al. (2007) have identified OC activity and stealing from casinos as major themes in the overall depiction of gambling in film.

In his history of drinking in America, Rorabaugh (1979) identifies his nation as one infatuated with two things: money and salvation. Gambling has long had a special place in the realm of sin and spirit — complicated perhaps by a culture obsessed with money. Whereas polytheist religions are often receptive to gambling (Binde, 2007) and use it as a means of discovering one's fate, monotheist religions such as Christianity and Islam tend to condemn gambling (Schwartz, 2006). The Roman Catholic Church views games of chance as sinful only when played to excess, leading to deprivation. The first Puritans to settle in America were more stringently monotheist than their Catholic and Anglican counterparts. For them, God's will was completely beyond human comprehension. Yet this entailed a paradox: God's will, divine providence, is the attribute to which Puritans paid the most attention. Financial success, for example, was seen as divine providence, the reward for hard work and faith. Games of chance were thought sinful because they trivialized providence (Miller, 1939, pp. 10–11, 30; see also Winship, 1996).

As with many vices, the American attitude has often been more judgmental than in other parts of the world. According to Binde (2007), antigambling Christian sentiment associates gambling with greed, demonic forces, cosmology, and a fatalistic, or occult, alternative to Christianity. Dunstan (1997) traces current disagreements over gambling back to colonial times: in non-Puritan colonies, gambling was acceptable (see also U.S. National Commission, 1976). Rose (1991) describes how public sentiment in the United States toward gambling has shifted from progambling to antigambling in at least three distinct waves. We are currently living in the third wave of legalized gambling (Rose, 1991). When gambling is legal, its consequences generate more negative attitudes toward gambling. When gambling is illegal, people forget the consequences and demand more liberal laws. In addition, when gambling is illegal, the unsatisfied demand for gambling creates a market niche often filled by illegal gambling.

These tensions have been compounded by other currents specific to the North American continent: Findlay (1986) argues that gambling was consistent with the adventurism and risk-taking common to a frontier spirit and was popular for this reason. Many heroes of the old west were famous for their gambling exploits (e.g., Wyatt Earp; Asbury, 1938). Asbury (1938) describes the gradual westward drift of professional gamblers from the eastern seaboard to the Mississippi and then on to California. Professional gamblers were typically cheats who used a number of means to swindle their customers (Asbury, 1938; Dunstan, 1997). Already in the late 19th century, the stories of gamblers and outlaws were popular in dime novels (Oriard, 1991), and this trend continued into the 20th century (Asbury, 1938; Clarke, 1929; Coates, 1930). However, a parallel trend has

demonized gambling by exaggerating the link between gambling and crime, which is most clearly shown in the abundance of films about criminals in charge of casinos (see Turner et al., 2007)

Perhaps the greatest flowering of gambling in 19th-century America occurred under the auspices of OC in the large cities of the eastern seaboard. Asbury (1928, 1938) describes how large gangs in New York City, with the cooperation of corrupt government officials, ran numerous gambling venues around the city. Although officially illegal, these casinos operated openly, and the police had well-defined fees that they charged to turn a blind eye. One of the most notorious gambling barons was John Morrissey. He was so successful that he eventually became a Democratic State Senator and U.S. Congressman from New York. However, by the late 1890s, the tide of public opinion had turned against the casinos and the political corruption that profited from them. Gambling was forced underground by the early part of the 20th century (Asbury, 1938; Schwartz, 2006; Turner, Howard, & Spence, 2006).

For the purposes of a contemporary discussion, it is the kind of OC that emerged around the 1920s — along with its relation to gambling — that is of interest. As mentioned, general accounts of OC that also touch on gambling are abundant (Albanese, 1989; Banting, 2006; de Champlain, 2004; Ianni, 1974a, 1974b; Ianni & Reuss-Ianni, 1972; McIllwain, 2003; Peterson, 1952, 1983; Reid & Demaris, 1963; Richter-White, 2003; Tyler, 1962). Figures such as Capone, Siegal, Luciano, and Rothstein are by now legendary (Banting, 2006; Clarke, 1929; de Champlain, 2004; Katcher, 1958; Short, 1984), and it is no secret that OC as we know it today received its major opportunity for growth during Prohibition. During this period, underground casinos and other gambling venues were one of the means for the distribution of alcohol. After repeal, organized criminals returned to gambling as a main source of revenue (Anderson, 1979; California Attorney General, 1971; de Champlain, 2004; Monkkonen, 1992; Thompson, 1997; Zendzian, 1993), but added to gambling the distribution of illegal drugs and the infiltration of labor unions (de Champlain, 2004).

Authors often use Las Vegas as a prototype for lessons learned and how, given its early association with mob rule, to avoid criminal control (Hsu, 1999; Johnson, 1992; Johnston, 1992; National Gambling Impact Study Commission, 1999; Skolnick, 1978; Woodiwiss, 1988). Discussions of that city's post-Prohibition OC history are readily available (Banting, 2006; de Champlain, 2004; Denton & Morris, 2001; Pileggi, 1995; Reid & Demaris, 1963; Roemer, 1990, 1994; Short, 1984; Tyler, 1962). In the 19th century, gambling was widely available in bars and saloons. However, territories such as Nevada were forced to outlaw gambling in order to be recognized as states (Asbury, 1938). In 1931, though, Las Vegas legalized casino gambling as a depression-fighting measure (de Champlain, 2004). Promoters who once had conducted illegal gambling operations were the first to operate legal establishments (Campbell & Marshal, 2007). For a discussion of states' rights in the United States, and how this autonomy made it possible for Nevada to legalize "sin," see Ostrander (1966). Until the 1970s, law enforcement in

Las Vegas was weak and corrupt (Denton & Morris, 2001; Pileggi, 1995). According to de Champlain (2004), to avoid a territory war, the Cosa Nostra treated Las Vegas as an open territory. In addition, they prohibited any murder within Las Vegas in order to make it a "safe and quiet place for gamblers and tourists" (p. 191).

A good chronology of legalized gambling can be found in Thompson (1997, pp. 89–105) (who also identifies gambling-related websites and periodicals and provides an annotated bibliography as well as an annotated list of films with gambling themes). Another excellent resource is the Kefauver report (U.S. Senate Special Committee, 1951), which has extra value in that OC and its involvement with gambling are addressed city by city. Other authors have discussed the pros and cons of gambling's legal status in the 20th century prior to the more recent trend toward legalization (Albanese, 1989; Anderson, 1979; Beare & Hampton, 1983; Hsu, 1999; Johnson, 1992; Johnston, 1992; Monkkonen, 1992; Peterson, 1951; U.S. National Commission, 1976; Weinstein & Deitch, 1974; Woodiwiss, 1988; Zendzian, 1993).

The amount of actual control that OC exerted in Las Vegas is debatable (Fidance, 2009). By 1999, the National Gambling Impact Study Commission (1999, p. 3-1) confidently stated that effective state regulation and the takeover of much of the gambling industry by public corporations had eliminated OC from the direct ownership and operation of casinos. This new "era" can loosely be identified with the late 1970s and the sanitization of gambling in Las Vegas. Between 1980 and 1996, Las Vegas reported a 41% decrease in its crime rate (Hsu, 1999). This transition from mob-run gambling to corporate gambling is described by Pileggi (1995; see also de Fina & Scorsese, 1995). With North America's major gaming center no longer under mob control, by the 1990s it was easier to render gambling more acceptable elsewhere (Burbank, 2000). Interestingly, the idea that the mob no longer controls casino gambling has not reached Hollywood. Turner et al. (2007) found that references to OC were quite numerous in films about gambling. Some commentators have claimed, however, that OC still plays a major role in Vegas, albeit more clandestinely (Johnson, 1992; Johnston, 1992; Mahon, 1980). These sources, however, are dated, and current OC involvement in the Las Vegas casino industry might no longer be as significant as it is alleged to have been in the 1980s and early 1990s.

Two offshore locales played a key role in the mid-20th century gambling expansion: Cuba and the Bahamas. Under Batista, Cuba was a haven for North American gangsters and their gambling rackets (Cirules, 2004). When Castro put an end to this arrangement, many interests relocated to the Bahamas and, eventually, Atlantic City (Block & Scarpitti, 1986; Demaris, 1986; Mahon, 1980; Zendzian, 1993). Tales of CIA attempts to assassinate Castro, with the help of disgruntled gangsters, add even more color to this development (Rappleye & Becker, 1991). Another such mid-20th century "migration" involved Montreal (Humphreys, 1999; Lamothe & Humphreys, 2006). Many OC gambling operators fled the United States for Montreal during and after the Kefauver inquiries into OC (U.S. Senate Special Committee, 1951).

Atlantic City presents another popular topic in the literature (de Champlain, 2004; Demaris, 1986; Goodman, 1995; Hakim, 1985; Hsu, 1999; Johnston, 1992; Mahon, 1980; Sternlieb & Hughes, 1983; Thompson, 1997; Zendzian, 1993). Though, with New Jersey passing legislation to allow casinos in the late 1970s, and the "action" really beginning in the 1980s (Demaris, 1986), we would classify this as a contemporary development, better addressed in the following sections.

Gambling and its relation to crime in general

The predominant correlation between gambling and crime is also the most obvious: some forms of gambling are illegal. Coontz (2001) claims that while betting on sports is illegal in every U.S. state except Nevada, it may also be one of the most common forms of gambling in the United States The same point has been made elsewhere (Beale & Goldman, 1975; Lamothe & Humphreys, 2006). Questions arise pertaining to the extent to which media and other institutions are complicit, with newspapers for example carrying odds and lines in sport sections (Wexler, 2008). It has been argued that if forms of illegal gambling are accepted by large sections of the public, tolerance for other forms of criminal behavior may also increase (Anderson, 1979; Dunstan, 1997; Ianni, 1974a, 1974b; International Gaming Institute, 1996; Lasswell, 1972; Liddick, 1999; Light, 1977; Schatzberg, 1993; Schatzberg & Kelly, 1996; Weinstein & Deitch, 1974). Longstanding issues addressed in the literature include the corrupting effect the acceptance of illegal gambling can have on police and other officials (Beale & Goldman, 1975; Dixon, 1991; U.S. Senate Special Committee, 1951; Pace & Styles, 1975; Peterson, 1951; Tyler, 1962) and an ensuing tolerance of other illegal activities (Albanese, 1989; Drzazga, 1963; Ianni, 1974a, 1974b; Knapp, 1972; Liddick, 1999; Reid & Demaris, 1963; Schatzberg & Kelly, 1996; Steffensmeier & Ulmer, 2006).

Numerous authors have debated the merits and problems of legalization as a solution to the above dilemma, with heated discussions over the extent to which gambling is inextricably associated with crime. For example, Clarke (1929) argued that "if the state ran gambling houses an Arnold Rothstein wouldn't be possible" (p. 18). However, it has also been argued that legal gambling will simply render illegal forms of gambling more acceptable to the public (Anderson, 1979, p. 145; Beale & Goldman, 1975; Lamothe & Humphreys, 2006; Sternlieb & Hughes, 1983; Thompson, 1997, p. 67; Weinstein & Deitch, 1974). Recent trends toward legalization have provided a focal point for queries into gambling's relation to crime (Campbell, Hartnagel, & Smith, 2005). The issue is contentious. Grinols (2000) examined crime statistics for all 3,165 counties in the United States for 20 years beginning with 1977 and found that 12.4% of the crimes observed in casino counties would not have occurred had casinos been absent. A similar picture emerges for violent crimes.

As mentioned in the introduction, police sources often emphasize a link between crime and gambling with little qualification (Edelman, 1982; Florida Law Enforcement Releases, 1995). According to Edelman (1982), "In the gambling capital of the east,

crime is rising with every throw of the dice" (p. 41). The author is of course referring to Atlantic City, a focus for much of the literature on the merits of gambling legalization. This is to be expected: New Jersey was a trendsetter, legitimizing casino gambling over a decade prior to similar developments elsewhere. Texts offering strong associations with crime and corruption in that city are abundant (de Champlain, 2004; Demaris, 1986; Goodman, 1995; Hakim & Buck, 1989; Johnston, 1992; Mahon, 1980; Sternlieb & Hughes, 1983; Zendzian, 1993). Some of these associations are questionable. For example, Demaris (1986) identifies a strong mob presence in that city, yet also acknowledges that Atlantic City had a significant OC presence well before the legalization of casino gambling. For a good discussion of a range of opinions (not limited to Atlantic City), see Thompson (1997).

A large number of studies have focused on the introduction of gambling in Atlantic City because it was a unique situation of changing from little legal gambling to wide-open gambling within a short period of time. Sternlieb and Hughes (1983); Friedman, Hakim, and Weinblatt (1989); and Hakim and Buck (1989) argue for a positive relationship between the presence of casino gambling and crime rates and a spillover of crime to communities surrounding Atlantic City. However, other authors have argued that the higher incidence of crime in Atlantic City was in large part due to increases in the number of visitors (Albanese, 1985; Gazel, Rickman, & Thompson, 2001). Ochrym (1990) has argued that nongaming tourism would have similar consequences for a community (Ochrym, 1990, p. 127; see also Albanese, 2003). Miller & Schwartz (1998) found correlations between casinos and local street crime to be anecdotal and inconclusive, arguing as many do that such increases are consistent with greater general activity associated with other tourist attractions. Phipps (2004) and Davis (2006) also found the evidence for a correlation between casinos and crime to be inconclusive.

Campbell and Marshal (2007) note that it is difficult to find objective data on the link between gambling and crime. Part of the problem is that the needs of police simply do not match those of social scientists. Their goal is to acquire evidence sufficient to sustain criminal charges, not to determine the background issues of the case. Campbell and Marshal (2007) list a number of factors (or filters) related to the reporting of a crime statistic. For example, someone has to perceive an activity as a crime, the person has to call the police, the police have to respond to the call, and then the police have to write up a report. Other factors can affect the chance of the police noticing the crime. These authors also note that the introduction of a new gambling venue will often lead to more pedestrian and car traffic that may require more policing. As such, the police may be more likely to notice crimes that would have occurred anyway.

There are several links between gambling and crime. Smith et al. (2003) offer four categories of criminal offences related to gambling:

> (1) illegal gambling — gambling activity that is counter to Criminal Code of Canada statutes, such as bookmaking, keeping a common gaming house, and cheating at play; (2) criminogenic problem gambling — such as forgery, embezzlement, and fraud, typically committed by problem gamblers to support a gambling addiction; (3) gambling venue — crimes that occur in and around gambling locations, such as loan sharking, money laundering, passing counterfeit currency, theft, assault, prostitution and vandalism; and (4) family abuse — victimization of family members caused by another family member's gambling involvement (e.g., domestic violence, child neglect, suicide, and home invasion). (p. 8)

Alternatively, Campbell and Marshal (2007) list six major links between gambling and crime. Their first two categories of crime are the same as Smith et al.'s (2003): (1) illegal gambling and (2) criminogenic problem gambling. However, they do not list family abuse as an issue and break down gambling venue crimes into four additional categories: (3) increases in crime specific to the expansion of the casino; (4) crime committed in the venue, such as money laundering; (5) crime committed against the casino or other players, such as cheating; and (6) corruption.

Turner, Preston, Saunders, Mcavoy, & Jain (2009, in press) found evidence to support several of these links between gambling and crime. A majority (65.2%) of the severe problem gamblers in their study reported criminal activity as a direct result of their gambling problem. These crimes tended to involve income-producing crimes such as break and entry, robbery, and theft. However, 37% of moderate problem gamblers and 22% of nonproblem gamblers reported that gambling was part of their criminal lifestyle. For example, some offenders reported that their criminal associates gambled, so they also gambled. Other offenders reported that crime led to a surplus of disposable income that made gambling possible or even necessary (e.g., earning $5000/week and had to spend it somewhere). Many reported gambling in prison, and one respondent said that he had learned bookmaking in jail.

Scope and nature of OC involvement

Gambling as a key venture

According to Moodie (2002), gambling is a key component of many criminal organizations. At a University of Alberta conference, a Canadian law enforcement official said the following:

> Illegal gambling, while appearing to be a minor part of a Traditional Organized Crime (TOC) network, is actually a foundation upon which most other illicit activities are supported. Illegal bookmaking, card dens and video gambling machines are Traditional Organized Crime's main source of revenue. Illegal gambling and related crimes such as loansharking, money laundering and corruption provide working capital to invest in more legitimate enterprises, thereby strengthening their entire illicit operation. (Moodie, 2002, p. 7)

If this is to be believed, gambling should be the backbone of OC, which is precisely how a U.S. senator once put it (King, 1969, p. iii). The literature provides a fair bit of support for that position, demonstrating a remarkable consistency over the years (Albanese, 1989; Anderson, 1979; Banting, 2006; Block & Scarpitti, 1986; Clarke, 1929; de Champlain, 2004; Demaris, 1986; Drzazga, 1963; Dunstan, 1997; Humphreys, 1999; Ianni & Reuss-Ianni, 1972; King, 1969; Lamothe & Humphreys, 2006; Johnson, 1992; Johnston, 1992; Liddick, 1999; Pace & Styles, 1975, p. 112; Pileggi, 1995; Rappleye & Becker, 1991; Steffensmeier & Ulmer, 2006; U.S. Congress Senate Committee, 1961; U.S. Senate Special Committee, 1951; Zendzian, 1993). For many readers, the first counterpoint would involve the relative importance of illicit drugs — an issue to be addressed shortly.

De Champlain's (2004) book on OC describes how the bosses of various families came together to form a syndicate (or commission) to avoid wars and designate territories of operation:

> From then on, gangland wars stopped. New territories were allocated according to everyone's specialties. Meyer Lansky was given Florida and the Caribbean. Benjamin Siegal got California and Nevada for gambling operations. Frank Costello received the slot machines, Bechalter the garment centre, Luciano narcotics and prostitution, and Michael Coppola the numbers racket …. (de Champlain, 2004, p. 19)

This quotation reveals how, when "crime" was divided up in the early 20th century, the larger category of "gambling" required subdivision. This is still the case. From the same text, with reference to the 1990s: "Soldiers can have an interest in more than one business, legitimate or illegitimate — whether it be clubs, restaurants, dice games, usury operations or lottery or bet-taking establishments" (p. 103). Given that hard numbers pertaining to illegal activities will invariably be elusive, such clues to gambling's relative

importance are necessary. As Munting (1996) has pointed out, "By definition the extent of illegal gambling cannot be measured" (p. 30). Nonetheless, there is some quantitative information in the literature. According to Smith et al. (2003):

> It is difficult to precisely gauge the scope of illegal gambling in a jurisdiction; however, revenue estimates rival, and in some cases surpass, those of its legal counterpart. For instance, sports bookmaking is illegal in every American state except Nevada; Nevada's 153 legal sports books handled $2.5 billion in betting action in 1999, whereas the American National Gambling Impact Study (1999) estimates that $380 billion annually is bet illegally on sports events around the nation. By this comparison, Nevada's legal sports betting total accounts for less than one percent of America's sports betting revenues. (pp. 9–10)

The figure of $380 billion may be exaggerated because much sports betting occurs between friends, involving neither a bookie nor OC. However, it suggests a huge potential profit for anyone willing to take the risk of running an illegal gambling book.

Liddick (1999) provides some staggering accounts of the scope of numbers gambling in New York state (esp. pp. 44–45), though many of his law enforcement sources are dated to the mid-20th century. One 1967 estimate has the proceeds of "illegal gambling" in the United States at a net $7 billion (King, 1969). Using the Implicit Price Deflator for 1967 (23.9%) and 2008 (119.7%) (U.S. Department of Commerce, 2008), this figure would translate as roughly $35 billion in today's dollars. However, we will leave it to the reader to decide upon the reliability of this ballpark figure as well as the precision of a category such as "illegal gambling." Demaris (1986) provides a great deal of information, exemplified by the following late-1970s estimate: one OC network supposedly controlled 80% of slot machine sales in the United States (p. 204). Anderson (1979) did a close study of one OC group and found the major activities to be gambling and loansharking, with the former clearly dominant (and, as already mentioned, loansharking generally depends upon gambling). Pace and Styles (1975) identify horse and sports betting as the most profitable OC ventures and provide thorough accounts of how these operations tend to be structured. The Kefauver report (U.S. Senate Special Committee, 1951) discussed mid-20th century OC activities in several major U.S. cities, and one is left with the impression that gambling is the most lucrative of all OC business enterprises. Drzazga (1963) described illegal gambling as "the principal source of revenue for today's hoodlums and racketeers" (p. 14). Conversely, there has been little evidence to suggest that bingo, lotteries, and off-track betting are under serious OC influence (State of California, 1971).

Newer developments are only starting to receive serious attention (McMullan & Perrier, 2003; Schwartz, 2005):

> In Western Canada, video gaming and lottery machines are the newest, and possibly the largest, illicit source of gambling income available to organized crime groups.

> The machines can earn up to $2000 per machine, per week, making this an extremely lucrative business. The cost of the machines ranges between $2500 and $5000 and is quickly paid off. Organized crime groups including the Hells Angels, Asian-based organized crime, Traditional organized crime, and East European-based groups are all involved in the illegal operation of these machines. (CISC, 2000, p. 33)

Other developments are only starting to be understood. Smith et al. (2003, p. 9) describe online gambling as "a rapidly growing phenomenon that is becoming an enforcement challenge for police and law enforcement." The unregulated nature of Internet gambling provides an opportunity for OC to profit from gambling (Pontell, Geis, & Brown, 2007; Banting, 2006; see also Behnam, 2007). Attempts to prohibit Internet gambling may lead to greater involvement by OC (Schelling, 1967; Skaperdas, 2001). In addition, gambling on the Internet may provide an easy means for money laundering (National Gambling Impact Study Commission, 1999). In particular, issues such as the lack of "uniform international law and oversight or regulatory regime, the fluidity of funds crossing international borders, and the high degree of anonymity" (National Gambling Impact Study Commission, 1999, pp. 5–6) have been identified as particularly problematic regarding Internet gambling.

Another interesting development is Internet hacking attacks, which can involve extorting money from sports and gambling websites (Germain, 2004). In these attacks, online gambling websites receive threats containing demands for money. If the money is not paid, the site becomes the target of "distributed denial-of-service (DDoS) attacks that would shut down the targeted Web site." OC figures are also involved in identity theft and Internet fraud (Banting, 2006). Another technique known as "black-holing" redirects users who are trying to access targeted financial and gaming websites to an identical-looking site run by the thieves. The visitors log in, and their user IDs and passwords are collected by the thieves. The visitors are passed back to the real location (Germain, 2004) and likely will not know they have been hijacked. While the perpetrators of such schemes are often hard to trace, such attacks may at times be directed at gambling sites for another reason: the uncertain legality of these sites could compromise recourse to legal action against the attackers. This is a question worth exploring, for there are certainly precedents for shakedowns aimed at businesses that specialize in "sin." Historically, sin trades such as gambling, prostitution, and drug dealing have often been directly controlled by OC, or at least forced to pay tribute, for the very same reason.

Given that thorough quantification is an unrealistic expectation even with legitimate industries, the goal is simply impossible with criminal activities. The following figure, while impressive, highlights the need for very rough estimates: the British Internet security firm mi2g "estimates that $200 billion is channeled through untraceable man-to-man financial networks" (Germain, 2004).

One approach to gauging the relative importance of gambling to OC is a review of the literature itself, and as mentioned we have found that informal treatments of OC tend to focus more on gambling than on any other activity. Clarke (1929) discusses the career of Arnold Rothstein, and the book clearly presents gambling as primary. Given that Rothstein himself was a gambler first and foremost, this may not be representative. Pace and Styles (1975) deal with OC in general, and in the index gambling and drugs get roughly equal footage. The authors do, however, identify gambling as more profitable (p. 112). In his treatment of Johnny "Pops" Papalia, Humphreys (1999) mentions gambling before discussing any other criminal activity (p. 3) and mentions another point we have already raised: even where gambling is not a mob figure's main activity, he is likely to engage in loansharking with gamblers as his most important clients. General OC accounts — not explicitly focused on gambling — such as those by Anderson (1979), Banting (2006), and de Champlain (2004), leave the reader with a strong, though arguably anecdotal, impression that gambling is OC's main activity.

Low priority for law enforcement

In a report written for the U.S. Justice Department, Fowler, Mangione, and Pratter (1978) complain how gambling laws are often a low priority for law enforcement officials and that resources devoted to dealing with them are scant. OC is often underreported because vice-type offences (e.g., prostitution, gambling, and drugs) generate few if any complainants or witnesses and are hence less likely to be reported to the police (Ogrodnik, 2002, p. 22). Campbell and Marshal (2007) also discuss this matter. One difficulty is that the police often rely on the general public to report a crime. In the case of gambling, the customer is often a willing participant in the crime, which rules out one of the main sources of information for the police.

Gambling is viewed as hard to regulate and prosecute — with prosecutors themselves often poorly motivated — in comparison to other activities (Fowler et al., 1978; Knapp, 1972; Pace & Styles, 1975; U.S. Senate Special Committee, 1951). Even if charges are laid for running illegal gambling venues, a conviction may not follow. Dewhirst (2006), a retired police officer, notes on a Listserv for gambling treatment and research professionals that it is often difficult to get a conviction in a case of illegal gambling. During a trial for running illegal gambling venues, he heard a judge ask, "How is this different from the casino?" The judge's wry grin in reaction to the Crown's response, "They are legal," indicated that the fines would be lowered.

The difficulties with detection, arrest, and prosecution may help to explain the seemingly little attention Canada's Criminal Intelligence Service devotes to gambling in many of its reports on OC. The reports from 2003 through 2006 (CISC 2003, 2004, 2005, 2006) barely deal with gambling. The 2005 report, when listing types of crime, provides "drugs" with six subheadings, whereas gambling gets no corresponding mention. The 2006 report lists six types of crime, and gambling is not one of them. These breakdowns, with respect to space and categorization, are clearly at odds with the allocations provided

in the sources listed above, reflecting political and budgetary realities that should be taken into account when scrutinizing many official documents.

A harmless vice

De Champlain (2004) states that OC focused on gambling in part because it was not considered a priority with law enforcement officials. Our review of official documents seems to confirm this view. A theme that consistently resurfaces in the TOC literature is the relative acceptability of gambling compared to the drug trade (Banting, 2006; de Champlain, 2004; Drzazga, 1963; Fowler et al., 1978; Ianni & Reuss-Ianni, 1972). Gambling is viewed as attracting relatively little attention and risk, in contrast to drugs, which attract much more negative political and police attention. The drug trade is often perceived as immoral, dangerous, and hence forbidden in many traditional OC circles (de Champlain, 2004; Lamothe & Humphreys, 2006; Pace & Styles, 1975; Pileggi, 1986). This view is also reflected in popular culture: in the movie *The Godfather* (Ruddy & Coppola, 1972), for example, Don Vito Corleone (Marlon Brando) refuses to get into the drug marketing business because he is worried about losing the cooperation of the politicians and police that he has on the payroll. The issue is also addressed in the film *Goodfellas* (de Fina & Scorsese, 1990). The point is clear: gambling is acceptable whereas drugs are not. To some extent, however, the refusal to get involved in the drug trade may have been more a public relations gimmick. De Champlain (2004) reports that the proscription against the drug trade was violated by some families and that the trade was controlled indirectly through links to other organizations, such as the Sicilian mafia, street gangs, and motorcycle gangs. In addition, other groups, such as the Hells Angels, have no such inhibitions about drug marketing at all (CISC, 2004; de Champlain, 2004).

The significance of gambling to OC groups cannot be understood without a grasp of gambling's many social roles. For example, Banting (2006, pp. 48–49) discusses how gambling enabled one mobster to fraternize with the rich and famous. As well, there is the simple fact that casinos provide an atmosphere that many OC figures seem to enjoy (Beare & Hampton, 1983, pp. 16–17; Johnston, 1992). King (1969, pp. 1–14) even offered conspiratorial explanations for why the gambling and OC connection had not received the attention that it should: apparently, powerful interests would be threatened. Either way, gambling is more likely than drugs to be perceived by the public as "victimless" (Albanese, 1989; de Champlain, 2004, pp. 150–152; Drzazga, 1963; Ianni & Reuss-Ianni, 1972; Pace & Styles, 1975), and this is perhaps more so in recent years given the legalization of many forms of gambling (Burbank, 2000).

It is highly probable that gambling will continue to have a strong attraction for criminals, and for organized criminals in particular. Gambling involves a quest for unearned profit — so even honest gambling has something in common with crime. Further, OC has long had a tendency to follow money — and especially money that flows freely and is hard to trace. Gambling profits can qualify on both counts. Commentators have mentioned that casinos present ideal opportunities for the skimming of profits as well as the laundering

of moneys already earned through crime (de Champlain, 2004; Demaris, 1986; Mahon, 1980; Munting, 1996; Sternlieb & Hughes, 1983; Zendzian, 1993). Arguably, money generated at casinos is harder to monitor than profits at many other businesses, and casinos often provide credit, which criminals can use to finance other ventures (Beare & Hampton, 1983, pp. 11, 16–17; Edelman, 1982). However, this perception of legal gambling venues may be obsolete because today the gambling industry is among the most highly regulated and monitored (National Gambling Impact Study Commission, 1999; see also Collins, 2007). Even as far back as 1985, Albanese found little evidence linking casinos to crime, organized or not. So we strongly advise interested readers to acquaint themselves with a range of perspectives when trying to unravel issues that still rely largely upon the anecdotal for clarification.

Social impact

Most of the issues pertinent to this section, such as the corruption that illegal gambling entails, have already been discussed. This section was written in part to revisit these issues and bring them under a single heading. Still, some new themes are raised.

Problem gambling

So far we have had little to say about problem, or pathological, gambling itself. Though an important topic, pathological gambling is not specific to OC and hence not a proper focus for this study. Nonetheless, a few points deserve mention. As noted above, pathological gamblers do utilize illegal gambling venues and loansharking services. As such, pathological gamblers are probably among the best customers of OC.

According to Abbott, McKenna, and Giles (2005), between one third and two thirds of problem gamblers engaged in treatment or mutual help groups report having committed gambling-related offences. A review of the literature by Williams, Royston, and Hagen (2005) reports that studies have consistently found very high rates of pathological gambling in offender populations. Williams et al. (2005) found that approximately one third of criminal offenders were either problem or pathological gamblers. Approximately 50% of crimes by incarcerated problem and pathological gamblers are reportedly committed to support gambling.

There has been some suggestion in the literature that problem gamblers may be more inclined to gravitate to illegal gaming venues (Weinstein & Deitch, 1974). In a study of the Canadian prison system, Turner et al. (in press) found that offenders were more likely to engage in nonregulated forms of gambling (e.g., private card games, games of skill, sports bets) than nonoffenders.

If a player finds him- or herself in debt to a legal casino, credit card company, bank, or other legal business, he or she can resort to a consolidated loan, credit counseling, or bankruptcy protection. These options may not be open to those who owe money to OC.

Turner et al. (in press) note that many pathological gamblers report that gambling led to their involvement in crime. Several offenders described being caught in a cycle of gambling, followed by debt, followed by crime, and then again by more gambling. One offender reported working as a debt collector to pay off his gambling debt.

In their study of Gamblers Anonymous (GA), Ferentzy, Skinner, and Antze (2007) also found that indebtedness to OC figures (e.g., loan sharks) could have serious effects upon how gamblers in that fellowship pursue their recovery. Engagement with the "Twelve Steps," and other psychospiritual endeavors, is often sidelined in favor of financial matters. As one interviewee put it, "You can't compare an AA or an NA. These are real things you have to address. You don't address them, you may not be walking the earth." Such dilemmas have serious clinical implications, as they are certainly not limited to mutual aid approaches to recovery.

On the other hand, during an informal discussion prior to an interview (Ferentzy, Skinner, & Antze, 2004), one GA member told the investigator that these TOC elements often display a respect for family and the obligations that go with it. According to this GA member, when gambling was primarily under mob control, if a woman were to approach one of the local "wise guys" complaining that her husband's gambling was leaving the family destitute, the husband would likely be barred from games run by that family. Though anecdotal, this information speaks to the difficulties with assessing the normative dimension associated with criminal elements. Regardless of what one chooses to believe, it is too simplistic to paint the ethical distinctions between legal and illegal gambling in black and white terms. It would not be hard to imagine, for example, how something akin to "self-exclusion" could be done more effectively in a setting that is both less formal and more personal.

Responsible gambling initiatives

Another social impact we have yet to mention involves the lack of guidelines when criminals run an operation. Given that the organization is illegal, no legal age limit can be imposed on access to the games. According to Richter-White (2003), OC can increase youths' opportunity to gamble. Youth under the legal age to gamble "could use illegally operated machines or participate in arranged competitive gambling" (p. 19). More generally, legal venues can be forced to comply with regulations regarding responsible gambling initiatives such as age limits, making helpline information available, ensuring that the games are designed and operated fairly, and providing information centers for the customers. No such pressure can be brought to bear on illegal gambling operations. As such, illegal gambling venues may generate a higher percentage of problem gamblers.

However, these problems also have to be weighed against the ability of the legal gambling venues to advertise and draw in new customers. Illegal gambling venues are limited to word-of-mouth advertising. Legal casinos can draw much larger crowds, which may lead to more problem gambling (Room, Turner, & Ialomiteanu, 1999).

Corruption

Gambling has long been associated with corruption of all sorts (Goodman, 1995; Asbury, 1938). For example, bookies have paid college athletes to throw games (U.S. Congress, 1961) and in 1919 paid most of the players of a baseball team to lose the World Series (Clarke, 1929). The exposure of such schemes can be emotionally charged. Such scandals typically involve illegal gambling schemes (National Gambling Impact Study Commission, Statement by William A. Bible, Appendix 1, 1999, p. 2)

Some authors, such as Demaris (1986) and de Champlain (2004), claim that in the 1970s many mobsters were hopefully awaiting casino legalization. Casinos can indeed provide good opportunities for money laundering (CISC, 2000; Munting, 1996), loansharking (CISC, 2000), and many other illegalities (Burbank, 2000; Germain, 2004; Moodie, 2002; Smith et al., 2003). Conspiratorial claims, especially on a smaller scale, are common. Demaris (1986) discusses the bribing of officials in Atlantic City (p. 154). The corruption of police, other officials, and businesspeople of all stripes is, of course, a natural extension of OC involvement with gambling (Beale & Goldman, 1975; Block & Scarpitti, 1986; Dixon, 1991; Fabian, 1990; Ianni & Reuss-Ianni, 1972; Johnson, 1992; Johnston, 1992; Mahon, 1980; Pace & Styles, 1975; Peterson, 1951; Tyler, 1962; U.S. Congress, 1961; U.S. Senate Special Committee, 1951). With certain associations established, people (including police) are "connected," and other criminal acts might then be overlooked (Albanese, 1989; Anderson, 1979; Beale & Goldman, 1975; Drzazga, 1963; Ianni, 1974a, 1974b; Knapp, 1972; Liddick, 1999; Reid & Demaris, 1963; Schatzberg & Kelly, 1996; Steffensmeier & Ulmer, 2006). High-level attempts on a politician's life (in this case Castro) have also been linked to OC and its association with gambling (Rappleye & Becker, 1991).

As mentioned, King (1969) claimed that illegal gambling is often left unexposed because well-placed, powerful individuals are involved. This problem was perhaps even more apparent in the 19th century, where, for example, politicians who were members of New York's famous Tammany Hall social club collected money from local crime bosses (Asbury, 1938), while the police licensed gambling houses even though they were officially illegal. The U.S. National Commission on the Review of the National Policy Toward Gambling (1976) provides a decent discussion of such 19th-century developments.

There is much in the literature to suggest that legalizing gambling venues does not necessarily mean an end to the involvement of OC or of corruption in general. During the 1970s, much of the OC revenue from gambling in Las Vegas came through skimming operations (de Champlain, 2004). Skimming is the practice of stealing monies from a casino's cash boxes, cashier's cages, slot machines, and sports books before they are counted. The book *Casino: Love and Honor in Las Vegas* (Pileggi, 1995) and movie *Casino* (de Fina & Scorsese, 1995) illustrate how the skimming operation worked in Las

Vegas. It cannot be done without the participation and cooperation of casino employees. In addition, de Champlain (2004) discusses the attempts by the New Jersey mob to infiltrate the casinos in Atlantic City through its unions.

Money laundering

Munting (1996) has pointed out that casinos are ideal for money laundering and other fraudulent practices, and many have said the same (Beare & Hampton, 1983; Burbank, 2000; Demaris, 1986; Johnston, 1992; Sternlieb & Hughes, 1983; Zendzian, 1993). Such activities can finance other crimes. However, as Collins (2007) points out, the gambling industry must now follow strict codes of conduct regarding money laundering, including reporting requirements for all transactions over a certain amount (e.g., $10,000 in Canada) as well as any other transaction deemed suspicious. Collins (2007) goes on to say that the industry is regularly tested by the regulators to ensure compliance. Conversely, small wins are routinely paid out without any reporting requirement. According to Smith and Wynne (1999), money launderers avoid detection by making several smaller cash exchanges so as not to arouse suspicion. The scope of all these effects is, of course, impossible to measure.

Benefits of illegal gambling

So far we have focused on the costs of illegal gambling, such as corruption, money laundering, and problem gambling. To be fair, we should also consider the question of what benefits illegal gambling might offer.

The benefits of legal gambling to society are at best debatable. When evaluating the impact of a gambling venue, progambling advocates consistently draw the conclusion that opening a casino boosts the local economy, tourism, employment, or housing market (Grinols, 2007). Often this is accomplished by picking and choosing the numbers carefully to emphasize the improvement in the economy caused by the gambling venue (for an example, see Turner, 2008, p. 40). Grinols (2003) argues that the net benefits of opening a legal casino (e.g., consumer surplus due to short distance to the casino) are outweighed by the negative consequences of gambling, such as problem gambling and criminal activity (see also Grinols, 2004). However, Eadington (2003) has argued that whether it is good or bad for the economy depends on a number of factors, including how we evaluate benefit. Destination casinos may have a net positive impact on a specific community, whereas convenience gambling (e.g., electronic gambling machines at the local bar) may be the least beneficial and most problematic.

Can the same logic be applied to illegal gambling venues? Are they beneficial to the economy under some circumstances? OC gambling can compete with legal gambling, and often the former attracts business by offering tax-free winnings at better odds (Beare & Hampton, 1983; Liddick, 1999). For example, the house edge from a bookie averaged across all gamblers is typically 4.55% (risk $11 to win $10), whereas for a sports lottery

the house edge may be 20% or more. Legally a gambler is still liable to pay tax on the winning, but because illegal gambling venues do not report wins to the authorities, it is unlikely that the player will be caught for tax evasion on gambling wins. Whether any of this can qualify as a "positive" social impact depends upon one's point of view.

Traditionally, the numbers racket (a privately run lottery) has often been run in ways that benefit the local community. This is especially apparent in marginalized communities, such as low-income, inner-city neighborhoods. Numbers or policy rackets were often initiated by respected community members and not by criminals, and these operations provided employment, credit, and other necessities to individuals lacking access to channels deemed legitimate in other circles (Light, 1977; Schatzberg, 1993; Schatzberg & Kelly, 1996; Steffensmeier & Ulmer, 2006). It is likely that in many locales the players would not "feel" like criminals when participating in the racket. In these cases, illegal gambling functions both economically and socially in ways that may be considered positive (Anderson, 1979; Dunstan, 1997; International Gaming Institute, 1996; Lasswell, 1972; Liddick, 1999; Schatzberg, 1993; Schatzberg & Kelly, 1996; Steffensmeier & Ulmer, 2006; Weinstein & Deitch, 1974). Yet this in itself entails a counterpoint: given the acceptability of this illegal activity, it has been argued that numbers rackets have an especially powerful corrupting effect upon police, who either ignore this crime or are actively involved in facilitating it (U.S. National Commission, 1976, p. 172).

Finally, Johnston (1992) has argued that the recent proliferation of legalized gambling has, with greater availability and more competent management of the gambling industry, led to more corruption and more debts. In the past, these problems were limited to selected segments and to regions such as Nevada. Now, according to Johnston (1992), the same evils have become a mainstream problem: perhaps the business should simply have been left in the hands of criminals, as "Corporate America" has legitimized and broadened something innately destructive (pp. 296–297).

Once more, we advise all interested readers to acquaint themselves with a range of opinions and to keep in mind that the relation of OC to gambling is still an understudied topic and that assessment of "social impact" will typically be clouded with ideology, emotion, and anecdote.

Illegal and legal gambling

Gambling has long been a part of human society (Schwartz, 2006). People like to gamble and, unless something drastic happens to change human nature, people will continue to gamble. The main issue for researchers on the social impact of gambling has to be the extent to which we want to control or prohibit gambling. Typically societies have opted for either prohibition or exploitation (Skolnick, 2003). Rose (1991) has shown that over the past 250 years in North America, regulation has swung wildly from wide-open gambling to prohibition. Currently we are in a liberalization phase in which companies and governments exploit gamblers (Skolnick, 2003), but Rose (1991) has predicted that society will swing back toward prohibition in the near future. This instability is driven by two competing aspects of gambling: (1) it is fun and exciting and seems to be an issue of individual choice, and (2) available gambling breeds cheats, criminals, and problem gamblers, which eventually leads to a general distaste for the entire enterprise.

In this paper, we have discussed how in the past, during times of prohibition, gambling products have been available from organized criminals. The absence of legal gambling therefore does not mean the absence of gambling. Clarke (1929) argued that "If the state ran gambling houses an Arnold Rothstein wouldn't be possible" (p. 18). Clarke appears to be advocating legal gambling in order to prevent OC from profiting from gambling. On the other hand, Demaris (1986) has argued that "Gambling is a parasitic enterprise that thrives on the weaknesses of people. It leaves in its wake corruption, debasement, despair, and the subversion of moral authority" (p. 424). This suggests that gambling should not be legalized. Legalization may take profit away from organized criminals, but legalization is often associated with a surge in public participation in gambling (Room et al., 1999). Legalizing gambling likely leads to more betting and hence more problem gamblers.

If gambling is illegal, it becomes a lucrative means of making a profit for people willing to break the law. It is unlikely that illegal gambling venues will encourage responsible gambling or stop their customers from sinking too deeply in debt. In fact, loansharking has often been practiced alongside illegal gambling. If gambling is legal, however, more people will gamble, and perhaps more people will be negatively affected by the consequences of gambling. The fact that illegal gambling fills the demand left unsatisfied during times of prohibition may to some extent explain why the relationship between legal gambling exposure and the prevalence of problem gambling is often weak (Abbott, 2007). Accurate assessment of the relationship between gambling exposure and gambling problems requires an accurate measure of the illegal gambling available in the communities examined. Our purpose in writing this paper was to generate interest in the topic of gambling and OC and to take a broader perspective on the social ramifications of both legal and illegal gambling. It may be that some forms of gambling are so inherently dangerous that they should be banned altogether, but that other forms of gambling may be better regulated than left to the nefarious world of criminals. This issue is likely to become quite prominent due to the availability of Internet gambling.

The contemporary setting

Nevada's casinos were once closely linked in the popular mind with OC. This perception was given substance by repeated federal and state investigations and prosecutions of casino owners and operators (National Gambling Impact Study Commission, 1999). Because of the volume of cash transactions involved in casino gambling, a number of regulations have been imposed on gambling businesses in order to minimize money laundering. A number of commissions have examined the link between gambling and crime (National Gambling Impact Study Commission, 1999; President's Commission on Organized Crime, 1986; U.S. National Commission, 1976). The general consensus of these reports is that OC no longer plays a major role in legal gambling. The 1999 National Gambling Impact Study Commission argued that "effective state regulation, coupled with the takeover of much of the industry by public corporations, has eliminated organized crime from the direct ownership and operation of casinos" (p. 3-1). However, the commission also noted that OC may play a role in illegal gambling, sports gambling, and Internet gambling. It also noted that legalization of gambling may increase some types of crime (e.g., crime by pathological gamblers to acquire funds for gambling) but concluded by noting the paucity of information on the relationship between gambling and crime. Firm conclusions are therefore elusive.

Given the recent proliferation of legalized gambling venues, the role of OC in gambling cannot be presumed to have remained constant. The Internet, still being explored, raises another set of questions yet to be answered. There is also the traditional attraction of gambling for the purpose of money laundering. Although a number of recent measures have been implemented to prevent money laundering, Levi and Reuter (2006) describe evidence for the effectiveness of these measures as "anecdotal" (pp. 1, 33, 59, 65). These facts, coupled with the longstanding difficulties involved in the study of criminal activities and criminal organizations, render OC's current role in gambling as hard to ascertain as at any other time since its inception in the 1920s.

Directions for future research

We have argued from the start that the relation between gambling and OC is understudied. To be fair, there is enough material on OC in general to provide some decent knowledge. The topic, however, should be addressed directly. Perhaps the best suggestions we could make would be consistent with the breakdown we provided section by section in this review. Since definitions of OC tend to be commensurate with an author's interests, perhaps some work should be done on working definitions best suited to this topic. Historical work, on both gambling and OC, is plentiful. Yet some history with a direct focus on this relationship would be of great value. The relationship of gambling to crime is still highly contentious, and the extent to which the two are linked requires more study. The nature of OC involvement will, above all, require more study along the lines of participant observation and discussions with former (and if possible

current) OC associates. Though often anecdotal, and problematic for other reasons we have mentioned, such approaches have long been considered integral to the study of hard-to-reach populations. The latter may be street drug addicts or members of AA — and it is not hard to see why professional gangsters are even less accessible, so the same methodological arguments will apply to a greater degree. Social impact, for example, will require quantitative analysis. Such analyses, however, could clearly be enhanced by the kind of qualitative knowledge that direct contact can generate.

One issue of paramount importance involves the many insinuations pertaining to the corruption of officials mentioned in this review. Is corruption still an important issue, or has effective regulation managed largely to keep crime organizations out of the gambling industry? Corruption scandals associated with the gambling industry are not uncommon (Phillips, 2006), but such scandals do not necessarily involve OC. We found little evidence of corruption at the highest levels of authority, but such evidence would indeed be elusive. So our own conservative treatment of this matter proves little. If someone found a decent way to study this issue, the findings could be invaluable.

Of course, a whole new world of OC-related gambling has been made possible through Internet technology. Potential OC involvement in Internet gambling is an urgent matter, one that the research community should target right away. As noted above, Skaperdas (2001) has argued that OC occurs in the absence of state enforcement of contracts. OC essentially functions as an alternative enforcement mechanism to facilitate the chain from supplier to consumer. Schelling (1967) has noted that criminal monopolies form when enforcement restricts the availability of a commodity, making it more viable for criminal monopoly control. Currently, some countries are attempting to restrict Internet gambling, but these regulations are inconsistent. Ironically, the restrictions may make the Internet a prime place for potential organized criminal involvement. Soon OC's involvement in Internet gambling might dwarf all other variations and could represent the highest research priority of all.

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Table 1
Sources of Information Organized by Type of Document

Participant Observer/Biographies

Author	Date	General topic
Anderson	1979	OC
Clarke	1929	OC
Humphreys	1999	Biography of participants
Ianni	1971a	OC
Ianni	1971b	OC
Ianni	1974a	OC
Ianni	1974b	OC
Ianni & Reuss-Ianni	1972	OC
Katcher	1958	OC
Pileggi	1986	Based on life of Henry Hill
Pileggi	1995	Based on actual events involving Frank "Lefty" Rosenthal & Tony "The Ant" Spilotro

Law Enforcement

Author	Date	General topic
CISC	2000	Annual report on OC
CISC	2003	Annual report on OC
CISC	2004	Annual report on OC
CISC	2005	Annual report on OC
CISC	2006	Annual report on OC
Dewhirst	2006	Gambling & law
Edelman	1982	Gambling expansion
FBI	2007	OC
Florida Law Enforcement Releases	1995	Gambling & crime
Fowler et al.	1978	Gambling & law
Interpol	2007	OC
Moodie	2002	Gambling & OC
Ogrodnik	2002	OC
Richter-White	2003	OC

Academic		
Author	Date	General topic
Abbott	2007	Gambling & crime
Abbott et al.	2005	Gambling & crime
Albanese	1985	Economics & crime
Albanese	1989	Economics & crime
Albanese	2003	Economics & crime
Behnam	2007	Gambling & law
Bloch	1962	Gambling
Block & Scarpitti	1986	Gambling & OC
Boulding	1973	Economics
Campbell & Marshal	2007	Gambling & crime
Campbell et al.	2005	Gambling & crime
Coontz	2001	Gambling & OC
Davis	2006	Gambling & crime
Eadington	2003	Gambling & law
Ferentzy et al.	in press	Gambling problems
Ferentzy et al.	2004	Gambling problems
Friedman et al.	1989	Gambling & crime
Gazel et al.	2001	Gambling & crime
Grinols	2000	Economics & crime
Grinols	2003	Economics & crime
Grinols	2004	Economics & crime
Grinols	2007	Economics & crime
Hakim	1985	Gambling expansion
Hakim & Buck	1989	Gambling & crime
Hsu	1999	Gambling expansion
Lasswell	1972	OC
Liddick	1999	Gambling & OC
Light	1977	Gambling & OC
McMullan & Perrier	2003	Gambling & crime
Miller & Schwartz	1998	Gambling & crime
Monkkonen	1992	OC
Ochrym	1990	Gambling & crime
Pace & Styles	1975	OC
Peterson	1951	Gambling expansion
Phipps	2004	Gambling & crime

Pontell et al.	2007	Gambling & crime
Room et al.	1999	Gambling expansion
Schelling	1967	Economics of OC
Skaperdas	2001	Economics of OC
Smith et al.	2003	Gambling & crime
Steffensmeier & Ulmer	2006	Gambling & OC
Thompson	1997	Gambling expansion
Thompson et al.	1997	Gambling problems
Turner	2008	Gambling problems
Turner et al.	2006	Gambling problems
Turner et al.	in press	Gambling & crime
Weinstein & Deitch	1974	Gambling expansion
Williams et al.	2005	Gambling problems

History

Author	Date	General topic
Asbury	1928	History of gambling
Asbury	1938	History of gambling
Banting	2006	History of OC
Binde	2007	Culture & religion
Coates	1930	Crime
de Champlain	2004	History of OC
Denton & Morris	2001	Gambling & OC
Dixon	1991	Gambling & law
Drzazga	1963	OC
Fabian	1990	History of gambling
Fidance	2009	Gambling & OC
Findlay	1986	Gambling
Johnson	1992	Gambling & OC
Johnston	1992	Gambling expansion
Lamothe & Humphreys	2006	OC
McIllwain	2003	OC
Miller	1939	Religion & gambling
Munting	1996	Gambling
Ostrander	1966	Nevada
Peterson	1952	Crime
Peterson	1983	OC

Rappleye & Becker	1991	OC
Reid & Demaris	1963	OC
Roemer	1990	Gambling & OC
Roemer	1994	OC
Rorabaugh	1979	Alcohol
Rose	1991	Gambling & law
Schatzberg	1993	OC
Schatzberg & Kelly	1996	OC
Schwartz	2005	Gambling expansion
Schwartz	2006	Gambling
Short	1984	OC
Sternlieb & Hughes	1983	Gambling expansion
Turner et al.	2006	History of gambling
Tyler	1962	OC
Winship	1996	Religion & providence
Woodiwiss	1988	Vice & prohibition

Commission Reports

Author	Date	General topic
Beale & Goldman	1975	Gambling & law
Beare & Hampton	1983	Gambling expansion
California Attorney General	1971	Gambling expansion
Dunstan	1997	Gambling
International Gaming Institute	1996	Gambling
King	1969	Gambling & OC
Knapp	1972	Economics & crime
National Gambling Impact Study Commission	1999	Gambling expansion
President's Commission	1986	OC
State of California	1971	Gambling & OC
U.S. Congress Senate	1961	Gambling & OC
U.S. National Commission	1976	Gambling
U.S. Senate Special Committee	1951	OC

Film		
Author/Producer/Director	Date	General topic
Coppola	1974	Based on historical events, but not on specific people
de Fina & Scorsese	1990	Based on life of Henry Hill
de Fina & Scorsese	1995	Based on historical events involving Frank "Lefty" Rosenthal & Tony "The Ant" Spilotro
Ruddy & Coppola	1972	Based on actual events, but not tied to specific people
Turner et al.	2007	Review of films about gambling

Other		
Author	Date	General topic
Burbank	2000	Gambling & law
Cirules	2004	OC
Demaris	1986	Gambling & OC
Germain	2004	Gambling expansion
Goodman	1995	Gambling expansion
Kim	2008	Gambling & crime
Mahon	1980	Gambling expansion
Skolnick	1978	Gambling expansion
Skolnick	2003	Gambling
Wexler	2008	Gambling expansion
Zendzian	1993	Gambling & OC

Should gambling be included in public health surveillance systems?

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Abstract

This paper examines the question of whether indicators of pathological or disordered gambling should be included in current public health surveillance systems. Such inclusion can be justified in terms of the emerging associations between disordered gambling and the leading indicators of the risk for premature morbidity and mortality. Additional justification can be seen in terms of the potential of Internet gambling to increase the incidence of gambling disorders, particularly among younger and older populations. The paper describes characteristics of public health surveillance systems and recommends including gambling in such systems, on at least a provisional basis.

Keywords: public health, surveillance, gambling disorders, Internet gambling, adolescents, seniors

Introduction

A number of investigators have argued that gambling and gambling-related sequelae be viewed within a public health perspective (Grant, Williams, & Kim, 2006; Korn, 2000; Korn, Gibbons, & Azmier, 2003; Messerlian, Derevensky, & Gupta, 2005; Poulin, 2006; Shaffer & Kidman, 2004; Shaffer & Korn, 2002). An important component of public health research is the collection of data within the framework of public health surveillance. The surveillance of health-related events (becoming a disordered gambler) or conditions (being a disordered gambler) is considered the modern foundation for the use of epidemiology to inform policy makers of the need to take actions to promote public health (Berkelman, Stroup, & Buehler, 1996). Today, "surveillance is seen by many as the bedrock of public health" (McQueen, 1999, p. 1312).

Background

> Public health surveillance is the ongoing, systematic collection, analysis, interpretation, and dissemination of data about a health-related event for use in public health action to reduce morbidity and mortality and to improve health. Surveillance serves at least eight public health functions. These include supporting case detection and public health interventions, estimating the impact of a disease or injury, portraying the natural history of a health condition, determining the distribution and spread of illness, generating hypotheses and stimulating research, evaluating prevention and control measures, and facilitating

> planning. Another important public health function of surveillance is outbreak detection (i.e., identifying an increase in the frequency of disease above the background occurrence of the disease). (Centers for Disease Control and Prevention [CDC], 2004, p. 1)

Berkelman et al. (1996) suggest that "surveillance should begin when there exists, or is *likely to occur* [italics added] a public health problem for which [programs] for prevention and control of a health event, have been, or may need to be, initiated" (p. 735). The possible need for new or adapted programs that target gambling disorders raises two important questions.

First, is disordered gambling viewed or viewable as a current or potential public health priority? There are a number of investigators who have argued that the answer is definitely yes (Korn, 2000, Korn et al., 2003; Messerlian et al., 2005). Evidence is beginning to accumulate that disordered gambling "is associated with significant morbidity," including "suicidality" (Grant & Potenza, 2004a, p. xiii). Nevertheless, disordered gambling does not yet draw the kind of attention from society and policy makers as that given to other social issues, such as drugs, alcohol, smoking, or HIV infection, to name a few (Evans, 2003). Gambling simply has not been viewed with the same degree of concern elicited by those behaviors currently included in ongoing public health surveillance programs, such as the Behavioral Risk Factor Survey conducted jointly by the CDC and the respective states.

Consequently, the allocation of scarce resources to address disordered gambling has, by comparison with other disorders, a relatively low to non-existent priority at both the federal (Finkelstein, 2003; Hyman, 1999) and state level (Addiction Technology Transfer Center, 2003), with Canadian provinces placing a much greater emphasis on funding research and other initiatives relative to U.S. states. One sign of this low priority is the lack of effort; Iowa has been an exception since 1997, monitoring gambling in a consistent fashion or systematically on a periodic basis, as Connecticut once attempted (Wharton Economic Forecasting Associates Group, International Communications Research Survey Research Group, Lesieur, & Thompson, 1997). A related issue is the significant failure to carefully determine the key indicators that need to be tracked by time, place, and person: "Non-random aggregations of disease [e.g., disordered gambling] are manifested along axes of measurement of time, of space, of individual personal characteristics, and of certain community characteristics" (Stallones, 1980, p. 80).

Second, are there programs currently available and/or in development, that could be implemented if needed? The answer to this second question is mixed. There is, at present, no empirically validated treatment for pathological gambling (Petry & Armentano, 1999). Strong evidence that treatment programs are beneficial is relatively scarce (Korn & Shaffer, 2004; Oakley-Browne, Adams, & Mobberley, 2000; Toneatto & Ladouceur, 2003), although a number of treatment strategies show promise (Hodgins & Petry, 2004; Hollander, Kaplan, & Pallanti, 2004; Kim, Grant, & Grosz, 2002; Pietrzak, Ladd, & Petry, 2003; Stinchfield & Winters, 2001; Tavares, Zilberman, & el-Guebaly, 2003), particularly in the area of cognitive behavioral treatment (Bujold, Arkowitz, & Menchola,

1994; Ladouceur et al., 2002; Sylvain, Ladouceur, & Boisvert, 1997). Similar arguments apply to prevention programs that, by comparison with treatment research, are a relatively recent endeavor in the field of disordered gambling (Derevensky, Gupta, & Dickson, 2004; Evans, 2003; Ferentzy, Turner, & Skinner, 2006; Ferland, Ladouceur, & Vitaro, 2002; Potenza & Griffiths, 2004). Finding answers to the two questions raised above has been hindered by the fact that the funding of basic and applied research into disordered and underage gambling is a relatively recent phenomenon.

Policy toward funding of gambling research began to change in the 1990s, when a number of states and Canadian provinces committed funding and resources to address the problem of gambling (NASPL, 2003). The change in funding for research into gambling at the federal level in the United States (e.g., Welte, Barnes, Wieczorek, Tidwell, & Parker, 2001, 2002, 2004) has been credited in part to the report by the National Gambling Impact Study Commission (Cunningham-Williams & Cottler, 2001). The study of gambling-related disorders remains, relative to other disorders, largely ignored by policy makers, at least in the United States, where funding initiatives remain relatively scarce.

A recent review of the literature on pathological gambling has concluded that, at present, there remains a shortage of quality research that meets the general standards of scientific rigor (National Research Council, 1999), although this is beginning to change (Grant & Potenza, 2004b; see also the longitudinal research being done at Harvard Medical School's Division on Addictions[1]). It will take time for gambling researchers to make up for this scarcity and communicate the results to policy makers. Much of the available research is of little value to policy makers (Gambino, 2005, 2006a, 2006b; Volberg, 2004), most notably because the focus of this research has not been on measures that are useful to policy makers (Gambino, 2005, 2006b; Jenkins, 2003). Policy-relevant measures include severity, disability, impairment, and need for treatment (Gambino, 2005, 2006b; Hadorn, 2000; Mechanic, 2003).

A second and related reason for the lack of relevance of current research to policy is the failure to relate case definitions, such as the use of cutoff scores, to clinical and policy-related outcomes, for example, the question "who will seek treatment?" (Gambino, 2006b). In sum, the early reliance on large-scale epidemiologic studies (due notably to funding by the respective states and provinces) has not produced the advances in knowledge that may be commensurate with the relative expense of such research. This is not to deny the value of such research (National Research Council, 1999); rather, the lack of policy-relevant measures reflects the limited usefulness of the questions asked by the funding sources, including questions about the prevalence of pathological gambling and who is at greatest risk (Welte et al., 2001, 2004).

The current argument for public health surveillance of gambling

Buehler (1998) notes two particular circumstances that are important for making a case for establishing a surveillance system to monitor indicators of [gambling] behaviors. First, if it is agreed that disordered and underage gambling represents a potential new public health problem, then "the implementation of surveillance is critical to an effective early response" (Buehler, p. 435). Second, if public health agencies agree to include gambling as a health problem, then surveillance represents "a first step in defining new roles" (Buehler, p. 435).

One criterion for the inclusion of gambling indicators in surveillance systems would be the recognition of gambling as a public health priority. In view of the relatively recent emergence of efforts to promote a public health paradigm for the study and understanding of gambling (e.g., Korn & Shaffer, 1999), the recognition of gambling as a public health priority remains elusive. An additional criterion would be a plausible argument or rationale that the monitoring and evaluation of gambling indicators is in the public interest (Teutsch, 1994). The potential for an increase in the incidence of disordered gambling through widespread in-home gambling on the Internet (Korn, 2000) might qualify as support for the latter view, but there is little evidence at present that such a phenomenon is in play (Cunningham-Williams, Cottler, & Womack, 2004; Griffiths, 2001; Ialomiteanu & Adlaf, 2001).

A failure to detect any significant rise in gambling disorders among Internet users may be due to the scarcity of research into the relationship between any increase in gambling on the Internet, and prevalence of disordered gambling (Derevensky & Gupta, 2007; McBride & Derevensky, 2009). Alternatively, the trend line necessary to detect any significant increase may be longer than the period covered to date. For example, the National Annenberg Risk Survey of Youth has been tracking gambling, including Internet gambling, among youth only since 2002 (Romer, 2006). A third possibility may be found in recent polls which report that the number of gamblers who frequently, more than once a year, gamble on-line remains relatively low in both the United States and Great Britain (Harris Poll, 2006). Only 4% of gamblers report gambling more than once a year on on-line poker, 3% at an on-line casino, and less than 2% on sports on-line. In a recent review of the literature, it was reported that the prevalence of Internet gambling is between 0.3% and 0.4% (*The WAGER*, 2007).

Can a reasonable argument be made that gambling and its sequelae meet recommended criteria needed to justify creation of at least a modest surveillance program for gambling among both adults and adolescents? This is a critical question because the absence of strong evidence that gambling is a significant factor related to the public health represents both a scientific and political barrier to the acceptance of gambling as a public health issue that deserves some measure of priority. People are known to die from illicit drugs, drunk driving, and AIDS. A similar argument, with the possible exception of suicide-related deaths (Maccallum & Blaszczynski, 2003; Newman & Thompson, 2003) — and the evidence on the latter is weak — cannot yet be made in the case of disordered gambling. In general, disordered gambling is a non-fatal disorder; therefore, any evidence

of its importance must come from a demonstration of the relationship between excessive gambling and measures of morbidity.

The accumulation of evidence of a strong or even a moderate relationship between gambling and measures of morbidity is only now beginning to emerge (Gerstein et al., 1999; Grant & Potenza, 2004b; Morasco et al., 2006; Pasternak & Fleming, 1999; Proimos, Durant, Pierce, & Goodman, 1998; Shaffer & Gambino, 2004) from recent evidence obtained on adolescents and adults. Proimos et al. (1998) obtained evidence of a strong relationship between adolescent disordered gambling and those behaviors associated with the leading causes of mortality and morbidity among adolescents and adults, as monitored by current surveillance programs.

Promios et al. (1998) recommended the inclusion of gambling in surveillance systems, as well as the value of screening adolescents for gambling in the primary care setting, as an indicator of other potentially hazardous behaviors, such as drinking and driving, illicit drug use, and other risky behaviors. Shaffer and Gambino (2004) have examined this same set of behaviors and found a strong dose-response relationship with the number of gambling problems reported; that is, the greater the number of gambling problems reported, the greater the likelihood that the gambler engaged in the risky behavior. These risky behaviors included, among others, driving and drinking, the frequency and intensity of substance use (tobacco, alcohol, marijuana, cocaine), violence, suicide-related behaviors, and behavior related to AIDS (e.g., unprotected sex). A recent analysis of a large-scale (N = 43,093) population study provided additional evidence of the association between disordered gambling and medical disorders, lowered health functioning, and higher rates of medical utilization, demonstrating also that even a moderate (five times a year) frequency of gambling can be associated with adverse health consequences (Morasco et al., 2006). In the strongest analytical model used in this study, "which controlled for demographic attributes and behavioral risk factors, pathologic gamblers were significantly more likely than low risk individuals to have been diagnosed with tachycardia, angina, cirrhosis, and other liver disease" (Morasco et al., p. 3).

Pasternak and Fleming (1999) screened a large sample of adults in a primary care setting for pathological gambling and found strong relationships between pathological gambling and the use of tobacco and alcohol. In addition, pathological gamblers tended to rate their health more poorly than did those who were not pathological gamblers. Similar results were obtained in a recent national prevalence study on pathological gambling (Gerstein et al., 1999). These investigators found relationships between pathological gambling and current mental problems, receiving psychiatric treatment, family problems, depressive episodes, job loss, bankruptcy, being arrested, and being incarcerated. Each of these lines of evidence supports the need for monitoring gambling behaviors.

It might be argued that since many of the behaviors noted earlier are associated with a higher risk of mortality in those who engage in them relative to those who do not, the relationship between disordered gambling and these behaviors implies comparable increased risk of mortality. The problem is the indirect nature of the association. These results were obtained from cross-sectional data in prevalence rather than incidence

studies. Under these conditions, it cannot be shown that the gambling disorder preceded or followed the onset of the other risky behavior (e.g., illicit drug use).

A potential public health problem?

One recent phenomenon is the emergence of widespread Internet gambling (Cunningham-Williams et al., 2004). Recent surveys place Internet use at three of every four households in the United States (Pew Internet & American Life Project, 2006) and two of every three Canadians (Statistics Canada, 2006). In a recent fact sheet, the American Gaming Association cited a report by Christiansen Capital Advisors that Internet gambling revenue was estimated in American dollars at $11.9 billion in 2005. Further, of the 23 million people estimated to have gambled on the Internet in 2005, about 8 million were from the United States.

Although there is little current evidence that Internet gambling has resulted in a major increase in disordered gambling, this possibility cannot be ruled out for the future and therefore deserves further consideration and discussion (Korn, 2000). The continuing growth of Internet gambling means that millions of people are able to gamble electronically by interacting with the computer or TV in the home or at work, or through hand-held devices while traveling. This growth also implies that there is the potential for a quantum leap in the number of active cases of disordered gambling. Recent research by Petry and her colleagues (Ladd & Petry, 2002; Petry, 2006) indicates that although the numbers remain low, of the 6.9% of people who gamble on the Internet, among those who gamble frequently (2.8%), prevalence rates of pathological gambling reached two thirds.

This worst-case scenario clearly meets the criterion for surveillance that there is, or will be, a need for programs of prevention, treatment, or education. The only ambiguities are in the definitions of *likely to occur* and *need for*. The potential future of this phenomenon may be judged, in part, by two significant trends, with both suggesting a similar time frame for addressing this issue.

Internet growth among adolescents and seniors

First, the growth of Internet gambling may be judged against the backdrop of a generation of young people who have grown up completely in an atmosphere of widespread acceptance and availability of legalized gambling (Shaffer, Hall, Vander Bilt, & Vagge, 2003). This generation is merging into one that is becoming more facile, better versed, and more involved in computer technology and use of the Internet at an early age. For example, a recent analysis reveals the sustained growth in access and use of the Internet among 3- to 18-year-olds (U.S. Department of Commerce, 2002) as ranging between 249% (ages 3 to 4) and 48% (ages 14 to 17) between 1998 and 2001. Estimates from the U.S. Census for the year 2005 indicate that by 2023, approximately 73 million young people under age 18 will have reached or passed the legal age for gambling.

Second, this same time period will mark the beginning of the passage of the now famous "baby boomer" generation into the largest senior citizen class in history (approximately 73 million as of 2005). This generation has contributed to and been observers of the widespread expansion and acceptability of legalized gambling. Many people of this generation have in fact voted on issues relating to the expansion of gambling, such as whether to introduce a casino. Many of these soon-to-be senior citizens are current users of the Internet and this number may be expected to increase. According to at least one survey (U.S. Department of Commerce, 2004), the percentage of Internet users age 50 or older has increased from 11.2% (1997) to 37.1% (2001), while the percentage among those aged 25 to 49 has increased from 27.1% to 69.9% during the same time period. These results raise the specter that, unlike seniors today, who are less likely to be involved with the Internet, this new generation of seniors may be vulnerable to the lure of Internet gambling for the many reasons currently offered to explain the susceptibility of seniors to the onset of disordered gambling (Wiebe, 2002). One recent survey that reported on Internet gambling (Ialomiteanu & Adlaf, 2001) found that the highest proportion of new Internet users were those in the 65-year-or-older category.

An increase in the incidence of gambling-related disorders among these two disparate generations might emerge if expected technological advances in such areas as computer graphics, interactive methodologies (both audio and visual), and simulation techniques (Griffiths, 2003) succeed in narrowing the gap between the popularity of computer and video gaming and the development of a similar attractiveness for Internet gambling (Griffiths, Davies, & Chappell, 2003). The use of computer and video games is a function of both age and gender (Roberts, Foehr, & Rideout, 2005). A greater percentage of younger children (aged 8 to 10) spend more time playing computer and video games than do those aged 11 to 14, who spend more time playing than do those aged 15 to 18. Males are much more likely to spend time playing these games than are females. This phenomenon mirrors the higher male-to-female ratio of those who meet the criteria for disordered gambling (Welte et al., 2002). Imagine a scenario in which a senior or young person logs on to an Internet gambling website. It is possible to envision a scene in which the individual who has logged on chooses to play a game of Texas Hold ‘em with four other players. The improvements in technology could permit the gambler to select four of their favorite people, for example, celebrities or historical figures, as their opponents. These technological advances could make gambling on the Internet a much more attractive proposition than it has been to date.

To the extent that technological advances applied to Internet gambling close any remaining gap between computer gaming and Internet gambling, individuals among these populations who are susceptible to the onset of disordered gambling may find themselves vulnerable to attractive web-based environments. There is every reason to assume that technological breakthroughs will eventually produce an environment that is barely distinguishable from the real environment. The result may be a future generation of young gamblers and an older generation of gamblers (who were more recently introduced to powerful and fast personal computers for use at home and work) who log on and are put at increased risk for disordered gambling. Add in the possibility that fellow players

can be simulated to represent the icons of choice, for example, celebrities, and the risk is likely to be enhanced even further.

These two examples provide but one definition of the window of opportunity for researchers to develop measures of disordered gambling that are valid, useful, and informative to policy makers and to get these measures included in the public health surveillance system. The question of which indicators are most likely to discriminate the pathological or disordered gambler from the non-disordered gambler is only now beginning to be addressed (e.g., Gambino, 2006a; Gambino & Lesieur, 2006; Smith & Wynne, 2002; Stinchfield, 2002, 2003; Stinchfield, Govoni, & Frisch, 2004).

Once developed and in place, these indicators will permit the rapid assessment of national, regional, and local (state, province) estimates and the ability to evaluate changes in these estimates on the basis of time, place, and person. National estimates should be obtained from the bottom up (i.e., pooling across states and provinces). This will permit any national estimate to more accurately reflect the distribution of the risk factors or determinants that remain to be specified in the kind of detail that is useful to policy makers (Messerlian et al., 2005; Shaffer, LaPlante, et al., 2004; Welte et al., 2002, 2004).

More important, reliance on the collection of data at the state and provincial level will be more informative, timely, and relevant to epidemiologic analysis than would the occasional national survey. The states and provinces would be better able to deal with the unique aspects of their own policy needs in terms of the strength of the gambling environment (Shaffer, LaBrie, & LaPlante, 2004) that currently exists in each state and province. The gambling environment includes, among other characteristics, the types of gambling approved, the population strata among which specific games are popular and gambling policies that exist or might be introduced. It should also be recognized, at least in the U.S. that these arguments apply to every state and province. For example, does anyone doubt the existence of disordered gamblers in Utah and Hawaii, where gambling is illegal? Utah, for example, borders on Nevada, which is considered by many to be the gambling Mecca of the United States, and where 75% of the citizens of Utah find gambling an acceptable alternative (Davidson, 2005). Hawaii is composed of a number of populations whose cultures reflect highly positive attitudes toward gambling (Associated Press, 2006).

The structure of public health surveillance

One of the goals of surveillance systems is to create the capacity to analyze data in such a way that the results of analysis can serve to signal the need for a rapid response to an emerging public health threat (McQueen, 1999). McQueen has argued further that the importance of socio-behavioral risk factors and social determinants of those disorders that account for *most* of the estimated morbidity and mortality is the driving force behind the need for surveillance programs. The recent demonstration of the importance of mental disorders in defining the magnitude of the public health burden of disease and disability supports the need for the inclusion of mental disorders in public health surveillance

(Herrman, Saxena, & Moodie, 2004; Neugebauer, 1999; Ustun, 1999; World Health Organization, 2004).

The design and implementation of a surveillance system on gambling requires consideration of several challenges and issues (McQueen, 1999). The first is the theoretical or empirical basis about which questions to ask and include. This basis will be determined, in part, by the perceived importance of the questions and the interpretation of current evidence by putative experts. This is itself a significant challenge to face (Blaszczynski, Ladouceur, & Shaffer, 2004). Shaffer, Hall, and Vander Bilt (1997) have stressed the need to strengthen the theoretical and empirical foundation for understanding and studying gambling (Grant & Potenza, 2004b; National Research Council, 1999). Researchers can make a strong contribution to the debate over which measures will most likely provide the needed information.

The second issue concerns methodology. McQueen (1999) states, "the primary methodological issue is how to build a monitoring system that collects data continuously, producing a seamless flow of data that can detect subtle and long-term changes in the variables of interest at the population level. ... [there should be a] focus on the method to provide long-term trend data" (p. 1312). The third issue identified by McQueen is how to use the system. The key problems to be addressed are "timeliness" and "provision of evidence" (McQueen, p. 1312). "In this age of computer-assisted telephone interviewing, rapid polling, and high-speed technology, the slowness of results in health-related surveillance is difficult to justify" (McQueen, p. 1313).

A detailed description of the structure of surveillance systems is beyond the scope of this paper. The interested reader is referred to excellent chapters by Buehler (1998) and Thacker and Stroup (1998), as well as detailed presentations by the CDC (2001, 2004). In the final analysis, the worth of any surveillance system will be determined by its usefulness (Teutsch, 1994). The establishment of a useful surveillance system requires at a minimum attention to six elements (Thacker & Stroup, 1998). These elements are, in brief, as follows: 1) establish goals, 2) develop case definitions, 3) select appropriate personnel, 4) acquire the tools and clearances for collection, analysis, and dissemination, 5) implement the surveillance system, and 6) evaluate the results of surveillance activities (Thacker & Stroup, pp. 118-122). It is time for the research community interested in gambling to begin to focus on these issues.

Discussion

If researchers and policy makers are committed to a rational strategy for effecting beneficial change, then they need to agree that there should be a straightforward relationship between evidence obtained by scientific research and the creation and amendment of health policy (Rothman & Greenland, 1998). Similar to the way in which scientific knowledge increases in other fields, knowledge of disordered gambling is cumulative and progressive in nature as new findings are added to the substantive knowledge base (Grant & Potenza, 2004b). Health policy, including that related to gambling problems, would be expected to reflect this new knowledge, and those who

advocate this strategy may expect major benefits to accrue to those who are the focus of health policy implementation (Levine & Lilienfeld, 1987).

The ultimate test of policy toward disordered gambling will be the measurable impact of an intervention on the incidence and severity of disordered gambling. Evidence obtained from surveillance programs can and should be important contributors to the decision-making process on the creation and amendment of public policy. Surveillance data are useful for the evaluation of the effectiveness of prevention and control initiatives. These data also provide a relatively rapid assessment of the impact of regulations or laws, modified or initiated to address public health concerns, and rapidly assess changes in the availability and accessibility of gambling (e.g., Poulin, 2006), such as an introduction of new gambling initiatives, or a sudden increase in Internet gambling as the result of enhancements in computer technology that make this form of gambling more attractive. The likelihood that researchers will find a strong association between any increase in Internet gambling and an increase in the incidence of disordered gambling is unclear at present; more research is clearly needed.

If it is agreed that the surveillance of gambling is a priority based on the accumulation of evidence on the relationship between gambling and measures of morbidity and mortality, then the following proposal is recommended. Once a set of indicators has been identified for inclusion in the behavioral risk factor surveillance systems currently in place in the United States and Canada[2], half the states and provinces include these indicators in the first year of the program and the remaining states and provinces in the second year. This recommendation is based on the recognition that both the states and the provinces have a diverse set of priorities such that the inclusion of gambling questions precludes additional questions of interest given the length of these surveys. These states and provinces would then alternate between inclusion and exclusion over the agreed course of the time table. Analyses of the results would be disseminated to all the respective parties for interpretation and comment. The application of sequential rule analysis (Sonesson & Bock, 2003) might be used with an emphasis on minimizing false alarm rates (Baron, 2003) to enhance early detection of a potential outbreak and to determine whether to continue or end the surveillance program.

The use of the term *outbreak* requires comment because it is unusual to apply this label to a behavioral disorder. The CDC recently sent investigators into the state of West Virginia at the request of state authorities to investigate an "outbreak of obesity" (Kolata, 2005). This investigation represents a first for the CDC but provides a potential precedent for examining a similar possibility in the incidence of new cases of disordered gambling, perhaps as a result of future Internet gambling activity.

We need to keep in mind that both proponents and opponents of the expansion of legalized gambling are agreed on a commitment to the development of policy that will mitigate any negative impacts of socially accepted legalized gambling. How many is not as important as how, where, and with whom to intervene. Decisions of this importance require a much greater degree of confidence than can be inspired by the evidence to date.

It is of value to propose a paraphrase of the Oregon state law, which requires the lottery to maximize revenues commensurate with the public good (Lyons, 1998) as a beginning statement for policy makers to consider: Promote those policies designed to maximize the economic and social benefits of legalized gambling while minimizing any economic and social costs. This is not a simple task: Maximizing benefits is not independent of minimizing costs. What remains to be specified by researchers and other stakeholders are practical and valid definitions of benefits and costs, and how to balance these considerations (Collins & Lapsley, 2003; McGowan, 1999; Walker, 2003; Walker & Barnett, 1999). This will not be an easy task, but the benefits of success in such an endeavor will be great.

The views expressed here are for the purpose of stimulating further discussion on the merits of introducing indicators of gambling and disordered gambling into current surveillance systems. This issue is a complex one, especially in view of the likelihood that surveillance format length would minimize the number of gambling indicators that would be included. The challenge to researchers who propose questions for inclusion is intensified by what may appear to be a clash between an emphasis on measures of disordered gambling (as presented here) and those implicit in a public health perspective. The latter paradigm includes the benefits side of the gambling equation, whereas the former stresses the costs or negative outcome side (I must give credit to the reviewer and editor for calling this important distinction to my attention). There is no easy answer to this challenge, which is why it is critical for those researchers with an interest in any advantages that may stem from including indicators of gambling in current surveillance programs to offer their views in response to the arguments presented here (Promios et al., 1998; Shaffer & Gambino, 2004).

Of particular value would be comments that address specific issues relating to the promotion of such a system. I offer a brief, but not exhaustive, list that may be of interest. This list includes which measures would be of greatest utility (e.g., Stinchfield et al., 2004); a discussion on the justification of disordered gambling as a public health priority (Korn et al., 2003; Poulin, 2006); the viability of prevention (e.g., Derevensky et al., 2004) and treatment programs (e.g., Ladouceur et al., 2002); the relationship between disordered gambling and measures of morbidity and mortality (e.g., Grant & Potenza, 2004b); and a comparison of measures of benefits versus measures of morbidity, particularly by taking into account the continuum of disordered gambling, such as including two (Gambino & Lesieur, 2006; SOGS) or three levels (McCready & Adlaf, 2006; CPGI) of severity. These and other questions need to be resolved before there is a majority acceptance among researchers with an interest in promoting the inclusion of gambling in current surveillance systems.

Finally, I would paraphrase John Dewey “that the only distinctions worth drawing are not between” (1981, pp. 268-269) pro-gambling and anti-gambling, or between benefits and costs, but between those policy recommendations that are not beneficial and those that are beneficial and result in an improvement in the public health[3].

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[1] LaBrie et al., 2008; LaBrie et al., 2007; LaPlante et al., 2009; LaPlante et al., 2008a; LaPlante et al., 2008b; Shaffer et al., in press; Xuan & Shaffer, in press.

[2] It is unclear whether Canada has implemented a surveillance system similar to the Behavioral Risk Factor Surveillance System (BRFSS). CDC has offered the technology to other countries, including Canada.

[3] The actual quote that is paraphrased is: "But if modern tendencies are justified in putting art and creation first, then the implications of this position should be avowed and carried through. It would then be seen that *science is an art,* that *art is a practice,* and that the only distinction worth drawing is not between practice and theory, but between those modes of practice that are not intelligent, not inherently and immediately enjoyable, and those which are full of enjoyed meanings" (Dewey, 1981; p. 268-69).

book review

Problem Gambling in Europe: Challenges, Prevention, and Interventions

Edited by Gerhard Meyer, Tobias Hayer, and Mark Griffiths. (2009). New York: Springer. 333 pp., ISBN: 978-0-387-09485-4. Price: $199 USD (hardcover).

Reviewed by: Peter Collins, Director, Centre for the Study of Gambling, University of Salford, Salford, Greater Manchester, UK

This new publication is an extremely useful work, and the editors and publishers are to be congratulated for providing such a comprehensive and informative reference piece on not only problem gambling issues in Europe, but on other aspects of gambling as well (e.g., earnings and participation rates).

The chapters are written by individuals or groups of scholars from 21 European jurisdictions and helpfully not confined only to those who are members of the European Union (EU). Jeffrey Derevensky has written an enthusiastic foreword that goes well beyond the ritualised compliments characteristic of many forewords and is informative and stimulating in its own right. The editors provide an overview of their book which is, in their words, "the first comprehensive overview about problem gambling in Europe." They offer interesting but by no means uncontroversial commentary on (1) problem gambling as a public health and public policy issue, (2) issues of causality, and (3) strategies for the prevention and treatment of problem gambling.

Thanks to the clear editorial guidance given to the judiciously selected authors about chapter structure, the individual contributions are all of a high standard, are both interesting and informative as case studies, and furnish the material needed to make comparisons. Although the book does not itself offer a comparative summary, the following summary of findings culled from it (see Table 1) illustrates the types of issues on which the book sheds light and the kinds of further work—not just in the area of research, but problem gambling treatment and prevention as well—that need to be undertaken in Europe and elsewhere.

The book reports that no reliable data are currently available on problem gambling in France, Hungary, Lithuania, Poland, Romania, Russia, the Slovak Republic, and Slovenia. Table 2 displays some of the studies that have been conducted over the past decade in jurisdictions outside Europe, as reported in Wiebe and Volberg (2007).

These two tables reveal the one main weakness I have identified in this book—namely, that different authors use different measures of the same apparent phenomena and risk, as well as various survey methodologies (e.g. face to face vs. telephone), sample designs, and so forth. Nonetheless, they give the misleading impression that like is being compared with like. [For this reason, we recommend our readers view these tables as they are intended—as a summary of the prevalence work in the field—rather than as a comparative look at problem gambling *per se* in different jurisdictions. *–Ed.*]

Table 1. Summary of Selected Prevalence Studies of Pathological Gambling in Europe

Jurisdiction	Year	Author(s)	Sample Size	Diagnostic Instrument	Prevalence Rate	
					Life-time	*Past year*
Belgium	2004	Druine et al.	3,002	DSM-IV Fisher		0.4
Denmark	2006	Bonke & Borregaard	8,153	NODS	0.3	0.1
Estonia	2006	Laansoo	2,005 (15-74 yrs)	SOGS-R	3.4	
Finland	2003	Ilkas & Turja	5,013	SOGS-R	1.5	
Germany	2008	Buth & Stouer	7,980	DSM-IV Stinchfield		0.6
	2008	Center for Health Education (Lang et al.)	10,001	SOGS		0.2
Great Britain	2007	Wardle et al.	9,003	DSM-IV		0.3
				PGSI		0.5
Iceland	2005	Ólason et al.	3,358 (18-70 yrs)	DIGS		0.6
				PGSI		0.5
Italy	2004	Bicanzoli et al.	1,093	SOGS	0.4	
Netherlands	2006	De Bruin et al.	5,575 (28% response rate)	SOGS	1.0	0.3
Norway	2005	Kavli & Berntsen	3,135 (18-30 yrs)	PGSI	1.9	
	2003	Lund & Nordlund	5,235 (15-74 yrs)	NODS	0.6	0.3
				SOGS-R	0.3	0.2
Spain	2004	Becona	1,624 (Galicia)	NODS	0.9	0.3
	1999	Ramirez et al.	3,000 (Andalusia)	SOGS	1.6	
Sweden	1999	Ronnberg et al.	7,139 (15-74 yrs)	SOGS-R	1.2	0.6
Switzerland	2007	Brodbeck, Durrenberger, & Znoj	6,385	NODS	0.3	
	1999	Osiek, Bondolfi, & Ferrero	2,536	SOGS-R		0.8

Table 2.
Summary of Selected Prevalence Studies of Pathological Gambling Outside Europe

Jurisdiction	Year	Author(s)	Sample Size	Diagnostic Instrument	Prevalence Rate
Australia	1999	Productivity Commission	10,525	SOGS-R	2.1
Canada	2002	Marshall & Wynne	18,887	PGSI	0.5
Hong Kong	2005	University of Hong Kong	2,093	DSM-IV	2.2
Macao	2003	Fong ka Chio & Orozio	1,121	DSM-IV	1.8
New Zealand	1999	Abbott & Volberg	6,452	SOGS -R	0.5*
Singapore	2005	Ministry of Community Development	2,004	DSM-IV	2.1
South Africa	2005	National Centre for the Study of Gambling	3,003	GA-20	1.4
USA	2000	Welte et al.	2,638	SOGS-R	1.9

*Last 6 months

Amongst the interesting issues which may be suggested by the data in this book are the following:

- Why do so many countries do so little about problem gambling, not even bothering to estimate the extent of the problem?
- Given this, how—in the case of state-owned monopoly industries—can governments claim to the European courts that their monopolies are justified in terms of protecting their citizens, especially from problems of excessive gambling?
- Are the differences between the poorer and richer states reflected in lower problem gambling numbers for richer states?
- Are differences between the dates of the studies significant in explaining differences in results—for example, because problem gambling numbers are for whatever reason declining in Europe?

In general, the introduction is particularly good in identifying policies and practices which could sensibly be adopted throughout Europe, and indeed world-wide, to mitigate the harm caused by problem gambling. The introduction is not, however, beyond criticism, and I hope it will be helpful to point out that the editors make a number of claims which are at the very least contentious (e.g., the claim that increases of accessibility lead to increases in problem gambling [p. xxii]). They are also not always scrupulous in discriminating between correlation and causality, for example, in discussing unhappiness in families and the presence of a problem gambler (xxi-ii); however, they do later acknowledge that it is not known whether people who are depressed tend to gamble too much or whether people gamble too much (in part) because they are depressed. Sometimes, too, it is important to distinguish between what is a risk factor for, and what is a symptom of, problem gambling (e.g., chasing behaviour is discussed as "a known risk factor" on p. xxii).

The truth is, as this book demonstrates, that one of the reasons it is so difficult to get good scientific data on problem gambling is that, comparatively, there is so little of it about. A more serious reason is that research has not hitherto been internationally co-operative and the funding for it has often been dissipated. This book is therefore especially welcome as an internationally-collaborative venture which succeeds in greatly adding to the evidence base

we have for Europe. As such, it should prove invaluable not only to scholars, but also to policy-makers and judges seeking to reduce the chaos that characterises gambling policy and legislation in almost all European jurisdictions, as well as that of the institutions responsible for the development and implementation of EU law with respect to gambling.

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book review

Overcoming Pathological Gambling: Therapist Guide and Overcoming Your Pathological Gambling: Workbook

By Robert Ladouceur and Stella Lachance
Therapist Guide: (November 2006). Oxford University Press USA. 144 pp. ISBN #9780195317039. $37.95 USD (paperback).
Workbook: (December 2006). Oxford University Press USA. 96 pp. ISBN #9780195317015. $27.95 USD.

Reviewed by: Timothy Fong MD, Assistant Professor of Psychiatry, UCLA Gambling Studies Program

A quick Internet search on Amazon.com reveals that there are hundreds of books available on the topic of pathological gambling. Some are meant for researchers, some for clinicians, and others for the patients and families themselves. The majority of the self-help workbooks for sale, though, are not evidenced-based and have not been tested in a rigorous scientific manner.

These two companion books—first-authored by one of the leading clinicians and researchers in the world on pathological gambling—are quite different. Both books are created under the *Treatments That Work* series, which was designed to provide updated, effective, and objective treatment information to the public in a user-friendly presentation.[1] The material presented in these works is the latest version of an empirically supported cognitive behavioral treatment (CBT) program for pathological gambling.

Both guides contain all the information and materials needed to initiate and conduct CBT for pathological gambling. The patient workbook is divided into 10 chapters which detail 12 individual sessions. Each session focuses on identifying and then correcting misconceptions or erroneous beliefs about the nature of gambling. For example, some pathological gamblers believe that they can "beat the system" or that they can control the outcome of the cards, dice, machine, etc. Others may believe that gambling is the solution to life's problems and that the longer they play, the more likely they will win. Once these cognitive distortions are identified, they can be modified through various exercises and homework assignments. One example of this is the ABCD model, which is a table that the patient completes. It starts with the patient identifying a high-risk

[1] See http://www.oup.com/us/catalog/general/series/TreatmentsThatWork/?view=usa for more titles from this series. *–Ed.*

situation (e.g., getting a paycheck) and then identifying the automatic thought that leads to gambling more than planned (e.g., "Now that I have money, I deserve to gamble it"). Next, behaviors resulting from the automatic thought are identified ("I end up gambling more than I intended and losing more than I can afford"). Finally, the consequence of the high-risk situation leading to gambling is identified ("I feel upset, guilty, and ashamed, and I don't have enough money until my next paycheck"). In addition to correcting erroneous beliefs about gambling, this program teaches problem-solving skills, self-assessment techniques, and trigger-recognition and avoidance.

The therapist guide provides step-by-step instructions for clinicians to help clients understand all of the facets of their problem. This guide is written to parallel the patient workbook and also to address common barriers, problems, and difficulties seen in gambling treatment. The therapist guide is an essential component to providing CBT treatment, especially for therapists who are not trained in CBT or who do not have extensive problem gambling treatment experience.

The books conclude with post-treatment assessments that are designed to be completed after the 12 weeks of treatment. Treatment and recovery for pathological gambling should continue beyond that, and one area of research not yet explored is how long the treatment effects from CBT last once treatment is completed.

Overall, the materials presented in both books are accurate, easy-to-read, and applicable to every subtype of problem and pathological gambler. The homework assignments are clearly presented and represent the type of assignments that therapists and clients will actually complete. CBT is easy to conceptualize, but the actual delivery of it is not always easy or obvious. Having a manual on hand gives therapists and patients the security of knowing that the product they are delivering is as close as possible to the one that was tested during clinical trials.

By definition, these manuals are very explicitly focused on presenting a cognitive behavioral approach. Other evidenced-based therapies and biological approaches are not covered here, nor are they meant to be. These two books would be excellent starter materials to any gambling treatment program or counselor who is beginning to gain experience in the management of pathological gambling.

book review

Neuroeconomics: A Guide to the New Science of Making Choices

By Peter Politser. (2008). Oxford University Press, USA. 219pp. ISBN 978-0-19-530582-1 $37.95 USD (hardback).

Reviewed by Ari Kalechstein, Ph.D., Adjunct Associate Professor,
Department of Psychiatry, Baylor College of Medicine

Editor's Note: This review by Dr. Ari. Kalechstein is the first in a two-part series on neuroeconomics. Since the field is new to most, we start by reviewing an introductory-level text to introduce our readers to this area of study. In our next issue, we will conclude with his review of the book, *Mid-Brain Mutiny: The Picoeconomics and Neuroeconomics of Disordered Gambling*.

A Neuroeconomics Text Stimulated My Medial Forebrain Bundle

Within the last several years, marked interest has emerged in the field of neuroeconomics. A number of reasons may underlie this interest; for example, over the past 20–30 years, there have been remarkable breakthroughs with respect to the development of technologies that enable researchers and clinicians to characterize brain structure and function, such as functional magnetic resonance imaging (fMRI). In addition, researchers in a wide array of fields are presently interested in describing the link between elements of neurobiology, such as brain chemistry (e.g., dopamine tone) or diagnosis of a particular mental health condition (e.g., addiction), to the manner by which individuals place a value on particular events, people, or objects. Finally, the visibility of the field was increased when pioneers in neuroeconomics were recently awarded the Nobel Prize in Economics. Despite the proliferation of peer-review manuscripts in this area, there exist, to this reviewer's knowledge, very few scientific texts on the topic (one example is Glimcher, 2004). Thus, Dr. Politser's text is timely.

With regard to the intended audience, it is this reviewer's opinion that the text is most appropriate for the following readers: neurologists, neuropsychiatrists, neuropsychologists, or cognitive neuroscientists—in other words, individuals with a background in neurobiology. For example, the text is prepared in a manner which assumes that the reader is familiar with the structure and function of the brain, such as the cognitive functions mediated by specific regions of the brain and particular neurotransmitters. As a result, individuals without a background in neurobiology will find the text to be more taxing, though Dr. Politser attempts to mitigate this issue by providing a glossary that includes succinct descriptions of terms. This point is not meant to discourage intrepid graduate students, interns, and fellows, who will certainly benefit

from reading this text if they are interested in neuroeconomics; rather, the intent is to forewarn, so that interested readers will obtain the maximum benefit.

In contrast, the text assumes that the interested reader will be less grounded in the area of economic theory. Indeed, the chapters are organized so that the following topics are sequentially addressed: identifying and defining the various components of choice, the economic elements underlying the ability to evaluate risk and reward, psychological abilities that underlie these evaluations, and future directions for neuroeconomics. Moreover, the majority of the text focuses on describing the overarching themes and the essential constructs of each theory.

Overall, Dr. Politser does an excellent job of integrating neurobiology and economics in 140 pages (glossary, references, and appendices excluded). His approach is to use a neuroeconomics principle as a starting point, which he then links to a neurobiological function or series of neurobiological functions. For instance, in Chapter 3, Dr. Politser discusses evaluation of risk and reward. He begins by describing various models of reward and risk evaluation and, to the extent that there is research regarding the neurobiology that underpins each model, he reviews it in the context of the particular model. Additionally, to facilitate reader comprehension, Dr. Politser includes a table that distills each of the economic theories into their basic elements, lists the advantages and disadvantages of each theory, and summarizes the neurobiological foundations of the particular model.

Particular strengths of the text are Dr. Politser's apparent grasp and understanding of complex neuroeconomics principles, and his writing style. For example—and consistent with the approaches used by experts in various fields—Dr. Politser can explain technical jargon using lay terms. In Chapter 2, Dr. Politser elucidates the components of choice. In one subsection, he lists the three primary elements of economic decision theory: diagnostic, management, and outcome efficacy. In order to illustrate these elements, Dr. Politser references a scene from the 1999 movie *Analyze This* with Robert De Niro and Billy Crystal, in order to demonstrate how each of these principles unwittingly played a role in the behavior of the character portrayed by De Niro. In fact, throughout the text, Dr. Politser uses scenes from movies and comments from various stand-up comedians and humorists to illustrate the applicability of the economic principles he presents in his book. From this reviewer's perspective, Dr. Politser's approach reflects the fact that he has considered the ecological validity of these economic principles—in other words, the degree to which they can be applied to day-to-day functioning. Moreover, and equally important, he makes a conscious effort to liven up the material, which is quite dense and might otherwise be less entertaining, and engages readers so that they might use this line of reasoning to generate their own examples of how these theories might explain human decision-making.

It is noteworthy that, in the introductory chapter, Dr. Politser tempers his excitement regarding the unlimited potential for neuroeconomics to explain human decision-making with an important disclaimer regarding the "fledgling science" that is neuroeconomics. Specifically, Dr. Politser articulates the need to formulate a framework that can "clarify the meaning and limitations of current neuroeconomic research." From this reviewer's perspective, it is the understanding of scientific limitations that can ultimately lead researchers to new and exciting discoveries. Dr. Politser's book can provide important assistance in that regard.

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book review

Betting Their Lives: The Close Relations of Problem Gamblers

By Lorne Tepperman. (2009). Oxford University Press. 350 pp. ISBN 978-0-19-543059-2. $49.95 USD (hardcover).

Reviewed by Henry R. Lesieur, Ph.D., Psy.D., Rhode Island Hospital, Providence, Rhode Island, USA

This book has 14 chapters divided among three sections: Problem Gambling, Gambling and Family Problems, and Future Directions. In the first section, we find that the main objective of the book is to place problem gambling in a sociological context with a particular focus on family relationships. Two studies underlie the foundation of the book: an exploratory study of 360 respondents called "At Home with Gambling," and an in-depth study of 59 gamblers and 31 spouses. The first is a product of research into the gambling beliefs of individuals in six different ethnic groups in the Toronto region: Aboriginal, British and Irish, Caribbean, Chinese, Latin American, and Russian. Their rationales for gambling, gender differences, and ideas about quitting gambling are discussed. The second study provides the main basis for the book. From that report we find that while there are cultural and social variables, physical and psychological motives seem to predominate in the answers given by the gamblers as to why they gamble. The value of Tepperman's analysis here is his placement of this within a social context.

The chapter "The Downward Spiral of Gambling" treats problem gambling like a career (see Lesieur, 1984, for an earlier example). In this analysis, chasing and its consequences are partially placed in the gambling context. Tepperman discusses the increased neglect of family, work, friends, and health as the gambler proceeds down the spiral. Much of this has been stated in other works on problem gambling.

In Chapter 7, "Worsening Family Relations," participant interviews give life to the data as well as to statements made by clinicians in other works. Money problems, time issues, increasing separation from family activities, and the predominance of negative emotional responses to increased gambling are described in the respondents' own words. "Lack of Spouse Awareness" is the title of Chapter 8. Here, Tepperman ties sociological theories of secrecy to the specifics of the gambler's lies. He points out that spouses typically are not aware of the extent of the gambler's financial losses or the extent to which they gamble. From my clinical experience, problem gamblers tend to be literalists. They lie through omission. For example, when I ask if they gambled in the past week, they will sometimes state something like "I didn't go to the casino at all," without mentioning that they bought lottery tickets, bet on sports, or engaged in some other form of gambling. Tepperman's case study of Zab and Delkash sounds like some of the gamblers I see. After the case study he provides the rationales for lying in a clear fashion, from both the

gamblers' and spouses' points of view. Conflict and conflict avoidance, as well as different paths to disclosure, are discussed in this context.

The value of adding a sociological perspective becomes very clear when Tepperman discusses the *embeddedness* of couples and the impact of this on gambling in Chapter 9. He defines it as follows: "Embeddedness refers to the intertwining of partners' social networks…" (page 185). Couples with strong couple embeddedness "occupied the same social world, knew each other's families, worked together, spent time with the same group of friends, or belonged to the same organization" (page 185). The more embedded the gambler and partner, the more they know about each other and the more influence the partner can have on gambling-related activities. However, when the gambler is embedded in the gambling world and the spouse is not, this increases secrecy and makes it harder for the spouse to have an impact on gambling. His treatment here is well worth the price of the book.

In Chapter 10, his discussions and examples of ineffective strategies for helping the gambler are similar to what is present in the literature on gambling and the family. Comments like "[c]ounseling is only as helpful as the gambler allows it to be" (p. 217) and "nagging appears to do little to improve the problem and much to worsen it" (p. 219) are widely known in therapeutic circles. Not surprisingly, some of the individuals interviewed went to Gamblers Anonymous or other treatment and did not like it. Others did not believe they had a problem or did not want to change.

Chapter 11—"Ability to Promote Treatment and Change"—is worth showing to significant others of gamblers, as it can give them hope that change is possible. Increases in shared activities, couples counseling, increasing awareness of treatment options, increased financial intimacy, and paradoxically both gambling with the gambler and ultimatums to quit gambling can work under the right circumstances. Perhaps future research will be able to tease out the difference.

Tepperman's recommendations for treatment, policy, and research represent a very good integration of sociological knowledge and theory with problem gambling and will be of interest to sociologists and researchers, as will the last chapter on regulation theory. The idea of role exits and the inherent "delay, mind-changing and backsliding" (p. 290) will be familiar to clinicians and those who study abstinence and relapse cycles among addicts. Regulation theory posits that embeddedness can produce overregulation, spouse regulation or kin regulation, while lack of embeddedness generates underregulation. Therapists would do well to pay attention to this.

This reviewer has one major critique of the book. On page 19, Tepperman makes what is an incredible comment: "problem gambling has never been studied from a sociological perspective." The following would disagree with this statement: Mikal Aasved, an anthropologist who wrote "The Sociology of Gambling"—a book filled with 440 pages of references to sociological research on gambling and problem gambling (Aasved, 2003); Rachel Volberg, a sociologist who does epidemiological research and focuses on social policy issues (Volberg, 2001); Jay Livingston, a sociologist who wrote about

gamblers in action and at Gamblers Anonymous (Livingston, 1974); John Rosecrance, a sociologist who wrote about problem gamblers ("degenerates") at an off-track betting parlor and about the need to place problem gambling in context (Rosecrance, 1985; 1988); and myself, a sociologist who wrote about the career of the (male) compulsive gambler from an interactionist perspective (Lesieur, 1977; 1984). However, having stated this, Tepperman's book adds considerably to what we know about the relations between gamblers and their spouses.

Like all good research, this book raises many questions, some of which he discusses in the latter chapters of the book. In addition, one wonders about the interconnections among the gambler, parents, children, other relatives, and friends—for example, how family secrets, and squabbles over control, enabling, and treatment are negotiated in families. While Tepperman touches on these issues at different points, further questions remain: What is the impact of the embeddedness of gamblers with their family of origin on the family they create? Given that a large percentage of problem gamblers are divorced or separated, how can the factors that Tepperman uncovered be used in interventions and the treatment setting with those clients? Rosecrance (1985) discussed the informal regulatory mechanisms within off-track betting communities that help keep regular "degenerates" from going overboard. Similar mechanisms sometimes work in informal settings at work, in bars, and other places. If researchers became more attuned to these contexts, they might uncover keys that therapists and others may use to help problem gamblers.

At the same time as members of family networks attempt to regulate the gambler, other social forces are at work that move gamblers in the opposite direction. Tepperman discusses a few of these. We could add others like casino self-exclusion programs that are either poorly enforced or not enforced at all. Perhaps the most insidious example of movement in the opposite direction from regulation is the increasing technological sophistication of gambling machines and gambling environments that are geared to keeping gamblers playing longer (increasing "time on device") and playing until their money has run out (Schull, in press). It is important that future researchers build on research like this, as well as studies like Tepperman's.

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book review

Mike Matusow: Check-Raising the Devil

By Mike Matusow, Amy Calistri, and Tim Lavalli. (2009). Cardoza Publishing: Las Vegas, NV. 288 pp., ISBN: 9781580422611. $24.95 USD (hardcover).

Reviewed by: N. Will Shead, PhD, International Centre for Youth Gambling Problems and High-Risk Behaviours, McGill University, Montreal, Quebec, Canada

The world of professional poker is filled with colourful characters. There are the grizzled veterans who learned their chops as road gamblers and have been staples in Las Vegas cardrooms since the early days of the Strip. Then there are the fresh-faced Internet poker phenoms, often barely old enough to play in brick-and-mortar casinos. Yet another generation of poker professionals rose through the ranks long after the veterans had established themselves and well before the Internet poker boom of the early 2000s — players like Phil Hellmuth, Daniel Negreanu, and Phil Ivey. Mike Matusow, nicknamed "The Mouth" for his loud and boorish personality, belongs to this latter pedigree and is perhaps the most colourful character of all. While there are numerous other players who have enjoyed more success in terms of poker accomplishments, certainly few, if any, have life stories that warrant a full-length autobiography. Matusow's story certainly does. His publicly erratic behaviours, often documented in radio interviews and television broadcasts, have made him an intriguing figure, and his story has been long awaited by those interested in the world of poker.

Check-Raising the Devil chronicles Matusow's gambling career up to present day, covering approximately 15 years. The book begins in his early adulthood when Matusow found himself living in a trailer and feeding a video poker addiction with weekly paychecks from a job at his parents' furniture store in Las Vegas. It describes his rapid introduction and immersion into poker, a game which seems to have served as a life preserver that prevented him from sinking into a seemingly inevitable gambling problem. From this point, we then follow his volatile journey as a professional player, including a foray as a poker dealer and being backed by other poker players so that he could afford to play in some of the highest stakes games in the world.

The book is candid, and Matusow is more than willing to point out his faults. His mental health problems are a focal point of his life story as he documents his ongoing struggles with bipolar disorder and attention deficit hyperactivity disorder (ADHD). A large portion of his story chronicles his involvement in the Las Vegas drug scene and 6-month incarceration in 2005 for participating in a drug deal. Matusow, completely drug-free until adulthood, describes his introduction to street drugs and the chaotic results that followed. Initially, he uses the street drug ecstasy (3,4-methylenedioxymethamphetamine, or MDMA) to overcome his social anxiety and to escape depressive episodes that came along with his undiagnosed bipolar disorder. Eventually, he abuses crystal meth

(methamphetamine) to augment his poker game, claiming it helps him concentrate and counteract symptoms of ADHD. He suspects his ADHD was in a prodromal state before being exacerbated by brain damage caused by ecstasy abuse. It is an often sad and disturbing journey towards the harsh realization that he did a great deal of damage to himself. His eventual road to recovery comes with the help of mental health professionals – a positive message for those who may be able to identify with some of Matusow's struggles.

Matusow's autobiography was originally slated to be co-authored by Michael Craig, author of *The Professor, the Banker, and the Suicide King*, a well-written and absorbing retelling of a series of ultra-high stakes poker games. I suspect that Matusow's autobiography would have taken on a completely different tone under Craig's pen. Being written by Matusow and his co-authors, Amy Calistri and Tim Lavalli, the book's first-person narrative is riddled with colloquialisms and crude language. Based on my familiarity with Matusow's conversational style from radio shows, sound clips, and television appearances, the prose captures his voice well. Although it is authentic, it is also distracting at times; it seems that the book compromises good writing for the genuine portrayal of Matusow's propensity to insert curse words unnecessarily into every other sentence.

Co-authors Amy Calistri and Tim Lavalli are both well-respected authors in the poker industry, having contributed to a wide variety of print and online poker publications. Dubbed "The Poker Shrink" in the poker industry, Lavalli holds a PhD in East-West psychology. His expertise is an asset, as large portions of the book are devoted to discussing Matusow's complicated mental health issues. Clearly, Lavalli developed a good understanding of Matusow's psychological difficulties and was able to communicate them to a general audience in a concise yet reasonably sophisticated manner.

While his mental health issues are adequately addressed in the book, it is disappointing that the issue of gambling addiction is not discussed in any detail. If you were to ask Matusow about it, I am sure he would argue that this issue was not broached because poker is not gambling to him and that therefore the point is moot. Clearly, his results show him to be a successful player, but the issue could have been explored further. Matusow himself admits that he had a gambling problem before being introduced to poker but does not explicitly address poker as a potentially addictive form of gambling. Throughout the book, he tends to attribute his losses to bad luck or a dip in his mental and emotional state, while his wins are invariably attributed to elevations in his focus and determination. If only it was that easy! To be fair, these are likely accurate representations of Matusow's perceptions. He also demonstrates some insight near the end of the book about the importance of maintaining balance by growing as a person outside of poker.

Overall, *Check-Raising the Devil* is a fascinating read for those interested in seeing professional poker through the eyes of one of poker's larger-than-life figures. Matusow's story is certainly not typical to poker professionals, but that is what makes this book so compelling. Based on his account, Matusow should consider himself exceptionally lucky to still be breathing, let alone enjoying the success he has experienced in a profession that is quick to chew up and spit out everyone aside from the most talented and fortunate.

book review

Research and Measurement Issues in Gambling Studies

Edited by Garry Smith, David Hodgins & Robert J. Williams. (2007). Elsevier: Academic Press. 664 pp., ISBN 978-0-123-70856-4. Price: $89.95 USD (hardcover).

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Research and Measurement Issues in Gambling Studies is a collection of chapters edited by Smith, Hodgins, & Williams (2007). This book is an ideal textbook for anyone who wishes to teach a course in research methods in the field of gambling studies. I'm not sure if such a course actually exists, but if it does, here's the textbook.

The authors of the various chapters are a virtual "who's who" of prominent researchers in the field of gambling studies. The chapters cover nearly every approach to the study of gambling problems that I can think of, including surveys (chapters 2 & 3), experimental studies (chapter 4), longitudinal studies (chapter 6), pharmacological studies (chapter 14), economic studies (chapter 20), qualitative studies (chapters 5 & 22), prevention (chapter 16), treatment, (chapter 15), psychometric studies (chapter 8), cross cultural studies (chapter 18), and policy (chapters 23 and 24). In addition, there are several chapters that summarize the current research findings within specific areas, including internet gambling (chapter 19), game features (chapter 9), adolescent gambling (chapter 17), co-morbidity (chapter 12), gambling and crime (chapter 21), and risk factors (chapters 11 & 13).

The only topic that I can think of that was not covered is the use of simulations of the games played by gamblers in order to understand the experience of the player (e.g., the outcomes of betting systems, the volatility and hit rate of different game designs, reinforcement schedules, distorted apparent payout due to virtual reels). In addition, economics methods are only covered in a single chapter that may not be representative of the general approach. However, on the whole this is an extraordinarily comprehensive survey of research methods in the field of gambling studies.

As an added value, each chapter is laid out with numerous subtitles that allow the reader to turn directly to the sections that interest them the most. In addition, the table of contents lists every subtitle of every chapter making it one of the most useful and longest table of contents I have ever seen. In addition to this, the book also includes a comprehensive index.

The approach of the chapters is somewhat mixed. In some chapters, the authors clearly take the position that they are teaching the reader how to conduct research in a particular area of interest. Other chapters are literature reviews that discuss a body of literature from a particular methodological point of view, rather than didactically explaining how to conduct the studies. I have not read every chapter in the book, but those that I have read are uniformly of high quality regardless of the approach taken.

One chapter I have found particularly useful is the one discussing gambling and crime, written by Campbell & Marshal (chapter 17). Their approach is both a literature review and a didactic discussion on the difficulties that one can face in conducting research on gambling and crime.

If you are setting up a course on methods of research in the field of problem gambling, this is the textbook for you. If you are a graduate student and want to know how to conduct research in this field, this is the resource for you. If you are a researcher looking for good summaries of the literature on a variety of topics, this is good reference book for you.