

editorial

New editorial board structure and new editorial board members

Dear colleagues:

This is the third issue of the *Journal of Gambling Issues (JGI)* since I began as editor-in-chief. With this issue, I am pleased to announce some changes to the editorial board structure and composition. I have very much enjoyed collaborating thus far with our highly dedicated, hard-working editorial board that has offered me invaluable advice and counsel from a variety of perspectives and disciplines within the gambling field. Editorial board members attend between two and four board meetings annually, routinely review papers for the journal, and respond to regular email queries from the editors (e.g., providing advice on invited papers, commenting on editorials). Until recently, the board was made up entirely of individuals from the Centre for Addiction and Mental Health (CAMH) in Toronto – the journal's home. Discussions at board meetings converged in a shared vision to have the *JGI* become a more nationally-representative journal.

The current board membership includes 3 editors (editor-in-chief, associate editor, managing editor), 9 voting editorial board members, and one ex-officio position. To move toward our vision of having the journal become more nationally-representative, we felt it would be important to include within the editorial board membership, the perspectives of other experts in the gambling field from across the country. We began this process with me joining as the editor-in-chief in 2010 and through our more recent addition of an associate editor, Dr. Serge Sevigny, from Quebec who is managing the new upcoming French language section of the journal. We would also be remiss if we did not acknowledge the invaluable contributions of our book reviews editor, Marianna Toce-Gerstein, from California.

The board also decided that a useful next step would be to begin the process of adding known gambling experts from Canadian regions outside of CAMH/Toronto/Ontario to the editorial board. However, we wanted to do this without increasing the size of the editorial board. Thus, we recently modified editorial board membership from the previous "open" timeline to a finite three year term. Each autumn, we will revisit board membership from the perspective of this new rotating board structure. Previous board members may be invited to return to the board after a hiatus of at least one year. When board members are on hiatus, they may choose to remain involved with the journal through membership on the international advisory panel (IAP). The IAP was created in 2004 and has a role to advise the editors on policies and content, and to alert us to strategic publishing opportunities (e.g., possible special issues, notable emerging gambling researchers and clinicians).

In implementing this new rotating editorial board model, we are pleased to announce the addition of two new voting members to the editorial board – Dr. David Hodgins from the University of Calgary in Alberta and Dr. Richard Wood from GamRes Limited in Quebec. Prior to their appointments to the editorial board, Dr. Hodgins was involved in our IAP and Dr. Wood was active as an *ad hoc* reviewer for the journal. We are very pleased to have these two gambling research experts join the editorial board and look forward to their increased contributions to the journal in this capacity. We also extend our sincere thanks to two previous editorial board members, Dr. Bruce Ballon and Dr. Tony Toneatto, who have agreed to step down from the editorial board this year to make room for our new members. It is difficult to summarize the extraordinary involvement and input that Drs. Ballon and Toneatto have had on the journal over the past decade—their dedication in developing and fostering of the journal since its inception has been vital to its success. We are pleased that they will both remain involved with the journal through membership on the IAP.

With these changes, our 9 current voting board members are: Robert Murray, Nigel Turner, Peter Ferentzy, Martin Zack, Nina Littman-Sharp, Daniela Lobo, Sheila Lacroix, Richard Wood, and David Hodgins. Wayne Skinner remains in the ex-officio position, Daryl Boshart as managing editor, Serge Sevigny as associate editor, and myself as editor-in-chief. In implementing the rotating board membership model, we will take factors such as regional representation, area of gambling expertise (e.g., clinical vs. epidemiological vs. neuroscience), and discipline (e.g., clinical psychology vs. social work) into account when making future appointments to the editorial board. I hope you will agree that these exciting changes to the editorial board structure and composition fit well with our longer term goal of increasing the *JGI*'s visibility and impact by fostering a more national scope for the journal.

Sherry H. Stewart, PhD, editor-in-chief

Pilot study of an Internet-based personalized feedback intervention for problem gamblers

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Abstract

This pilot study reports on the initial usage of an online personalized feedback screener for problem gamblers. The Check Your Gambling screener (CYG; www.CheckYourGambling.net) is an online version of a paper and pencil screener that had shown some promise in an initial evaluation to promote short-term reductions in gambling behaviour. The online CYG screener was linked to two existing Web pages for gambling in Ontario, Canada—the Ontario Problem Gambling Helpline (OPGH) Web page and ProblemGambling.ca. While more participants used the ProblemGambling.ca ($n = 730$) version than the OPGH version ($n = 591$), the OPGH version appeared to be more targeted, as almost all of the participants using this Web site were Canadian (and the personalized feedback of the current version of the CYG is generated using Canadian norms). More work is needed to establish whether the online CYG screener can motivate reductions in gambling among participants or motivate treatment-seeking in those requiring assistance in addressing problematic gambling behaviour.

Introduction

Many people with gambling concerns never access treatment (Cunningham, 2005; Suurvali, Hodgins, Toneatto, & Cunningham, 2008). Barriers to treatment include issues of shame, embarrassment, and not wanting to admit having a problem (Suurvali, Cordingley, Hodgins, & Cunningham, 2009). Lack of problem recognition is also a significant factor. As an example, in a general population survey of Ontario adults, only 47% of those with possible or probable pathological gambling status thought they had even a moderate problem with their gambling (Cunningham, Hodgins, Toneatto, & Cordingley, 2009). Given that so many problem gamblers do not access treatment, there is a need to improve accessibility to tools that problem gamblers can use outside of treatment settings. Further, as problem recognition appears to be an important barrier to treatment access, efforts should be made to develop and disseminate screeners that will allow gamblers to assess the severity of their problems even when not in treatment.

Internet-based screeners for problem gamblers are one way of increasing accessibility. Internet access is widespread, and its content can be accessed any time, day or night, and from any location with Web access. A recent general population survey found that half of participants meeting criteria for possible or probable pathological gambling indicated that they would be interested in an Internet-based screener to evaluate their gambling (Cunningham, Hodgins, & Toneatto, 2008). Given this high level of interest, we have taken a brief personalized feedback intervention for gamblers and put it into a Web-based format (beta version located at www.CheckYourGambling.net). Little other work has been done on Internet-based interventions for problem gamblers (Carlbring & Smit, 2008; Griffiths, Wood, & Parke, 2009; Wood & Griffiths, 2007). Given the paucity of research in this area, this brief report will describe pilot results from the use of the online Check your Gambling (CYG) screener (Evolution Health Systems, Inc., 2009) during the period it was linked to two existing information Web sites for problem gambling in Ontario, Canada—the Web page for the Ontario Problem Gambling Helpline (OPGH) and ProblemGambling.ca. Both off these sites provide general information on problem gambling and available treatment resources.

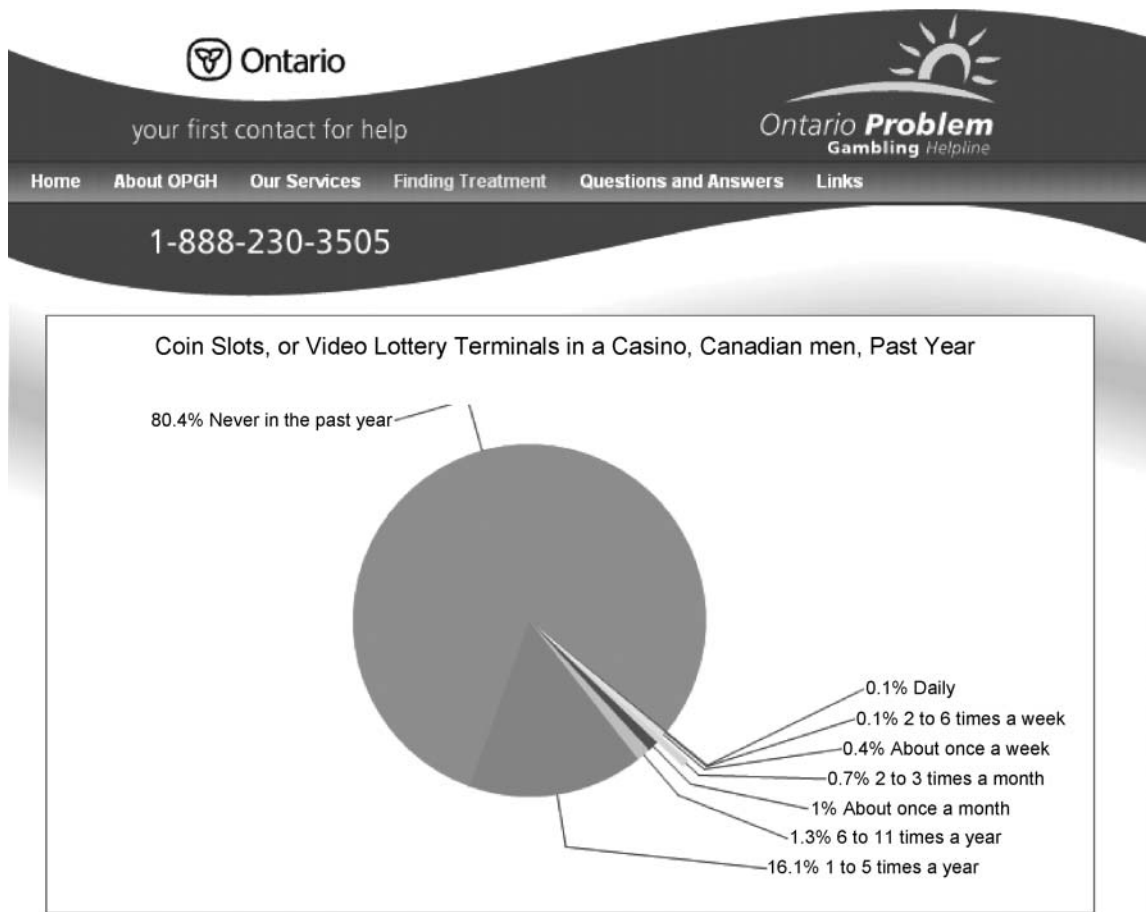
Methods

Content of the Check Your Gambling screener

The paper and pencil version of the CYG screener is described in detail elsewhere (Cunningham, Hodgins, Toneatto, Rai, & Cordingley, 2009). The online version can be accessed at www.CheckYourGambling.net and has similar content (the reader is invited to try this version of the CYG screener). The only content added to the online version compared to the paper and pencil version was that feedback is now also provided on the amount of money spent on gambling. Translation of the paper and pencil version to the online version was straightforward primarily because the content of the paper and pencil version had initially been developed with the eventual aim of computerizing the materials. Briefly, the CYG screener asks a short set of questions and then provides the participant with a personalized feedback summary. The screener questions consist of demographic items (age, sex, country of origin), questions about frequency of different gambling activities in the past 12 months, amount of money spent on gambling, the nine items of the Problem Gambling Severity Index (CPGI) (Ferris & Wynne, 2001), and the brief, eight-item version of the Gambling Cognitions Questionnaire (GCQ) (Toneatto, 1999), a measure of the cognitive distortions the person holds about gambling. Finally, the front page of the screener (1) asks the respondent why they are taking the test (for yourself, for someone you know, you are just checking out the test to see what the results look like) and (2) asks the participant to acknowledge that their data can be used for research purposes. The CYG screener was programmed such that all questions had to be answered before a feedback report was generated. Conduct of this study was approved by the standing ethics review committee of the Centre for Addiction and Mental Health.

Upon completing the screener, the participant is provided with a personalized feedback Final Report. The report consists of pie charts that compare the participants' gambling to others of the same age and sex in Canada (population estimates from the 2002 Canadian

Figure 1. Example feedback from the Ontario Problem Gambling Helpline version of the Check Your Gambling online screener.



Community Health Survey on Mental Health and Well-being were used for this purpose, CCHS) (Statistics Canada, 2003). Please see Figure 1 for a sample pie chart from the OPGH version of the Web site. The Final Report continues with a summary of how much the person spends on gambling, along with the participant's Problem Gambling Severity Index (PGSI) score and an interpretation of what this score means about the severity of their gambling. The report concludes with a list of any distorted cognitions the person holds (e.g., "I try to figure out what my luckiest numbers are"), and a summary describing the error of each of these beliefs (adapted from a self-help book for problem gamblers (Toneatto, Kosky, & Leo, 2003). The final element of the feedback is a list of techniques that the person could adopt to lower the risk associated with their gambling.

Data collection and analysis

A database of all participants on both these versions of the CYG screener was compiled for the first 15 months of the life of this screener. The database was downloaded and translated to SPSS (SPSS Inc., 2008) for analysis. Only participants who stated that they

Table 1

Demographic and Gambling Characteristics of Participants Using the OPGH^a and the ProblemGambling.ca^b Versions of the Check Your Gambling (CYG) Screener

	OPGH (<i>n</i> = 390)	ProblemGambling.ca (<i>n</i> = 480)	<i>p</i>
Mean (SD) age	38.2 (12.8)	38.1 (12.1)	.92
% Male	61.5	63.1	.68
% Living in Canada	96.7	80.0	.001
% Problem/pathological gambler ^c	79.2	76.9	.46

^a Version of the CYG screener linked to the Ontario Problem Gambling Helpline Web site.

^b Version of the CYG screener linked to the ProblemGambling.ca Web site.

^c As measured by a score of 8 or more on the Problem Gambling Severity Index.

were taking the test for themselves were included in the full analysis. Demographic and gambling characteristics were compared between participants of these two versions of the CYG using simple bivariate comparisons (t-tests and chi-squares). No adjustments were made to account for multiple statistical comparisons because of the exploratory nature of this pilot study.

Results

There were 1321 completed CYG tests in the 15 months of use from the OPGH site (*n* = 591) and from the ProblemGambling.ca site (*n* = 730). Almost two thirds (65.9%) stated that they were taking the test for themselves, while 21.2% said they were taking the test for someone else and 12.9% said they were just checking out the test to see what the results looked like. There was no significant difference ($p > .05$) in the proportion of participants who said they were taking the test for themselves between the two versions of the Web sites. The remaining results will only use data from the 870 tests where participants said they were taking the test for themselves (390 tests from the OPGH site and 480 from the ProblemGambling.ca site).

There were no significant differences ($p > .05$) in the mean age ($M = 38.1$, $SD = 12.4$) or the percent of male participants in the two Web sites (62.4%). However, there was a significant difference in country of residence between the two Web sites, with participants using the OPGH Web site being more likely to reside in Canada as compared to the ProblemGambling.ca version (96.7% versus 80.0%; $\chi^2 = 53.0$, 1 df, $p < .001$). Table 1 presents the demographic and gambling severity characteristics for the participants of the two Web sites.

There were no significant differences ($p > .05$) in the proportion of gamblers categorized as problem gamblers in the two Web sites (77.9% as measured by a score of 8 or more on the PGSI). There was some indication that participants using the OPGH Web site were spending more on gambling than participants using the ProblemGambling.ca Web site. Using just those participants who came from Canada to control for type of currency used

to report the amount of money spent on gambling (OPGH, $n = 377$; ProblemGambling.ca, $n = 384$), a higher proportion of participants using the OPGH Web site reported that they had spent more than \$1000 on gambling during the occasion that they gambled the most in the last year ($\chi^2 = 8.4$, 1 df, $p < .01$; OPGH = 42.7%; ProblemGambling.ca = 32.3%). However, the other two measures of the amount of gambling in the last year, the proportion who spent more than \$1000 in the last month on gambling (52.8%) and the proportion who spent more than \$1000 on gambling in the last year (82.7%), showed no significant difference ($p > .05$) between the two Web sites.

Discussion

The CYG screener was designed to help gamblers evaluate their gambling. Having the screener available on the Internet allows participants to use the CYG at a time and location of their choosing. In addition, it is hoped that the anonymity of the online screener will alleviate some of the barriers to seeking help that problem gamblers have identified.

The current study linked copies of the CYG screener to two existing Web pages for problem gamblers in Canada—ProblemGambling.ca and the online information page of the OPGH site. Both Web sites showed substantial use of the CYG over the 15-month pilot period, indicating that tools like the CYG are of interest to problem gamblers. While the ProblemGambling.ca version had more users, the OPGH site had more of its users from Canada. As the normative feedback component of the CYG is only available using Canadian data at present, it could be argued that the OPGH link provided a better “match” of the screener to its users. Further, the large majority of participants in both versions of the CYG met criteria for problem or pathological gambling, with some indication (based on the reported amount of money spent) that participants in the OPGH version had more severe current problems.

What needs to be done next in the evaluation of this screener? First, the content of the CYG Web site would benefit from usability testing, to identify if any elements are confusing to participants or if additional feedback elements are merited. This step is being undertaken as part of the process of developing a new version of this screener that will be made available through the ProblemGambling.ca Web site. As well, the content of the screener might be improved through a comparison with other gambling screeners on the Internet (e.g., Your First Step to Change, http://s96539219.onlinehome.us/toolkits/FirstStepSite/main_intro.htm; Mise Sur Toi, <http://misesurtoi.ca/en/test-gambling-habits/>; the Atlantic Lottery Corporation, <http://corp.alc.ca/PlayResponsibly.aspx?rdr=true&LangType=1033&ekfrm=106>; Spelinstitutet, <http://www.spelinstitutet.se/produkter/gamtest>). Third, some form of reliability check on the types of responses made by participants is necessary. The data for this pilot study consist entirely of self-reported responses made by users of the CYG Web site. While we did restrict analyses to just those participants who said that they were reporting on their own gambling, the question still arises as to the reliability of the data (e.g., are 78% of participants really problem gamblers?). This limitation also points to the need to explore whether this screener—consisting of measures that have largely been validated in paper and pencil format—is also psychometrically valid in a computerized format (Buchanan, 2003).

Finally, a clear limitation of the current study is that it focuses only on the usage of the CYG screener. While a small pilot found some indication that the CYG led to reductions in gambling (Cunningham, Hodgins, Toneatto, Rai, et al., 2009), considerably more research is needed before any reliable claims can be made as to the efficacy of the CYG as a brief intervention in and of itself. Part of this research, a randomized controlled trial of the CYG materials, is currently underway in which participants are recruited from the community through random-digit dialling. However, no efficacy research has been conducted to-date of the impact of the CYG screener in an online setting. Similar screeners that target alcohol have been shown to have an impact on problem drinking in a general population setting (Cunningham, Wild, Cordingley, van Mierlo, & Humphreys, 2009; Doumas & Hannah, 2008). Realistically, though, it can be expected that the CYG will only have limited, short-term impact (if any) on the severity of participants' problem gambling because it is such a brief screener. The real usefulness of tools like the CYG is as an easy-to-access and nonthreatening portal to motivate participants to seek further help online or in person. This use of the online CYG screener remains to be studied and will be an important signpost of the long-term benefits of promoting online screeners for problem gamblers.

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The maximum rewards at the minimum price: Reinforcement rates and payback percentages in multi-line slot machines

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Abstract

Past research has shown that gamblers frequently use the *mini-max* strategy in multi-line slot machines, whereby the player places the minimum bet on the maximum number of lines. Through a detailed analysis and explanation of the design of multi-line slot machine games, we show that when using the mini-max strategy, the payback percentage remains unchanged, yet the reinforcement rate is significantly increased. This increase in reinforcement rate is mainly due to spins in which the amount won is less than the amount wagered, which we call *losses disguised as wins*. We have verified these conclusions by playing an actual slot machine game for 10,000 spins and recording the results. We believe that the high reinforcement rate that results from playing multiple lines on games of this type contributes to their potential addictiveness. We provide three theories for why players use the mini-max strategy and suggest further areas of research.

Keywords: slot machines, electronic gaming machines, EGMs, gambling, payback percentage, operant conditioning

Introduction

Modern video slot machines are sophisticated computer games. So-called line games typically have five animated reels that the player “spins” in hopes of winning prizes that are awarded when identical symbols land on the spaces of horizontally arranged paylines. On many of these electronic gaming machines (EGMs), the player can typically wager one to five credits on multiple paylines (typically 9, 15, 20, or more paylines). Haw (2008b, 2009) showed how the rate of operant reinforcement increased as the number of wagered paylines increased on a popular slot machine game in Australia. In this paper, we extend Haw’s work on reinforcement rates in multi-line games by using a simple theoretical slot machine game to demonstrate how games of this type are designed. Furthermore, we show

how the frequency of prizes increases dramatically as the number of played lines increases and how most of these apparent wins are *losses disguised as wins* (LDWs; Dixon, Harrigan, Sandhu, Collins, & Fugelsang, 2010), in which the prize is less than the amount wagered. We then discuss reinforcement rates in terms of the pathways model of problem and pathological gambling (Blaszczynski & Nower, 2002) and the commonly used *mini-max* strategy, whereby players wager the minimum number of credits on the maximum number of lines (Livingstone, Woolley, Zazryn, Bakacs, & Shami, 2008).

Haw (2009) used the term “multiplier potential” to describe the fact that the total wager on a spin is the product of the denomination of the machine, the number of lines wagered, and the number of credits wagered on each line. He determined that the denomination of the machine and the maximum number of lines were the two most important determinants of the average amount wagered. He stated that “from a behaviourist perspective, these two characteristics represent the operant link between the gambler and the reinforcer and may play a role in understanding gambling as an elicited, contingency-shaped behaviour” (Haw, 2009, p. 1). This hypothesis follows logically from the pathways model of problem and pathological gambling, in which Blaszczynski and Nower (2002) proposed “a process commonly applicable to all gamblers” with

the influence of classical and operant conditioning leading to increased participation and the development of habitual patterns of gambling, and cognitive process resulting in faulty beliefs related to personal skill and probability of winning. (p. 491)

In an experimental test of the effect of wager size on player behavior, Sharpe, Walker, Coughlan, Enersen, and Blaszczynski (2005) modified existing slot machines to have lower denomination bill acceptors, slower reel spins, and a lower maximum wager. Lowering the maximum bet level from \$10 to \$1 was accomplished by reducing the multiplier potential of the game. Their results showed that “the reduction in maximum bet levels was the only modification likely to be effective as a harm minimization strategy” (p. 503).

In a field study, Livingstone et al. (2008) interviewed 180 Australian EGM players about their gaming strategies and found that “many participants said their most common pattern was to bet minimum credits on maximum lines (mini-max)” (p. 104). This finding has been supported experimentally by Dixon, MacLin, and Daugherty (2006), who found that 83% of participants preferred a machine with frequent small payouts over a machine with larger but less frequent payouts. This phenomenon is somewhat peculiar when considered in light of the fact that the *payback percentage* of any EGM game does not vary with the number of lines bet.

The payback percentage is the average proportion of money that is bet on an EGM that is returned to players in the form of prizes. The payback percentage is always less than 100% and the remaining amount (the *hold*) is the profit taken by the casino. In this paper, we use a simple theoretical slot machine game to show that, despite having more frequent wins and nominally larger wins when playing multiple lines, the payback percentage remains constant irrespective of the number of lines played and the number of credits wagered per line. We will show that there is no monetary advantage conferred by adopting the mini-max strategy.

We will then discuss the different schedules of reinforcement that are created when players adopt the mini-max strategy versus other strategies. We conclude by arguing that players adopt the mini-max strategy in order to maximize the frequency of reinforcement while minimizing the amount that they risk per spin. As Livingstone et al. (2008) concluded, “[EGM players] consistently preferred games where there were frequent wins, with the occurrence of wins seeming more important in problem gambler discourse than the size of those wins” (p. 115). Indeed, studies have shown that player behavior does not change with payback percentage, but is related to reinforcement rate (Haw 2008a; Weatherly & Brandt, 2004). Likewise, B. F. Skinner (1953) wrote in his classic treatise, “Slot machines, roulette wheels, dice cages, horse races, and so on pay off on a schedule of variable-ratio reinforcement. Each device has its own auxiliary reinforcements, but the schedule is the important characteristic” (p. 104). We contend that players’ ability to influence the variable reinforcement schedule¹ of the game, by adjusting the number of lines played and hence the frequency of prizes, may be a key mechanism in the development of problematic gambling behavior.

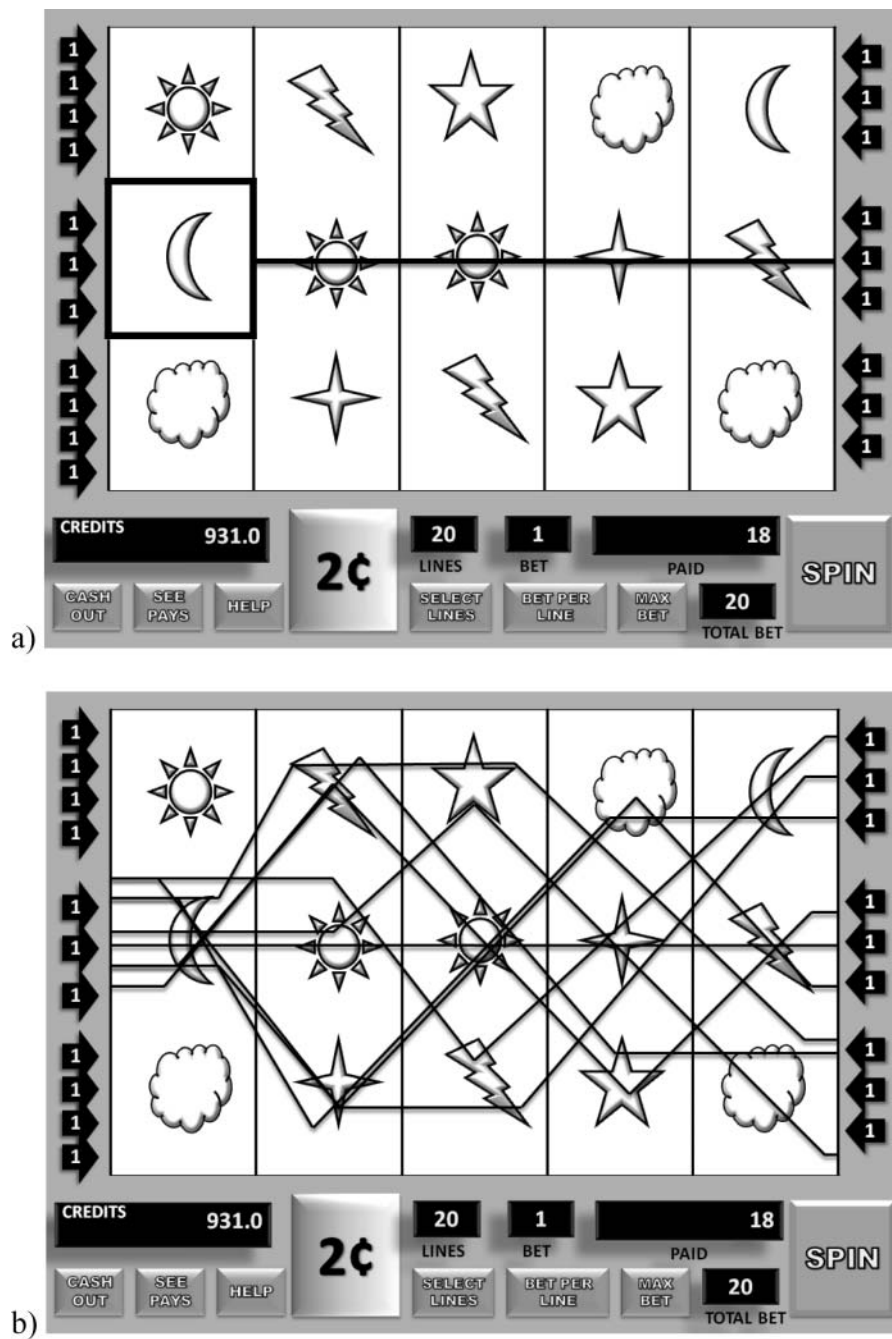
Money Storm: A Typical Multi-line Slot Machine Game

To illustrate the features of a typical multi-line EGM, we will briefly describe the slot machine game “Money Storm” (Interactive Game Technologies, Reno, NV, USA), shown schematically in Figure 1a. The game shown enables players to play up to a maximum of 20 lines and the player can wager one to five credits on each payline, with each credit having a value of 2 cents. Thus, the minimum wager is one credit (one credit wagered on one payline) and the maximum wager is 100 credits (five credits wagered on each of 20 paylines). In Figure 1b, the player has used the mini-max strategy. The player has wagered the *mini*(mum) number of credits (1 credit) on the *maxi*(mum) number of lines (20). Thus on each spin, the player has wagered a total of 40 cents. Figure 2 contains schematic depictions of each of the 20 paylines. In addition to line wins, this game also has scatter wins and bonus rounds. In this game, a win equal to twice the amount wagered on a payline is given whenever the Money Storm logo falls on the first space of that payline. In the instance illustrated in Figure 1b, the Money Storm logo is in the first space on 9 of the 20 paylines, and so the player has been awarded a total of 18 credits (i.e., two credits won on each of the nine winning paylines). Thus, the player has wagered 40 cents and “won” 36 cents (a loss disguised as a win). At the conclusion of the spin, the game highlights all of the line wins (Figure 1b) and then cycles through each of the wins individually (as in Figure 1a). These visual displays are presented with celebratory music whenever a prize is awarded on at least one payline, even if the total amount awarded on all of the paylines is less than the total amount wagered on the spin. In this instance, the loss of 4 cents was celebrated as a win. These exciting audiovisual events are present only on spins with a prize awarded on at least one payline; outcomes where the players lose their entire spin wager (40 cents in this case) are delivered in stark silence.

The Payback Percentage Is Constant: Example of a Simplified Multi-line Slot Machine Game

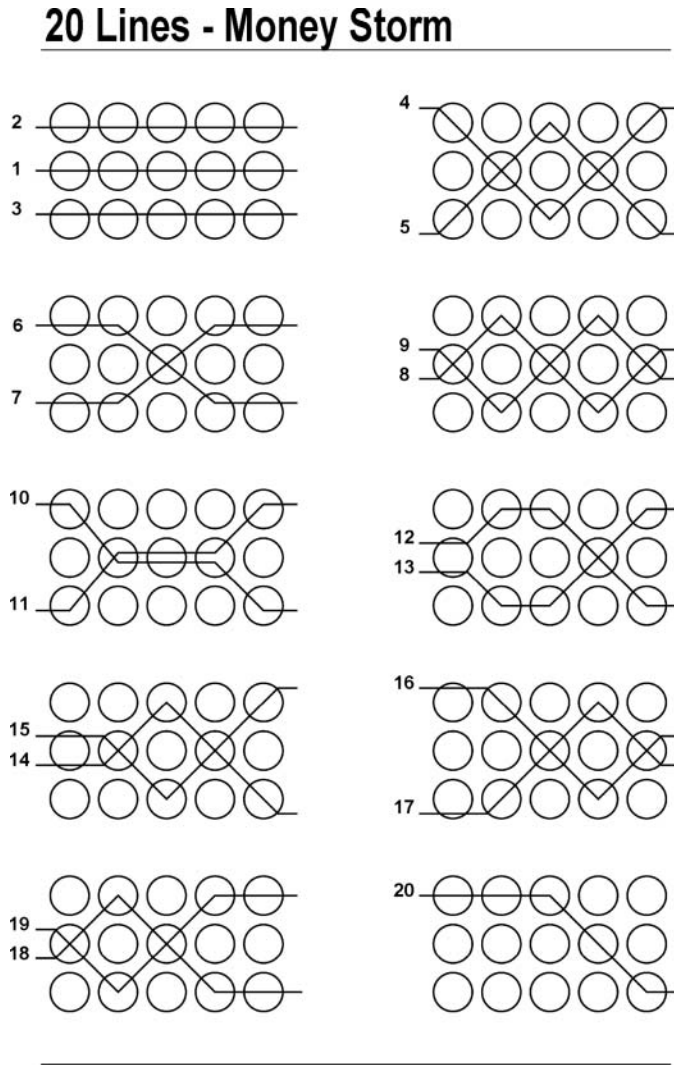
Money Storm is a very complex game with five reels, 20 paylines, and an elaborate paytable, making it difficult to illustrate the relations between the mini-max strategy, the frequency

Figure 1. Screenshots resembling the Money Storm game showing a line win (a) and wins on 9 of 20 lines (b).



of rewarded outcomes, and the fact that despite playing more lines, the payback percentage remains the same. To help explain the concepts of how multi-line slot machines work, we will first examine a simplified slot machine game that we have designed for illustrative purposes, and then we will revisit Money Storm.

Figure 2. Schematic of the 20 lines in the Money Storm game



Paytable. Figure 3 shows the paytable for a simple hypothetical three-reel slot machine game that we designed. This game pays prizes for getting three identical symbols on a payline. With one coin wagered, three apples on a payline pays two credits, three bananas on a payline pays four credits, and three cherries on a payline pays 25 credits. With two credits wagered per payline, the wins are doubled to four credits for three apples, eight credits for three bananas, and 50 credits for three cherries.

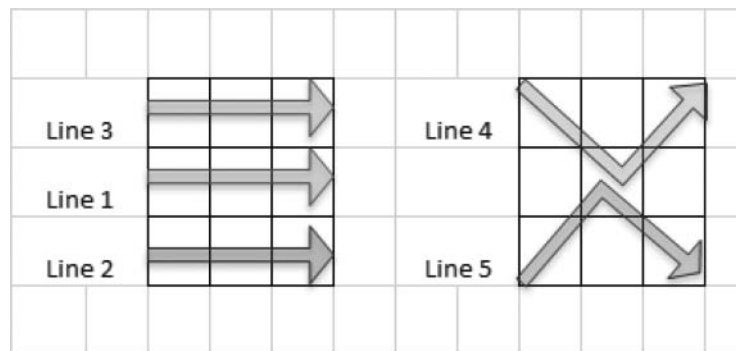
Paylines. Our simplified game allows players to bet on up to five paylines. These are shown in Figure 4. The player can wager on one to five paylines (in slot machine jargon, the player is said to “buy a line”). Players must buy lines in order from 1 to 5. If the player chooses to buy one line, the player is wagering on only payline number 1. If the player buys three lines, the wager is on lines 1, 2, and 3; and if the player buys five lines, the wager is on lines 1, 2, 3, 4, and 5. The total credits wagered on a spin are the product of the number of

Figure 3. Paytable for our simplified slot machine game. With one credit wagered, three apples (A) pays two credits, three bananas (B) pays four, and three cherries (C) pays 25.

	Reel 1	Reel 2	Reel 3	Credits Wagered	
				1	2
Example 1	A	A	A	2	4
Example 2	B	B	B	4	8
Example 3	C	C	C	25	50

Note. A = apple, B= banana, C= cherry.

Figure 4. The five paylines in our simplified slot machine game



lines wagered multiplied by the wager per line. Thus the minimum wager is one credit (i.e., wagering one credit on one line) and the maximum wager is 10 credits (i.e., wagering two credits on each of the five lines). Consider the following example. If the player had bought only one line, the result in Figure 5a would be a loss because there are not three identical symbols on the first payline (i.e., the middle horizontal row of symbols). However, if the player had wagered on all five lines, there would have been a win of 25 credits on line 3, which contains three cherries (the top row of 5a) and a win of four credits on line 5 (the B's that align in a ^ shape in Figure 5a), which contains three bananas. The result in Figure 5b has a win of two credits for three apples on line 5. Again, the player would not win anything in this scenario if they were wagering on one line.

Reels. Harrigan and Dixon (2009) showed two modern five-reel multi-line slot machine games that have been approved for use in Ontario, Canada. The number of symbols per reel was 47, 46, 48, 50, and 50 in one game (Lucky Larry's Lobstermania) and 35, 35, 35, 35, and 35 in the other (Money Storm). In this simplified example, the number of symbols on the video reels is limited to three on the first reel, three on the second reel, and four on the third reel. The reels are designed as an array in a data structure called a *circular linked list*. We will use the third reel, shown in Figure 6, to explain how the circular linked lists work.

Figure 5. Sample outcomes for two spins on our simplified slot machine game

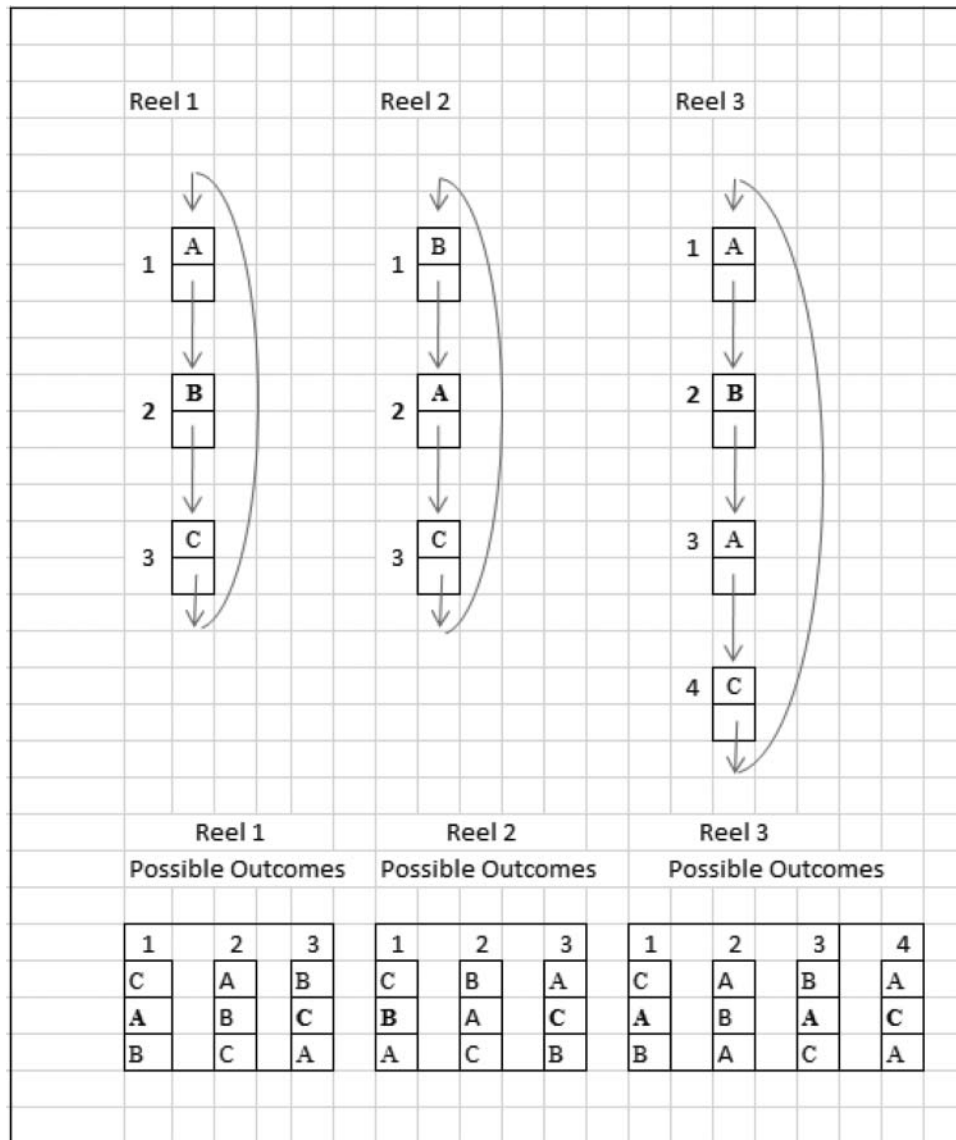
5a			5b		
C	C	C	B	B	A
A	B	A	C	A	B
B	A	B	A	C	A

- The third reel contains four symbols: apple, banana, apple, and cherry. Each has a stopping position (S1, S2, S3, S4) associated with it.
- A random number between 1 and 4 is generated for the reel.
- If the random number generated is 1, then the apple in stopping position 1 is displayed on the middle horizontal line (i.e., payline # 1), the cherry is displayed above the payline (i.e., payline #3), and the banana is displayed below the payline (i.e., payline # 2).
- If the random number is 2, then the banana in stopping position 2 is displayed on payline #1, the apple in stopping position 1 is displayed above the payline, and the apple in stopping position 3 is displayed below the payline.
- If the random number is 3, then the apple in stopping position 3 is displayed on the payline, with the banana above the payline and the cherry below the payline.
- If the random number generated is 4, then the cherry is displayed on the payline, the apple in stopping position 3 is displayed above the payline, and the apple in stopping position 1 is displayed below the payline.

For the outcome depicted in Figure 5a, the random numbers were 1 for reel 1, 1 for reel 2, and 1 for reel 3. For Figure 5b, the random numbers were 3 for reel 1, 2 for reel 2, and 2 for reel 3.

Random Number Generator. When the game is idle, the random number generator (RNG) in the slot machine is continuously generating random numbers. As in all three reel EGMs, when the player presses spin, the last three random numbers are used to determine the stopping position of the three reels. On five reel games, it is the last five random numbers that determine the outcome. At the instant the spin button is pressed, the slot machine has determined the outcome, but the player does not know the outcome yet. The animated reels then appear to spin for approximately 5 seconds, and the three symbols corresponding to the three random numbers land on the center payline.

Figure 6. Circular linked lists for the three reels of our simplified slot machine game.



Our simple slot machine game needs three random numbers for each spin: one between 1 and 3 for reel 1, another between 1 and 3 for reel 2, and one between 1 and 4 for reel 3. The RNGs generate large numbers, typically in the range of zero to four billion (thus making it virtually impossible to determine the next numbers to be generated by the algorithm). To get a number between 1 and 3, the large random number is divided by the number of symbols on the corresponding reel and then 1 is added to the remainder. For example, assume that the last three random numbers generated by the RNG were 326,789 for the first reel; 4,102,198 for the second reel; and 957,162 for the third reel.

The three reel positions would be calculated follows:

- 326,789 divided by 3 results in 108,929 with a remainder of 2. One is then added to the remainder to produce the random number “3” for reel 1. The cherry will appear on payline 1 for the first reel.
- 4,102,198 divided by 3 results in 1,367,399 with a remainder of 1. One is then added to the remainder to produce the random number “2” for reel 2. The apple will appear on payline 1 for the second reel.
- 957,162 divided by 4 results in 239,290 with a remainder of 1. One is then added to the remainder to produce the random number “2” for reel 3. The banana will appear on payline 1 for the third reel.

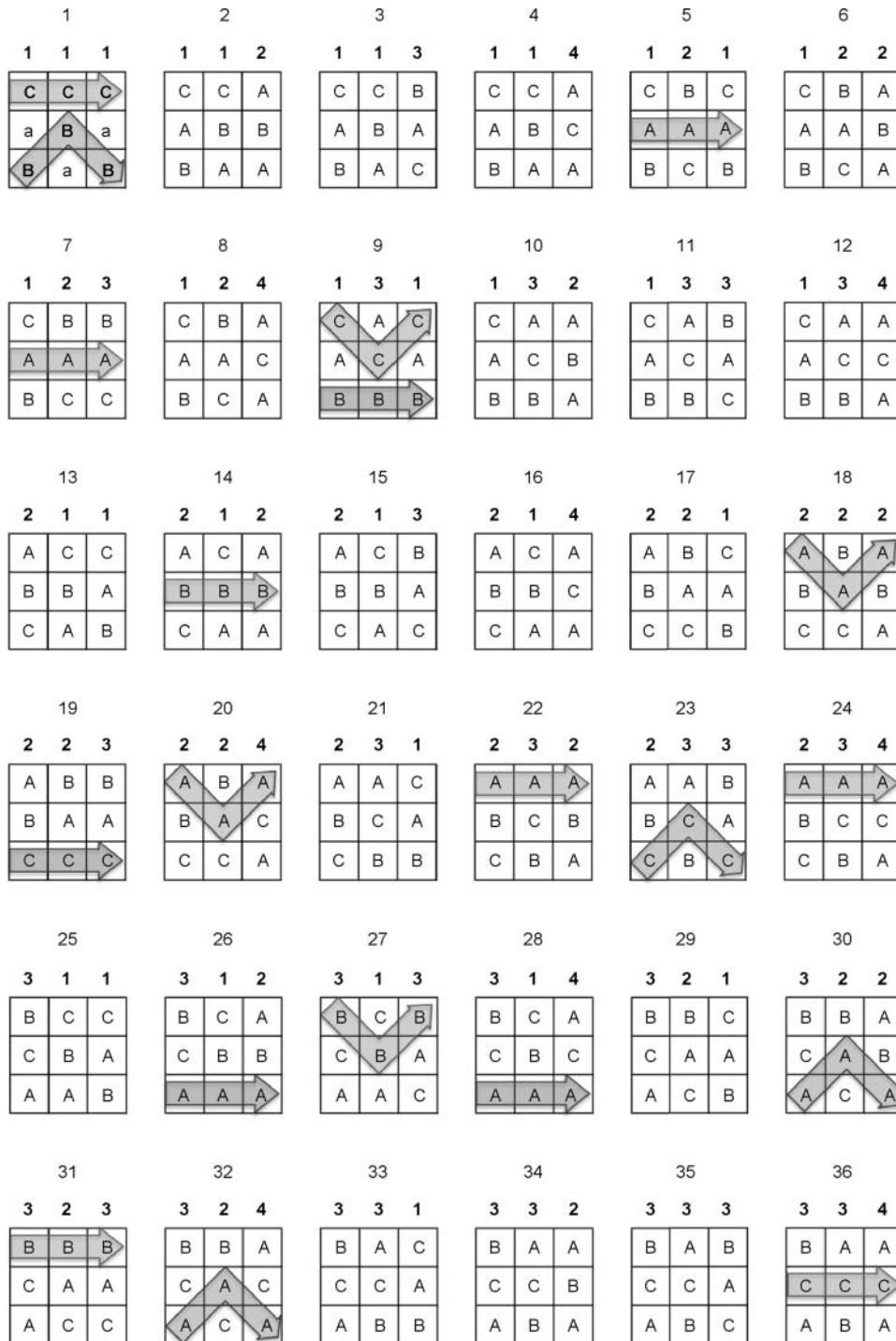
Thus, in this example, the reels stop in positions 3, 2, and 2, which is the outcome shown in Figure 5b.

All Possible Outcomes. Given that the number of symbols per reel is three on the first reel, three on the second reel, and four on the third reel, the total number of possible outcomes is 36 (calculated as the product of the number of symbols per reel, or $3 \times 3 \times 4$, which equals 36). The total number of combinations is referred to as the game’s *cycle*, and so this simple game has a cycle of 36. Each outcome has an equal probability of occurring on any given spin, and so each outcome will occur with approximately equal frequency over the lifetime of this slot machine. We can therefore calculate the likelihood of each possible outcome by examining the cycle. Today’s five-reel games with 30 to 50 symbols per reel have cycles of hundreds of millions. The reason that we designed this simplified game is so that we could show all possible outcomes, although, as will be shown, the effects concerning the number of reinforced spins and payback percentage generalize across cycle sizes. Figure 7 shows all 36 possible outcomes for the game. The outcome in the upper left corner shows the outcome when the random numbers are 1, 1, and 1. This outcome has a win of 25 credits on the third payline and a win of four credits on the fifth payline. The outcome to the right of that is the outcome when the random numbers were 1, 1, and 2. This outcome is a loss. Each of the remaining possible outcomes in Figure 7 shows the random numbers and any winning lines.

Table 1 shows the corresponding mathematics associated with the same 36 outcomes depicted in Figure 7. Row 1 in Table 1 corresponds to outcome 1 in Figure 7, row 2 in Table 1 corresponds to outcome 2 in Figure 7, and so on. The first five columns in Table 1 are for each of the five individual lines. Table 1 shows that on payline 1 there are four wins, in outcomes 5, 7, 14, and 36. Payline 2 has wins on outcomes 9, 19, 26, and 28. For each payline, over the cycle of 36 spins, there are 32 losses and 4 regular wins (wins greater than the spin wager), resulting in a hit frequency of 11% (4 divided by 36 equals 0.11) for each payline.

When wagering one credit per line, the total wager per line over the cycle is 36 credits. Table 1 shows that the total won on each individual line over the cycle is 33 credits ($2 + 2 + 4 + 25$), and each payline has a payback percentage of 91.7% (33 divided by 36 equals 0.917), which approximates a typical payback percentage on slot machines in North America. In operant conditioning terminology, the *reinforcement rate* per line is RR9.0 as there are four spins with winning outcomes in the cycle of 36 spins (36 divided by 4 equals

Figure 7. All 36 possible outcomes in our simplified slot machine game.



Note. Arrows indicate lines that involve a payout.

MULTI-LINE SLOT MACHINES

Table 1.
All 36 possible outcomes in our simplified slot machine game

Outcomes	Five individual paylines					“Buy” one to five paylines				
	1	2	3	4	5	1	1–2	1–3	1–4	1–5
1			25		4			25	25	29
2										
3										
4										
5	2					2	2	2	2	2
6										
7	2					2	2	2	2	2
8										
9		4		25			4	4	29	29
10										
11										
12										
13										
14	4					4	4	4	4	4
15										
16										
17										
18				2					2	2
19		25					25	25	25	25
20				2					2	2
21										
22			2					2	2	2
23					25					25
24			2					2	2	2
25										
26		2					2	2	2	2
27				4					4	4
28		2					2	2	2	2
29										
30					2					2
31			4					4	4	4
32					2					2
33										
34										
35										
36	25					25	25	25	25	25
Regular losses	32	32	32	32	32	32	28	24	21	18
Regular wins	4	4	4	4	4	4	8	6	7	5
LDWs hits	0	0	0	0	0	0	0	6	8	13
Total hits	4	4	4	4	4	4	8	12	15	18
Spins	36	36	36	36	36	36	36	36	36	36
Hit frequency	0.11	0.11	0.11	0.11	0.11	0.11	0.22	0.33	0.42	0.50
Credits won	33	33	33	33	33	33	66	99	132	165
Credits wagered	36	36	36	36	36	36	72	108	144	180
Payback %	91.7	91.7	91.7	91.7	91.7	91.7	91.7	91.7	91.7	91.7
Reinforcement	9.0	9.0	9.0	9.0	9.0	9.0	4.5	3.0	2.4	2.0
Loss per cycle	4	4	4	4	4	4	8	12	16	20

9). In other words, a player may expect to win something on the first payline at an average of one in nine spins. Note that the winning amounts and total wagered would be doubled if the wager were two credits per line, while the hit frequency, payback percentage, and reinforcement rate would remain *unchanged*. The total monetary loss by players would, however, be doubled over the course of the cycle.

The five columns on the right-hand side of Table 1 show the winning amounts for all possible choices of buying one to five lines. The total in each row for these five columns is calculated from the five individual payline columns on the left. For example, when wagering one credit per line, the following possibilities exist for outcome 1 (amounts would be doubled if the player wagered two credits per line):

1. Buy one line resulting in a loss (i.e., a net loss of one credit)
2. Buy two lines resulting in a loss (i.e., a net loss of two credits)
3. Buy three lines resulting in a win of 25 on line 3 (i.e., a net win of 22 credits)
4. Buy four lines resulting in a win of 25 on line 3 (i.e., a net win of 21 credits)
5. Buy five lines resulting in a win of 25 on line 3 and a win of 4 on line 5 (i.e., a net win of 24 credits)

It is important to note that the same outcome can be a regular loss or a win, depending on the number of lines wagered. For example, in the preceding example, the outcome is a regular loss when the player buys one or two lines, but is a win when the player buys three, four, or five lines.

Reinforcement Rate. Regardless of the number of lines that are bought, the number of spins in the cycle is 36. Table 1 shows that as the number of lines bought increases from one to five, the number of regular losses (spins where the person loses all of their spin wager) decreases from 32 to 18. This is because the player has bought more opportunities to receive a prize on any given spin. We use the term *hit* to refer to a spin on which the player is *rewarded* by being paid something, even if it is less than the amount wagered (i.e., both wins and LDWs). In modern slot machines, both wins and LDWs are “celebrated” by the machine with “winning” sounds and flashing lights or animations. As shown in Table 1, the number of hits increases as the number of lines wagered increases. These hits can be broken down by the number of wins in which the prize is greater than or equal to the wager and the number of LDWs in which the award is less than the amount wagered. When wagering on one or two paylines, there are no LDWs, but the number of LDWs increases significantly as the number of bought lines increases. When all five lines are bought, there are 13 LDWs and only five wins. The hit frequency (i.e., spins with celebratory audiovisual feedback indicating a win) will be 18 hits of 36 spins (i.e., 50%), but the number of spins in which the player actually wins more than wagered will be five of 36 (i.e., 13.9%). In other words, 13 of the 36 spins (i.e., 36.1%) accompanied by celebratory audiovisual signals of reward will actually be net losses for the player. Furthermore, 13 of 18 hits (i.e., 72.2%) accompanied by celebratory audiovisual signals and rewards are net losses.

Table 1 shows the reinforcement rates (the average number of spins between reinforcements) over the cycle of 36 spins. Each individual line has a reinforcement rate of 9.0 because

for each line there are four possible wins of the cycle of 36 (36 divided by 4 equals 9.0). Importantly, when the player buys all five lines, the reinforcement rate increases from once every nine spins (when playing only one line) to once every two spins (when playing all five lines). It is very likely that this more than 4-fold increase in the reinforcement rate affects the experience of players. Of course, each outcome is selected randomly from the cycle of possible outcomes, but if a gambler were to play this game long enough to ensure a representative sample of outcomes from the cycle, and wager on all five paylines, a hit would occur on approximately half of the spins. As we will see when we revisit the Money Storm game, these game characteristics are similar to those of real EGMs.

Payback Percentage. The five columns on the left of Table 1 show that each of the five individual lines has a payback percentage of 91.7%. The five columns on the right show that the payback percentage remains unchanged at 91.7% regardless of the number of lines bought. In essence, when a player has bought five lines, the player is playing five games. That is, the player has five possible ways of winning, each with a payback percentage of 91.7%, and thus the payback percentage when buying all five lines is also 91.7%. In payback percentage terms, there is *no advantage* to playing multiple paylines over playing a single payline. One spin with wagers placed on all five lines is mathematically equivalent to making five spins on five different slot machines simultaneously and placing a wager on one line for each machine.

The hold (the casino's profit) is the opposite of the payback percentage and together they always add to 100%. Our game with a payback percentage of 91.7% has a hold of 8.3%, meaning that 8.3% of all the wagers placed on all the lines throughout the lifetime of our simplified slot machine game will be lost. With a hold of 8.3%, the loss per cycle can be calculated as 8.3% times the total wager. Table 1 shows that as the number of lines bought increases, the average amount lost per spin in the cycle increases correspondingly. Thus, when five lines are bought, the loss per cycle is 5 times the loss when one line is bought, and so the casino's profit is 5 times greater.

The capability of modern EGMs to enable players to wager on more than one line and to vary the amount that they wager on these lines affords what researchers call *gambling strategies*. Often, players choose to adopt what Livingstone et al. (2008) have called the mini-max strategy, placing the minimum bet on the maximum number of lines. As we have shown, the payback percentage remains the same no matter how many lines are selected. Our example also shows that the higher the average wager (the more credits per line and the more lines wagered on), the higher the average loss. Paradoxically, the preferred mini-max strategy used by most EGM players is actually a poor strategy if the goal of playing the game is to avoid losing money. As we have shown, what significantly distinguishes single-line play from multi-line play (as in the mini-max strategy) is that playing maximum lines is likely to result in some form of reinforcement (win or LDW). In our game, reinforcement rates range from once every nine spins to every other spin. The amount won over time will be equivalent, but the machine will dole out the payback in smaller and more regular increments if all lines are wagered, whereas betting on only one or a few lines would result in a long series of losses interspersed with infrequent large wins. The regularity of outcomes

Table 2.

5,000 spins on Money Storm when wagering on one line and 20 lines

Outcomes	1 line	20 lines
Regular losses	4,229	2,608
Winning hits	771	909
LDW hits	0	1,483
Total hits	771	2,392
Spins	5,000	5,000
Hit frequency	15.4%	47.8%
Credits won	4,525	90,504
Credits wagered	5,000	100,000
<i>P</i> %	90.5	90.5
Reinforcement rate	6.5	2.1
Loss (in credits)	475	9,496

Note. LDW = losses disguised as wins.

with multi-line betting may seem more predictable to players and convey a comforting sense of control over the game.

Money Storm Revisited

For our simple slot machine game, we have shown the result for each of the 36 spins in the cycle. Although the concepts remain unchanged, each EGM found in a casino will have a different cycle size and different number of lines that can be “bought,” and so each game will vary in payback percentage, hit frequency, and reinforcement rate. To provide an example table of results for an actual slot machine game, we played 5,000 spins on Money Storm while wagering on one line and 5,000 spins while wagering on 20 lines and recorded the results. These results are shown in Table 2. The payback percentage was the same in both instances. With one line wagered, the hit frequency was 15.4% and the reinforcement rate was once every 6.5 spins. While wagering on 20 lines, however, the hit frequency was 47.88% and the reinforcement rate was once every 2.1 spins.

Why do Players Use the Mini-Max Strategy?

According to Livingstone et al., players of multi-line EGMs overwhelmingly often choose the mini-max strategy whereby they wager the minimum number of credits on the maximum number of lines. Given that the payback percentage is unchangeable, why do players use the mini-max strategy? Because this strategy does not affect their odds of gaining money, it cannot be because mini-max is an optimal strategy for monetary gain. Indeed, it is a good strategy for *losing* money because playing more lines increases the overall bet size. We suggest that there may be three explanations for why players would select this strategy. Each explanation is framed in terms of the pathways model of problem and pathological gambling and in particular on the classical and operant conditioning aspect of the model

in which the player's exposure to reinforcers gives rise to excitement and arousal that may ultimately contribute to an illusion of control and other irrational beliefs that support further gambling.

One possible reason for using the mini-max strategy is that players enjoy being rewarded (i.e., a win or an LDW) over not being rewarded (i.e., a regular loss). By increasing the number of lines wagered, they can experience an increased frequency of operant reinforcement. As Haw (2009) noted, the capacity for players to change the number of lines wagered and thereby effectively change the reinforcement schedule may be "the operant link between the gambler and the reinforcer." Indeed, players may be able to consciously distinguish regular wins from LDWs, although similar audiovisual feedback is given at the conclusion of regular wins and LDWs but not at the conclusion of regular losses. In terms of Pavlovian conditioning, regular wins are powerful unconditioned stimuli that are experienced intermittently. The sights and sounds that accompany regular wins can easily become classically conditioned to the hedonic experience of winning money. When LDWs occur, there is brief exposure to these conditioned stimuli that may be sufficient for players to feel the affective experience of reward. At an emotional level, the difference between LDWs and regular wins may become blurred and the hit frequency (which includes both LDWs and wins) effectively becomes the rate of operant behavioral reinforcement. These motivational processes almost certainly involve unconscious elements of the limbic system and dopaminergic reward centers of the brain that are well-known for the roles they play in addictive behavior (Zack & Poulos, 2009). Of critical importance for the issue of addictive gambling is the fact that repeated activation of reward pathways may cause neuroadaptation of these motivational systems. According to a biological-psychological perspective, such adaptation is the final common pathway underlying the transition from recreational enjoyment or "liking," to pathological craving or "wanting" (Koob, 2009; Robinson & Berridge, 2000). If the active ingredient in EGMs is the reinforcement schedule and programming EGMs to feature large numbers of playable lines inherently leads to artificially high reinforcement rates, then programming games with these features is analogous to producing cigarettes with extra nicotine and elevated potential for addiction of consumers. The individual characteristics of some people may make them more responsive to this manipulation and place them at greater risk for pathological gambling (MacLaren, Fugelsang, Harrigan, & Dixon, 2011; Milosevic & Ledgerwood, 2010). One exciting area of future research may focus on the mechanisms through which individual differences in motivation and personality may interact with game features and reinforcement schedules to impact the likelihood of transitioning to a cycle of addictive behavior.

A second explanation for why players use the mini-max strategy is that by allowing the player to select the number of bought lines, the player is given some control over the game. They can essentially adjust the Money Storm game from a 15.4% hit frequency to a 47.8% hit frequency, resulting in a major change in the playing experience. The player does in fact control the lines played and so it is in essence *real* control over the game. However, a player's impression that they may have uncovered a winning strategy by playing the maximum number of lines is somewhat misleading. This line of mentation could be invoked to support a wider belief system involving illusory control generally, as well as other cognitive distortions that are believed to play a critical role in continued gambling

according to the pathways model (Blaszczynski & Nower, 2002). A third possibility further involves *cognitive regret* and the effects of players' choices on operant reinforcement. A player who buys only one line is very likely to see outcomes in which winning combinations occur on unbought lines and to experience cognitive regret for not buying these lines. On subsequent spins, a player experiencing this regret or frustration could change his or her wagering strategy to cover all lines and thereby obtain any potential wins. As Livingstone et al. (2008) concluded, this "effect is likely to entrench the operant conditioning effects associated with the random ratio schedules of EGM reinforcement, whilst ingrain[ing] in the gambler the need for comprehensive 'coverage' of possible game outcomes" (p. 117). As players reduce the apparent opportunity cost of missing out on possible wins, they also increase the frequency of LDWs and upwardly adjust the reinforcement schedule of the game. The real cost of this comprehensive coverage is that larger amounts of money are expended with no increase in payback percentage.

Conclusions

Previous research has shown that gamblers frequently use the mini-max strategy in multi-line slot machines. Through a detailed analysis and explanation of the design of multi-line slot machine games, we have shown that when gamblers use the mini-max strategy, the payback percentage remains unchanged but the reinforcement rate is significantly increased. We believe this increase in reinforcement rate, which is mainly due to LDWs, may underlie the addictiveness of multi-line slot machine games.

As illustrated in this paper, the payback percentage is completely independent of the number of lines wagered or the amount wagered per line. The player's choices do not affect the payback percentage in any way, but they do cause tangible changes in reinforcement rate. If the active ingredient that reinforces slot machine play is the subjective experience of reward, then betting on all paylines gives the player a potent way of upwardly titrating their "dose" of frequent rewards. An intriguing question for future research may center on game popularity and the ways in which experienced gamblers may "forage" a casino in search of games with the most rewarding reinforcement schedules and how they may strategically play these games to optimize their subjective experience of reward while prolonging the amount of time they can spend gambling before their money is depleted.

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¹The term “reinforcement schedule” does not imply that specific outcomes of a game are predetermined or ordered in any predictable way, but that the average frequency of wins that occur across a large number of spins can be increased or decreased by the design of the game and the options chosen by players.

Gamblers, grinders, and mavericks: The use of membership categorisation to manage identity by professional poker players

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Abstract

Historically, gambling has varied considerably regarding its moral and social meanings. Whilst frequent gambling is often constructed as deviant, professional poker playing can be argued to occupy the conflicting position of both deviant and legitimate. This study explored how professional poker players negotiate this potentially troubled aspect of their identities. Semistructured interviews were conducted with four men from the United Kingdom who played casino poker. The data were analysed using membership categorization analysis. The following membership categorisations were in use within participants' accounts: gambler, *grinder*, *maverick*, and nongambler, as well as the central categorisation of professional poker player. Participants constructed themselves as stigmatised because they were frequent gamblers and poker players. Thus professional poker players utilised membership categorisation to distance themselves from other membership categories, particularly gamblers, which was achieved primarily through claims warranted by reference to skill and control.

Keywords: gambling; poker; membership categorisation; qualitative

Introduction

Gambling is a powerful act, with the capacity to elevate or debase its participants (Hill & Clark, 2001), and has varied considerably throughout history with regard to its social and moral meanings (Binde, 2005). Prior to its inclusion in the DSM-III (APA, 1980), frequent gambling was largely understood to result from some failing in a person's character (see Blaszczynski, 1985) or as a form of sin (Reith, 2003). Related to this, gambling (particularly poker) has been linked with criminality and organised crime. More recently, these understandings have been overtaken by discourses where frequent gamblers are the subjects of medical and social pathology (Nicoll, 2007), producing the identity of the compulsive (or pathological) gambler (Rossol, 2001). These discourses have latterly become the focus of public health perspectives (e.g., Blaszczynski, 2011). Understandings of gamblers have

therefore varied from “immoral” and “criminal” to “ill” and “a public health issue”, but nevertheless remain inevitably bound up with morality.

Issues of self-control are of key importance in Western culture, with loss of control seen as generally troublesome, leading to wrongdoing and immoral behaviour (Hammersley & Reid, 2002). Poor control is a critical element of many contemporary accounts of problem gambling (pathological gambling is included as an impulse control disorder in the DSM-IV (APA, 1994), which has driven many of these theoretical accounts). The amount of control exerted by a particular individual within a given wagering activity is an important determinant of whether or not that activity is understood to be gambling *per se* (e.g., Smith & Preston, 1984). In view of the tension between these different renderings, the position of *professional poker players* as gamblers is likely to be contested, with control utilised as a pivotal construct in accounts.

There are few previous studies that look specifically at poker players. Zurcher (1970) participated in regular friendly poker games at participants' homes. He concluded (from interview data) that poker meetings constituted a separate world with its own norms and rules of behaviour. He also suggested that poker playing fulfilled social-psychological needs not satisfied elsewhere in life (see also Kusyszyn, 1976; Ocean & Smith, 1993). However, such accounts may be constructed for socially and personally functional reasons and cannot necessarily be regarded as factual (McAdams, 1993), particularly since gambling was a more stigmatised activity when these studies were conducted. It has been argued previously that gamblers draw upon various vocabularies of motives, including those centred around occupational characteristics, play, and recreation, to explain their gambling behaviour and neutralise the social stigma attached to it (Hayano, 1977; Smith & Preston, 1984). However, the socio-cultural context in which poker is played in the United Kingdom (UK) has changed. Poker playing is an increasingly prevalent activity, and there is widespread media coverage of poker tournaments, the players, and celebrity endorsement (Wood, Griffiths, & Parke, 2007). Thus, poker playing is becoming a normalised, even aspirational, behaviour. The frequency with which an individual engages in a gambling activity is an important determinant of whether a person is considered to be a gambler (Lange, 2001). Given their preoccupation with, and frequency of, gambling, professional poker players are likely to meet lay definitions of problem gambling and at least some of the clinical criteria for pathological gambling. However, this is within a context of significant financial gain, which is atypical of diagnostic, empirical, and lay conceptualisations of frequent gamblers. Taken together, these issues place professional poker players in an interesting position in terms of their identity; on the one hand, they are frequent gamblers (so possibly stigmatised as deviant psychologically and morally), while on the other, they are professional poker players and may be objects of esteem (see Prus, 2004).

Motivations for gambling have been reported to include factors such as tension release, escape, fun, excitement, and social interaction (e.g., Wood et al., 2007; Clarke, 2008; Southwell, Boreham, & Laffan, 2008; Lee, Lee, Bernhard, & Lee, 2009). A large number of studies suggest that winning money is also a central motivation (e.g., Wood et al., 2007; Southwell et al., 2008; Lee et al., 2009, but see Smith & Preston, 1984). Lee, Chae, Lee, & Kim (2007) found that winning money effectively mediated other motivational variables

(amusement, excitement, avoidance, socialising). Because poker is their livelihood, it seems not unreasonable to suppose that professional poker players too play primarily for the money (although in this group other motivations might also be important, such as prestige and status). However, playing to win big as many gamblers do (Wood, Griffiths, & Parke, 2007) is different than playing to win in the long run, as might be the case with professional poker players.

The present study utilises membership categorisation analysis (MCA; Baker, 2000, 2004) to explore in depth the discursive resources employed by professional poker players to constitute and manage their identities. MCA developed from the ethnomethodological work of Sacks (1972, 1992) as an analytic technique that allows explication of how members of a particular culture, through interaction, formulate and manage categorisation of themselves and others. There is much in communicative interaction that is not necessarily explicitly stated, but that is implicitly understood, for instance, the way in which categories are linked with one another (e.g., husband and wife, wife and mother), and the normative behaviours and characteristics expected of particular categories—category-bound activities—(e.g., the category “wife” suggests running a household; Tainio, 2002). Thus, MCA is focused on understanding the ways in which people categorise themselves and others, the attribution of legitimate behaviours, and how these are recruited in the relative positioning of individuals and groups to one another (Baker, 2000). MCA is particularly suitable for the investigation of themes relating to morality (Watson, 1997); the activities involved in membership categorisation (describing others, with implied or explicit judgements and claim-making about those others) both reflect and compose moral reality (Stokoe, 2003).

As Nicoll (2007) points out, research directed at investigating the spaces and practices of gambling, particularly in casinos, where individuals of diverse backgrounds interact, is neglected. Membership categories in use by professional poker players are likely to be rich because this gambling group does not fit easily into and is unlikely to accept dominant problematised constructions of frequent gamblers. Moreover, their apparent motivations to, and outcomes of, gambling would appear to be at odds with those typically attributed to frequent gamblers. Therefore, it is the aim of the present study to document, in detail, the membership categorisations used by professional poker players to compose their own identities and those of others in the sociocultural domain of the live casino poker game.

Method

Participants

The four participants were all British men from the Midlands aged between 21 and 27 who met regularly during poker games at the casino. Recruitment to the study was based on participants' self-inclusion in the membership category of professional poker player, the self-report of poker winnings being an important source of income, and playing in a casino environment. The participants were from varying backgrounds: two played poker as their full-time job; one was a full-time student who used his winnings to support himself financially, and the fourth ran his own business but poker provided an important additional

source of income. All of the participants in the study had played poker for at least two years.

Materials

The semistructured interview schedule used general, open questions relating to experiences of gambling, motivations for playing, and other people's perceptions of their behaviour (see Appendix 1). Probe questions differed between participants as the interviewer followed up relevant points. The semistructured approach allowed the participants freedom to discuss issues of interest to them in order that emergent data would be, as far as possible, spontaneous rather than determined by the interview questions themselves.

Procedure

Individual interviews lasting 50–80 minutes were conducted by a female researcher who played poker regularly with the participants. Interviews were conducted in the participants' homes, recorded with the participants' permission, and then transcribed verbatim.

Analytic procedure

The transcripts were subjected to a basic level MCA based on the approach outlined by Baker (2000; 2004) and later summarised by Stokoe (2003). First the analysis focused on identifying the membership categories that were present within the data (e.g., professional poker player); these were either explicitly named by participants or inferred from subsequent analysis of category-bound activities (maverick was the only category not explicitly named). Category-bound activities reflect motivations, actions, rights, and obligations that are ascribed to, or implied by, a given membership category (Watson & Weinberg, 1982; Widdicombe & Wooffitt, 1995). For example, the category professional poker player implies the capacity to make a living from playing poker; thus winning money would be a legitimate (expected) activity for this group. In other words, category-bound activities are how members of each category “do, could, or should behave” (Baker, 2000, 2004). These were identified through close analysis of the ways in which participants spoke about the different membership categories that emerged from their accounts. Following this, membership categories were analysed in terms of their broader function within participants' accounts, for instance, how participants used membership categories and associated category-bound activities to make claims about themselves and others. Finally, the distinctiveness of and overlap between membership categories were examined to ascertain how participants grouped categories and/or isolated them from one another. This process illuminates the structures within participants' social worlds and how these structures are justified and maintained through talk (Clayman & Maynard, 1995; Garfinkel, 1967).

The study was conducted in accordance with the British Psychological Society's ethical guidelines and was approved by Nottingham Trent University's Ethics Committee. Identifying information has been changed to preserve anonymity.

Analysis

Professional poker players

Professional poker playing was constructed as an occupation and/or as a sport. Poker playing constructed as an occupation affords self-sufficiency and independence with little direct influence of others; in the first extract below, Tony claims to play poker because he wants “to do something for myself” and to have his job or career in his “own hands”. This construction is later reinforced when the participant refers to it as his “bread and butter”. The data imply that the potentially influential “others” are employers, as he continues by saying he is “sick of working for people”. Poker playing is further justified as an activity that the participant enjoys. There is an implied freedom and pleasure to professional poker playing that may not be available to others in their work. Thus poker playing is constructed as gainful self-employment, which affords both enjoyment and financial control, which subtly positions the professional poker player as superior to those employed by others for a wage.

The categories of *leisurely gambler* and poker player are distinct owing to the different levels of seriousness with which the game is taken; simply playing poker does not make a person a poker player. Competitiveness and winning are central characteristics of professional poker players, as is taking the game seriously. The term *leisurely gambler* suggests poker playing is recreational rather than occupational; thus these categories have different category-bound activities: whilst professional poker players are engaged in work, gamblers are engaged in recreation. The aforementioned themes are apparent in conversation with “Tony”:

Interviewer: I’d just like you to summarise your main reasons—the most important reasons why you do actually play.

Tony: OK, because I want to do something for myself, because I want my career—I want my job to be in my own hands. I’m sick of working for people and also I do it because I like the game, I do it because I like the different aspects of the game.

I: What is it about the game that you enjoy so much?

T: Like I said before—the psychology of it and the winning. Yeah, I like winning.

I: So, you’re very competitive?

T: Yeah, you have to be competitive in order to succeed in poker.

I: How important is it in your life?

T: I’d say it’s pretty important. I mean, I’d be willing to give it up if I had something else that I’d like to do or that I was moved into doing but it is quite an important part of my life. It’s my bread and butter at the end of the day so I’ve got to think of it as important otherwise what kind of player would I be? I’d be just kind of a *leisurely gambler* and not a—and not a poker player.

Poker was also constructed as a sport; participants referred directly to poker as a sporting activity, and they regularly drew on sporting analogies to normalise *tilt* (tilt denotes losing control over gambling behaviour; Brown, 1989) in terms of a “bad day”, such as may be experienced by sports people. References to sport were most often in relation to sport played

as a profession; this dovetails well with the construction of poker playing as an occupation. Earlier, the analysis described poker playing as “work”: reference to poker playing as a professional sport elevates poker playing from simply work or “bread and butter” to a profession that requires a high level of training and skill. “Carl” explains how poker players and tennis players are similar:

Well, basically being on tilt is every poker player’s worst nightmare and anything can set you on tilt. In the same way that a tennis player can have a bad day, something can happen to them and when they get out on the court it all comes there and they can’t play their A game and you know, they can’t make the serve and then they’re not playing as well as they could do and that’s the same thing for poker.

According to “Tony”, poker allows the opportunity to exert control and make money:

Tony: . . . I like to think that poker’s within my control. Yeah, as I’ve said before, there’s different forms of gambling—there’s the detached and the attached forms of gambling. Detached forms of gambling are like the horse-racing forms where you’ve got to rely on a set of results from other people—you’ve got no control over it yourself apart from who you choose and that’s about it. Whereas in poker you can work people out, you’re not just relying—you’re so much more in control when you’re playing poker. You can just get out whenever you like, whereas horse-race betting you have to stay there until the end and you win or lose. It’s a fifty/fifty every time, pretty much.

Interviewer: So, is that very important to you—to have that kind of control in the game?

T: Yeah, otherwise—well, that’s it—I don’t consider poker to be a strong form of gambling. I see it as more of a sport where you win money. I see gambling as—like I say the pools or the lottery where it’s a complete freak of chance half the time and you haven’t got any deciding influence over it.

Tony draws on the idea that skill (e.g., “work people out”) and control (e.g., “get out whenever you like”) both allow influence over the outcome of the game and it is these features of poker that align it with sport and differentiate it from gambling. In contrast, gambling allows the participant little control or influence (e.g., “fifty-fifty every time, pretty much”).

Skill and control were ideas that ran throughout participants’ accounts to differentiate poker playing from gambling, as also shown in the excerpt from Carl below:

When I started playing poker a lot of my friends who didn’t play thought I was going to be taken for a ride. I mean, their idea of a poker room is not really up and coming with the twenty-first century. Their idea of a poker room is shady people who’ll break your legs if you take money off them in the car park. I’m not joking, some of them were like ‘be careful, you know some of these men could be mobsters’ and stuff like that. They almost felt sorry for me, like I was being taken for a ride. Now

I just laugh—after they’ve worked a weekend earning seventy quid and I’m sitting there with four hundred that I’ve made in a night doing something that I love. That’s just because they didn’t understand that if you know what you’re doing, you can make a lot of money from playing poker. They see it like other forms of gambling, where you don’t have any control over what you’re doing. But now they’re cool with it.

Carl explains that nongamblers “didn’t understand” and held outdated stereotypical views of poker as an immoral and/or criminal activity. Carl says that because of this “[t]hey [non-poker players] almost felt sorry for me”. The data imply that the reason nonplayers were only *almost* sorry is because of how lucrative and enjoyable poker playing can be “. . .if you know what you’re doing. . .” (i.e., if you are skilled). Thus the negative construction of poker players as disreputable is countered; the participant states that his nongambling friends are now “cool with it”, thus bolstering his position that the enjoyment and financial reward that follow skilful play are sufficiently powerful justifications for poker playing.

In their interviews, both Tony and Carl drew on skill and control to distance poker playing from gambling. Control (over financial and occupational aspects of their lives and skill-based control within the game) is clearly an important attribute of professional poker players. Emotional control, explained by “Steve below, is another type of control necessary for the successful poker player:

I used to get a proper—proper buzz from winning, but the thing—the thing is you have to learn to control the variance, in order to be a good poker player, right? Part of that, ironically, is learning to control the rush you get when you win. It’s a two-edged sword. If you have to learn how to curb your emotion when you’re on a sharp downward spiral and completely eliminate your emotional response from your reasoned play, on the flipside you have to learn how to control your emotion when you’re on a high winning streak, ‘cause as I said, those are the two situations where your judgement is affected, either when you’re winning a lot or when you’re losing a lot and you have to learn how to control both of them.

“Richard” also touches on emotional control, using the concept of tilt:

It’s called tilt and there’s a poker term for it and a lot of players do it and I sometimes do it. But the longer I play, I think the older I get, I think the less I’m gonna do it. It’s one of those things as I get older, I think you kind of mature.

Participants claimed that emotional restraint allowed them to exert control over play; however, players admitted to losing this control at times. Because this is inconsistent with the category-based attribute of control, participants had to account for this. Tilt was therefore normalised, by Richard, as something that happens to a “lot of players”, and by Carl as “every player’s worst nightmare”. Tilt was located in the past rather than the future and as something that over time can be overcome or managed. Hence, participants were able to acknowledge instances of loss of emotional control whilst limiting the impact of these on their identities by asserting that future instances will be avoidable or manageable. The

control they develop during this process is cited as one of the defining characteristics of the professional poker player.

In summary, constructions of professional poker players cast poker as a profitable occupation or sport involving skill and control across a number of domains (occupational, cognitive, and emotional). Control was particularly important in differentiating poker playing from gambling.

Grinders

A fuzzy distinction was made between professional poker players and the hardcore of professional poker players (i.e., *grinders*), that grind out a profit through repetitive, low-risk play. Grinders show high levels of skill and control and use poker as a source of income; thus there are some category-bound activities in common with professional poker players. Differentiation of this group is achieved through reference to personal qualities: grinders are cast as morally inferior, aimless, greedy, and selfish. Below, Carl gives a negative account of poker playing, in that it involves taking money off people, but not giving back to society. The life of a professional poker player would not be fulfilling, according to Carl. Note that here, the participant oscillates between including himself in this group and not, shown by his use of “you’re” in the first sentence, and “them” in the final sentence:

The thing is from playing poker, is that you’re basically taking money off other people. I mean, you’re not really giving back to society in any way, shape, or form, which is kind of another reason why I think that being a professional poker player wouldn’t be that fulfilling a lifestyle—unless you were being the best of the best or something, which would always be satisfying. But the fact that you’re not adding to society would be a bit of a downer. I see professional poker players, especially the grinders that are down at the casino, I see them as selfish people who don’t really have a direction.

To summarise, grinders are constructed negatively; Carl struggles to resolve the problematic construction of grinder with the overarching category of professional poker player to which both participants and grinders belong. Grinders may represent an unwanted aspect of the professional poker player identity; therefore narrative work is necessary to accomplish separation from this.

Gamblers

In the interviews, participants did not consider themselves to be gamblers, and emphasized that gambling was a preoccupation that lacked skill, control and gravity. The following section explores this further.

Richard, for example, at once embraces the identity of professional gambler, whilst at the same time rejecting gambling itself as an activity: “I don’t like gambling but I’m a professional gambler”. This participant specifically states that he is a professional gambler,

which would seem distinct from gambler, particularly in view of the statement that he does not like gambling.

Steve explains a similar sentiment in more detail:

I don't even consider myself to be a gambler. I take money off gamblers, yeah? People who come to the casino who want to gamble when they've only got a four out of ten chance of winning against me—they're gamblers. They might win every now and again and they might get a buzz and they come back again but then six times out of ten, which they can never really count properly, 'cause they're gamblers, I take their money, so it's the edge that I keep playing as far as I can and—and that way I don't even consider myself to be gambling, do you know what I mean? Gambling is something that you have no control over but in my opinion if you're gambling it's like you're flipping a coin and that's gambling, yeah, fifty-fifty flipping a coin. But as long as I have the edge, even if it's a very small edge, one-two percent even, three-four percent. Ten percent edge is huge—huge, yeah. If I have any kind of an edge, right, I don't consider that to be gambling.

Gamblers are constructed as “others”, shown in Steve's use of “them” and “they're”. He states that providing he is playing the edge (playing from a position of statistical advantage over the long term), he does not consider himself a gambler. Again gamblers are constructed as losers, with inferior skill and control: “I take money off gamblers, yeah?”; “they can never really count properly”. In contrast to professional poker players, where emotional control and winning are category-bound attributes, it is implied that emotionality and frequent losses are attributes of gamblers: “. . .they might win every now and again and they might get a buzz. . .”.

In summary, gamblers are constructed negatively (i.e., as lacking in skill and control, and playing poker primarily for recreation, rather than to win). Interviewees differentiate this group from professional poker players, most likely owing to stigma attached to gambling.

Maverick poker players

The behaviour of maverick poker players is described as often thoughtlessly extravagant, grandiose, and out of control. Mavericks include professional poker players, but *flash* behaviour in this group occurred within casino games other than poker (e.g., roulette). Whilst the participant acknowledges that this group may be of equal or even superior skill in poker playing, they can “lose vast amounts of money” on other games, because they cannot “add these things up in their heads” and “get drawn into the whole buzz”. Thus, mavericks, like gamblers, are losers, lack skill, and have poor levels of emotional control, but only when engaged in games other than poker:

Steve: What is the point in flipping a coin where you have only a 49% chance of winning? People do this every day, because they can't add these things up in their head, I don't know why. Part of the reason is that they win so much money and it's the better players that do this. They win so much money—the money seems

immaterial to them. If they lose a thousand pounds a day [on roulette or blackjack] it doesn't matter because they can win it playing poker the next day so it doesn't really matter so much and they get drawn into the whole buzz of having one day when they win five grand and they miss the fact that they are losing extremely large amounts of money, which they do all the time.

Interviewer: Would you consider them to be gamblers then?

S: Oh yeah, they're definitely gamblers—they're definitely gamblers. They are people who are willing to lose vast amounts of money to get the buzz, every now and then, off winning a reasonable amount of money. They're completely comfortable with that. Part of the reason that they do that, as I said, they have a reliable income, well in their own eyes, but, you know, Pete's an ex-British champion and he's the best player down there. He can basically make money down there playing poker every day, every day, yeah and he doesn't have to worry about where his next meal is going to come from, even if he goes broke. Someone will lend him some money and he'll make some more money. He doesn't have to worry about that at all. So that's part of the reason why throwing a few extra hundred onto the roulette table doesn't seem as painful to those kinds of people. Even so, they still come to the casino going 'I can't believe I just put six grand on the table', I mean, those kinds of amounts don't really mean that much to them.

Mavericks share some category-bound behaviours with both professional poker players and gamblers. To distance the uncontrolled behaviour of the mavericks from the controlled behaviour of professional poker players, Steve portrays this lack of control as specific to other games. Moreover, the lack of control in this group is minimised; it "doesn't really matter" because to mavericks "money seems immaterial" owing to their ability to make more money from playing poker. Furthermore, there is some evidence that mavericks are held in some esteem for the characteristics they share with professional poker players: playing poker is their occupation (it produces a "reliable income", although it is interesting that Steve adds "well, in their own eyes" to this assertion); they are skilful players, and they win a lot of money. Above, it is stated that Pete can make money "every day . . . and he doesn't have to worry about where his next meal is going to come from". Employment is typically associated with daily routine, and as mentioned earlier is a source of "bread and butter". However, an alternative construction to the out-of-control and extravagant maverick, or the maverick engaged in employment, is that these individuals are carefree—their skill at poker is such that they do not need to be concerned with the day-to-day minutiae of life, such as a next meal, despite the casual loss of large amounts of money on other games.

In summary, mavericks share category-bound attributes with both gamblers and professional poker players, resulting in some conflict within accounts. Mavericks are constructed somewhat negatively (when gambling), and aspects of the account serve to distance professional poker players from this. However, their skill and success at poker is used to offset this, maintaining a positive portrayal of professional poker play.

Nongamblers

The following section looks further at the membership category of nongamblers. Nongamblers are viewed as not understanding poker and holding outdated ideas about the game. Not all nongamblers were viewed in this way; both Tony and Steve divide nongamblers into two polarised groups: those who understand and are open-minded, and those who do not understand, who stigmatise and are judgemental. To the question “What do your friends and family think about you playing poker?”, Tony responds:

To be quite honest I think they don't really give a shit. Really, it's not going to keep them awake at night. Most people just accept it because they're pretty open-minded people, they wouldn't be judgemental about it. Obviously there are judgemental people but it's because they don't really understand the game as much as I do and they just see it as one form of gambling and they don't understand the actual sport of it.

Tony uncovers two types of responses from nongamblers to poker playing: people who “don't really give a shit” and people who are “judgemental”. It is not clear whether the former are conceived of as having an understanding of the game which allows them to be accepting. However, the latter don't understand the game and see poker playing as gambling (the implication is that it is not). Hence, nongamblers are negatively portrayed as lacking in understanding and as judgemental if they disapprove, but positively constructed as open-minded if they approve or are neutral.

Similarly, Steve speaks of others' responses to his poker playing:

Interviewer: Ok, just one last question, what do your friends and family think about you playing poker?

Steve: Well, they don't understand, as I said, there's a very stigmatised response to that information. I always have to be careful the way that I tell people. That whole spiel that I gave you about playing the part of the casinos, the bookies, where I'm always taking bets that I'm favourite to win? I've had to develop that to explain to people why I don't consider what I do gambling, yeah? Now people have a very stigmatised response. When I told the people—when I started my business up and I had a support group, like, an incubation unit where I was working and they found out I was playing poker, there was this huge response of ‘are you gambling, are you going to gamble our money away?’ and I was like, well look, I'm four and a half thousand pounds up, I'm obviously not losing any money, I'm obviously winning, so you can never tell me that I'm losing money. They don't understand that there's a huge skill element, they don't understand that having a five percent edge is a really, really huge advantage in the long term. They don't understand the whole concept. So, in a way, sometimes I can't even be bothered to explain because they just don't even understand. But the people that I care about their opinions, i.e., my family, my good friends or anyone, I do take the time to explain it to them exactly why I'm doing something and how it's not self-destructive and if I was—if I was

self-destructing I would stop. And some people just can't get over the fact that you are actually in control of something. They just think you're deluding yourself.

Steve states that nongamblers stigmatise professional poker players, and it is implied that nongamblers see professional poker players as self-destructive, deluded, and not to be trusted. To combat this, the participant again calls upon his own skill and the notion that nongamblers don't understand the game, or the skill element, or the "whole concept". In summary, nongamblers are divided into two distinct branches of this membership category: those who understand the game and are open-minded, and those who do not understand the game and because of this, stigmatise poker players.

Discussion

Four major membership categories were identified within participants' accounts: grinders, mavericks, gamblers, and nongamblers; the accounts also developed the central category, professional poker players. Grinders were very frequent long-term poker players, the hard-core, that grind a profit by playing their statistical edge on a daily basis. The term grinder suggests monotonous, repetitive play, resulting in small, but regular and sufficient, wins: as per the "daily grind". Grinders would not appear to be distinguishable from professional poker players in terms of the skill/control constructs; instead, differentiation was achieved through reference to gambling-irrelevant personal qualities (e.g., selfishness, aimlessness, and lack of fulfilment). Smith and Preston (1984) demonstrated that nongamblers tended to view gamblers as compulsive and greedy, which are characteristics similar to those attributed to grinders. Therefore, professional poker players may have taken some aspects of cultural stereotypes of gamblers and applied them to this membership category.

Mavericks cut across the categories of professional poker player and gambler. In the context of poker, mavericks, like professional poker players, were attributed with high levels of skill and control, but this was specific to poker. When playing other nonskilled games, mavericks resembled gamblers (poor control and loss of money). Professional poker players therefore utilised the concepts of emotional and cognitive control as context-specific devices that would differentiate themselves from gamblers and mavericks, categories that have poor control as a central attribute.

Gamblers were constructed as *others*. Category-bound activities of gamblers were playing poker as recreation and playing games other than poker with greater chance elements. Playing poker as recreation suggests a lack of serious approach to the game: leisure is "unobligated" time where the implication is that no work is done and activities are engaged in for fun and entertainment (Delaney & Madigan, 2009). Gamblers were also portrayed as unintelligent, passive losers, with low levels of skill and control. Throughout all accounts, claims that professional poker players were not gamblers were warranted by reference to skill and control. In order for professional poker playing to be constructed as something other than gambling, participants drew distinctions between poker and other gambling activities in terms of the amount of skill and control involved. These were consistently presented as the most important elements that differentiate poker from gambling. Likewise,

the level of skill and control exerted when playing poker was a central determinant of whether players would be categorised as gamblers.

Professional poker players conceived of themselves as a stigmatised group. It is perhaps surprising that participants felt there was stigma to playing poker professionally, as poker has become an increasingly visible form of entertainment in the media in the UK over the past decade. There are two complementary accounts that might help to explain this. First, professional poker playing is a form of gambling, and gambling, especially frequent gambling, is a stigmatised activity (Smith & Preston, 1984; Preston, Bernhard, Hunter, & Bybee, 1998; Suurvali, Cordingley, Hodgins, & Cunningham, 2009). By necessity, professional poker players gamble frequently. As a consequence, nongamblers who “don’t understand” may confound the two categories, and attribute the category-bound activities of gamblers (e.g., loss of control, loss of money) to professional poker players. Considerably more work (with reference to these constructs) was done in participants’ accounts to distance themselves from gamblers than from any other membership category. Participants also claimed there were stigmas attached specifically to poker (rather than just to gambling) that they dismissed as arising from outdated views of poker and the context in which it is played. Telling stories about stigma means that professional poker players can refute unpalatable constructions of poker playing whilst simultaneously reconstructing it in the way they wish. Professional poker players were clearly keen to be dissociated from the membership category of gambler. Ironically, professional poker players here aligned themselves with societal norms by themselves stigmatising gamblers. Yet, as already described, professional poker players also constructed themselves as stigmatised.

Participants’ accounts worked to legitimise poker and to construct and manage their identities as professional poker players and not gamblers. The overarching attribute of professional poker players was control, which extended across a number of life domains: control over occupation/employment, control within the game (stemming from high levels of skill and experience), and emotional restraint. A considerable amount of attention has been given to the concept of control within the gambling research literature. However, this has mainly focused on skill and control in relation to particular gambling outcomes with the idea that these are generally illusory (e.g., Langer, 1975; Walker, 1992; Dickerson, 1993; Toneatto, Blitz-Miller, Calderwood, Dragonetti, & Tsands, 1997; Ladouceur, Giroux, & Jacques, 1998; Cantinotti, Ladouceur, & Jacques, 2004; Wood & Griffiths, & Parke 2007). Here, participants reported making money or even a living from poker, which would indicate that there is a rational dimension determining the choices that they make in play. However, the relative roles of skill and chance continue to be hotly debated in the context of gambling regulation. Surprisingly, control is not often reported as a key motivation for gambling (although see Loro, 2004). Nevertheless, here control was a core category-bound activity that was invoked by professional poker players.

It has been suggested that the social rewards may provide an escape from the pressures in gamblers’ lives (Ocean & Smith, 1993; Loro 2004). Professional poker players did not justify their gambling in these terms. However, it may be that psychosocial motivations were cleaved away from the professional poker-playing domain for discursive reasons. Professional poker playing was generally constructed as both an occupation, which would

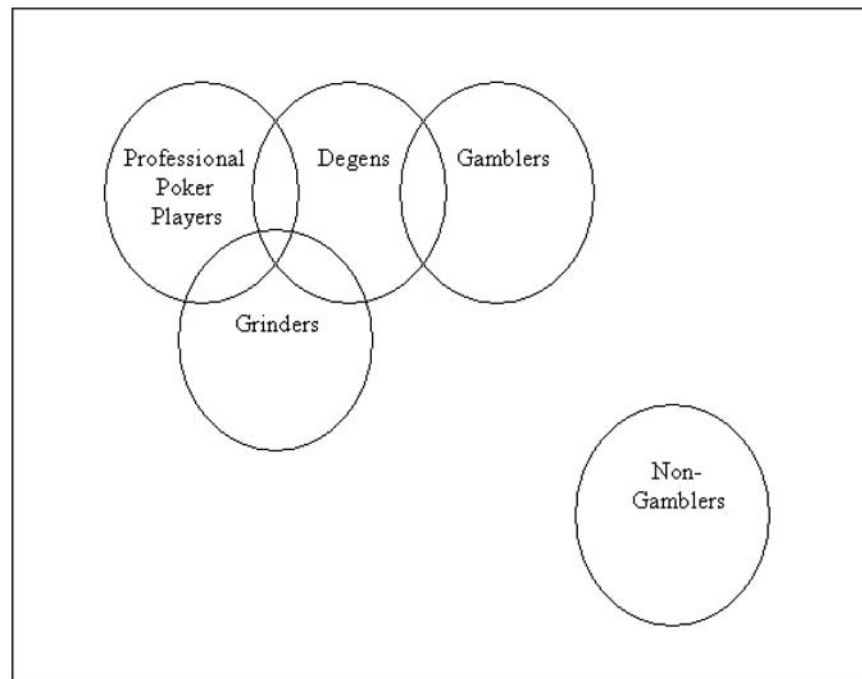
also be consistent with a financial motivation, and a serious enterprise. To conflate this with benefits such as social contact (which is again suggestive of recreation) would dilute the power of this account.

The authors expected that linguistic devices would be employed more specifically and regularly in relation to gambling as a psychological disorder (another source of stigma), which they were not. Control is valued in Western cultures, and loss of control is viewed as problematic in almost any life domain. Gambling is often viewed as disreputable and as personally and socially destructive (Prus, 2004). Addiction, control, and morality are therefore intimately related—addiction suspends people’s control, which can lead to wrongdoing (Hammersley & Reid, 2002). The participants in the present study had all experienced loss of control over their gambling in the past. Clearly, loss of control for professional poker players is an illegitimate category-bound behaviour. Participants distanced themselves from this by locating it in the past and/or by arguing that episodes in the future will be controllable. Since both older lay and newer discourses of gambling have lack of control as pivotal, when referencing their capacity to be controlled, participants were also conveying that their poker playing was not a psychological or moral problem. Thus, invoking control powerfully substantiates the account of professional poker playing as unproblematic.

Here, some groups’ category-bound activities were shared with professional poker players (see Figure 1 for a schematic of interrelations between the categories). There is overlap between the categories of maverick and grinder with professional poker players, since all three categories were constructed as playing poker regularly for monetary gain and as an occupation. Grinders and mavericks show core category-bound attributes of the superordinate category of professional poker player, for example, skill and control specifically when engaged in poker play. Mavericks also share some attributes (monetary loss, lack of control) with gamblers when not engaged in poker play. Nongamblers do not overlap in their category-bound attributes or behaviours with any of the other categories. Other interrelations are possible between the groups (for example, grinders and mavericks may share behaviours and attributes, independent of professional poker players), but were not suggested by the present data and might be explored in further research.

Questions regarding the sample remain: Firstly, participants were included in the study on the basis that they defined themselves as professional poker players and claimed to make a living from this at the casino. Whether or not participants objectively fulfil this category (even if an objective definition exists) is unknown. One criterion would be evidence of income from play; however, these data were not collected. Regardless, the study shows how this self-defined group separate themselves from other groups through the medium of language and categorisation. Secondly, the sample size could be considered small. Sample sizes need to be manageable to avoid data redundancy and allow a sufficiently deep analysis; however, it is important to have sufficient participants to allow theoretical saturation. The data did not suggest any further clear membership categories, and the membership categories presented were very clearly present in the data. Here, we argue that the participants, plus the researcher (who conducted the interviews and regularly played poker with the participants), represent a self-contained micro-culture. Although it could be argued that the researcher may have had a conflict of interest, the second author had no

Figure 1. Schematic of participants' constructions of interrelations between membership categories.



contact with participants, and both authors were committed to ensuring that conclusions drawn were thoroughly grounded in the data.

As is the case with in-depth qualitative studies, it is not possible, or desirable to claim the data to be generalizable. Instead, the study should be seen as a portrayal of the use of membership categorizations to compose a particular social world that is culturally, historically, and location specific. The approach taken by Sacks (1992) was to move from individual instances and cases to aggregates of data. Therefore the consistency with which these categorizations extend beyond this time and locale is a matter for further research, although these ‘types’ seem recognizable. Take for example, the gambling stereotypes of the ‘high roller’ and the ‘degen’. Whilst no technical definitions exist for these terms, high rollers are gamblers (or poker players) that gamble for inordinately high stakes. Degens exhibit unwise betting behaviour on non-poker-related gambling games, particularly table games (e.g., roulette). These gamblers often play poker with skill and panache, and can be said to exhibit degen behaviour when they lose large sums of money on bets away from the poker table and on games of pure chance. Both high rollers and degens clearly share attributes with the category presented here: ‘Maverick’. However, participants did not use these terms. Moreover, degen in particular can be seen as derogatory, which did not seem compatible with participants’ accounts of this membership category.

Conclusions

From the current methodological perspective, we do not take talk necessarily at face value, but instead as a form of action that accomplishes something in social and interactional contexts. In the present study, what is achieved is normalisation of poker playing through reference to membership categories and category-bound activities. In addition, constructions of gamblers, grinders, and mavericks showed that participants used these membership categories as a counterpoint to, and an illustration of, what their behaviour is *not* in order to position poker playing as a legitimate, productive activity. By establishing that “poker isn’t gambling” through the use of direct statements to this effect or analogies that legitimise poker, or by distancing themselves from gamblers, mavericks, and grinders, all of the participants were able to build and maintain their identities as professional poker players and “not gamblers”.

Somewhat tautologically, outright denial of a gambling problem in a frequent gambler is commonly accepted itself as an indication of a gambling problem, placing gamblers in a discursive double bind. Participants therefore created delicately nuanced accounts of their behaviour using the problematic behaviour of others as a counterpoint.

Findings here are illuminating with regard to the general processes (describing others, with implied or explicit judgements and claim-making about those others) which individuals and groups use to differentiate between themselves and others, manage their identities, and construct a shared moral reality (Stokoe, 2003). When identities and activities are defined as problematic, this can lead to objectification, isolation, rejection, and stigma; however, in some contexts these same identities may represent sources of prestige (see Prus, 2004). The connection of categories to individuals and/or groups is important because the categorisation process can lead to changes in the way individuals and groups experience themselves and, in turn, to external changes in behaviour and social practice (Hacking, 1999; Lloyd, 2005). The categories and fine-grained distinctions made between poker players by this particular group of participants suggests that gambling will be best understood from a number of different levels of analysis. Gamblers’ own categorisations might help researchers differentiate more sensitively between different types of gamblers.

Although participants were not instructed to talk only about their casino experiences, no membership categorisations emerged in relation to online play; however, this may be because this particular sample rarely played online. It might be expected that the membership category of grinder will be well represented online, as this format of poker allows for the proportionally greater volume of play (e.g., playing multiple tables concurrently) for relatively low stakes that characterises this group. In view of the increase in online poker playing in the UK, it will also be important to explore the use of membership categorisation in online poker players, since the use of identity may differ between real and online worlds (e.g., see Wood et al., 2007). Given the move towards looking at data that involve social interaction beyond that of the researcher and participant, future research might use data gathered, for example, by recording interaction during poker games, which will allow a more realistic exploration of how categorisation is used within natural interaction.

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Her previous research has focused on associative mechanisms involved in reward-related behaviours, and she has recently been working to apply this expertise to frequent gamblers.

Appendix 1: Interview Schedule

Can you please describe your first experience of gambling?
Can you please describe your first experience of playing poker?
Can you tell me a bit about your poker playing now?
How often do you play poker?
Are there any particular people you play poker with when you go down to the casino?
Could you describe the aspects of the game that make it so attractive?
What are your main reasons for playing?
Is there anything else you gamble on?
How important is playing poker to you?
How does poker playing affect your finances?
Would you consider yourself to be a good poker player?
What do your friends and family think about you playing poker?

Intelligent design: How to model gambler risk assessment by using loyalty tracking data

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Abstract

The ability to analyse player data collected from customer loyalty programs, smart cards, and on-line systems by risk for problem gambling has the potential to change the gaming industry and how it operates. Gambling providers are coming under increasing pressure to make use of player tracking data to identify and subsequently help at-risk and/or problem gamblers. Although the prospect of successful identification and intervention is vastly improved by the use of such a system, there are still legitimate concerns surrounding how to implement and evaluate the use of player data for these purposes. To inform ongoing debate, this paper will provide an overview of lessons learned through the authors' work in creating gambler risk assessment models by using loyalty data. This paper has particular relevance for social policy, regulatory oversight, and corporate social responsibility applications.

Introduction

The environment in which gambling providers operate is changing. Jurisdictions are beginning to enforce gaming operators' legal responsibilities for preventing and minimizing harms through legislation, regulation, and licensing conditions (Great Britain Department for Culture, Media and Sport, 2005; Great Britain Gambling Commission, 2005; New Zealand Gambling Commission 2003, 2004). A key feature of these regulatory specifications is a requirement for gambling operators to develop programs or policies for identifying problematic gambling behaviour among patrons. The use of loyalty data and player tracking has been noted by researchers and regulators as an important and reasonable approach to screen for at-risk and/or problem gamblers (Sky City Auckland Entertainment Group, 2007). Growing awareness of potential harms associated with gambling and the subsequent adoption of risk identification and prevention for corporate social responsibility purposes has already led some gambling providers to invest in systems that use player tracking technology for responsible gaming applications (Hancock, Schellinck, & Schrans, 2008). Several gaming operators have also undertaken initiatives to utilize player tracking data

for assessing players' risk levels and mitigating related harms and problems through host intervention programs (Austin & Saskatchewan Gaming Corporation, 2007; Svenska Spel, 2007). Although player tracking data have been used to identify problem gamblers in the past, neither model development nor the standards for evaluating the results and performance of the models have been critically evaluated. From our research experience and expertise in this area of inquiry, we have established a number of criteria that need to be considered in the development of a Gambler Risk Assessment System (GRAS). This paper focuses on specifications for model development by using player loyalty data that describe potential pitfalls and sources of error associated with the process.

The Need for a GRAS

The transtheoretical model of change suggests that a gambler's recognition of their problem is a major step leading toward recovery (Prochaska & DiClemente, 1992). This position has been substantiated by research in the field (Hodgins, 2001; Schellinck & Schrans, 2004a). Nonetheless, it appears that as few as 5% to 15% of problem gamblers seek professional assistance (Schellinck & Schrans, 2004a; Shaffer & Korn, 2002). Moreover, those who present for help are likely the most extreme cases and may have been referred for treatment by other agencies. The remaining problem gamblers may be categorized as (a) seeking assistance informally from a spouse or others, (b) having low motivation to seek assistance despite experiencing harm as a result of their gambling activity, or (c) unaware that they are at risk. In particular, the latter group may benefit from an opportunity to gain insight and a better understanding about their current situation vis-à-vis their gambling and risk for problems.

Some forward thinking operators in the gaming industry feel responsibility for identifying and assisting those who are having problems with their gambling. Indeed, operators may face lawsuits and subsequent financial penalties if found guilty of avoiding a "duty of care" for their customers. As a result, lack of remedial action on the part of a problem gambler or at-risk patron is of concern to the gambling provider, thereby stimulating industry interest in other ancillary methods for supporting identification and support for problem gamblers in non-clinical situations such as the gaming environment. Screens such as the Canadian Problem Gambling Index (CPGI; Ferris & Wynne, 2001), the Victoria Gambling Screen (McMillen, Marshall, Wenzel, & Ahmed, 2004), and the EIGHT screen (Early Intervention Gambling Health Test; Sullivan, 1999), which are largely based upon the South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987) and the diagnostic criteria of the *Diagnostic and Statistical Manual of Mental Disorders* (4th edition, American Psychiatric Association, 1994), are currently used in a number of venues to assist staff and players in self-identification of risk for problem gambling.

The identification of problem gamblers "on the floor," based upon behaviours or physiological and emotional symptoms, has also proven to be a useful tool (Allcock et al., 2002; Schellinck & Schrans, 2004b). Schellinck and Schrans (2004b) assessed both clearly observable and less visible cues to determine the potential for using these signals to identify problem gamblers in situ. The former behaviours included kicking the machine, getting more cash from automated teller machines, and continuing to gamble until the venue closed.

Examples of quasi-visible cues consist of players' indications of nausea or anger while gambling. By combining cues, the authors were able to identify 86% of problem gamblers with a 94% confidence level, thus corroborating the value of using multiple cues for problem gambling identification. Delfabbro, Osborn, Neville, Skelt, and McMillen (2007) validated these results in an independent on-site study and also recommended the use of cue analysis for identifying problem gamblers.

Despite the value of using combined cues to identify problem or at-risk gamblers, there are practical limitations to the effectiveness of an "in-house" program that relies solely upon staff observation to meet this objective. To be effective, player information must be collected and combined over time. Site staff may not have the continuity (e.g., have been present to observe all play sessions for a particular patron) or capacity (e.g., ability to observe, store, and assess behaviour for multiple patrons). Staff are often required to perform multiple duties beyond those of gambling customer service. Moreover, staff may be biased in the identification process and the process itself may cause tension for staff and patrons. For example, there may be embarrassment, hesitancy, and/or fear of altercations for staff in approaching familiar or unfamiliar customers to discuss a potential gambling problem. An employee may also be reluctant to identify someone who has been "a big tipper". These various problems can be minimized and/or eliminated by reducing reliance on subjective staff recognition and instead using a more objective method of identification to trigger the process; information (i.e., player tracking data) already collected and stored by customer loyalty programs can be used to produce consistent uniform alerts that systematically direct limited staff resources to where they are likely to do the most good.

The Use of Gambler Tracking Data Based on Loyalty Programs

Loyalty programs, similar to those used by retailers to develop customer relationship plans, have been introduced by casinos across the world. In these programs, play behaviour is recorded when gamblers insert their card into the machine or present it to a table attendant, thus making them eligible to receive bonus rewards or other member benefits. By collecting and analysing behavioural cues that have been measured in an unbiased manner over time, such a database can be used to develop a model to identify at-risk and problem gamblers. The development of a loyalty-based model can also provide a measure for comparison with an "on the floor" observation program. Using two such methods of identification provides a means of confirming and/or validating the accuracy of each and improves the likelihood of achieving successful, targeted outcomes.

There are several drawbacks to exclusively using loyalty data to identify at-risk and problem gamblers. For example, one cannot talk to the gambler to explore the underlying reasons for the behavioural patterns identified in the data. In contrast, working directly with a patron provides the advantage of being able to ask about motivation for a particular behaviour (e.g., "When you gambled, did you go back another day to try to win back the money you lost?"). Loyalty data can identify the days on which an individual lost large amounts of money and can determine if the gambler returned within the next day or so to gamble again. However, these data cannot tell us what the motive is for returning the next day (e.g., Is it to win back losses, or is it simply to continue gambling?). If a person is found to continually return

to gamble the next day after a loss, does this occur because the person gambles only on Fridays and Saturdays each week? If so, regardless of any loss on Friday, the event will be followed by gambling on Saturday. To overcome these problems, we have developed several different measures that collectively serve to capture various behavioural patterns indicative of chasing behaviour. These include defining a loss as a fixed amount (e.g., \$200 or more) and as a multiple factor of average losses over the previous loss sessions. The measure also includes variables to capture “returning to play within the next day or so.” The new variable is then tested to determine its ability to predict problem gambling, as defined by a standard problem gambling screen such as the Problem Gambling Severity Index (PGSI) of the CPGI (Ferris & Wynne, 2001). Only those variables found to be significant are included in our model development phase. Even though a variable such as chasing behaviour is found to be strongly associated with problem gambling, it does not mean that by itself it can accurately categorize someone as a problem gambler (i.e., with less than 10% false positives). In fact, although most problem gamblers display some degree of chasing behaviour, not everyone who exhibits chasing behaviour is a problem gambler. Therefore, a “chasing” variable is used in combination with other behavioural cues in order to make a prediction that meets the standards for accuracy. For example, including behaviours such as “playing for an average of more than 6 hours per session” and “betting at maximum bet levels on the machines most of the time” may allow us to accurately categorize a player as an at-risk or problem gambler.

Loyalty data on its own does not include information that identifies a player as being in a category of risk for problem gambling. Therefore, a necessary step in using loyalty data to generate an accurate model is to obtain a measure of risk for a representative sub-sample of loyalty players; a random sample of suitable loyalty club members is surveyed and a problem gambling screen is administered. Part of this sample is used to develop the model and the remainder is reserved for the holdout sample. The model is assumed to be valid if it accurately classifies a holdout sample of gamblers into the same categories as does the problem gambling screen used in the survey.

The accuracy of the model is likely to deteriorate over time as the gambler’s environment changes (e.g., with the introduction of new games, new forms of gambling, and changed gambling limits). This means that models have a “shelf life” and must be recalibrated periodically to remain relevant for current players. It is difficult to determine the reliability of the model over time, though it is generally suggested that a model of this type is accurate for 2 to 5 years (Berry & Linoff, 2004). Regardless, although updating the model adds cost to the process, it is necessary to periodically ensure that the model continues to perform as indicated and expected by using a new sample of gamblers. The authors recalibrated one casino model that was still quite accurate in its ability to classify members as at-risk or problem gamblers, yet over a 4-year period also exhibited increased sensitivity. This meant that the old model was identifying more of the at-risk or problem gamblers but with a higher rate of false positives (i.e., while the model continued to accurately classify actual at-risk and problem gamblers, more non-problem gamblers were also being flagged or picked up by the model).

Given that model sensitivity and accuracy is so strongly related to the data available in the database and the environmental conditions influencing that data, there are likely benefits from some level of customization to reflect the specific characteristics of the market of interest, pre-empting the concept of a “one-size-fits-all” approach to model development. This means that items that are highly predictive of problem gambling in one market or gaming culture may not necessarily be equally predictive in another.

Another potential difficulty with using loyalty tracking data that is often mentioned by gambling providers (to the authors) comes from the inability to measure gambling at other venues and for other forms of gambling where tracking data are not available. The assumptions are that the problem gambling may be originating or occurring elsewhere (e.g., problems with electronic gambling machines outside of a casino, such as video lottery terminals or Pokies), or that there will be insufficient gambling data gathered by the system to accurately classify a patron. In part, this can be addressed by focusing on the behaviour of regular patrons for a particular operator. First, a general gambling screen is usually adapted to measure gambling problems associated with a specific form of gambling. During the customer surveys used to administer the adapted problem gambling screen, we find that the majority of regular local casino gamblers tend to be loyal to a particular venue and that this activity accounts for most of their gambling expenditures (time and money). Although it is not possible to detect problem gambling for all forms of gambling solely from player loyalty data, if we have sufficient data in terms of gambling activity at the specific site of interest, we can correctly identify and classify a large proportion of problem gamblers among the regular clientele independently of where else they may gamble.

And finally, unless the tracking system is set up in such a way that loyalty members cannot share their cards or that card sharing is minimal, the data cannot be used for modelling. Moreover, gamblers may only use one card at a time; if they lose a card or obtain a new card, this information needs to be connected to their existing play behaviour information if it occurred within the time frame of the model. Otherwise, collected data will be unreliable. There are numerous ways that casinos currently discourage card sharing and multiple card use among members that work equally well for ensuring that loyalty data are suitable for model development (e.g., a card must be inserted during play, reward/points are non-transferrable and only eligible for one card per player, players are periodically rewarded for card use). As biometrics and other portable player identification devices are adapted for gambling applications, this problem is likely to diminish.

Specifications of GRAS

From our experience working with gambling databases over the last 8 years, creating algorithms for commercial GRASs and related applications, and our ongoing research into gambling behaviour, we have derived a list of specifications that need to be considered when designing such a system. The remainder of this paper describes these specifications in detail. The discussion is aimed at those who may not have specific expertise in or knowledge of data mining and modelling techniques but are in a position to evaluate, advise, implement, and/or oversee such systems.

Table 1

Example of a classification matrix for a model identifying problem gamblers

Actual	Predicted		Row total
	Problem gamblers	Non-problem gamblers	
Problem gamblers	60	40	100
Non-problem gamblers	20	880	900
Column total	80	920	1,000

1. Evaluation of Model Accuracy

A GRAS algorithm produced to classify gamblers into risk categories for problem gambling must meet certain criteria to determine accuracy. Typically, the researcher assesses the value of a predictive model by using a classification matrix. The approach used is illustrated in Table 1. In the following example, we have a sample of 1,000 gamblers, of whom 100 have been classified as problem gamblers and 900 as non-problem gamblers on the basis of a screening process.¹ We run our model, which predicts (classifies) that 80 of the gamblers are problem gamblers and 920 are non-problem gamblers. The matrix now provides us with the measures to estimate the accuracy of the model.

As noted by Peng and So (2002), the common measures used to characterize the effectiveness of the model by means of the results of the classification matrix are sensitivity and specificity.

Sensitivity is defined as the proportion of observations correctly classified as an event. In the current example, the event is whether the individual is a problem gambler; we correctly classified 60 of the 100 problem gamblers, thus producing a sensitivity of 60%. Another way to look at this is to say that we are effective in correctly identifying 60% of the problem gamblers.

Specificity is defined as the proportion of observations correctly classified as a non-event. In this case, 880 of 900 non-problem gamblers were correctly classified, giving us a specificity of 97.8%.

In our view, four other very important measures are needed to assess the value of a model. These are the confidence level, false-positive rate, false-negative rate, and overall accuracy.

The **confidence level** refers to the proportion of those correctly classified by the model as an event. In our example, 80 gamblers were classified by the model as problem gamblers, of whom 60 were correctly classified and actually are problem gamblers according to the screen. This gives us a confidence level of 75% (i.e., 60/80). If we approach someone in a venue that the model has identified as a problem gambler, we would want to be highly confident that the individual is, in fact, a problem gambler.

The **false-positive rate** is the proportion of those identified as an event when they are not an event. In this case, 20 of the 80 gamblers identified as problem gamblers by the model are not scoring as problem gamblers on the screen, which gives us a false-positive rate of 25%.

The **false-negative rate** is the proportion of those identified as a non-event when they are an event. Of the 920 gamblers identified as non-problem gamblers by the model, 40 are problem gamblers according to the screen, and so we would say that we have a false-negative rate of 4.3% (i.e., $40/920$).

The **overall accuracy** is the proportion of all gamblers correctly classified. In this case, 60 of the problem gamblers are correctly classified and 880 of the non-problem gamblers are correctly classified. The overall accuracy is therefore 94% (i.e., $(60 + 880)/1,000$).

It should be clear why it is important to know all of these measures when appraising a model.

First, most models can look good on one or more of these measures. For instance, using the data in our example, if all gamblers were classified as non-problem gamblers, the model's overall accuracy would be 90%, its specificity would be 100%, and its false-negative rate would be 10%, all of which appears to be appropriate. However, the sensitivity would be 0%, we could not calculate a confidence level or a false-positive rate, and the model would be useless for identifying problem gamblers.

Second, when the model is designed, the analyst has a choice of which of the matrix criteria to maximize. Increasing the score on one dimension, however, usually reduces the score on another. The best example of this phenomenon is the trade-off that occurs between sensitivity and the confidence level. For example, when we increase the model's sensitivity, we maximize the proportion of problem gamblers that we will identify, but usually our confidence level will drop; that is, the more individuals we classify as problem gamblers, the more difficult it becomes to do this correctly, resulting in a higher rate of false positives. Some problem gamblers may behave in such a manner that they can be clearly identified, whereas others share many characteristics with non-problem gamblers. When we classify the individuals in this latter group as problem gamblers, we will also pick up and misclassify some non-problem gamblers who have similar characteristics.

The decision as to whether one maximizes sensitivity or confidence depends on how the model output will be used. If the goal is to cost-effectively reach as many problem gamblers as possible, maximizing sensitivity makes sense. If reducing false positives is an issue (as might be the case if one were using the information to initiate interaction with a gambler on the floor), a high confidence rate is desired. If a gambling provider specifies a minimum confidence level of 90%, in order to achieve this confidence objective, the modeller may be forced to reduce sensitivity to 20% (i.e., 20% of problem gamblers will be correctly classified by the model). Therefore, the cost of having a high degree of confidence in the classification process will be a reduction in the proportion of problem gamblers identified: a large proportion, perhaps even the majority of problem gamblers, may not be identified by the model.

Table 2
Sample risk classification

Model score probability of being in target segment	Model category	% of gamblers that fall into each model category	% in each model category that are problem gamblers	% of problem gamblers in each model category
50% - 100%	High risk (red light)	6	90	20
10% - 49%	Medium risk (yellow light)	34	50	60
0% - 9%	Low risk (green light)	60	10	20

2. Correct Approach to Classification

An algorithm produces output used to classify a gambler. Usually the higher the score, the greater the probability (i.e., certainty) that the gambler is a problem gambler. Sometimes it is incorrectly assumed that the higher the score (i.e., probability of belonging to the target segment), the greater the risk faced by the gambler. Thus, the probability continuum is used to assign gamblers to categories representing varying degrees of risk (e.g., problem gamblers and medium-risk, low-risk, and no-risk groups). However, people assigned a “medium” probability of being in the target group do not necessarily have a medium degree of risk. They could be problem gamblers whose gambling behaviour is not distinctive enough for the model to categorize as high risk (e.g., it is too similar to the gambling behaviours of low-risk gamblers). Therefore, it is incorrect and potentially problematic to assume that a “medium” score obtained by using the model means that the gambler is at a medium-risk level.

Table 2 illustrates this point. The model is used to assign each gambler a probability that he or she is a problem gambler. The information is then used (incorrectly) to label the patron as a high-risk (often denoted by a red traffic light symbol), medium-risk (yellow light), or low- or no-risk gambler (green light). These three model groups may respectively make up 6%, 34%, and 60% of the gambler population. Of those in the high-risk category, 90% are problem gamblers. We can therefore say that we have a 90% confidence level that gamblers in the high-risk category are problem gamblers. Similarly, only 10% of those in the low-risk category are problem gamblers, and we can be 90% confident that they are not problem gamblers if they have been placed in this category.

However, caution must be exercised in interpreting these categories as a risk continuum. A majority of problem gamblers will fall into the medium-risk category, to make up 50% of the gamblers in that category. Thus, although they are not at medium risk, they are simply placed in the medium-risk category because they cannot be confidently assigned to the high-risk category by using the available data. Similarly, caution must be exercised when considering the green light category. This is the largest group of gamblers, and even though problem gamblers comprise only 10% of the group, this represents 20% of all problem

gamblers, a proportion that is similar to those assigned to the high-risk category. This means that problem gamblers were equally likely to be assigned to the high- or low-risk categories in this model, with the majority identified as medium risk. Therefore, it would be incorrect and potentially problematic for an operator to assume that it is safe to target those assigned to the medium- or low-risk (green light) category with a campaign to increase their gambling.

3. Algorithm Validation by Using a Holdout Sample

When developing algorithms, the modeller creates two (and sometimes three) samples. The first is called the training sample and this sample of gamblers is used to create the models. Modelling techniques such as regression analysis, decision trees, and neural networks all maximize the ability to predict or classify by using the available information contained in the particular data set used to build the initial model (e.g., training sample); the specific characteristics of the training sample are used to arrive at an optimal model. If the sample profile differs in some way from the population at large, the model will use these variables to predict group membership. For example, if problem gamblers in the training sample were more likely to play on Tuesdays than were non-problem gamblers, the model will also use play on Tuesday as one of its variables to classify the gamblers. However, it may be that in the general gambler population, problem gamblers are no more likely to play on Tuesdays than are non-problem gamblers. The randomly selected training sample just happened to have more problem gamblers playing on Tuesdays, resulting in the significant association between day played and problem gambling.

To help guard against the possibility of developing a skewed or biased model, the analyst creates a holdout sample called a *validation sample*. Assuming “Tuesday play” by the problem gamblers noted in our example was a random anomaly, the holdout or validation sample would not have problem gamblers playing more often on Tuesdays. If that is the case, when the model is applied to the holdout sample, it will no longer predict as well because one of the key variables is no longer appropriate (i.e., no longer predictive of problem gamblers in that sample), just as it would not work if it were applied to the general gambling population of interest.

Typically, the ability of the model to correctly classify gamblers is reduced when applied to the validation sample, although in rare instances, the model may perform better on the validation sample than on the training sample. Regardless, the results of the model when applied to the validation sample are felt to be a better estimate of the true accuracy of the model and should always be the criteria by which a model is judged. Thus, when estimating measures such as the sensitivity and confidence levels for a particular model, we use the classification matrix for the validation sample as opposed to the classification matrix from the training sample.

4. Selection of the Validation Sample

Following from Point 3, the validation sample used should not be based on a self-selected sample unless it is first weighted to reflect the distribution of the original training sam-

Table 3

Classification matrix based on self-administered screens to validate model

Actual	Predicted		Row total
	At-risk gamblers	Non-at-risk gamblers	
At-risk gamblers	70	3	73
Non-at-risk gamblers	8	19	27
Column total	78	22	100

Table 4

Classification matrix based on a random sample of gamblers

Actual	Predicted		Row total
	At-risk gamblers	Non-at-risk gamblers	
At-risk gamblers	38	2	40
Non-at-risk gamblers	18	42	60
Column total	56	44	100

ple. This assumes that the training sample has the same profile as the general gambling population of interest. Using a self-selection process is problematic, as it could create an artificially inflated estimate of the model's accuracy. The following example illustrates this effect by using hypothetical numbers.²

First, for the purposes of our example, we assume that if a standard screen were administered to a random sample of a venue's annual customers, approximately 40% would be classified as at-risk or problem gamblers (we will refer to these groups collectively as at-risk gamblers). Second, we assume that when presented with the opportunity to fill in an on-line self-administered problem gambling screen, those who are at risk are more likely to complete the screen, given that the exercise will be more relevant to them. If we estimate that at-risk gamblers are four times more likely to respond, 73% of those who fill out the screen will be at-risk gamblers and the rest (27%) will be not-at-risk gamblers.

A model might achieve the classification rate shown in Table 3.

This classification matrix reports a sensitivity of 96% (70/73), a confidence level of 90% for identifying at-risk gamblers (70/78), and an overall accuracy of 89% (70% + 19%). These appear to be very good statistics for model performance by most standards. However, they are inflated because they are not applied to a representative sample of gamblers. If a random sample of gamblers was used as a validation sample, then we might expect a classification matrix as shown in Table 4.

We assume the sensitivity of the model would remain the same and that 96% ($\approx 38/40$) of at-risk gamblers would be identified. We also assume that the not-at-risk gamblers are identified with the same accuracy as before, but that their numbers become larger because in a random sample of gamblers, they make up a larger portion of the population. In this case, the overall accuracy drops to 80% ($38\% + 42\%$) and the confidence level drops to 68% ($38/56$). This means that, overall, twice as many people are misclassified (20% vs. 10%) and that, rather than 1 in 10 gamblers being classified as a false positive, the rate of misclassification in this particular example increases to 1 in 3.

Arguments can be made that our example either underestimates the amount of bias introduced because of self-selection (e.g., sensitivity would also likely be found to drop when applied to a random sample), or overestimates the bias (e.g., the likelihood of at-risk gamblers filling out the screen does not differ strongly from not-at-risk gamblers). Whatever the case, we feel that the example clearly illustrates the potential for bias in such an approach. There are methods of estimating the bias due to self-selection, but these methods would need to be applied and new numbers produced before the accuracy of the model is reported. The bottom line is that figures for model accuracy reported by using this form of validation cannot be compared with more legitimate forms of validation until the potential for bias has been assessed and adequate controls introduced.

5. Selection of the Training Sample

The sample used to develop the model should be representative of the sample to which it is applied. If the model will be used to assess regular gamblers, (e.g., defined as those who gamble at least 12 times a year on a regular monthly basis), then the model needs to be trained on a sample with the same profile. There are a couple of ways in which this might not be the case. The model could be developed on the basis of patrons of one type of venue, of one specific venue, or of a particular jurisdiction and then be applied to other types of venues, other venues not similar to the one used for training, or even venues in other jurisdictions. As mentioned previously, the validation sample may also not represent all regular gamblers if self-selection is used.

Risk measures such as SOGS and the CPGI-PGSI are applied to jurisdictions around the world, and so the question arises as to why data-based algorithms cannot be similarly applied to other jurisdictions. The answer is that screens such as SOGS have indicators of behaviours and negative consequences due to gambling that are fairly universal. Stealing to pay for gambling debts is indicative of high-risk behaviour in all jurisdictions, and, therefore, the statement works well as a measure to determine risk levels for players in most parts of the world. However, gambling behaviour measures used as predictors in statistical models are less transferable. There is a defined relationship (usually isotopic) between the dependent variable (being a problem gambler) and the independent variables (maximum rate of play in a session) such that above a certain value for the dependent variable (e.g., I spend more than \$11.50 per minute), the gambler is likely to be classified as a problem gambler. A model developed in Canada in which the maximum bet per spin on a video lottery terminal is usually around \$2.50 will have a lower value for this variable being associated with problem gambling than is the case in Victoria, Australia, where the

maximum bet on a Pokie machine can be \$10.00 per spin. In this case, a maximum spend of \$18.75 per minute may be necessary before a gambler is designated as a problem gambler by the model. The same variable may be effective in both jurisdictions; it is the cut-off level designating problem gambling that is likely to differ between jurisdictions and venues. The appropriate level can only be determined through empirical research by using a sample that is representative of the gamblers (and play behaviour) in the jurisdiction where it will be applied.

6. Appropriate Choice of Data Used in Modelling

A minimum amount of information needs to be gathered on a gambler before a model can be developed and used for classification purposes. For development of a risk model, there must be sufficient data points recorded for the gamblers (this could be a minimum of anywhere from 3 to 15 times) so that the key predictor variables can be calculated (i.e., populated sufficiently for modelling). Typical of most consumption processes, the majority of gambling activity is accounted for by a relatively small proportion of those who gamble over a year. The actual number varies by venue and jurisdiction, but it can be expected that as many as 50% of annual patrons will only have between one and five sessions of gambling recorded over a year. If it is determined that a minimum of 10 sessions is required in order to provide enough information for accurate modelling of gamblers, then this proportion could be further reduced to 25% of the yearly gambler population.

The amount of information (i.e., sessions) needed to produce an accurate model can be determined empirically by using a set of criteria. However, once the minimum number of required sessions is set, the proportion of people included in the modelling process can be increased by expanding the time frame for inclusion. That is, rather than relying on 1 year's worth of data, the modeller can use data over a 2-year period, which may effectively double the number of gamblers who are classified by the model. We recommend using gambling behaviour over a 1-year period, as this time frame typically corresponds with the time reference for most risk measures or screens (e.g., past-year gambling involvement) and also coincides with operator and regulatory annual tracking and oversight. If a shorter period is used, then we recommend that the risk instrument administered to the gambler also reflects this same time frame.

A common problem in data mining and modelling is that the use of information collected at a certain point may no longer be valid as time passes. Obvious examples are demographic variables such as income, work status, or family composition that become out of date and deteriorate in value as predictors over time. However, this would also include any other information collected at a single point such as attitudinal variables, recent behaviour and experiences, perceptions or beliefs, and other measures often collected in surveys. Some of these variables can change quickly and frequently (e.g., work status) and their inclusion can cause model accuracy to deteriorate rapidly. Other variables based on psychological measures such as attitudes toward gambling can change even more quickly and should be used with extreme caution as predictors.

Additional demographic and attitudinal variables could contribute to a model's ability to classify gamblers; however, exclusion of such variables is pragmatic and one often born of necessity. To include such variables would require surveys of all new regular gamblers with periodic update surveys (e.g., every 2 years) of the total sample of regular gamblers in order to maintain accurate information in the database. Some casinos or gaming operators have 30,000 or more regular gamblers and the cost of maintaining such a system would be prohibitive. The authors have worked with databases for large retail and consumer organizations (e.g., financial, grocery, and insurance) that started building models, including these forms of variables, an approach that was subsequently abandoned because the costs of maintaining the data were too high and usually the data itself was unreliable because consumers refused to answer many of the critical questions. Models have been developed that achieve very acceptable classification accuracy without inclusion of these non-behavioural variables, and so, in our experience, models that do not rely on variables of this type are preferred.

7. The Responsiveness of the Algorithm

The model utilizes behaviours that occur over a specific period of time, say a year, and then creates variables from this recorded behaviour. These variables are then used to predict risk and to assign the gambler to the appropriate risk category on the basis of the predicted outcome. Twelve months of data may be required to amass enough information to make accurate predictions. However, it is also important that the model be responsive to changes in behaviour that produce gambler movement between risk categories (either increased or decreased risk). If a gambler stops gambling because of self-exclusion or a change in play patterns to those consistent with non-problematic gambling, the model output should reflect this within a reasonably short period, ideally at the point when the improved behaviour is found to persist. However, the algorithm should not be so responsive that it reassigns a person's categorization on the basis of temporary or transient changes in behaviour. Algorithms that rely more on complex play patterns rather than on simple frequency or extent of gambling will more likely have sufficient momentum to minimize the impact of temporary or extraneous changes in behaviour that are unrelated to risk reduction (e.g., temporary breaks in play due to travel, health, or financial constraints).

8. Accuracy Over the Full Range of Gambling Expenditures

Modelling analysts will have an easier time assigning those who exhibit more extreme behaviour to the high-risk categories. Hence, those who spend more and who gamble more frequently will likely be categorized as those who are at risk or problem gamblers. However, the majority of those who are at risk may not fall into the extremes, although it is more difficult to identify a problem gambler who does not exhibit extreme behaviours.

For example, risk for problem gambling tends to be higher among those who gamble at the high end; high rollers play more often and spend at higher rates, and, therefore, it is relatively easy to maximize sensitivity (reach of at-risk and problem gamblers) by building a model that includes most of these high rollers in the high-risk category on the basis of spending and

frequency. However, this group of high rollers makes up a small proportion of the regular players, many of whom are not having any problems. Simply targeting high spenders means that most problem gamblers in the low-spending segments will not be identified at the cost of including too many false positives from the high-spending category. Gamblers in the low-spending segments, as well as those experiencing difficulties with their gambling, can be expected to make up the majority of the player base.

Thus, a good model should be able to identify a significant proportion of at-risk and problem gamblers among all spending segments without incurring a high rate of false positives.

9. The Shelf Life of the Algorithm

The legal and social environment in which gambling occurs, the alternative attractions available for entertainment, and the nature of people's preferences and perceptions change over time. Changes in any of these factors can impact a given model's effectiveness. Once developed, models are said to have a shelf life. The gambling provider should specify that the accuracy of the model be reappraised at least every 3 years and updated if necessary. A representative sample of gamblers should be used when the model is tested and recalibrated.

Data miners sometimes claim that their models update themselves over time. However, to update their effectiveness, the models must have up-to-date values for the dependent variable, that is, the current status of the gambler in terms of risk. The source of this updated information can be from self-administered risk screens completed by gamblers either on their own or with assistance (e.g., on-site staff), or from access to gambler results provided to the modeller through treatment professionals. However, in both of these cases, the sample used to update the model is very likely to be biased toward those who are at higher risk for gambling problems. This is the same issue identified in the discussion concerning validation of the model. Use of this biased sample to recalibrate the model over time will lead to a biased model that cannot be applied to the gambler population as a whole, as it is only valid for those who self-identify as having a gambling problem. Because of sampling, the reported accuracy of the model will also likely be inflated, especially when compared with models that use a general gambling population sample to update and calibrate.

Summary

Existing means of identifying at-risk and problem gamblers, such as problem gambling screens and the use of cues exhibited on "the floor" of the venue, are limited in value and can be augmented effectively by using a GRAS that is based on player tracking data. This paper provided a list of specifications that are not exhaustive, but should give gambling providers and jurisdictions that set policy guidelines for such systems a better understanding of the characteristics of an effective GRAS. Above all, the system should provide the users with accuracy, broad coverage of gambler segments, real value in terms of identifying at-risk or problem gamblers in a timely and effective manner, and confidence that the system is valid in its categorization of gamblers over the life of the model. There is considerable

opportunity for the implementation of these systems in jurisdictions and markets worldwide, and there will be continued development of the techniques for creating models that will meet the specifications presented here.

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Dr. Tony Schellinck is the F. C. Manning Chair in Economics and Business at Dalhousie University and a Principal and CEO of Focal Research Consultants Limited. Dr. Schellinck has been publishing articles and authoring texts in the areas of consumer psychology, research methods and gambling for over thirty years. Over the last twenty years, he has conducted numerous industry and government sponsored surveys, focus groups and field experiments examining gambling behaviour, policy and practices. Since 1988 Tony has co-authored 15 large-scale peer-reviewed government gambling studies that have had an international impact for gambling best practices and social policy. Tony was a co-director of the Faculty of Management's Informatics Initiative at Dalhousie University and is responsible for an ongoing research program in the area of data-mining, measurement and constructs development, particularly related to human behaviour and gambling. He also researches and develops new analytic techniques specifically suited for large consumer databases. These diverse areas of interest have recently converged as

Dr. Schellinck and his team at Focal develops new methods of analyzing gambling loyalty data and player tracking for evaluative purposes as well as identification of problem gamblers and other high-risk behaviours.

Tracy Schrans is a Principal and President of Focal Research Consultants. Ms. Schrans has an Honours degree in Social and Experimental Psychology, completing advanced courses in data-mining, data analysis, research design, and project management. She is a Certified Marketing Research Professional (CMRP) and professional moderator. She has conducted gambling research in the public, community health, regulatory and commercial gaming sectors since 1988, with specific expertise in methodology, behaviour measurement, and prevalence. Tracy consults on a national and international basis, working with governments and organizations in Canada, Europe, Australia, and New Zealand. She has published papers in peer reviewed journals, co-authored numerous government reports and is a reviewer for various publications and granting agencies. She was appointed to the Board of Directors of the Nova Scotia Gaming Foundation from July 2005–2009 and is currently involved in social marketing and program evaluation for gambling, player tracking and loyalty data analysis, as well as outcome monitoring and public health program evaluation for Addiction Services including alcohol, tobacco, other drug use and gambling. Tracy and Dr. Tony Schellinck are the first researchers to use gambling tracking data to manage risk (CSR) most recently designing new gambling instruments to identify early and advanced risk as well as harm among adults and youth for prevention and social policy applications.

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¹A typical model uses the output of a risk screen such as SOGS or the CPGI-PGSI, which assigns gamblers to risk categories as a dependent or target variable. The dependent variable is used as a benchmark in designing the model to classify gamblers by risk level. An underlying assumption in this modelling process is that there is no error in the dependent variable. That is, the gamblers are correctly classified by the screen. However, we know that application of these screens to the same samples often results in only a 60% overlap in classification (e.g., Ferris & Wynne, 2001), so that the results depend very much on the choice of screen. The gambling provider must therefore have confidence that the screen utilized is appropriate for the venue setting and the type of gambling (i.e., electronic gambling machines and table games) because the behavioural data used to classify gamblers are based on these forms of gambling.

²Note that the distribution of risk for yearly customers, although hypothetical in nature, is consistent with multiple studies of gambler populations that the authors have examined over the last 4 years, but is not representative of any specific market or venue.

Does one shoe fit all? Impacts of gambling among four ethnic groups in New Zealand

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Abstract

The aim of the current study is to examine the impacts of gambling among four different ethnic groups within New Zealand (i.e., Maori, Pakeha, Pacific peoples, and Chinese and Korean peoples). Four thousand and sixty-eight Pakeha, 1,162 Maori, 1,031 Pacific people, and 984 Chinese and Korean people took part in a telephone interview that assessed their gambling participation and their quality of life. Results showed a number of differences between ethnic groups. For the Maori and Pacific samples, there were significant associations between gambling participation (especially time spent on electronic gaming machines) and lower ratings in a number of life domains. In contrast to the findings for the Maori and Pacific peoples, which showed predominantly negative associations between gambling modes and people's self ratings of their domains of life, the findings for Pakeha and for Chinese and Korean peoples were more mixed and the associations predominantly positive.

Keywords: gambling, quality of life, ethnicity, New Zealand

Introduction

Past research has shown that certain ethnic groups are disproportionately harmed by gambling. This may be related to their socio-economic and political position within a society, access to gambling venues, cultural beliefs and values, culturally determined help-seeking attitudes, and the process of acculturation (Clarke et al., 2006; Raylu & Oei, 2004; Reith & Scottish Executive Social Research, 2006).

In New Zealand, the disproportionate effect of gambling is particularly evident among Maori (the indigenous people of New Zealand who account for approximately 15% of the total New Zealand population), Pacific peoples (who represent about 7% of the total population), and recent migrant groups such as Chinese and Koreans (according to the 2006 census, Asian people represent 9% of the total population, and the largest Asian ethnic group is

Chinese, constituting 42% of the Asian population). These groups accounted for over half of the country's problem gamblers in recent studies of gambling in New Zealand (Abbott & Volberg, 2000; Dyall & Hand, 2003; Ministry of Health, 2009; Statistics New Zealand, 2007; Tse, Wong, & Chan, 2007).

Maori

Dyall and Morrison (2002) highlighted the fact that, as with alcohol and tobacco, the regulatory and legislative regimes that govern gambling activity in New Zealand have never included requirements to actively protect or promote the interests of Maori or ensure the participation of Maori in the process of policy development. This is despite the fact that previous research has suggested that Maori are at particular risk for the adverse impacts of gambling and are at greater risk of problem gambling than are non-Maori (Abbott & Volberg, 2000; Dyall, 2004, 2007).

The 2006/07 New Zealand Health Survey showed that Maori are disproportionately affected by problem gambling (Ministry of Health, 2009). Maori not only had higher current gambling participation rates (71.8%) than the national average (65.3%), but also had significantly higher problem gambling rates (1.7%), as defined by the Canadian Problem Gambling Index, compared with the total population (0.4%). In addition, this survey suggested that Maori made up approximately half of problem gamblers in New Zealand in 2006/07 even though they represented only 11.4% of the total adult population.

Abbot and Volberg (Abbott & Volberg, 2000; Volberg & Abbott, 1997) estimated that Maori spent more on gambling than did Pakeha even though household incomes of Maori were significantly lower. Dyall and Hand (2003) undertook a qualitative survey of participants who worked with Maori *whanau* (families) and suggested that gambling eroded social capital and Maori cultural and family values; it also reduced time and money available to families. These findings are supported by a study on the social impacts of gambling in Manukau City, New Zealand (Rankine & Haigh, 2003), which found that harms to children, loss of *mana* (respect and status), and theft and misappropriation of goods to pay for gambling, are common.

Clarke and colleagues (2006) suggested that the main reasons for Maori to start and continue gambling were the desire to win big money; easy access to gambling activities, especially electronic gaming machines (EGMs); and as a way to escape from stress, troubles, and loneliness.

Pacific Peoples

Pacific peoples encompass numerous ethnicities from the South Pacific. The five largest Pacific groups in New Zealand are the Samoans, Cook Islanders, Tongans, Niueans, and Fijians (Statistics New Zealand, 2007).

The 2006/07 New Zealand Health Survey revealed that although a large proportion of Pacific peoples do not gamble (Pacific peoples had a lower current gambling participation

rate [55.2%] compared with the national average), those who do gamble were at greater risk of developing problem gambling. In comparison with the total population, Pacific peoples were approximately 4 times more likely to be problem gamblers; to be more precise, 1.7% of Pacific peoples compared with 0.4% of the total population were classified as problem gamblers (Ministry of Health, 2009). Pacific peoples made up 21.1% of problem gamblers in New Zealand while representing only 5.3% of the total adult population.

Cultural beliefs and practices may influence Pacific people's attitudes to and participation in gambling. There is a history of gambling in Niuean culture; however, problem gambling is a more recent development (Collaborating Pacific Contributors, 2004). Bellringer, Perese, Abbott, and Williams (2006) found that migrant Pacific mothers were more likely to gamble than were New Zealand-born Pacific mothers. Another finding was that Pacific mothers who followed the cultural practice of gift giving were more likely to gamble and spend over \$20 a week on gambling. A concentration of non-casino EGMs has been cited as a problem for Tongan communities (Guttenbeil-Po'uhlia, Tu'itahi, Hand, & Htay, 2004). Furthermore, Tongan communities were found to hold many misconceptions about how gaming machines worked that fostered false beliefs in control and the amount of money returned to the community (Guttenbeil-Po'uhlia et al., 2004). Some of their cultural values also facilitate gambling, for example, the value of *feinga* (persistence courage, determination, and exhausting all options). For many Tongans of low socio-economic status, this supports gambling as a final chance to succeed financially (Guttenbeil-Po'uhlia et al., 2004).

The impacts of gambling on Samoan communities have included breakdown in family relationships in terms of honesty, trust, and spending time together with partners; providing for the needs of children; extra financial and care-giving burdens placed on extended family members; financial management problems, leading to loss of possessions or eviction; and declines in levels of health, employment, education, and contribution to the community (Perese & Faleafa, 2000). Similar problems were noted in Tongan communities. Expectations of life in New Zealand have changed as "the dreams of some Tongan migrants for a better life have been transferred from participation in the economy and social life of New Zealand to the sites of the gambling industry, Casinos and Pokies machines" (Guttenbeil-Po'uhlia et al., 2004, p. 10).

Clarke and colleagues (2006) suggested that the main reasons for Pacific peoples to start and continue gambling in New Zealand were the need for money to meet traditional obligations to family (close, extended, and non-blood links) and ethnic communities, limited entertainment options, and the easy access to gambling activities.

Asian Peoples

The Asian community is also made up of numerous ethnicities. The five largest communities in New Zealand are the Chinese, Indians, Koreans, Filipinos, and Japanese (Statistics New Zealand, 2007). The majority of Asians in New Zealand (78%) were born overseas (Statistics New Zealand, 2002).

Data on people accessing gambling-help services in New Zealand indicated that increasing numbers of Chinese and other Asians are presenting with gambling problems. In 2005, Asian people made up 8.1% of new clients to Gambling Helpline, and they were the only ethnic group to increase in absolute numbers and as a proportion of clients for both the Helpline and the face-to-face services. In addition, in contrast to the reduced numbers of clients using the national Helpline, the Auckland-based Asian Gambling Hotline had 263 new callers in 2005, an increase of 11% from 237 in 2004 (Ministry of Health, 2006). In 2007, the percentage of new Helpline gambler clients who identified as Asian declined slightly to 6.9%, but the proportion of new Asian clients presenting to face-to-face intervention services continued to increase (from 6% in 2005 to 7.6% in 2007; Ministry of Health, 2008). Asian clients reported substantially higher losses of money than other ethnicities. According to the *Problem Gambling Intervention Services in New Zealand: 2007 Service-User Statistics* report, the median amount of money lost by Asian people was \$4,000 (in the 4 weeks prior to assessment) compared with an overall median of \$1,000. Asian clients represented just 11% of clients contributing to these data while accounting for 41% of reported losses (Ministry of Health, 2008).

Research overseas has demonstrated similar troubling patterns with regard to Asian gambling in Western countries. In Canada, the Chinese Family Service of Greater Montreal (as cited in Papineau, 2005) reported a higher prevalence of compulsive gambling in the Chinese population that it studied than for the Quebec population as a whole. Similarly in Australia, the Victorian Casino and Gaming Authority (2000) found that Chinese-speaking communities had the highest frequency of individuals classified as probable problematic gamblers compared with the general Victorian sample and other ethnic groups. Moreover, for those who participated in gambling activities, Chinese tended to spend considerably more money per week than the general community.

One of the contributing factors to Asian gambling in New Zealand could be the acculturation process. Many of the clients seeking treatment reported that they did not have gambling problems prior to coming to New Zealand. Gambling in their homeland consisted of playing games (such as mah-jong) with family and friends rather than with strangers in casinos (Wong & Tse, 2003). It has also been suggested that lack of experience in gambling as it exists in New Zealand, spare cash, and free time may be the reasons that some Asian immigrants developed problem gambling (Wong & Tse, 2003). Limited English ability, difficulty in gaining employment, disconnection from family support, and shift work with nothing to do afterwards may lead to social isolation for new immigrants, and this feeling of isolation can be eased through gambling games that require no language skill and are provided in venues where other Asians meet (Clarke et al., 2006; Li & Chan, 2006; Wong & Tse, 2003). This can result in a negative cycle in which stress leads to gambling, which leads to more money loss, which creates more stress. The lack of a tradition of help-seeking outside the family and unfamiliarity with available services can lead to reluctance to seek help (Li & Chan, 2006; Wong & Tse, 2003).

Newly arrived immigrants may find that loss of money through gambling jeopardises their ability to begin employment or study, essential to establishing a life in New Zealand (Wong & Tse, 2003). Chinese international students in New Zealand reported problems with

money, health (weight loss, stress, lower self-esteem, depression, increased smoking and drinking), their studies, and legal concerns (Li & Chan, 2006).

Pakeha

The majority of the New Zealand population is Pakeha (i.e., people of European descent), who brought gambling to New Zealand as part of their culture early in the 18th century (Dyall, Tse, & Kingi, 2009).

The 2006/07 New Zealand Health Survey indicated that although Pakeha were more likely to have participated in gambling in the past 12 months compared with the general population (67.6% vs. 65.3%), they were significantly less likely to be problem gamblers (0.2%).

Research has suggested that the main reasons for Pakeha to start and continue gambling were the desire to win big money, easy access to gambling facilities, and as a way of coping with stress and boredom. Family, peers, and advertising were also noted as contributing factors for Pakeha gambling (Clarke et al., 2006).

Impacts Related to Different Types of Gambling and Their Availability

Statistics on people seeking treatment indicate that primary modes of problematic gambling vary by ethnicity. Maori (75.1%) and Pakeha (70%) clients were more likely to report non-casino EGMs as their primary mode of gambling. Casino tables were the primary mode of gambling for half of the Asian respondents (50%). Asians (35.4%) and Pacific peoples (33.6%) were more likely to report casino EGMs as their primary mode of gambling than were other ethnicities (Ministry of Health, 2007).

It is unclear from the existing gambling literature, however, whether different gambling modes have different impacts on people's domains of life because of their ethnic background. This study, therefore, is an attempt to increase our understanding of the role of culture in gambling and to shed light on this under-explored area. Specifically, it tries to answer the following question: Will the impact of different modes of gambling on quality of life differ for different ethnic groups? The answer to this question has important implications for policy and service providers in effectively reducing gambling harms in different ethnic groups and in designing interventions that address the specific needs of people in their respective ethnic communities.

Methodology

Participants

The sample consisted of 4,068 Pakeha (46% male); 1,162 Maori (47% male); 1,031 Pacific peoples (51% male); and 984 Chinese and Korean peoples (49% male) who were aged between 15 and 80 years and had lived in New Zealand for at least 12 months. The mean age of the participants was 48.15 years ($SD = 18.25$) for Pakeha, 40.85 years ($SD = 15.40$)

for Maori, 35.30 years ($SD = 11.04$) for Pacific peoples, and 40.08 ($SD = 12.17$) for Chinese and Korean peoples.

Procedure

Data collection took place from May 2007 to November 2007 with a computer-assisted telephone interview system. A stratified sample design was used to reflect the New Zealand population on the basis of geographic regions and level of urbanisation. The strata, when combined, covered the whole of New Zealand. Level of urbanisation was divided into metropolitan (i.e., the Auckland urban area) and large cities such as Hamilton, Christchurch, and Wellington; smaller main urban areas; large towns; small towns; and rural areas. The strata were derived from local calling areas, adjusted to match main urban areas where possible.

Telephone numbers were randomly generated. Randomly generated phone numbers have the advantage of including both published and unpublished phone numbers and therefore having greater coverage of the sampling frame than occurs with the use of non-randomly generated listed telephone numbers. Telephone numbers were screened against the Yellow Pages (to remove business numbers). Phone numbers were distributed in proportion to the usually resident population aged 15 to 80 years with a landline telephone across the 33-area strata.

Each number was called at least 10 times at different times and days of the week until contact was made. The final stage of sampling involved the random selection of one respondent from those eligible in each household. The number of eligible people living in each household was established and listed so that the data collection software could select one respondent at random (no prior reduction in the number of eligible people took place and the data were weighted appropriately prior to analysis to take account of interviews being conducted with one person per household).

The sampling for the Maori sample utilised the Maori electoral roll, and the sampling for the Pacific sample and for the Chinese and Korean sample included the use of a lexicon approach. This lexicon sample was essentially a list-based frame of electoral households where there were published telephone numbers and people with Pacific or with Chinese or Korean-seeming names. A list of words that could trigger a possible Pacific or a Chinese or Korean name is matched against all the names (not just surnames) on the electoral roll to look for households where there might be Pacific or Chinese or Korean people.

The response rate was 62% for the general population sample, 74% for the Maori sample, 64% for the Pacific sample, and 62% for the Chinese and Korean sample.

Survey Instrument

The survey was developed from the existing survey instrument produced from the pilot qualitative study previously conducted by SHORE and Whariki (2006). This pilot study included three components: (a) a review of the available literature about methodologies

and approaches used for measuring the social and economic impacts of gambling; (b) data collection with various stakeholders from the gambling industry and qualitative interviewing of people from different ethnic groups who participated in gambling, as well as with those affected by the gambling of others, to provide insights into the nature and range of gambling impacts within New Zealand; and (c) development and piloting of a quantitative data collection instrument to assess the social and economic impacts of gambling in New Zealand (SHORE & Whariki, 2006). The survey instrument was piloted thoroughly and found to be largely successful in its aims. The current study builds on the survey designed as part of this pilot project. The survey covers the following areas:

Participation in gambling. It was first ascertained whether respondents had gambled in the previous 12 months. This was established by asking respondents if they had gambled using eight specified (and mutually exclusive) modes or venues of gambling plus any additional types of gambling they used. These modes or venues were buying lottery products, playing EGMs in a bar, playing EGMs in a club, playing EGMs in a casino, gambling at casino table games, playing poker or other card games for money, betting at a race track, betting at the TAB, playing housie (bingo) for money, and gambling on the Internet for money.

For each mode or venue in which a respondent reported gambling (excluding lottery products), they were asked how often they had gambled using that mode or venue in the last 12 months, how much time they would spend gambling on a typical occasion for that particular mode or venue, and the longest amount of time they had spent gambling on any one occasion in the last 12 months.

Quality of life. Respondents rated themselves on a 5-point scale (from very poor to very good) on a number of domains of life, including physical health, mental well-being, relationships with family and friends, feelings about oneself, overall quality of life, financial situation, material standard of living, performance in study or employment-related training, performance at work, ability to take care of children, and ability to take care of the elderly. Each domain reported on was measured with a single question, such as “In general, in the last 12 months would you say your physical health has been very good, good, adequate, poor, or very poor?” and “Thinking about your relationships with people that are close to you, in the last 12 months how would you rate your relationships with family and friends? (very good, good, adequate, poor, or very poor).” Respondents also rated themselves (from very dissatisfied to very satisfied) on how satisfied or dissatisfied they were with their lives in general (“Taking everything into account, how satisfied or dissatisfied would you have been with your life in general these days?”). Correlations between quality of life domains are shown in Table 1.

Control variables. Three gambling related variables were controlled for in the regression analysis to isolate an independent impact of gambling modes or venues on people’s quality of life.

One variable is people’s overall gambling involvement. Respondents who have not participated in any gambling activity in the last 12 months were coded 1 (no gambling).

Table 1
Correlation matrix of quality-of-life measures

	Physical health	Mental well-being	Relation-ships	Feelings about self	Overall quality of life	Overall satisfaction with life	Financial situation	Housing situation	Material standard of living	Work performance	Study performance	Care giving - children	Care giving - elderly
Physical health	-												
Mental well-being	.45	-											
Relation-ships	.21	.31	-										
Feelings about self	.32	.48	.39	-									
Overall quality of life	.32	.38	.38	.49	-								
Overall satisfaction with life	.25	.36	.32	.45	.50	-							
Financial situation	.30	.33	.24	.37	.41	.32	-						
Housing situation	.23	.31	.31	.31	.43	.30	.38	-					
Material standard of living	.25	.30	.28	.37	.48	.34	.52	.44	-				
Work performance	.18	.29	.28	.37	.33	.27	.24	.23	.27	-			
Study performance	.17	.26	.28	.34	.29	.23	.25	.20	.26	.41	-		
Care giving - children	.19	.26	.35	.35	.34	.26	.20	.25	.28	.34	.24	-	
Care giving - elderly	.17	.20	.26	.33	.34	.22	.18	.17	.21	.28	.27	.40	-

Respondents who participated only in lottery products in the last 12 months were coded 2 (lottery only). Respondents who had participated in at least one gambling activity other than lottery products up to a total of 3 hr and with losses of less than 5% of personal income were coded 3 (low gambling involvement). Respondents who had gambled more than 3 hr per week or who had lost more than 5% of their personal income were coded 4 (high gambling involvement). Lottery products were kept as a separate category because they are non-continuous forms of gambling and are therefore considered less harmful.

Another gambling-related variable controlled for was the total net money gain or loss. This was assessed with the question: “Think about what you spent on gambling in the last 12 months; overall do you think you have made money or lost money?” (made money/broken even/lost money/don’t know). Those who responded “made money” or “lost money” were asked to recall their total net gain (i.e., the total amount made less the total amount bet over the last 12 months) or their total net loss (i.e., the total amount lost after total winnings have been added over the last 12 months).

The third variable controlled for was the prevalence of other heavy gamblers in one’s life. All respondents, including non-gamblers, were asked if they had had any people in their lives whom they considered to be fairly heavy gamblers in the last 12 months (yes/no).

Questionnaire translation. In order to reach a higher number of Chinese and Korean respondents, the survey instrument was translated from English to Chinese and Korean. It was then translated back to ensure the accuracy and the linguistic equivalence of the translation.

Results

Ethnicity and Modes of Gambling

The results showed that Chinese and Korean peoples and Pacific people were less likely to participate in gambling activities; 56.3% of Chinese and Korean and 50.1% of Pacific people had not gambled in the last 12 months (compared with 35.1% Pakeha and 29.5% Maori).

Table 2 shows the prevalence of gambling modes in each ethnic group. Compared with other ethnic groups, Pakeha were more likely to bet at a race track and Maori were more likely to buy lottery products; bet at the TAB; play EGMs in clubs, bars, and casinos; play poker or card games at their own or someone else’s house; and gamble on the Internet for money. Pacific people were more likely than other ethnic groups to play housie (in community centres, clubs, or bars), whereas Chinese and Koreans were more likely than others to gamble at casino table games.

Table 2
Prevalence of gambling modes in each ethnic group

Ethnic group	Gambling mode									
	EGMs in bar	EGMs in club	EGMs in casino	Casino tables	Race track	TAB	Poker	Housie	Internet	Lottery products
Pakeha										
Percentage	7.0	4.4	7.8	2.9	8.4	8.7	3.4	1.7	0.7	58.8
Median frequency (times/year)	7.5	4	1.5	1.5	1.5	7.5	4	1.5	1.5	18.5
Median time (min)	37	37	90	90	150	7.5	150	90	22	
Maori										
Percentage	15.2	6.4	10.3	2.9	6.0	12.6	7.3	4.9	0.9	63.6
Median frequency (times/year)	7.5	4	1.5	1.5	1.5	5.5	4	4	7.5	29.5
Median time (min)	37	37	90	90	150	7.5	270	150	90	
Pacific										
Percentage	8.5	2.4	9.2	2.6	2.4	7.0	5.7	5.0	0.7	45.0
Median frequency (times/year)	4	4	1.5	1.5	1.5	14.5	4	7.5	1.5	29
Median time (min)	37	22	90	90	270	15	150	90	90	
Chinese and Korean										
Percentage	3.2	0.6	9.4	6.2	1.0	3.5	5.9	0.5	0.5	34.8
Median frequency (times/year)	4	4	1.5	4	1.5	7.5	4	1.5	29.5	11.5
Median time (min)	22	90	52	90	150	7.5	150	37	90	

Note. Percentages do not sum up to 100 because respondents could choose multiple gambling activities. EGM = electronic gaming machine.

Impacts of Gambling Mode on Domains of Life Within Each Ethnic Group

Table 1 shows the correlations between the 13 domains of life measures. The results suggested that these variables were only minimally to moderately correlated ($r < .60$); therefore each domain of life was examined separately in the following regression analysis.

Multinomial logistic regressions (with stepwise model selection) were used to assess the impact of gambling modes¹ on the modelling of domains of life. Time spent on each gambling mode by each ethnic group (i.e., Pakeha, Maori, Pacific, and Chinese and Korean) was entered into the regression model to assess for any linear relationships with domain-of-life measures. The effects of the following variables were controlled for in order to isolate an independent impact of time spent gambling: age, gender, ethnicity, marital status, education qualification, occupational status, income (with log transformation), overall gambling involvement, net money gain or loss, and prevalence of other heavy gamblers in one's life. Thirteen regression models were conducted (one model for each domain of life); results of these analyses are summarised in Table 3 (please contact the author for full results). Model fit for the gambling variables in the logistic regressions were compared with a null-hypothesis model² on a chi-square distribution. The addition of gambling variables significantly improved model fit for every domain-of-life measure (see Table 3).

Pakeha. Results show that Pakeha who spent more time playing EGMs in casinos reported a better financial situation ($p = .002$), better housing situation ($p = .002$), and better material standard of living ($p = .008$) compared with those who spent less time on casino EGMs. Playing casino table games was associated with a better self-reported material standard of living ($p = .035$). Time spent on the race track was positively associated with ratings of participants' physical health ($p = .027$), mental well-being ($p = .045$), and satisfaction with life ($p = .003$). Betting at the TAB was associated with participants' ratings of their financial situation ($p < .001$), material standard of living ($p = .035$), and work and study performance ($p = .031$ and $.043$, respectively). Playing poker at home or with friends was associated with better self ratings in regard to quality of life ($p = .002$) and care giving for children ($p = .018$). The length of time spent on playing housie was associated with a better self-rated study-related performance ($p = .030$).

For Pakeha, the length of time spent on playing non-casino EGMs had no significant impact on individuals' self ratings of their domains of life.

Maori. Maori who spent a longer time playing non-casino EGMs reported experiencing significantly poorer mental well-being ($p = .007$), poorer feelings about self ($p < .001$), poorer quality of life ($p = .001$), lower overall satisfaction with life ($p = .003$), poorer housing situation ($p = .014$), and poorer material standard of living ($p = .008$), and they rated themselves as a poorer parent or care giver ($p = .047$). Playing EGMs in a casino was associated with poorer self ratings in regard to relationships with family and friends ($p = .001$), and playing casino table games was associated with poorer self-rated work performance ($p = .048$). Time spent on TAB gambling was negatively associated with participants' ratings of their financial situation ($p = .026$).

Table 3
Impact of time spent on each gambling mode on people's domains of life (showing log odds that were statistically significant at the 5% level)¹

Gambling modes	Domains of life												
	Physical	Mental	Relation- ships	Self	Quality of life	Life satisfn	Financial	Housing	Standard of living	Work	Study	Care- Chil- dren	Care- Elderly
Non-casino EGMs													
	Pakeha												
	Maori	-.17**		-.28***	-.20***	-.19**		-.16*	-.16**			-.16*	
	Pacific	-.26***	-.20*				-.27***						
	Chinese/ Korean												
EGMs in casino													
	Pakeha						.20**	.25**	.18**				
	Maori		-.30**										
	Pacific					-.23*							
	Chinese/ Korean												
Casino tables													
	Pakeha								.25*				
	Maori									-.53*			
	Pacific												
	Chinese/ Korean							.27*					
Race track													
	Pakeha	.12*	.11*			.16**							
	Maori												
	Pacific												
	Chinese/ Korean					.90**							

Table 3
Continued

Domains of life															
Gambling modes	Physical			Relation- ships		Self	Quality of life	Life satisfn	Financial	Housing	Standard of living	Work	Study	Care- Chil- dren	Care- Elderly
TAB	Pakeha								.24***		.13*	.15*	.19*		
	Maori								-.22*						
	Pacific														
	Chinese/ Korean														
Poker	Pakeha						.18**							.32*	
	Maori					.19*							-.19*		
	Pacific														
	Chinese/ Korean					.34**	.32**		.25*	.28*			-.39**		
Housie (bingo)	Pakeha												.45*		
	Maori										.20*				
	Pacific														
	Chinese/ Korean					.25*									
Model fit ²	Chi-	17.6***	32.0***	26.2***	26.9***	40.8***	24.6***	42.1***	30.0***	28.8***	9.0*	22.2***	11.2***	-	-
df	square	2	4	3	2	4	3	5	4	5	2	4	2	-	-

¹The equation $y = \beta_0 + \beta_1 a_1 + \beta_2 a_2 + \beta_3 a_3 + \beta_4 a_4 + \beta_5 a_5 + \beta_6 a_6 + \beta_7 a_7$ was used (where y was the logits of Domain of Life (DOL), β_0 was the intercept, a was the ethnicity dummy variable, and x was the time spent on a gambling mode). The coefficients ($\beta_4, \beta_5, \beta_6, \beta_7$) were the slope changes of time spent on the odds of "success" in response to DOL measure conditional on ethnicity.

² Model fit statistics were calculated by using the chi-square test on the differences of log-likelihood and the degree of freedom. *** $p < .001$. ** $p < .01$. * $p < .05$.

Playing poker at home or with friends gave a mixed picture; it was associated with better self-rated relationships with family and friends ($p = .027$) but poorer self ratings in regard to study performance ($p = .039$). The length of time spent on playing housie was associated with better self ratings of material standard of living ($p = .046$).

For Maori, the length of time spent betting at the race track had no significant impact on individuals' self ratings of their domains of life.

Pacific People. Pacific peoples who spent more time playing non-casino EGMs reported poorer physical health ($p < .001$), poorer mental well-being ($p = .011$), and a poorer financial situation ($p < .001$). More time playing EGMs in a casino was associated with poorer self ratings in regard to overall satisfaction with life ($p = .015$).

Betting at the TAB was negatively associated with participants' self ratings of their mental well-being ($p = .002$), whereas playing housie was associated with better self ratings in regard to feelings about self ($p = .018$).

For Pacific peoples, the length of time spent on playing table games at a casino, betting on the racetrack, and playing poker at home or with friends had no significant impact on individuals' self ratings of their domains of life.

Chinese and Koreans. Chinese and Koreans who spent a longer time playing table games at a casino reported a better housing situation ($p = .017$) compared with those who spent less time on casino table games. Time spent on the race track was associated with better self ratings in regard to quality of life ($p = .003$).

Playing poker at home or with friends gave a mixed picture; it was associated with better relationships with family and friends ($p = .002$), a better quality of life ($p = .002$), better financial situation ($p = .022$), and better housing situation ($p = .012$), but a poorer self-rated study performance ($p = .004$).

For Chinese and Korean peoples, the length of time spent on EGMs, betting at the TAB, and playing housie (in community centres, clubs, or bars) had no significant impact on their domains of life.

Discussion

The size of the samples of Pakeha, Maori, Pacific peoples, and Chinese and Korean peoples interviewed in the current study allowed for a detailed analysis of the relationship between their gambling behaviour and their self ratings of their quality of life in various domains. The results reveal a number of similarities and differences between ethnic groups.

The Maori and Pacific samples were very similar in the significant associations found between time spent on EGMs and poorer self-rated quality of life in a number of life domains. Maori who spent a longer time playing EGMs perceived themselves as having significantly worse mental well-being, poorer relationships, worse feelings about self, poorer

overall quality of life, lower satisfaction with life, a poorer housing situation, a poorer material standard of living, and poorer child rearing ability. Pacific peoples reported poorer physical health, worse mental well-being, lower satisfaction with life, and a poorer financial situation.

Past research has revealed that, in New Zealand, non-casino EGMs are disproportionately more likely to be located in areas of low socio-economic status and relative deprivation (Ministry of Health, 2006; Wheeler, Rigby, & Huriwai, 2006). On the basis of 2005 gaming machine data and 2001 census data, approximately 53% of all non-casino EGMs in New Zealand were found to be in the most deprived 30% of communities (Ministry of Health, 2006). Furthermore, Maori and Pacific peoples are substantially over-represented in these socio-economically deprived areas (Wheeler et al., 2006). Given the evidence found in the current study suggesting ethnic inequalities in EGM-related harms, we suggest that more problem gambling services, tighter control, and better policies regarding the number of EGMs allowed in the more deprived areas are needed to effectively reduce gambling harms in Maori and Pacific ethnic communities.

Among the sample as a whole, there were some reported benefits of gambling, but for Maori and Pacific peoples, only a few positive associations were found (i.e., for Maori, poker and housie were positively associated with relationships with family and friends and with material standard of living, respectively; for Pacific peoples, housie was associated with better feelings about self). These findings support the previous research that Maori are at particular risk of experiencing the adverse impacts of gambling (Dyall, 2004) and that Pacific peoples are much more likely than others to develop gambling problems (Abbott & Volberg, 2000). These findings may reflect higher participation levels but also the relative lack of resources available to Maori and Pacific people (Gambling Watch, 2003), meaning that the adverse consequences of gambling are not mitigated. In addition, these findings suggest the value of exploring redistribution effects in future work on the impacts of gambling.

These predominantly negative associations for Maori and Pacific peoples contrasted with the findings for the Pakeha sample, which were all positive. The current study suggested that time spent betting at the race track and TAB, playing EGMs in a casino, playing casino table games, and playing poker and housie were all positively associated with participants' self ratings in regard to a number of life domains, including better physical health, mental well-being, overall quality of life, overall satisfaction with life, financial situation, housing situation, material standard of living, work and study performance, and care giving for children. Unlike other ethnic groups, no negative associations were found between time spent on gambling and Pakeha's domains of life. Even playing EGMs (in casinos) was positively associated with financial, housing, and material domains of life.

The findings from the sample of Chinese and Korean peoples showed some similarities with the Pakeha sample in that gambling participation in some modes was associated with positive ratings of quality of life in some domains. With regard to playing casino table games, longer times were associated with a better self-reported housing situation. Playing poker and card games was associated with better relationships with family and friends, better overall quality of life, a better financial situation and a better housing situation;

furthermore, betting at the race track was associated with better self ratings in regard to overall quality of life.

For Chinese and Korean peoples, study and training performance was the only domain of life that was negatively associated with gambling mode. Furthermore, similar to the case for Pakeha, no significant associations were found between time spent on EGMs and poorer quality of life in life domains. The current study, however, did not ask the respondents to indicate whether they were born in New Zealand or overseas. We recommend that this information be obtained in future research in order to disentangle the impact due to acculturation from the effect of Asian ethnicity.

To conclude, the present study is an attempt to broaden the current understanding of the impact of gambling modes on different ethnic groups in New Zealand by using a less conventional approach. For example, in the present study, a problem gambling screen was not used. Instead, the impact of heavier gambling was investigated by using the time spent in different modes of gambling. Furthermore, new measures of quality of life derived from extensive qualitative questionnaire work were used to measure the impact.

One limitation of the current study, however, is the issue of under-representation of heavy gamblers who are unable to access a landline telephone. Results from a New Zealand survey found that pathological gambling prevalence rates were approximately 3 times higher for the respondents who could not be contacted by telephone and who completed the postal questionnaire (Abbott & Volberg, 2000). It is possible, therefore, that the relationships found with reduced quality of life may be stronger if more of the heavier gamblers were included in the analysis.

In summary, the current study has provided evidence that different gambling modes have different impacts on people's domains of life because of their ethnic background. More research, however, is still needed to further our understanding in the definitions of and pathways to problem gambling in different ethnic communities.

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¹Internet gambling was not included in this analysis because the number of people in the sample who participated in Internet gambling was too low (0.6%, $n = 42$). EGMs in bars and clubs were combined to form a new variable, "non-casino EGMs."

²Logistic regression model without gambling variables.

Tricky business: The nature of integrity violations in Dutch casinos

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Abstract

This article explores the nature of integrity violations in Dutch casinos. In such organizations, risk may be minimized, but it cannot be eliminated. Casinos, therefore, have a clear interest in constantly seeking to improve their safety standards and cultures. This article empirically analyzes the nature of documented integrity violations in Dutch casinos during the period 2001 to 2006. Of the 78 employee contracts that were terminated because of integrity violations, the files of 13 employees of the table games division were researched in depth. Our analysis of the sample led to a set of propositions regarding the nature of integrity violations in Dutch casinos.

Money changes everything. – Cindy Lauper

Introduction

There is something intriguing about employees' integrity violations in casinos. Everything around casino employees revolves around money. They witness significant greed in their daily jobs and work in an organization where information about money flow is indirect. This lack of direct and precise information could result in the creation of multiple opportunities for theft in a casino.

Gambling studies are currently dominated by research that addresses risks related to problem gambling and addiction treatment. However, despite the gambling folklore and the historical connections between gambling and organized crime, the issues related to the links between gambling and crime receive only little scholarly attention (Ferentzy & Turner, 2009). In their review of the literature, Ferentzy and Turner (2009, p. 125) broadly distinguish four categories of criminal offences related to gambling: illegal gambling, criminogenic problem gambling, crime in and around gambling venues, and family abuse. Because crime in relation to gambling constitutes such a vast and diverse research area, we have chosen to develop an explorative research into integrity violations by casino employees. This type of abuse is part of Ferentzy and Turner's category of venue-related crime and represents only one, but a potentially significant and underresearched, crime issue for contemporary casinos.

In this article, we answer the following question: What is the nature of integrity violations in casinos? In order to help casinos combat corrupt behavior, we first need to understand 21st-century violations as much as possible, which is the aim of this article. The better understood they are, the better we can design policies to prevent them. In this article, we further present empirical (descriptive) research on the nature of integrity violations in Holland Casino (HC), the monopolized Dutch casino network.

First, we discuss the concept of integrity and the research background. Subsequently, the heuristic approach of our research is explained. We then discuss the organizational context and vulnerability of the casino business. Following this contextualization of the integrity issue, we investigate a sample of casino integrity violations in a cross-case analysis leading up to a set of propositions regarding the nature of integrity violations in Dutch casinos. From the start, we would like to caution the reader that this research is purely exploratory, that it is intended to thematize and open up this underexplored area of gambling research for debate, and that the resulting propositions should be understood as theoretical hypotheses that might be used as input for further research rather than as generalizable conclusions.

Integrity Violations and Research Background

Casinos can be characterized as high-risk organizations because they exploit high-risk games – high-stakes games that are sensitive to fraud and are associated with a high incidence of problem gambling – and display a reflexive attitude toward these risks because these risks are, to a considerable extent, consciously addressed and managed. In the terms of Weick and Sutcliffe (2001), casinos are organizations “that operate under very trying conditions all the time and yet manage to have fewer than their fair share of accidents” (p. 3).

In this article, we refer to integrity violations as a particular kind of “organizational accident.” Integrity is defined as the quality of acting in accordance with relevant moral values, norms, and rules. Our focus, however, is on integrity *violations*. We use a typology of integrity violations based on the work of Huberts and Pijl (1999). The types of integrity violations are considered universal and thus useful for describing unethical behavior in almost all organizational contexts. Lasthuizen (2008) recently succeeded in a first validation of the typology.

The empirical research was conducted in HC, which in 2004 had 4,489 employees, of whom 51.2% worked full-time. Employees were based in one of the 14 casinos, an operational branch, or the head office. About 60% were male, and the workforce was rather equally distributed across age groups.

The organization was divided into several departments. Every casino comprised several divisions: table games, gaming machines, front office, food and beverage, security and risk control, human resources, and facilities.

Table 1
Types of integrity violations

1. <i>Corruption: bribing</i>	Misuse of public power for private gain; asking, offering, accepting bribes
2. <i>Corruption: nepotism, cronyism, patronage</i>	Misuse of public authority to favor friends, family, party
3. <i>Fraud and theft</i>	Improper private gain acquired from the organization (with no involvement of external actors)
4. <i>Conflict of (private and public) interest</i>	Personal interests (through assets, jobs, gifts, etc.) that interfere with public interests
5. <i>Improper use of authority</i> (for noble causes)	Use of illegal/improper methods to achieve organizational goals (e.g., illegal methods of investigation or disproportionate violence by police)
6. <i>Misuse and manipulation of information</i>	Lying, cheating, manipulating information, breaching confidentiality
7. <i>Discrimination and sexual harassment</i>	Misbehavior toward colleagues or citizens and customers
8. <i>Waste and abuse of resources</i>	Failure to comply with organizational standards, improper performance, incorrect or dysfunctional internal behavior
9. <i>Private time misconduct</i>	Conduct in an employee's private time that harms the public's trust in administration or government

Research and Method

To answer the main research question – What is the nature of integrity violations in Dutch casinos? – we chose an explorative and inductive research strategy (cf. Eisenhardt, 1989; cf. Glaser & Strauss, 1967; Höffling, 2002). More specifically, a multiple case-study design was used, which focuses on understanding the dynamics present within single settings (Eisenhardt, 1989; Herriott & Firestone, 1983; Yin, 1989) in order to generate theory in the shape of propositions (Gersick, 1988; Harris & Sutton, 1986). This method is fitting when not much is known about the phenomenon that is being researched, or when the phenomenon is so complex that neither the variables nor the exact relationship between the variables is fully definable (van Hoesel, 1985), as is the situation here. Case studies offer the advantage of richer details of actual events and their context. Coupled with the within-case analysis is a cross-case search for patterns (Eisenhardt, 1989, p. 540). In our study, the within-case analysis consisted of a detailed description of integrity violations, and the cross-case search for patterns focused on a comparison between these integrity violations.

The archives of all the establishments of HC were studied. Special permission was obtained from HC to study these highly confidential archives under several conditions: No recognizable personal details of the offenders would become public; HC would have the right to read the manuscript before publication to ensure that no personal details were included and to retain the opportunity to suggest alternatives for factual mistakes; and we could not approach the offenders.

Cases analyzed were those in which an employment contract was ended between 1 January 2000 and 1 January 2006 because of an integrity violation (cases could not be too recent, because the case had to be closed in order to solicit permission to study them; otherwise, it was feared, we would risk interfering in the case). There were 78 cases. Only 18% of them were female, even though females occupied 40% of the total workforce. Most terminations (44%) were in the table games division. The table games have the largest amounts of uncounted money and, apparently, the most opportunities for integrity violations. We focused on these cases because they were specific to our research question.

The 78 cases spanned all age groups, although the average wrongdoer was slightly younger than the average employee: 42% were under 30 years of age as opposed to 24% of the workforce. This concurs with findings in the general literature; Weeks, Moore, McKinney, and Longenecker (1999, p. 310) found that employees are less prone to commit integrity violations later in their careers. Fourteen (18%) of the 78 wrongdoers were female; 42% of the total workforce is female.

Upon any investigation of an integrity violation within HC, a record is created at the casino's Security and Risk Control (S&RC) department. We first studied the records to obtain an overview of the research population. We then decided to specifically study those cases that were in the "table games" department, a typical and specific department of the casino business. This reduced the 78 cases to 34. For further in-depth research, from the 34 table games cases, we selected employees who were immediately fired because of the integrity violation, as opposed to those who were in a probation period and whose contracts were simply not renewed "for integrity reasons" or those whose contracts were ended by mutual consent (e.g., to avoid further charges). This reduced the number of cases to 17, which were spread over 11 different casinos. Three of these cases involved persons with managerial functions, which we included to ensure that supervisors were represented in the study. One person was then selected from each of the 11 casinos to ensure a geographical case spread. If multiple cases qualified from a certain casino, one was chosen at random. After this combination of theoretical and random sampling, 14 cases of integrity violations were selected in total. We later discovered that one person had been employed by the casino for only 1 week and we eliminated his case for insufficient information, which left us with 13 cases for analysis. This is an acceptable number, according to Eisenhardt (1989): "while there is no ideal number of cases, a number between four and 10 cases usually works well. . . . With more than 10 cases, it quickly becomes difficult to cope with the complexity and volume of the data" (p. 545).

The selection process was designed so that the study results would represent the nature of all integrity violation cases discovered and investigated in the nationwide HC network.

The files of the 13 selected cases were studied in depth at the casino where they were stored. The information varied somewhat according to individual casino rules, but in all cases, administrative files of the wrongdoer (such as yearly work performance reports) were available. In the nine investigations that S&RC had conducted themselves, interrogations and witness interviews were especially helpful to the description and analysis of individual cases. In addition, we conducted interviews with managers of human resources and S&RC

when possible, which provided valuable information about the wrongdoer and specific circumstances of each case.

To find cross-case patterns, Eisenhardt (1989, p. 541) suggests using techniques that force investigators to go beyond initial impressions. Usually, researchers in multiple case studies face immense quantities of data. Here, we followed the suggestion of Miles and Huberman (1994) to use a monster grid. On one axis of the grid are the 13 individual cases; on the other are variables from a literature review that were determined to be useful to the study of the nature of integrity violations in casinos.

The option, however, of insights and novel findings based on other variables emerging from the data was left open. The cells of the grid are not filled with numbers, but with various verbal comments and citations (Swanborn, 2003, p. 16). From this grid, patterns were derived in the form of propositions, which were then juxtaposed with the empirical data. This inductive process was repeated many times. According to Eisenhardt (1989):

From the within-site analysis plus various cross-site tactics and overall impressions, tentative themes, concepts, and possibly even relationships emerge. The next step of this highly iterative process is to compare systematically the emergent frame with the evidence from each case in order to assess how well or poorly it fits with case data. The central idea is that researchers constantly compare theory with data—iterating toward a theory which closely fits the data. A close fit is important to building good theory because it takes advantage of the new insights possible from the data and yields an empirically valid theory. (p. 541)

From the reiterative process, grounded theory in the form of propositions emerged, which we will present at the beginning of each section, followed by the study data that led to it. All of these propositions should be regarded as hypotheses that might be subject to falsification, confirmation, or adjustment in further research. The propositions are compared with the existing body of literature on corporate corruption (e.g., Ashforth & Anand, 2003; Brief, Buttram, & Dukerich, 2001). This is also (partly) covered in management studies under such headings as “corporate illegality” (e.g., Baucus, 1994), “organizational misbehavior” (e.g., Vardi & Weitz, 2004), “unethical behavior in organizations” (Brass, Butterfield, & Skaggs, 1998), and “ethical decision-making behavior” (Trevino & Youngblood, 1990). Criminologists discuss it in studies on “white collar crime” (e.g., Croall, 2001; e.g., Sutherland, 1983; Weisburd, Wheeler, Waring, & Bode, 1991), “occupational crime” (e.g., Clinard, 1983), or “corporate crime” (e.g., Blankenship, 1993; Shover & Bryant, 1993). In this way, we make clear what is specific about integrity violations in casinos vis-à-vis organizations in general. To illustrate the findings, we will present some case details and literal quotes; anonymity requirements, unfortunately, prevent in-depth presentation of the case stories.

Integrity Violations in the Casino Context

Before we discuss our empirical findings, we first discuss the casino context of our study.

Gambling organizations usually operate under severe legal restrictions, government regulations, and organizational safeguards (Collins, 2003; Cosgrave, 2006; Dombrink & Thompson, 1990; Eadington & Cornelius, 1997; McMillen, 1996; Reith, 2003; Schwartz, 2003). How did these come about?

Many jurisdictions with legal gambling organizations learned how to organize safe and crime-free gambling by untoward experience. The close association between organized crime and Las Vegas gambling made famous by films and crime stories is backed by scientific research (Schwartz, 2003; Skolnick, 1978; Spanier, 1992). Strong efforts have been made to disassociate gambling from this image and to address the conditions that make gambling vulnerable to it.

In *House of Cards*, Skolnick (1978) reconstructed Nevada's casino history. He described the development of regulatory bodies for the Nevada casinos during the 1960s and 1970s. According to Skolnick, both government supervision and operator legitimacy increased significantly because of external pressure from the federal government and from the tourist industry. Public trust increased as respectable entrepreneurs entered the casino business, but, Skolnick (1978) maintains, even the most respectable casinos cannot guarantee the total absence of fraud. It can occur at all levels of the gaming system, from government supervisors to shop floor employees. Theft by personnel, for instance, will always remain a threat; note that the lessons of Nevada did not prevent the involvement of organized crime in Atlantic City where casinos were legalized in 1978.

There are huge differences between jurisdictions regarding gambling's legalization, regulatory measures, and operational standards (Collins, 2003; Thompson, 1998). Virtually all, however, have confronted and countered criminal involvement, corruption, and fraud. This was no less true for the Netherlands, this article's country of focus, where casino gambling was legalized in 1974 in the form of a monopoly now known as Holland Casino, which runs 14 casino establishments nationwide. Although it is now widely regarded as a respectable organization operating at the high end of the Dutch entertainment industry, it was an organizational disaster until the mid-1980s (Kingma, 2002). In the founding phase of this casino organization, there were serious problems with casino expertise, the tax regime, personnel management, administration, sharing tips, security, government supervision, and employee fraud (Zoeteman, 1988). The problems were extensively reported in the media and discussed in Parliament. In 1981, a management offensive was launched to counter fraud and cleanse the company of untoward practices. Dozens of employees were suspended and internal control was improved and intensified. However, the public image of the casino industry was tarnished and a significant illegal casino market was simultaneously in existence, one in which organized crime, allegedly even the American Mafia, was involved (Kingma, 2004b; Middelburg, 1988). In Britain, similar experiences with criminal involvement and fraud also led to measures to purify and control the industry (Miers, 1981).

All cases apparently required a phase of bad experiences and struggles between public authorities and casino operators to learn how to effectively manage and control casinos. Safeguards had to be installed to prevent commercial gambling from subverting major societal interests. For these reasons, modern states are reluctant to organize gambling as

free-market entities, but rather as tightly regulated and sometimes monopolized industries. Gambling scholar Collins (2003) has remarked that cases of free-market gambling have only occurred “as a consequence of an absence of public policy rather than because government has consciously decided that a free market in commercial gambling services is the right policy to pursue” (p. 9).

During the early era of modern casinos, the main issues were fighting fraud and criminalization (Kingma, 2002). Having brought these issues under better control in the 1990s, the market boomed and problematization shifted toward concerns related to economic development, addiction, and problem gambling (Kingma, 2004a). In the United States, for instance, this shift was marked by the government’s creation of the National Gambling Impact Study Commission in 1996 (Whyte, 1998), an institute established to evaluate the rapid spread of organized gambling and to address the possible economic and social problems related to it. By the mid-1990s, research in the United States indicated that organized crime within the casino industry should be considered “a shadow of what it once was” (Albanese, 2003, p. 152). According to Albanese (2003), casinos’ ancillary businesses present a primary opportunity for criminal involvement. Like personnel, such vendors must be carefully and continuously screened. Cases of skimming and cheating in the United States almost always involve cooperation from someone on the inside. According to Albanese (2003), this indicates the need for “careful background screening and monitoring of casino employees.” This characterization of crime in U.S. gambling seems to apply to the Dutch casino monopoly as well.

The Dutch media have reported only a few incidents involving robbery, fraud, or corruption since the early 1990s. The major concern of casino management, supervisors, and politicians was to expand the organization and develop “responsible gambling policies” for casino customers. Since the early 1990s, HC expanded from three to 14 high-class urban casinos embedded in local environments with food and entertainment facilities (Kingma, 2008). Within HC, the exploitation of gambling products was rationalized and the range of gambling products diversified. HC is a case of “McDonaldization,” as defined by Ritzer (1993), enhancing the principles of efficiency, calculability, predictability, and control by replacing humans with nonhuman technology. Notably the gaming machine division, introduced in 1986, was expanded, and by 2005 accounted for over 60% of casino returns (Holland Casino, 2006). According to Ritzer and Stillman (2001, pp. 95–97), who discuss casinos as “paradigmatic” for the “new means of consumption,” casinos may also serve as an example for contemporary consumption because of their high levels of surveillance.

Although the Dutch casinos are now regarded as respectable (Kingma 2002, 2008), the industry remains vulnerable to crime. In 2003, a former employee accused HC of facilitating money-laundering practices.¹ The incident was extensively discussed in the media and by Parliament, indicating that when a casino fails to safeguard its gambling products, its public image and legitimacy is quickly undermined. Without immediate and effective counteraction, such incidents might, in terms of Perrow’s (1999) “normal accident theory,” lead to “system disaster,” which in this case would be a retraction of the gambling license and the closing of casinos.

To safeguard their systems, casinos can be characterized as “panoptic spaces,” complex organizational designs of spatial arrangements, behavioral norms, and surveillance (Foucault, 1975). The casino guards the games with a security system unparalleled in the entertainment industry. Security as a primary concern is manifested clearly in the specialist security service. Nevertheless, guards and their surveillance equipment are only an outer layer of the security system, which is deeply integrated with the design of the buildings, organization, and company culture (Kingma, 2008, p. 43). For example, HC checks the “antecedents” of all personnel. There are strict rituals and procedures for handling, transporting, and counting money, chips, and *jetons*. Table openings, behavior in the counting rooms, entering certain rooms, changing croupiers, and documentation all follow stringent rules and procedures. Supervisors are placed to ensure that the regulations are followed; breaking a rule has serious consequences such as summary dismissal for any form of theft. To monitor cash flows, Dutch casinos use electronics where possible, registering money inside the slot machines and at the American Roulette tables and recording every human movement on film. Cameras are also frequently used for dispute resolution, such as when a customer disagrees with a dealer’s interpretation of his or her bet.

The security system perhaps more significantly has a preventive effect, which is in line with the overall objective of a panoptic space. Personnel and customers are aware that they are under constant surveillance (Kingma, 2008, p. 43). Although the security measures lead to penalizing or banning offenders in the case of extreme breaches, their purpose is more to intervene and correct at an early stage. In this respect, the organizational design of HC assumes the features of a safety culture (Gherardi, Nicolini, & Odella, 1998). HC indeed seeks to institute strong, unitary safety norms and values that are ideally shared by all members of the organization. These cultural mores are intended to encourage employee compliance and commitment to reliability, responsibility, and attentiveness.

Casinos are tight spaces in which many people work, play, and interact in close proximity. Tasks are specialized and the substitution of expertise and equipment is limited. There are many and diverse feedback loops between gamblers and employees, as well as between various categories of employees. Information, particularly and most significantly about the returns of the numerous individual gambling transactions and aggregate gambling returns, is only indirectly known to the employer, and only known after the fact. To the untrained eye, the transaction processes within the casino are difficult to follow and understand. Of significance is the high number of and interactions between a casino’s centralized “control parameters” regarding identification, registration, administration, and video surveillance. These elaborate controls indicate that the various components of casinos may interact in unwanted and unexpected ways.

Research Findings

In this section, we present our findings in the shape of a number of propositions or hypotheses, followed by a discussion of the data that informed these propositions.

Proposition 1. *The most prominent type of integrity violation in casinos is “fraud and theft.”*

Eight of the 13 individuals were fired for “fraud/theft.” Three were fired for “waste and abuses of resources,” and the remaining two for “private time misconduct.” In seven of the eight fraud cases, the suspect confessed. Interestingly, one of them remarked:

During lunch we talked several times in a select group about theft at a roulette table. We agreed that the chance of getting caught was really small. And punishment would involve, next to being fired, probably just a suspended jail sentence of a few months. We estimated that the possible gains of the theft could be very high though.

This quote suggests that the casino culture might house a more favorable balance (in the eyes of the wrongdoer) of gain versus risk. In other cases, wrongdoers indicated that they found themselves in a gradual drift of increasingly incautious behavior. After they were caught, they were amazed and frustrated by their misbehavior and the fact that they had risked their jobs.

What happened in the 13 cases? In three, the casino employee was in collusion with one or more of the guests, who were given more than their legitimate winnings. In two cases, chips were stolen and hidden about the employee’s person. Two others, both supervisors, committed fraud during the changing and counting of chips. Their trick was to cause confusion during the procedure, taking advantage of it to steal chips and “correct” the books.

The other cases were not directly gambling related. One person was fired for stealing from colleagues’ lockers. Three were fired because they took advantage of sick leave or were habitually late for work. In one of these cases, the employee had also borrowed large sums of money from colleagues but could not repay them, leading to organizational unrest. The two cases of private time misconduct involved a drug violation and a domestic violence charge.

In cases of fraud and theft, it is not always clear precisely how much money was taken. The amounts the investigators felt sure about ranged from €5,000 to 132,000. In four cases, the amount was between €25,000 and 30,000. It was often mentioned in the files that the real amount embezzled was probably higher because of the likelihood that the theft occurred over a longer and untraceable period.

Our first proposition is about the category of integrity violations in a casino. The proportion of fraud and theft cases, eight of 13, seems comparatively high if we look at other types of organizations, such as governmental (e.g., Nelen, 2003). Of course, our finding that most integrity violations are money related does not come as a surprise, because we are dealing with an organization suffused with money. Furthermore, table games employees, such as our sample, are closer than others to large sums of uncounted money. The fact that in a casino one plays with money clearly makes these organizations vulnerable to fraud and theft.

Proposition 2. *Integrity violators in casinos are often either extroverts or introverts.*

Table 2

Various quotations concerning the impressions and characters of the cases

	Comments
1	· Makes an enthusiastic and jovial impression · Handles stress well and is outward oriented
2	· Makes a timid impression · Friendly, quiet, introvert person
3	· Being very sure of himself · Outward oriented. Trendy person, focused on status. Does not handle negative feedback very well
4	· Does not ask for much attention · Introvert person. Does not like to be in the foreground. Makes an insecure and nervous impression at the table. He was always in some kind of trouble
5	· Inconspicuous and not dominant · Quiet person. Took much care of his appearance and had trouble concentrating
6	· Always very serious · Quite and diffident person. Took very good care of his appearance. Much focused on outer appearance
7	· An entertainer at the table. Clearly present · Very self-assured. Friendly, humoristic. Took good care of his appearances
8	· Makes an absent/minded impression · Took good care of his appearances, a macho and show-off. Socially interested
9	· Clearly present · Much outward oriented. Manipulating person
10	· Clearly present · Outward oriented. Loved expensive brands. Extrovert person
11	· Quiet · Took very good care of himself. A father figure, colleagues could always talk with him about personal things, but not clearly present
12	· Clearly present · Did not take his job seriously. Arrogant. Did not honor agreements
13	· Quiet. Makes a resigned impression · A soloistic person. Sometimes very cynical

Table 2 presents a summary of quotes on the personality of wrongdoers in the cases. These quotes are derived partly from the files, but mostly from interview data.

Nine of the 13 individuals could be characterized as “extroverted.” Other key words were “communicative,” “open,” “direct,” and “flair.” An illustrative interview quote was, “There was always a lot of laughter with R. in the cafeteria. He was immediately the center of attention.” Words such as “normal” or “average” were rarely used to describe the wrongdoers. The few who were not the ebullient type were characterized oppositely: quiet, introverted.

A similar pattern of extremes emerged when examining relationships with colleagues. Seven had excellent relationships with their colleagues and were popular; five had little contact. In one case, no information was available.

Because personalities of organizational wrongdoers are seldom considered in quantitative research, little is known about them from the literature (cf. Nielsen, 2003). Moreover, this aspect has received little attention in qualitative research (Ahmad & Brookins, 2004; Anechiarico & Jacobs, 1996; Della Porta & Vannucci, 1997; Höffling, 2002). Vardi and Weitz (2004) conclude in their review of organizational misbehavior: “We believe that the ability to predict intentional misbehavior patterns would be an important contribution to OB research. However, systematic empirical research on misbehavior is still lacking” (p. 116). In organizational misbehavior literature, significant relationships are reported between certain personality traits and workplace delinquency (Ashton, 1998; Griffin, O’Leary-Kelly, & Collins, 1998; Raelin, 1994; Sproston, Erens, & Orford, 2000; Trevino, 1986), but the studies focus on variables such as cognitive moral development, locus of control, Machiavellianism, or low self-esteem. In our research, personality traits were not derived from psychological testing but from observations and remarks made in the files and interviews. Although this is subjective and comparatively weak evidence, it clearly indicates that personality traits are considered relevant in practice and that the observations point in the direction that integrity violators are (after the fact) perceived as somehow “standing out,” because of either conspicuously eye-catching or conspicuously unobtrusive behavior.

Proposition 3. *Most integrity violations in casinos involve weak supervision of the violator.*

From the case material, it became clear that all the cases of fraud were accompanied by poor control and supervision of the violator’s activities, resulting in opportunities for fraud. Furthermore, the immediate supervisors concerned had not considered integrity a serious issue – at least not until the corruption case surfaced. This is remarkable, given the casino tables’ vulnerability to fraud. The wrongdoers had been able to establish a trustworthy relationship or evade supervision. A witness reported: “After the change in supervision by the table manager, it was too easy for him. There wasn’t immediate control anymore. In the old system it would have been nearly impossible for him.” Most wrongdoers expressed a feeling that there was no control, or that control existed on paper but was not enforced. One explained: “The first time I made a mistake at the table and accidentally paid the guest too much, I thought ‘never mind, my mistake.’ But then I realized how easy it was; no one noticed it. Then the idea came into my mind.”

The relationship between integrity violations and weak supervision is firmly rooted in the literature. Leadership and supervision is considered of highest importance to prevent corruption and fraud, as is setting a good example (e.g., Johnson, 1993; Petrick & Quinn, 1997; Sproston, Erens, & Orford, 2000; Trevino, Weaver, Gibson, & Toffler, 1999). Ashforth and Anand (2003) argue:

Leaders do not have to actually engage in corruption to serve as role models: rewarding, condoning, ignoring, or otherwise facilitating corruption – whether intentionally or not, or explicitly or not – often sends a clear signal to employees. (p. 7)

Also noticeable in the fraud cases was that the control procedures were in most cases inadequate. In organizational misbehavior literature, Ackroyd and Thompson (1999) have

stated that employee misconduct is usually the result of oppressive or lax controls. Although (as indicated in the theoretical section) employee supervision in casinos is intense compared with other work environments, it is striking that, at least in our sample of fraud cases, there were clear indications of poor supervision. From this, one might conclude that it is perhaps difficult to maintain high standards of supervision and/or that a slackening of supervision in a casino easily leads to rule-breaking behavior.

Proposition 4. *Colleagues are hesitant to report suspicions of another's integrity violation.*

In three of the eight fraud cases, a customer reported that something was suspicious. Three others were discovered through regular camera system controls. One was discovered incidentally during a camera review request from a customer to determine the rightful owner of a stack of chips, one from normal video control, and one from company-wide control.

Supervisors had reported the employees who were fired because they were habitually late or absent; the locker theft was reported by the owner and the thief was apprehended after an investigation. Only once was an investigation instigated by a peer. This conforms to recent research on reporting in public organizations (de Graaf & Huberts, 2008) in which it was found that only 9% of integrity violations originated from peer reporting, whereas one third were started after regular controls and accountancy and about one quarter by citizen or customer reports. This also concurs in the literature on reporting integrity violations within organizations, which states that loyalty and solidarity are important factors that influence colleagues' reporting behavior (e.g., Gorta & Forell, 1995; Trevino & Victor, 1992; Zipparo, 1999). Similar conclusions have been formulated in whistle-blowing literature (e.g., Greenberger, Miceli, & Cohen, 1987; Miceli & Near, 1984; Near & Miceli, 1986). An example of loyalty from the case material was "I noticed that he had much more money than he used to. I found that suspicious. I suspected irregularities at his table. Maybe I should have reported it, but he was a good guy and I really didn't think about it." In another case: "I walked around for a while with a bad feeling because of the irregularities that I noticed. I didn't know what to do with that. I didn't want to rat on a colleague." A person who did report said: "I clearly noticed that my colleagues didn't like the fact that I reported."

In most cases, the wrongdoer's behavior had caught the attention of colleagues or supervisors. In one case, it was clear to colleagues that the wrongdoer had more money than he used to: "He had a lot of cash on him all of a sudden. Normally he always needed money and asked me to lend him money." In five other cases, it was clear that the wrongdoer was behaving differently, described as having "lots of restlessness in his daily duties." "He was doing a hundred thousand things at the same time, except what he was supposed to." In only two of the eight fraud cases were there no warnings within the organization. Three of the violators had been suspects in previous internal fraud investigations. Others had behaved strangely toward their supervisors. An assistant manager in human resources remarked: "He was number one on my list of those I expected to go." This behavior links to a study on corruption in public organizations (van der Wal, de Graaf, & Lasthuizen, 2008) that has concluded: "In most organizations, signals of something 'irregular' surfaced before the corruption case was discovered." Turner's classical theory on organizational disasters claims

that most are preceded by an “incubation period” in which there are incidents and signs of irregularities that are not always adequately responded to (Turner & Pidgeon, 1997). This observation indicates that high-risk gambling organizations should, in the terms of Weick and Sutcliffe (2001), be mindful of small and weak signs of trouble and that they should not rely on colleagues to report them.

Proposition 5. Integrity violators in casinos are effective employees.

Almost all files had annual staff appraisals and it is notable that the wrongdoers were not “bad” employees. Of the 13 cases, 12 had good or very good yearly functioning reports. The same applies to the croupiers. In each case, their speed, accuracy, and neatness were praised. As one supervisor said during an interview, “He was one of the best croupiers we had. He worked mechanically, neatly, and at a high pace.” We also found the following quote: “During observations we could hardly follow him. He worked very neatly, especially for his work pace.” This last quote also hints at the possibility that the better croupiers are, the harder it is to detect them stealing. This may even lead to carelessness by the wrongdoer. We found the following quote in one of the files by a wrongdoer: “I did not have much fear for the cameras. I thought I was too quick for them.”

The data presented here resonate with the findings of a similar study (de Graaf & Huberts, 2008) on corruption in public service in which it was concluded that the corrupt were neither inefficient nor ineffective, leading to the following proposition.

Proposition 6. Integrity violators in casinos often have a gambling addiction.

In seven cases, no information on addiction was found, but in six cases, the wrongdoers obviously had a gambling problem. In these cases, the wrongdoers either admitted to their gambling problem and/or it was inferred from their accounts by the supervisors. These wrongdoers often had money problems: in five of these cases, third parties had demanded their paychecks at least once. In two cases, HC, on request, advanced their paychecks at least five times.

Because a gambling addiction can be related to other addictions, we looked for evidence of this association. At least one of these six persons with a gambling problem also used hard drugs (cocaine); at least two of the six gambling addicts used soft drugs on a regular basis. The finding that a substantial number of the wrongdoers had a gambling problem is particularly significant in light of the HC policy that employees must not visit gambling establishments in the Netherlands.

Proposition 7. Integrity violators in casinos often act alone.

It is notable that in all 13 cases, the wrongdoer was acting alone with respect to the casino system. No evidence was found of corrupt networks. In three cases, people outside the casino – not colleagues – were involved. We cannot confirm any hypothesis that casino fraud is committed by groups of colleagues. On the contrary, we propose that most casino employees who commit fraud act alone. We regard this as somewhat surprising,

given the supervisory and video controls. This finding hints at deficiencies in operational control.

Conclusion

In this article, we explored the nature of integrity violations in Dutch casinos and offered primary conclusions in the form of seven propositions. They sketch a picture of integrity violations in Dutch casinos. This research offers a conceptual framework and a first impression of integrity violations in casinos. We immediately add to this that we are fully aware of the limited basis of the empirical findings. The propositions are based on the Dutch situation and inferred from only a limited number of cases from which one cannot draw generalized conclusions. The propositions should therefore be regarded as hypotheses that could be tested in further research. Although we hold that the propositions are valid and plausible, the causal mechanisms behind these propositions, as well as the statistical generalizability, are definitely unclear and could be the object of further research.

Casino companies differ regarding their organizational procedures, surveillance systems, and safety cultures. The number of undiscovered cases in the Dutch casinos is a “dark number”: we do not know it. What we do know is that integrity violations are related to the overt flow of money and that they are persistent, even in casino companies that are determined to eradicate them. Despite knowing they are being watched in the modern casino panopticon, employees still misbehave. This somewhat paradoxical observation can perhaps partly be explained by some observations in our data, for example, that it is usually the best croupiers who steal because they become overconfident and believe that they will not get caught. Also, as we saw, as soon as supervision is weak, the chances of stealing increase.

It would be interesting to repeat this study in different countries to see whether the nature of corruption differs. Future research could also be of a more quantitative nature to test the propositions and to determine the statistical generalizability in order to find out whether the propositions can be supported in a larger population of casinos and cases.

Casinos should be regarded as high-risk organizations. They not only provide a vulnerable service – gambling with money – but they are also accident prone due to certain organizational features such as “complex interactions” and “tightly coupled” connections (Perrow, 1999). At the same time, the organization of casinos is highly sensitive and well poised to prevent and manage certain accidents (Weick & Sutcliffe, 2001). Regarding this last feature, casinos assume the character of “panoptic spaces” (Foucault, 1975), where behavior is under constant surveillance and organizational space is designed to optimize this surveillance. The severe scrutiny is somewhat paradoxical because it counters misbehavior while increasing the complexity of interaction, which could lead to unexpected and unwanted consequences. In a casino, the surveillance system might prevent employees from misbehaving, but it might at the same time lead to a laxity in vigilance: Authorities might assume that employees will not misbehave because they know they are being videotaped.

Finally, although risks can be mitigated, casinos cannot be risk free. In this sense, integrity violations – deviations from relevant organizational values, norms, and rules (Huberts & Pijl, 1999) – can be characterized as a kind of “normal accident” (Perrow, 1999) in casinos. Casinos thus have a clear interest in constantly seeking to improve safety standards and cultures. Scientific analyses of the kind offered in this article might be helpful for that.

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Gjalt de Graaf and Sytze Kingma wrote the article. John School did the bulk of the empirical research at Holland Casino and also wrote significant empirical paragraphs of the article. Natalia Zborowska made substantial editorial contributions and wrote paragraphs on the casino crime practice and literature.

¹This was reported, on the basis of investigative journalism, on September 2, 2003, by the newspaper *Het Parool* and the television news program NOVA. Subsequently, there was a police investigation, which did not find proof of “large-scale money laundering” practices at Holland Casino. In the Dutch system, Holland Casino carries, as a state monopoly, the primary responsibility for the surveillance and control of the casinos. The Dutch gambling commission has no authority over the casinos in terms of operational control.

Gambling problems as a political framing—Safeguarding the monopolies in Finland and Sweden

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Abstract

Many EU member states are currently rethinking their gambling laws and policies to adapt to European law and to take into account increased technological possibilities for the gambling industry and increased competition on national gambling markets. Some of the countries have responded to the new situation by giving up or remarkably weakening their monopolies, but other countries have, on the contrary, reformed their monopoly systems to strengthen them to meet the new challenges. This article analyses gambling policy reforms in Finland and Sweden, where the liberalisation trend has been contested to safeguard the monopoly systems. The main means have been an increased focus on gambling-related problems and emphasis on the responsible nature and particular capability of monopoly-based systems to tackle these problems. This has made it possible not only to keep the monopoly system intact but also to expand its field of activities to the Internet as a responsible measure.

Keywords: European Union, Finland, gambling, monopolies, public health, Sweden

Introduction

In recent decades, Western gambling markets have typically been nationally based, and many of the jurisdictions have established national monopolies around gambling. The monopolies have been justified by their ability to provide revenues for the public good in the form of charities, grants, or taxes, but also for preventing fraud, money laundering, and black market gambling. However, the feasibility of sustaining monopolies or even national regulations has been questioned during recent years. In Europe, this is especially due to the European Union (EU). In the global context, monopolistic markets are threatened by new technologies.

The free movement of capital, goods, and services within the EU has, among many things, meant increased competition on the national level. National restrictions and

gambling regulations have been questioned in the name of free markets, and at the same time, the legality of preventing foreign actors entering the market is contested in many member states. Increasing opportunities for cross-border gambling have facilitated the development of a global gambling market beyond easy state control (Cisneros Örnberg, 2006). The new situation has forced the European gambling monopolies to redefine their position. At the same time, the space for political action has opened up for new actors in national gambling fields, in particular for the private gambling industry.

Although many EU member states are currently rethinking their gambling laws and policies, they have chosen different directions. While some countries (e.g., Spain, Italy, Denmark, and France) have adapted their regulations by giving up or at least remarkably weakening the role of the monopoly, others have reformed and strengthened their monopoly systems to fit the new situation and keep their markets regulated. This has been made possible by repeated rulings by the European Court of Justice establishing that the EU's principle of freedom to provide services *can* be restricted if it is justified by an overriding reason relating to the public interest.

In this article, we analyse parallel developments of two interrelated national gambling monopoly systems in which the trend towards freer gambling markets has been contested. The countries in question are Finland and Sweden, countries with a closely related political and historical past. This is especially apparent when it comes to social welfare policies such as those on alcohol and gambling. Both countries have similar regulated gambling systems with a few state-controlled gambling companies.

The formal effects of EU policy-making on the national level have been extensively researched over the years, on topics ranging from defence industry to the environment. However, the rapprochement to the EU is not only about national implementation of EU law but also dependent on changes in social life and public opinion that affect how policy decisions are handled and framed within each national context. How something is defined and framed affects perceptions and thus ways of thinking and acting for those involved (see, for example, Mörtz, 2000; Schön & Rein, 1994; Cisneros Örnberg, 2009). This article analyses how and by whom gambling policy has become framed in Finland and Sweden. The material used consists mainly of written documents in the form of bills, speeches, government reports, publications, and official minutes from each country; records of actions of relevant EU bodies; and also media and public discourse. On the basis of these data, we have systematically and critically examined the policy developments and arguments put forward in Sweden and Finland to offer insight into how the issue of gambling has been reframed in both countries.

In what follows, we first deal with the EU and its legal position on gambling. Secondly, we describe the regulatory systems of gambling in Sweden and Finland. Then we show how the interest in gambling problems (politically, professionally, and publically) has increased in the last few years. Finally, we briefly take up the politically charged case of Internet poker and examine how it has been dealt with in both countries.

The EU and gambling

Lotteries and gambling are, in principle, prohibited in the legal system of all EU member states. The main reason for this is that lotteries and gambling involve a high risk of fraud and abuse for criminal purposes. At the same time, most member countries permit exceptions to this prohibition to a varying extent (European Lotteries, 2004).

Within the EU, gambling is regulated, in accordance with the subsidiarity principle, at the national level. However, since gambling monopolies are common in the EU member states, the legitimacy of restrictions in the area of gambling has been examined by the Court of Justice of the EU (CJEU) in a number of cases. In its gambling jurisprudence, it has examined to what extent national authorities can impose restrictions on the cross-border provision of gambling services and whether these restrictions are compatible with the Treaties of the European Community. The CJEU has tried some twenty cases involving gambling in which the freedom of establishment (article 49 TFEU) and the freedom of services (article 56 TFEU) were adjudicated (see, for example, Cisneros Örnberg, 2006, for a more detailed description). There are also at the moment seven pending cases (see, for example SEC(2011) 321).

The court has long taken a cautious attitude vis-à-vis national gambling legislation and not seriously criticized any member state (Hettne, 2009). The different rulings have been interpreted by some lawyers as a sign that the CJEU, especially in the area of services, seems to prefer to delegate sensitive judgements to the national courts. As long as the protective measures that the regulations refer to appear to be genuine, appropriate, and necessary, and the regulation is proportionate for the purpose, and as long as less far-reaching measures could not obtain the same goal, it is for the national courts to make the judgement, which has meant that different national courts have made different interpretations (Bernitz & Kjellgren, 2002; see also Keuleers, 2003b). However, the Gambelli verdict (C-243/01) in 2003 signalled a new, more severe, view on gambling monopolies, where the court required that the purpose of a gambling monopoly has to be sincere and honest. The judgement emphasised that the economic interest of a member state does not constitute an acceptable reason (C-243/01; see also Bernitz, 2004; Allroth, 2005). The Gambelli verdict can therefore be argued to express a new turn in the previously (relatively) accepting attitude vis-à-vis national regulations and claims of public interest (Hettne, 2005).

Even though gambling is a national question and so far has not been the object of any harmonisation initiatives within the EU, the Commission has on several occasions questioned national gambling regulations. In the last few years, several countries have received inquiries from the Commission on their gambling services and their compatibility with existing EU law. The uniqueness of gambling services has also meant that the EU legislators have largely excluded gambling from a broad sweep of regulation, for example, the Services Directive (2006/123/EC) and the Electronic Commerce Directive (2000/31/EC). Nevertheless, legal experts are of the opinion that an initiative by the European Commission to establish an EU regulatory framework for online gambling services is becoming more and more inevitable, considering the borderless nature of e-gambling services (Keuleers, 2003a; Verbiest & Keuleers, 2004). The efforts of the EU

to promote the development of the Internet also make future action on the EU level about regulation of the gambling market very likely (Cisneros Örnberg, 2006). A European Parliament resolution in 2009 supports the development of common standards for online gambling regarding age restrictions, a ban on credit and bonus schemes directed at vulnerable gamblers, and a maximum amount to be played per week, as well as information about the possible consequences of gambling, where to obtain help in case of addiction, and the potential addictiveness of certain games (European Parliament Resolution (2008/2215(INI)). The resolution, together with the Council Conclusions from 2010 (http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/intm/118398.pdf), the Green paper by the European Commission (COM(2011) 128), the accompanying Commission staff working paper (SEC(2011) 321), and a series of Presidency conclusions, indicates an increased interest in intergovernmental gambling policy development at the EU level.

Gambling regulation in Finland and Sweden

The following section describes how gambling policy development has proceeded in Finland and Sweden.

Sweden

Lotteries in Sweden fall under two acts of parliament: the Lotteries Act (1994:1000) and the Casinos Act (1999:335). The Lotteries Act is prohibitive legislation which makes it possible only for those with a licence to arrange lotteries within the country, and all such permits are subject to governmental scrutiny. The biggest actor, with 53 percent of the regulated market, is the state-owned company Svenska Spel. Svenska Spel has a monopoly on arranging lotteries and number games, betting on sport events and dog racing (the latter dissolved in January 2006), and slot machine gambling. The company also has the licence to operate the four established international casinos in the country. The second-largest actor, with 31 percent of the market, is Aktiebolaget Trav och Galopp (ATG). ATG is a state-controlled company owned by the horse-racing associations. Various public benefit organisations (in Swedish: Folkkrörelserna) arrange lotteries through their company Folkspel and cover about 15 percent of the market. Folkspel was founded in 1989 and consists of approximately 75 voluntary organisations; the surplus of their activities goes back to the members.

The political responsibility for gambling is divided between the Ministry of Health and Social Affairs (MHS) and the Ministry of Finance. The MHS is responsible for public health aspects of gambling, with the Swedish National Institute of Public Health (SNIPH) as the responsible authority. The Ministry of Finance is responsible for overseeing gambling and lotteries and the processing of permits, with the Gaming Board (in Swedish: Lotteriinspektionen) as the central supervisory authority. In 2010, the gross gambling revenue (sales minus prizes) in Sweden was 16.85 billion Swedish crowns (1.89 billion Euros), an increase of 5.5 percent compared to 2008. However, even though the total turnover has increased, the percentage of Swedish citizens' disposable income spent on gambling has stayed the same over several years (Lotteriinspektionen, 2010).

Gambling over the Internet, interactive games, and the increased interest of foreign companies in Sweden have changed the gambling market drastically and put pressure on the monopolistic structure in the country. According to an estimate by Svenska Spel, gambling on sites owned by companies without a licence in Sweden covers about ten percent of the total known gambling market (Lotteriinspektionen, 2011). For several years, international gambling companies such as Ladbrokes, Unibet, and Expekt, together with national newspapers, have been challenging the Swedish gambling monopoly. These betting companies interpreted the CJEU ruling in the Gambelli case as the end for Svenska Spel and its monopolistic position. However, in October 2004, the Swedish Supreme Administrative Court concluded that the Swedish gambling monopoly was not in conflict with European Community law. The court judged that the Swedish regulations were necessary, proportional, and nondiscriminatory. The prohibition in the Lotteries Act on promoting foreign gambling—as well as the Lottery Act as a whole—is not consistent with European Community law on free movement of services and right to establishment, but the Court followed previous CJEU judgements that allow exceptions if the reasons are to protect the public and prevent crime (Regeringsrätten mål 5819–01). However, even though the Supreme Administrative Court established that the main purpose of the regulation was not to benefit the public treasury and that the system as a whole fulfils the demands of European Court law, they indicated that the Swedish system needed a review. It was concluded that while gambling enterprises must be allowed to market themselves, the marketing by Svenska Spel has been aggressive and extensive, especially on TV (Cisneros Örnberg, 2006; Hettne, 2009).

The government therefore appointed an investigation group in 2004 to make a general overhaul of the legislation in the gambling and lottery area. The final report concluded that there were reasons to question the compatibility of Swedish gambling regulation with European Community law, since economic considerations had had a disproportionate importance. The report also argued that it was impossible to legislate against competition from foreign actors and presented an alternative system with licences that both Swedish and foreign gambling operators could apply for. This new system would increase the competition and allow private profit while at the same time being under Swedish control.

However, the report was not able to present a complete bill proposal and analysis of all relevant questions for future Swedish gambling legislation. The Ministry of Finance therefore announced a new extended investigation in 2007 with the purpose of suggesting a long-term gambling regime (Kommittédirektiv, Dir. 2007:79). The report, finished in 2008, made the judgement that the foundation of present gambling regulation is in accordance with EU law and can function as a model for future gambling regulation. The investigation also opened up the option of a new licensing system for betting, with the exception of betting on horses. However, the report has so far not resulted in any law changes.

Finland

The Finnish state monopoly on gambling is regulated by the Lotteries Act (1047/2001). The Government grants licences for three gambling operators for five years at a time, with only one licence valid at a time for each type of gambling. Private companies are not allowed to conduct gambling activities. At the moment, The National Lottery, Veikkaus Ab, which is

totally owned by the state, has a monopoly on the lottery and betting business. Gambling on horses is operated by the state-regulated company Fintoto Oy. Profits from Fintoto go to equestrian sports, and profits from Veikkaus go to culture, sports, and youth work. Raha-automaattiyhdistys (RAY), The Slot Machine Association, has a gaming licence for keeping slot machines available for use, operating casino games, and running casino activities. At the beginning of 2010, RAY's licence was expanded to allow gambling on the Internet. RAY is a consortium of some 100 nongovernmental organisations (NGOs) in the field of health care and social welfare.

The Ministry of the Interior is responsible for gambling licences, and the National Board of Police is responsible for national supervision. The Ministry of Social Affairs and Health (MSH) is responsible for monitoring gambling-related problems (for a more detailed description of the Finnish system, see Jaakkola, 2008). In 2010, the gross revenue (sales minus prizes) from gambling in Finland was 1.53 billion Euros, an increase of 3.8 percent compared to 2009. The market shares were as follows: Veikkaus 52.6 percent, RAY 44.1 percent, and Fintoto 3.3 percent. According to an unofficial estimate made by RAY and Veikkaus, gambling on sites owned by companies without a licence in Finland covers about eight percent of the total known gambling market (Valkama, 2011).

The Finnish monopoly and its compatibility with European Community law were questioned in the *Läärä* case (C-124/97). In particular, the proportionality of an exclusive licence in relation to the social and economic benefits was discussed. The court case was described as a crucial question for interest organisations, since they to a large extent depend on the subsidy that RAY distributes. The Advocate General of the CJEU proposed that the state monopoly should be replaced by a system with licences, without sole rights, but still including strong state control. The Advocate General indicated that the present situation with vigorous marketing campaigns, the interest from the organisations with licences to increase the amount of gambling, and the deficient control of gambling by youths were all in conflict with the claimed purposes of the monopoly. The CJEU, however, went against the recommendation of the Advocate General and concluded that the Finnish legislation was consistent with the principle of free movement of services and goods, on condition that the restrictions aim at limiting the possible harms of gambling. The *Läärä* case led, however, to increased national attention to age limits and gambling responsibility.

In the late 1990s, the Finnish monopolies experienced increased competition from the Internet and gambling companies such as Centrebet, Expekt, Ladbrokes, and Unibet. Today, several private companies are offering gambling widely on the Internet in Finnish. In addition to the foreign companies, Finland has had a conflict with the Åland Islands gambling company (PAF). Åland is a Swedish-speaking autonomous region of Finland, and PAF, licensed by the Government of Åland, offers Finnish-language Internet games to the Finnish mainland. The Finnish Supreme Court of Justice announced their verdict in February 2005, fining PAF for violation of the lottery law. However, the legal dispute has continued due to different legal interpretations of the verdict from the Supreme Court of Justice.

Several actions have been taken to compete with nonlicensed gambling companies; for instance, in 2007, the Ministry of the Interior set up a working group whose task was to

propose measures according to which the government could take action to better uphold the exclusive right to organise gambling, tackle social problems associated with gambling, and prevent crime. A first set of law changes came into force in October 2010, and included, for example, tightening control of the marketing of nonlicensed gambling operators.

Gambling problems in focus

As we have shown, the EU involvement in national policy-making in gambling has increased, and, in particular, the Gambelli verdict stressed the importance of sincere and honest public health interest in regulating gambling markets. Gambling monopolies should clearly and effectively focus on preventing gambling-related problems. There are competing ways of defining problem gambling or gambling problems. One consensual definition is: “Problem gambling is characterized by many difficulties in limiting money and/or time spent on gambling which leads to adverse consequences for the gambler, others, or for the community” (Gambling Research Australia, 2005). In what follows, we describe how the gambling monopolies have responded to the recent development and more actively taken on public health-based arguments to protect, and even expand, their field of action in Sweden and Finland.

According to two large studies, the extent of gambling problems in Sweden seems to have remained the same over the last two decades, at about 2.2 percent of the Swedish population. The proportion of the population considered to have a severe gambling problem is 0.3 percent (Rönnerberg et al., 1999; Statens Folkhälsoinstitut, 2010).

Since 1999, the SNIPH has financed a helpline where problem gamblers can receive consultation about their gambling free of charge. A year later, the National Association for Problem Gamblers (Spelberoendes Riksförbund) was founded. This organisation, the SNIPH, Svenska Spel, and other concerned parties cooperate and consult each other when it comes to gambling and gambling responsibility in a trade association called Oberoende spel-samverkan (OSS).

During 2004, the media started to show an increasing interest in the negative effects of gambling. Gambling problems were also discussed in Parliament, and gambling operators started to develop standards for gambling responsibility. Gambling responsibility, the negative effects of gambling, the development of a voluntary organisation for gambling problems, and gambling operators’ development of codes of conduct were focussed on in the public debate. According to the Swedish Gaming Board, gambling responsibility and gambling responsibility programs took a prominent role when it came to the marketing of gambling products (yearly reports by Lotteriinspektionen at <http://www.lotteriinspektionen.se/>).

Furthermore, in 2006, the SNIPH started an education and information campaign about gambling and gambling problems on the Internet. Later, the Gambling Market’s Ethical Council was formed by the Swedish gambling companies with the purpose of working with ethical questions around gambling, lotteries, and their advertisement. Svenska Spel also introduced a service called Spelkoll on the Internet that analyses gambling patterns and alerts the person if risky changes in their gambling patterns are discovered.

In Finland, gambling problems became a public topic at the beginning of the 1990s, when the first studies on gambling problems were published (Murto & Niemelä, 1993; Rahapelit Suomessa, 1993). As an after-effect, experimental treatment programmes for problem gamblers were established. Gambling-related problems then emerged as a bigger political issue in the 2000s. An important milestone was the renewed Lotteries Act in 2001/2002, which gave the MSH the task of monitoring gambling-related problems. MSH commissioned a population study to estimate the prevalence of problem gambling in Finland. This survey was repeated in 2007; the prevalence of risky gambling habits was estimated to be about three percent among Finns over 15 years of age (Tammi, 2007; Aho & Turja, 2007).

The social and other problems involved in gambling were also addressed in the governmental Gaming Forum in 2004. The MSH also established a working group on gambling problems (2006–2007), which proposed that preventing problems should be the primary goal of gambling policy and proposed several policy restrictions. A working group was appointed in 2007 to revise the Lottery Act. The proposals led to restrictions on the marketing of the games, the classification of games according to their harmfulness, and new ways of organising the supervisory authority, but they also led to the start of Internet poker and other Internet casino games by the RAY.

In the 2000s, all Finnish monopoly organizations have introduced their own responsibility programmes, emphasising their actions to reduce and prevent problem gambling. As in Sweden, they also fund the helpline and treatment programmes for compulsive gamblers (see Tammi, 2008).

Expanding the territory: Monopolies launch Internet poker

So far we have shown that Sweden and Finland have had quite similar gambling policy developments during the last decades, including the emergence and adoption of a problem gambling prevention perspective to comply with the increased EU pressures. However, the emphasis on problem gambling has meant not only restrictions and preventive campaigns but also the expansion of Internet gambling. Next we describe the processes of extending the Swedish and Finnish monopolies to include Internet poker. The public health approach has been a central point of discussion when the monopolies have been granted licences to Internet poker.

Globally, the possibility of playing Internet poker for real money has existed since 1997 but has in recent years developed exponentially. At the same time, “ordinary” poker has received increased media attention. Estimates of global online gambling during 2008 amount to \$3.8 billion, where poker is estimated to be 35 percent of the turnover (Tryggvesson, 2007; Lotteriinspektionen, 2010).

In 2005, Svenska Spel applied for the right to arrange Internet poker gambling. The purpose of the launch was, according to the application, mainly to meet the increased competition from foreign gambling companies already organising poker games on the Internet that were available for Swedish gamblers. Svenska Spel expressed hopes that they would be able to take over gamblers from foreign gambling sites, a so-called canalization argument, which

would be good from a problem gambling viewpoint since a state-owned company would take concerns other than simply short-term commercial objectives into account and be subjected to more efficient control and follow-up than commercial companies. Svenska Spel also presented a gambling responsibility program which would include certain restrictions on gambling and thereby diminish the risk of harmful gambling (Tryggvesson, 2007; Stymne, 2009).

Two authorities, the SNIPH and the Swedish Gaming Board, gave their opinion on the application from Svenska Spel, and both authorities recommended a rejection. According to the SNIPH, the new forms of gambling contained all or most of the factors that research has shown increase the risks for problem gambling (availability, speed, no natural endpoint). Furthermore, the SNIPH argued that poker gambling facilitates the gambler overestimating the importance of their own skilfulness, and that it is a form of gambling with special risks for young people. There is also the risk that new gamblers—ones that would never gamble on international sites—would be introduced, which most likely would give rise to more people addicted to gambling. Furthermore, the effects of responsible gambling programmes had not been evaluated, so it was unclear whether they could compensate for increased gambling (Remissyttrande Dnr 21-05-0192; see also Jonsson, 2005). The Swedish Gaming Board had a somewhat different angle in their comments. In addition to an increase in gambling-related problems, they also warned about a one-sided increase in Svenska Spel's competitiveness. Measures not corresponding to the protective purpose of the law could be in violation of EC law and possibly jeopardize Swedish gambling regulation.

However, the government chose not to listen to the two opinions, and the application from Svenska Spel to the government for permission to arrange poker games on the Internet was accepted in November 2005, with a start in March 2006 and a governmental evaluation after one year. The Swedish government's reasons were similar to the ones presented by Svenska Spel, but with an extra focus on the control aspect. The government argued that a continued increase in the share of Swedish gamblers on foreign gambling company sites meant a decrease in the Swedish authorities' potential to control gambling that in practice is performed in Sweden. Furthermore, in the present situation the surplus of Swedish gambling would not be to the benefit of public good but rather go to private profit interests. It was also the government's assessment that the licence resulted in a strengthening of the potential to meet the protective interest of the Lottery Act and was thereby compatible with the EC law.

When Svenska Spel started their Internet poker site, it was the first state-owned gambling Web site in the world. The permit given was temporary and valid until 31 December 2007. However, while awaiting the report and evaluation of Internet poker gambling in Sweden (SOU 2008:36), this was extended to 1 July 2008. The permit was given under certain conditions: only people over the age of 18 were allowed to gamble; each gambler had to state a limit on how much money they agreed to lose and how much time they would allow themselves to gamble each day, week, and month; the marketing of Internet poker was only allowed in newspapers and on the Internet; Svenska Spel had to provide the number of the support line in connection with their advertising.

In 2006, Svenska Spel's launch of their Internet poker site was big news in Sweden and internationally. In 2007, Svenska Spel managed to take a considerable share of the Swedish market: according to Svenska Spel's own figures about 35 percent. The site rapidly became one of the five largest poker sites in the world (Svenskaspel.se). During the following years, Internet poker held a unique position on the gambling market, and the interest does not seem to have diminished. The number of Internet poker gamblers in 2007 could be estimated at 200,000. Out of these, 70,000 made their poker debut at Svenska Spel, but only 50 percent continued to gamble only on Svenska Spel. According to the same figures, about 20,000 were canalized from other sites to Svenska Spel (SOU 2008:36). At the same time, the number of calls to the SNIPH support line regarding poker games increased considerably (Lotteriinspektionen.se). Considering that the main goal of the canalization argument is to steer current gamblers to nationally controlled gambling, and not to increase the total amount of gambling (SOU 2006:11), one can argue that introducing Internet poker was questionable from a public health point of view.

Svenska Spel's licence to arrange Internet poker, as well as the way the company had followed the terms stated in the permit, was evaluated in a report presented in March 2008. A governmental inquiry evaluated Svenska Spel's site and the responsible gambling measures. The inquiry concluded that the conditions concerning responsible gambling were fulfilled and the conditions on promotion were followed. Those playing only on Svenska Spel's site, according to the report, took fewer risks and had fewer gambling problems than those playing on other sites. Since Svenska Spel fulfilled the requirements, the national debate which followed has not included any questioning about Internet poker conducted by the monopoly. On the other hand, there have so far not been any extensions of the licence to other gambling areas, such as Internet casinos, on the regulated market.

The Swedish experiment on Internet poker was closely followed in Finland. Soon after Sweden launched Internet poker, public discussion about national Internet poker started in Finland. The proponents, most visibly the Minister of Culture and Sport, suggested that one of the national lawful operators should take responsibility for Internet poker. Both RAY and the MSH dismissed the minister's suggestion, stating that domestic Internet games would simply add to gambling problems (YLE Uutiset 2008; HS 2008).

In 2007, there were approximately 125,000 Internet-poker players in Finland (Tammi, 2007). In April 2009, the working group set to reform gambling legislation proposed that RAY should offer casino games on the Internet. The main argument was that it should not make any difference which medium is used for gambling. Although at first averse to the idea of monopoly-based Internet poker, RAY applied for the right to arrange Internet gambling. Before the final permission, the Ministry of the Interior had asked opinions about RAY's application from ten stakeholder organizations in the field. The most critical opinion came from The National Institute for Health and Welfare (THL). THL referred to the critical views of its sister organisation in Sweden (SNIPH) and stated that starting Internet poker would increase the number of problem gamblers. THL also made reference to the Swedish Gaming Board's view that starting Internet poker could be in violation of European Commission Law.

From the viewpoint of public health, it is noteworthy that, as in Sweden, the Finnish government chose not to listen to the critical opinions, and RAY received the licence and opened the Internet casino with a wide range of slot machines, casino table games, and online poker in November 2010. It was expected to generate approximately €25 million during the first year of operation (RAY, 2010). Even if the process of adopting Internet poker was slower in Finland than in Sweden, the Finnish monopoly eventually expanded its territory more than the Swedish government chose to do.

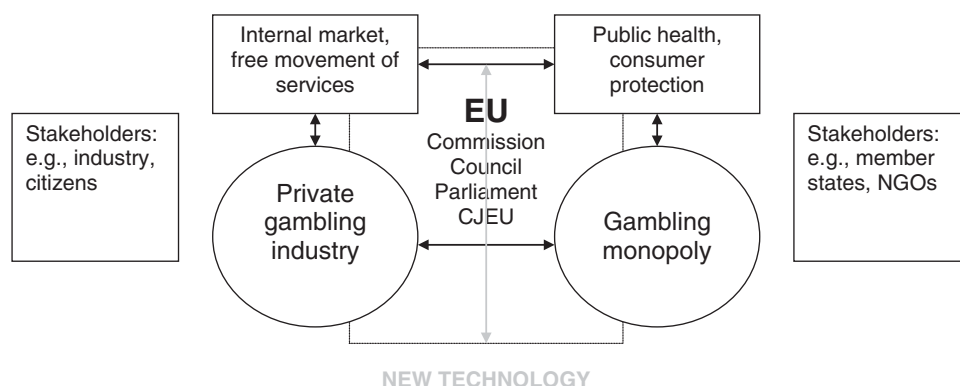
Discussion and conclusions

The way in which a problem is perceived and talked about affects actual policy-making. One result of the European integration process is that new policy areas are created and areas that have been national become partly European. National and European politics become intertwined, which leads to changes in the nation state and opens up possibilities and channels for actors other than those representing the state. These actors could include other member states, but also interest organizations or lobby groups. Different actors have different views on how to frame a concept, policy field, or problem (Cisneros Örnberg, 2009).

In comparison with alcohol policy, for example, the harmonisation of gambling policy has been a slow process. This could be based on the fact that most member states within the EU have some form of regulation on gambling, and the sympathy for keeping it a national matter is greater than for alcohol. A problem with future harmonisation among the member states in the gambling area is the lack of political will among the member states to establish a borderless gambling market with free competition. One main reason for this is that gambling monopolies are frequent among the member states and bring in considerable tax revenues (Hettne, 2005). The increased interest of Svenska Spel and other gambling operators in “responsible gambling” is remarkable but at the same time understandable and in line with the development of European case law.

Figure 1 illustrates in a simplified manner the current European policy context, where, although gambling is foremost a national concern, gambling is negotiated simultaneously as an issue that can infringe EU law and as an issue with public health concerns. During the last decade, an increased interest in public health questions is discernable on the EU level, supported by the Amsterdam and Maastricht Treaties, and also by previous CJEU decisions. Furthermore, the Gambelli and Markus Stoß verdicts (C-243/01 & C-316/07) stressed the importance of sincere and honest public health interest when it comes to regulating gambling markets. Gambling policy can in this way elucidate the need for member states to emphasize the public health aspect of national regulations. This is partly done by focussing on the problems related to the area in question, above all in the form of research with preferably comparable figures over time and between member states, but also through a medicalisation of the question with increased treatment possibilities. Thus, European integration and EU membership have made the prevention of social and individual problems an important justification for the gambling monopoly and an important area for action in both countries.

Figure 1. Gambling policy dynamics in the EU



We have analysed from a comparative perspective how two monopoly-based gambling policies have become redefined in Finland and Sweden. What we have seen is an increased focus on public health-related gambling problems but also a new supply of gambling opportunities on the Internet. To date, this parallel strategy by the two Nordic monopolies of increasing both regulations and supply has proved a successful political adaptation strategy to the rapidly changing economical, political, and technological context where the justification of national gambling monopolies has been questioned.

In Western Europe, concurrent processes of convergence and divergence of national gambling policies are going on. The tendency towards convergence of policies takes place due to the increasing political demand to incorporate gambling-related harm prevention into the code of conduct of the gambling industries, and this tendency is shared between gaming operators regardless of their status as monopoly-based or private businesses. The parallel process of divergence takes place because national monopolies also take different directions in adapting their gambling policies to the EU. Some give up or significantly weaken their monopolies in order to conform to EU free movement and establishment of services, whereas some monopoly systems ally with EU principles related to protection of consumers and public health.

This divide has resulted in two major lines of development: while in some countries monopolies are being abandoned or their role in the markets is becoming weaker, in some other countries the monopolies are reformed and fortified to meet the new challenges. Sweden and Finland have taken the latter path, with an increased focus on problem gambling, thus emphasising the responsible nature and particular capability of monopoly-based gambling markets to tackle these problems. The Finnish and Swedish monopoly organizations have accepted the problem aspect and incorporated it into their business model. This has made it possible not only to safeguard the monopoly system but also to extend it to cover Internet gambling, all in the name of a socially safe and responsible option for the private and cross-border gambling industry.

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Fantasy baseball: A new way to gamble or just another game?

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Abstract

The controversy over whether fantasy sports should be considered a new form of gambling was investigated. The predominance rule was used to operationally define gambling. This rule states that an activity is gambling if outcomes are due more to chance than to skill. Individuals active in a fantasy baseball league (commonly referred to as “owners”) and individuals who had never entered any type of fantasy league (“non-owners”) participated. Perceptions of skill-to-chance ratios were assessed and a content analysis of the specific skill and chance features involved in fantasy baseball was conducted. The results showed that fantasy baseball owners and non-owners judged outcomes to be more the result of skill. In an attempt to determine whether these results were supported by actual outcomes, a second study analyzed the records of a fantasy baseball league over an extended period. The findings of this additional study also suggest that skill may predominate over chance.

Keywords: fantasy sports, sports gambling, predominance rule, rotisserie

Introduction

There is controversy concerning the exact criteria that should be used to determine whether an activity is gambling or not. Academic researchers, addiction counselors, and those representing the legal system have diverse views concerning the criteria deemed to be appropriate (see Bernhard & Eade, 2005; Reber, 2000; Van Ingen, 2003). It seems that people who enter contests are looked upon in a favorable manner because these activities are usually considered a reflection of a competitive desire to achieve (Curry & Jiobu, 1984). However, when an activity involves the exchange of money, it often has a negative connotation and can be viewed as immoral or simply a waste of money (Bernhard, 2002). Better understanding of gambling issues has important practical implications. Some corporations have policies against gambling and may fire employees who are perceived to be gambling on company time or using company resources to gamble (Davison, 2009). It seems that in some of these cases (reported in Davison [2009]), the guilty parties were unaware that their actions

could be construed as gambling. Therefore, additional theoretical work needs to be done to determine what constitutes gambling.

There are clear and concise definitions of different types of gambling behaviors, such as recreational gambling, problem gambling, and pathological gambling (Bergler, 1958; Custer, 1984; Lesieur & Custer, 1984; Rosecrance, 1985). Gambling has also been identified with a variety of activities, including (but not limited to) many forms of casino gambling; lotteries; and betting on sports, horses, and dogs (Abt, Smith, & Christianson, 1985). However, specific definitions of gambling are less noticeable in the research literature. Several definitions have been proposed, but are often too broad. For instance, Reber and Reber (1995) defined gambling as encompassing those activities in which something of value is put at risk for the possibility of ultimate gain. Similarly, Bernhard and Eade (2005) broadly defined gambling as an activity that risks something of value, for example, substantial amounts of money, on an event whose outcome is undetermined. A shortcoming of these definitions is that they could also be used to describe participation in a contest, such as a spelling bee. For example, in a spelling bee, an entry fee is paid; that is, something of value is put at risk. When the entry fee is paid, the winner is unknown; that is, the outcome is undetermined. The situation is the same in playing slot machines. Money is put into the machine; that is, something of value is put at risk. The outcome of the play is unknown until after the machine handle is pulled. The application of these definitions could easily lead us to categorize a spelling bee as gambling when clearly the correct categorization would be that of a contest. Thus, we propose that these two current definitions of gambling are too broad. With such broad definitions, there is the danger that some activities could be labeled as gambling when they actually could be more appropriately viewed as a contest. An aim of the current study is to determine whether this might be the case with fantasy baseball.

It is useful to explore Reber's (2000) more complex definition of gambling. He believes that all activities that fit the general definition of gambling also need to have two underlying independent dimensions. The first dimension is flexibility. This is the extent to which the nature of the game resists attempts of the participants to alter the payouts. In inflexible games, the payout odds are set independently of the actions of the participants and nothing that the participants do will have any long-term effect on the payout. Such games are exemplified by roulette and lotteries. In more flexible games such as poker and blackjack, the skills of the participants are significant features in determining the eventual outcomes. The application of the flexibility dimension to a spelling bee could result in considering the spelling bee to be something akin to poker. In other words, the speller's skill level has some effect on the outcome, thus game flexibility, but the responses of other spellers are beyond control. The second dimension is referred to as the normative expected value (EV) of the activity. Here, the skill of the participant is the determining factor as to whether or not he or she will have a positive or negative expectation. The EV of a game is related to the probability of winning, but is unrelated to how much is wagered. Reber includes card games such as poker and blackjack, as well as horse racing and sports betting, as forms of gambling in which skill plays a major role in determining high or low EV. Just as skilled poker players may enter a poker game with positive expectations or positive EV, so may skilled spellers enter a spelling bee with the expectation that they may win. In both cases, EV can be applied to gambling and contests.

It should be noted that the EV of an enterprise is distinct from the “flexibility” factor. Reber (2000) argued that the EV of a game is based on either the mathematical properties when they are knowable (as in a game such as roulette), or the pragmatic operations of all of the contestants who participate. In this case, the EV is only an estimate calculated after sufficient data have been collected. For example, there can be an activity that is high in flexibility, but with long-term negative EVs. In these forms of gambling, the vast majority of people will lose, but not all. A participant’s skill level will often determine their success (A. Reber, personal communication, July, 24, 2008).

A social dimension has long been a common ingredient found in many activities, including most forms of gambling (Abt et al., 1985). Whether it has been wagering on cards, sports, horses, dogs, or any other form of gambling, the gambler has been known to find a venue and cohort to discuss, prepare, celebrate, and lament. According to Rosecrance (1988), wagering leads to the development of gambling social worlds. Within these gambling worlds, the participants will often develop their own unique vocabulary (Bernhard & Eade, 2005).

Researchers have suggested that gambling is a rewarding activity with the propensity for addiction (Shaffer, 1997, 1999, 2004). Apparently, this can take place either in a social setting (Rosecrance, 1985) or in the solitude of one’s home in front of a computer screen. Shaffer (2004) posited that technical advances might be related to development of an addiction. Gambling seems to be particularly vulnerable to this occurrence (Shaffer, Hall, & Vander Bilt, 1997).

An activity that might be considered a new form of gambling (Bernhard & Eade, 2005), referred to as fantasy sports, appears to fit in neatly with these more traditional ways of gambling. It has been suggested that fantasy sports should be given the same legal status that is currently given to the older forms of gambling (*Humphrey v. Viacom, Inc.*, 2007). Fantasy sports appear to be similar to accepted forms of gambling in several ways. Traditionally, these activities have been enveloped in a social world where success is affected to some extent by skill level and there is something of value put at risk by the participants involved. Therefore, the primary aim of the current study is to determine whether there is merit in claims that fantasy sports are gambling. Such claims will be contrasted with the perceptions of fantasy sports players and non-players, as well as actual outcomes reflected in fantasy baseball league records.

History of Fantasy Baseball

Fantasy sports can be traced to a restaurant in New York City called *La Rotisserie Francaise*, where in 1979 a group of baseball fans began the organization of a fantasy baseball league consisting of teams whose performance was based on the statistics of actual players from Major League Baseball (MLB) teams (Bernhard & Eade, 2005). One of the original fantasy baseball league participants was Dan Okrent, who is often referred to as the person who invented the rules for what is referred to as *rotisserie*, or *roto* baseball. Almost immediately, fantasy baseball fans began to formulate their own vocabulary, or jargon, applicable to their newly created activity. One of the more interesting terms is “owners,” which is used by

fantasy members who have drafted a team—they are the “owner” their team and “own” the players on it. By the early 1990s, rotisserie baseball had led to spin-offs such as fantasy football, fantasy basketball, and other fantasy sports (Ballard, 2004). Clearly, the early days of fantasy sports resembled the traditional forms of gambling, because they provided an important source of social relations, and money was put at risk for expected gain.

Initially, an “auction” style of drafting players occurred, where prior to the sports season the players from the real leagues were selected by the owners of the fantasy leagues (Ballard, 2004). In this style, owners were given a predetermined “bankroll,” which they could use to bid for players. Once this bankroll was depleted, the owners would no longer be able to acquire players. Thus, a fantasy manager bidding highly to get last year’s Most Valuable Player might later have such a small bankroll left that they might have to fill other positions with players with low value.

Although the auction style draft is still a popular method, recently many leagues began utilizing a “snake” draft of players. This change has been generated by the ease of its use in Internet “draft rooms,” where owners take turns picking players for their team. For instance, in a 10-team league, owners will begin round 1 of the draft by picking in order, starting with the first pick through the 10th, and then back in reverse draft order, with the owner picking 10th then picking immediately again to start the second round (i.e., the tenth drafter would get the 10th and 11th picks, the ninth drafter would get the 9th and 12th picks, and so on).

Early fantasy baseball leagues based success on how many statistical categories were won (rotisserie style). This style, which is still popular, bases league champions on this criterion. Today, it appears that a majority of these leagues are utilizing a point-scoring format to assess the league champion in what is often referred to as the head-to-head (HTH) style. Whereas the older rotisserie format is based on season-long statistics, HTH often utilizes a schedule of games in which one’s fantasy team will face a different fantasy opponent in the league on a weekly basis. In these HTH games, points are scored based on performances of real players in MLB. For instance, for batters, a single may be worth one point, a double worth two points, and so on. For a typical scoring breakdown for batters, see Table 1. Pitchers can also score points depending on their performance (using different statistical categories—see Table 2). Note that either an auction or a snake-style draft can be used regardless of the type of scoring format used. Many fantasy leagues have entry fees, and award monetary prizes to winners at the conclusion of play.

Recent estimates indicate a dramatic increase in fantasy sports popularity. For example, in a recent study, the Fantasy Sports Trade Association (FSTA) tracked the consumer behavior of fantasy sports participants. They estimated that almost 20 million American adults were participating in fantasy sports. This estimate is almost 3 times higher than it was a decade ago. It was also estimated that fantasy sports had a market size of more than \$1.5 billion (FSTA, 2007). More recently, it was reported on the FSTA home page that there are currently 32 million people in the United States and Canada participating in fantasy sports (FSTA, 2011). Considering that their 2003 report estimated participation to be 15 million adults (Hu, 2003), it could be that the popularity explosion of fantasy sports has not yet peaked.

Table 1
Typical scoring categories for fantasy baseball batters

Batting category	Points
Singles	1
Doubles	2
Triples	3
Home runs	4
Batting average ranges	
.200–.219	1
.220–.239	2
.240–.259	3
.260–.279	4
.280–.299	5
.300–.319	6
.320–.349	7
.350–.374	8
.375–.399	9
.400 and above	10
Walks	1
Strikeouts by batter	–1
Runs scored	1
Runs batted in	1
Stolen bases	2
Caught stealing	1

FTSA research depicts an interesting demographic profile for those partaking in this activity. There is a preponderance of males (over 90%) with an average age of 36 years. Most are married, educated, and homeowners with an average annual salary of \$77,000. They spend about 5 hours per week on-line managing their teams (FSTA, 2010).

During its infancy, fantasy sports began in a similar fashion as the traditional forms in that it had a social network of avid individuals (Bernhard & Eade, 2005). Just as it has with some of the traditional forms of gambling (e.g., poker), the advent of the Internet has changed the composition of how league owners interact and thus the social networking that occurs. For the first decade and a half of its existence, fantasy owners would meet on-site to share in the camaraderie that is inherent in the drafting of players for the upcoming season. A typical meeting place for this event would be at the home or business of the chairperson of the league (commonly referred to as the “commissioner”). If league owners were coworkers, it would not be unusual for the draft to take place at the conference room of the corporation where they were employed.

During the 1990s, the Internet made life easier for fantasy sports fans. Up until that time, fantasy league owners were known to search through box scores in daily newspapers to find the statistics of their players (Davis & Duncan, 2006). Currently, league owners enjoy their activity without having to spend hours manually compiling statistics. Today, several Web

Table 2
Typical scoring categories for fantasy baseball pitchers

Pitching category	Points
Wins	1
Losses	2
Earned run average ranges	
4.01–4.50	1
3.51–4.00	2
3.01–3.50	3
2.51–3.00	4
2.01–2.50	5
1.76–2.00	6
1.51–1.75	7
1.26–1.50	8
1.01–1.25	9
0.00–1.00	10
Quality starts	5
Complete games	10
Shutouts	10
No-hitters	10
Strikeouts by pitcher	1
Saves	5
Blown saves	–5
Walks & hits/innings pitched ranges	
1.21–1.30	1
1.11–1.20	2
1.01–1.10	3
0.91–1.00	4
0.00–0.90	5

site services such as CBS Sports, ESPN Fantasy Sports, Yahoo! Sports, and the *Sporting News* provide real-time up-to-the minute statistics (Hu, 2003). For example, as an MLB player hits a home run and scores for his real-world team, this is immediately reflected in added points for the fantasy team who has this player.

Although the change brought about by the Internet has had its advantages, in some ways, it has also led to a drop-off in the social exchange component that was so prominent in its early days. Rather than meeting at a restaurant or conference room where good-natured banter was done in a group atmosphere, much of today's fantasy sports activities are conducted without any face-to-face interaction. Similar to the traditional forms of gambling, in fantasy sports, a large portion of owners are now conducting business in isolation. However, not unlike the older forms of gambling, many of those involved in fantasy sports revel in an environment in which they are surrounded by other passionate participants.

Are Fantasy Sports a New Form of Gambling?

Is participation in fantasy sports a form of gambling? Although we found no empirical study that specifically investigated this question, some researchers, counselors, company executives, university administrators, and writers have the perception that fantasy sports fits at least a broad definition of gambling. It has also been reported that fantasy sports participants are involved in a gambling culture (Bernhard & Eade, 2005).

The Council on Compulsive Gambling of New Jersey (CCGNJ) views fantasy sports as a “gateway” to more traditional forms of gambling (J. Beck, personal communication, July 23, 2007). The CCGNJ managerial assistant reported that in their presentations to high school students, CCGNJ counselors urge these young people to avoid fantasy sports. They highlight the issues that they feel can lead a young person from fantasy leagues to illegal sports gambling. Such issues include the possibility of spending significant amounts of time and losing large sums of money in the fantasy leagues.

Recently, four employees working for the Westlake office of Fidelity Investments, located in the Dallas/Fort Worth, Texas, area, were fired because they had violated the firm’s “gambling policy” by participating in fantasy football leagues. One of the individuals fired said that he was interrogated as if he were an international gambling kingpin (Davison, 2009). Similarly, some university administrators have included fantasy sports bans in their gambling policies and have required that literature be given to student athletes prohibiting them from participation in any fantasy league that awards a prize or requires a fee to participate (“Don’t Bet on It,” 2005). Supporting these views, one sportswriter reported that fantasy football “is a form of gambling, pure and simple” (Magee, 2003).

In contrast, the National Football League (NFL) currently views fantasy football as a nongambling activity; however, this has not always been the case. The NFL currently allows its players to participate in fantasy football leagues. However, initially the NFL considered fantasy football as a gambling activity and adamantly opposed it. Some have questioned whether the added interest the fantasy game was creating for the real game and the resulting added revenues that were being generated might have been the reasons that the NFL reassessed its position (Magee, 2003). In addition, *Sports Illustrated* reported that no one has ever been arrested for participating in a fantasy league and that it is not considered to be gambling (Ballard, 2004).

The legal system has its own criteria for determining whether an activity is gambling. Generally under common law, gambling involves three elements: (1) the distribution of prizes (2) according to chance (3) for a consideration (*Lucky Calendar Co. v. Cohen*, 1955). The key legal element in identifying whether a game or contest is gambling depends on whether there are contingent factors that are out of the control of the players. This chance element in a game is legally assessed by the “predominance test” or “dominant factor test” (In re *Allen*, 1962).

According to the predominance rule, games of pure chance, such as slot machines, are gambling and consequently illegal or subject to regulation. Games of pure skill, such as

chess, are not gambling. For games with a mixture of elements of chance and skill, the predominance test requires the court to decide whether “uncontrollable chance” or “player skill” predominates in determining the outcome of the game (Balestra & Cabot, 2007). The percentage of chance required for a game to be gambling varies among states, but usually 50% or more is the test (see <http://www.gambling-law-us.com> for a summary of state laws). Although the courts have not decided upon a definite means to determine the predominance of skill or chance (Boswell, 2008), academics have provided expert testimony on the statistical predominance of skill in poker (*Raley v. People of the State of Colorado*, 2010).

The application of the predominance test is still at issue for fantasy sports. A recent court case challenging the legality of fantasy sports never reached the chance or skill issue because the challenge resulted in a pretrial dismissal (*Humphrey v. Viacom, Inc.*, 2007). But the federal law (USA) has made an explicit exception to fantasy sports, stating that they are games of skill (Unlawful Internet Gambling Enforcement Act, 2006), whereas two state attorney generals have published opinions that fantasy sports are gambling (see La. A.G. Op., & Fla. A.G. Op., 1991). Consequently, the legal categorization of fantasy sports is an open question.

Assessment of Fantasy Baseball

The diversity of views from real-world settings described earlier suggests that a more formal assessment of fantasy baseball is due. Such a formal assessment could be the beginning of a body of empirical work that could guide decision makers in the private sector, education, counseling settings, and legal determinations. Because current definitions of gambling partly depend on the views or attitudes of participants as to the predominance of skill or chance (Reber, 2000), the informed attitudes and views of owners is one logical beginning point for the formal assessment of fantasy baseball. A second angle of assessment is the analysis of actual win-loss records from a fantasy baseball league.

One possible way to assess the status of fantasy sports as gambling is to use the predominance rule as the basis for an operational definition of gambling. The predominance rule proposes that if the outcome of a game or contest is predominantly the result of skill, then the activity is not gambling. If the outcome is due mainly to chance, then the activity is considered gambling. Therefore, estimates of the skill-to-chance ratio could be used to operationally define whether fantasy sports are gambling. A second way to assess the status of fantasy sports is to analyze the actual records of a fantasy sport's league. If fantasy sports are predominantly games of chance, then over time no particular team or teams should outperform other teams. Chance factors will be evenly distributed across teams and will result in roughly equal win-loss outcomes.

The major objectives of the current study were to explore the skill-to-chance estimates of fantasy baseball owners and non-owners (who have never been involved in fantasy baseball) and to see whether these perceptions are supported by actual win-loss records. To achieve these objectives, all participants in Study 1 were asked to estimate the amount of

skill involved in fantasy baseball. Non-owners were included in the study because of the possibility that the owners' estimates could be biased in the direction of perceiving higher levels of skill than may actually exist. In Study 2, we analyzed actual fantasy baseball league records for 12 teams across nine seasons.

From the experience of the first author, who has been a fantasy baseball owner for 18 years, we predicted in Study 1 that both owners and non-owners would judge that fantasy baseball outcomes are due more to skill than chance. We based this prediction on our expectation that fantasy baseball owners would think that chance elements would cancel each other out and that knowledge and skill will be predominant. To a lesser extent, we felt that this would also apply to non-owners. Study 2 was included to determine whether the results of Study 1 were supported by actual outcomes. A final hypothesis relates to the two distinct formats available to owners of fantasy teams. Considering the structures of the two formats, we expected owners of the rotisserie format to perceive more skill than those involved in the HTH leagues. Specifically, we felt that the variability involved in playing different opponents every week in the HTH format would be viewed as being a chance factor (for example, playing a "hot" team). In contrast, we felt that those playing the rotisserie style would believe that chance factors would even out over the full season.

Study 1

This study compares estimates of the skill-to-chance ratios in fantasy baseball outcomes of owners and non-owners. In addition, owners' skill-to-chance estimates are compared for the HTH versus rotisserie formats.

Method

Participants. A convenience sample of 173 participants took part in the study. The sample was composed of 117 participants who have never been fantasy baseball owners (i.e., fantasy baseball participants) and 56 participants, who at the time of data collection were fantasy baseball owners. The non-owner sample, which was composed of college students enrolled in undergraduate psychology courses offered at a rural 4-year college in the Rocky Mountains (USA), was composed of 64 (55%) women and 53 (45%) men. The non-owners' mean age was 21.71 years ($SD = 6.59$). Sixty-seven non-owners (57%) were Caucasian, 23 (20%) were Hispanic or Latina(o), 11 (9%) were African American, one (1%) was Asian American, and 14 (12%) identified themselves as other, or did not declare an ethnicity. The owners were composed of 55 men and one woman (mean age = 32.5 years, $SD = 11.1$). Forty-seven owners (84%) were Caucasian, four (7%) were Asian American, two (4%) were Hispanic, and two (4%) were African American. One participant reported their ethnicity as "other." Owners' approximate annual mean salary was \$78,085 ($SD = \$65,888$). The mean length of time of fantasy baseball ownership was 7.62 years ($SD = 4.99$). All but one participant reported residing in the United States, with 18 (32%) residing in Connecticut, nine (16%) in Colorado, seven (13%) in New York, and the remainder in 14 other states. The demographic profile of the owner

subsample was fairly similar to the overall national profile of owners reported by the FTSA.

Materials. The non-owner's questionnaire asked for demographic information and whether these participants had ever been fantasy baseball owners. An extensive description of fantasy baseball was included in the questionnaire. The fantasy baseball description was pilot tested with 15 students enrolled in a junior-level psychology research methods course. The pilot testing was conducted to make certain that the description was clear and understandable.

To make certain that the participants understood the description of fantasy baseball, a 10-item quiz was included. The quiz response format used a Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Scores were calculated by summing all responses. Scores could range from 10 to 50, with higher scores reflecting more accurate and more confident knowledge of fantasy baseball. A single item also asked the participants to rate their general baseball knowledge on a scale from 1 (*could not explain the real game of baseball*) to 5 (*could explain very well the real game of baseball*). Estimates of the skill-to-chance ratios in fantasy baseball were also requested. These estimates required that participants pick one of 11 possible skill-to-chance ratios. The skill-to-chance ratio response options were in increments of 10% and ranged from "skill = 100% and chance = 0%" to "skill = 0% and chance = 100%." Each ratio response option was given a numeric value such that 1 represents skill = 100% and chance = 0%, 2 represents skill = 90% and chance = 10%, 3 represents skill = 80% and chance = 20%, all the way to 11 represents skill = 0% and chance = 100%.

The fantasy baseball owner's questionnaire asked for demographic information and also asked these participants to list all the features of fantasy baseball that required skill and all the features that reflected chance. The skill and chance listings functioned to make the details of the game more salient before the skill-to-chance ratios were estimated. The listings also provided some insight into specific factors that were viewed as skill or chance components. Estimates of the skill-to-chance ratios in the HTH and rotisserie designs were requested. The format for obtaining these skill-to-chance estimates was the same as that used in the non-owner's questionnaire. Information about the importance of the monetary prize in fantasy baseball and how the monetary prize affects interest levels was also collected.

Procedure. The non-owners were recruited at a small college in the Rocky Mountains (USA). The fantasy baseball owners were recruited through e-mail sent to league members or former league members of the first author, who is also a fantasy baseball owner. A total of 16 participants were contacted in this manner. Forty other participants were recruited through a fantasy baseball Internet bulletin board. The e-mail and bulletin board postings described the study and functioned as a consent form. All participants, regardless of how they were recruited, were blind to the expectations of the researchers. Consent to participate was given when the participant clicked on the questionnaire Internet address contained in the e-mail or bulletin board posting. When the participant completed and submitted the questionnaire, a debriefing message appeared.

Results

Owner results. The owner's questionnaire asked the participants to list as many skill and chance features of fantasy baseball as they could think of. Content analyses of the skill features and chance features were conducted. One-hundred twenty-eight responses reflected skill features. Three broad skill themes in the owner responses were identified: the ability to select good players (66% of responses), effective player scheduling (17% of responses), and miscellaneous skills (17% of responses). Player selection features included the ability to effectively use the waiver wire (selection from a list of real MLB players who had not yet been chosen for any of the fantasy teams; these players are also referred to as free agents), knowing when to make or not to make trades, knowing who the best players are to draft, being able to effectively use the point categories, and the ability to create a balanced and competitive player roster. Player scheduling features involved knowing when to select or to bench a certain player for specific games, knowing whom to match up with whom, and recognizing when to make modifications in the roster. The miscellaneous responses were typically very general statements, such as knowing how to use a computer and the Internet, the ability to filter good information from bad, and having the patience to manage a team for 162 games.

One hundred and six owner responses identified chance features. Three broad chance themes in the owners' statements were identified: unpredictable player performance (68% of responses), league procedures that introduce chance (23% of responses), and miscellaneous chance factors (9% of responses). Player performance features included unexpected injuries; natural variation in player performance from game to game; the unanticipated call-up of new talent; and the possibility of the real MLB team going on winning or losing streaks, which owners felt could affect a player's opportunities for fantasy points. League procedure features included the unpredictable volatility of the HTH format, and the chances one takes when drafting relatively unknown players. Miscellaneous responses included the influence of the weather, player suspensions, and the effects of real MLB managers who play favorites that are not clear to the public.

The owners also estimated the skill-to-chance ratios in HTH fantasy baseball and rotisserie baseball. In the skill-to-chance estimates, the HTH format was judged to involve less skill compared with the rotisserie format. More specifically, the mean estimate of the HTH format was judged to involve approximately 65% skill and 35% chance. In comparison, the rotisserie format was estimated to involve approximately 75% skill and 25% chance. Thus our hypothesis that the owners would perceive outcomes predominantly due to skill in both formats was supported. A two-tailed paired samples *t* test revealed that the amount of estimated skill was higher for the rotisserie format ($M = 3.42$, $SD = 1.82$) compared with the HTH format ($M = 4.48$, $SD = 1.78$), $t(32) = 3.89$, $p < .005$. Also, a strong direct relationship between estimates of the skill-to-chance ratio in the HTH and the rotisserie formats was found, such that higher skill estimates in one format were associated with higher skill estimates in the other format, $r(41) = .76$, $p < .005$. Of the participants who have played both the HTH and the rotisserie formats, 24 (69%) felt the two formats were different, while 11 (31%) felt there was no difference.

Concerning the importance of playing for money, 46 (90%) of the owners reported they would be just as likely to participate in fantasy baseball even if there was no monetary prize, whereas five (10%) reported they would be less likely to participate. Finally, 36 (73%) reported that their interest level would not decrease if there were no monetary prize, whereas 13 (27%) reported that their interest level would decrease.

Non-owner results. To give informed skill-to-chance estimates, it was imperative that the non-owners understood fantasy baseball. To assess whether the non-owners understood the fantasy baseball description in the questionnaire, an overall mean score on the 10-item quiz was calculated ($M = 38.92$, $SD = 5.53$). The range of possible scores was 10 to 50, with higher scores reflecting more accurate and more confident knowledge. The mean score represents 78% of the highest possible score. A two-tailed independent samples t test showed that the men's knowledge scores ($M = 39.70$, $SD = 4.68$) did not differ from the women's scores ($M = 38.28$, $SD = 6.10$), $t(115) = 1.39$, $p = .17$. Also, the fantasy baseball knowledge scores were modestly correlated with participants' evaluations of their general baseball knowledge, $r(100) = .21$, $p = .03$. Again, a two-tailed independent samples t test revealed no gender differences in the men's ($M = 3.63$, $SD = 1.07$) and women's ($M = 3.44$, $SD = 1.01$) estimates of their general baseball knowledge, $t(98) = 1.00$, $p = .32$.

To test our hypothesis that the non-owners would also perceive HTH fantasy baseball outcomes as predominantly due to skill, we calculated a mean score ($M = 5.43$, $SD = 1.76$). This score implies that the non-owners perceived that outcomes were due to about 55% skill and 45% chance; thus our hypothesis was supported. A two-tailed independent samples t test revealed that the owners perceived a greater amount of skill in outcomes (65% skill to 35% chance) compared with the non-owners, $t(169) = -3.28$, $p = .001$.

Additional non-owner exploratory analyses were also conducted. A two-tailed independent samples t test revealed no gender differences in the men's ($M = 5.31$, $SD = 1.49$) and women's ($M = 5.52$, $SD = 1.97$) skill-to-chance estimates, $t(113) = -.65$, $p = .52$. That is, both the women and men judged the skill-to-chance ratio to be approximately 55% skill to 45% chance. Also, two groups were formed to determine whether the skill-to-chance ratio estimates were different for those who scored high versus low on the fantasy baseball knowledge quiz. With the overall knowledge mean score as a cutoff point, non-owners who scored 40 or higher composed the high knowledge group ($n = 61$), whereas those who scored 39 or lower composed the low knowledge group ($n = 53$). A two-tailed independent samples t test revealed no difference in skill-to-chance ratio estimates for the high knowledge ($M = 5.26$, $SD = 1.64$) versus the low knowledge ($M = 5.55$, $SD = 1.85$) groups, $t(112) = .87$, $p = .39$. Finally, no relationship was found between estimates of the skill-to-chance ratios and knowledge of fantasy baseball, $r(114) = -.08$, $p = .39$.

Discussion (Study 1). The results of Study 1 supported our hypothesis that skill would be the perceived predominant influence in fantasy baseball outcomes for both owners and non-owners. As expected, the owners' estimates of skill-to-chance ratio in the HTH format were higher than those of the non-owners. The non-owners' estimates still reflected the perception that outcomes were predominantly due to skill and not to luck. In addition, no gender differences were found in non-owner perceptions. Also, as expected, the owners'

estimates of the skill-to-chance ratios reflected their perception of more skill being involved in the rotisserie format compared with the HTH format.

Study 2

Method

A set of fantasy baseball league records was obtained by the first author. The records are for the 2002 through the 2010 seasons from a league operated by CBSSports.com. Sixteen teams played during this period. Four teams were dropped from this analysis because they participated in only one or two seasons. We felt that one or two seasons was not enough time to establish a reliable record. The remaining 12 teams included in this analysis participated in four to nine seasons. The mean number of seasons in which teams participated was 7.00 ($SD = 3.53$). The league records consisted of the number of games won, lost, and tied by team for each season. For each team, the total number of games won, lost, and tied were calculated. Also, the percentage of games won by each team during the period was also calculated. The percentage of games won across all teams ranged from 42% to 61% ($M = 50\%$, $SD = .10$). To determine whether some teams did better over time compared with others, we divided the teams into two groups. Teams that won 50% or more of the games played during the period were labeled elite teams ($n = 5$), whereas teams that won 49% or less of the games played were labeled non-elite teams ($n = 7$).

Results

Games won-lost. The five elite teams played a combined total of 839 games, of which 464 were won and 375 were lost. Chi-square analysis revealed that the number of wins was greater than the number of losses ($\chi^2 = 9.44$, $df = 1$, $p = .002$). The seven non-elite teams played a combined total of 1,112 games, of which 512 were won and 600 were lost. A second chi-square analysis revealed that the number of games lost was greater than the number of games won ($\chi^2 = 6.96$, $df = 1$, $p = .008$). In addition, the elite teams won a significantly higher percentage of games compared with non-elite teams ($\chi^2 = 8.09$, $df = 1$, $p = .004$), and the non-elite teams lost a significantly higher percentage of games compared with the elite teams ($\chi^2 = 8.31$, $df = 1$, $p = .004$). It should be noted that the results of the last two chi-squares are not completely independent of each other (see Figure 1).

Seasons won-lost. The five elite teams played a combined total of 30 seasons. Chi-square analysis revealed that the elite teams won significantly more seasons than they lost ($\chi^2 = 4.80$, $df = 1$, $p = .028$). The seven non-elite teams played a combined total of 47 seasons. An additional chi-square analysis reveal that the non-elite teams did not lose significantly more seasons than they won ($\chi^2 = 1.04$, $df = 1$, $p = .307$). However, the elite teams won a significantly higher percentage of seasons than the non-elite teams ($\chi^2 = 6.45$, $df = 1$, $p = .011$), and the non-elite teams lost a significantly higher percentage of seasons compared with the elite teams ($\chi^2 = 8.38$, $df = 1$, $p = .004$). It should be noted that the results of the last two chi-squares are not completely independent of each other (see Figure 2).

Figure 1. Percentage of games won and lost by team type

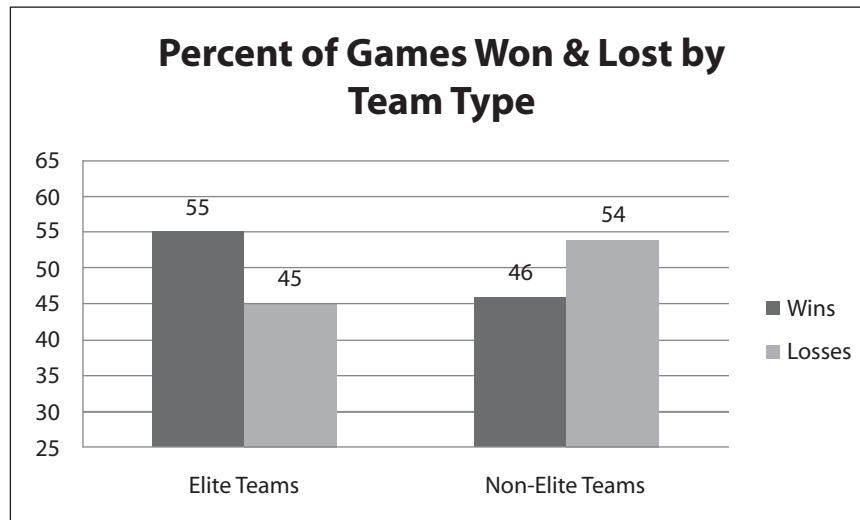
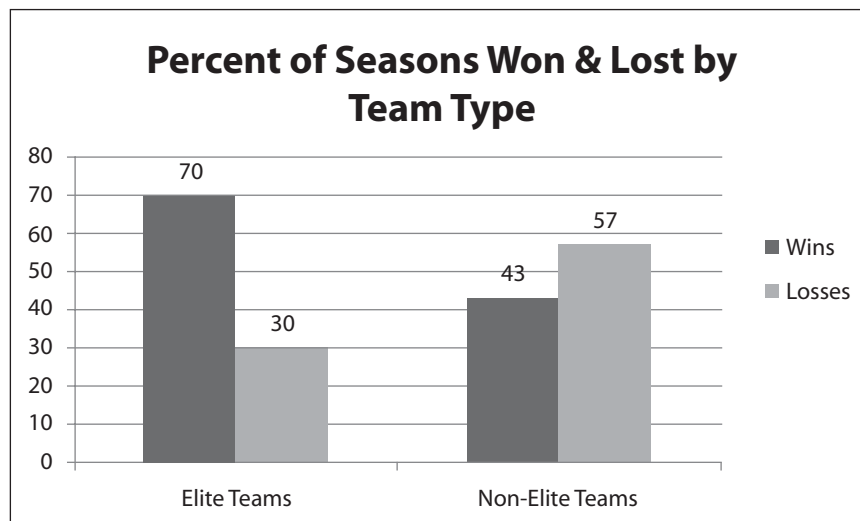


Figure 2. Percentage of seasons won and lost by team type



Discussion (Study 2). At the game level, elite teams won significantly more games than they lost and non-elite teams lost significantly more games than they won. Elite teams won a higher percentage of games than the non-elite teams and the non-elite teams lost a higher percentage of games compared with the elite teams. At the season level, the elite teams won significantly more seasons than they lost and won a higher percentage of seasons compared with the non-elite teams. Also, the non-elite teams lost a significantly higher percentage of seasons compared with the elite teams. However, the non-elite teams did not lose significantly more seasons than they won. From these results, one could conclude that some teams do significantly better over time than other teams. This occurs at the game level

and at the season level. To us, this implies that some significant amount of skill is reflected in fantasy baseball outcomes.

General Discussion

The controversy as to whether fantasy sports (in particular fantasy baseball) should be considered a form of gambling was investigated by comparing the perceptions of owners and non-owners about fantasy baseball and by analyzing actual fantasy baseball league win-loss records. Because of the vagueness of current definitions of gambling (see Bernhard & Eade, 2005; Reber & Reber, 1995), Study 1 used the predominance rule as a way to operationalize gambling. Under the predominance rule, an activity is gambling if outcomes depend more on chance than on skill. The results showed in their perceptions, owners and non-owners agreed that there is more skill than chance involved in fantasy baseball outcomes. However, the non-owners felt that there was somewhat less skill involved than the owners did. We speculate that this difference could be due to a number of factors, including a better knowledge of fantasy baseball, the illusion of control over outcomes, or attempts to justify the time spent playing fantasy baseball. Further research in this area would be revealing. The analysis of fantasy baseball league records in Study 2 reinforces the results of Study 1. That is, elite teams do better at the game and season level over an extended period compared with non-elite teams. This implies that, as the perceptions of owners and non-owners suggest, skill factors may be predominant over chance factors.

Overall, the results of Studies 1 and 2 support the Unlawful Internet Gambling Enforcement Act, which has excluded fantasy sports as a form of Internet gambling, but run counter to the position of the CCGNJ. The current studies are important because they provide scientific evidence that can be considered by opposing parties as the debate moves forward on the nature of fantasy sports.

In light of the present research, we propose that further theoretical work needs to be done on the basic nature of gambling. Current definitions of gambling propose that gambling is an activity that places something of value at risk in the hope of making a gain in an underdetermined outcome (Bernhard & Eade, 2005; Reber & Reber, 1995). As mentioned earlier, these definitions do not clearly make distinctions between entry fees and wagers, or between a prize or wager payoff, or whether skill or chance drives outcomes. From current definitions of gambling, entering something akin to a spelling bee could be considered gambling. That is, money is paid as an entry fee in the hopes of winning a monetary prize.

Even the application of Reber's (2000) dimensions of flexibility and EV fail to exclude a spelling bee from gambling. For example, a spelling bee would be quite flexible in that some would do well (high EV) and others not so well (low EV). The amount won would be based on skill. As for its EV, it could be negative, neutral, or positive depending on how the monies were collected and distributed. If each contestant paid an entry fee and all the fees were distributed as prize money, the game would be a zero sum game. If the organizers took out a small amount to pay for "running the game" then the game would have a negative EV because less money would be available to be distributed in order to make it a fair game. This would be the case even though some highly skilled contestants would still maintain

a long-term positive EV. If the organizer put in “added money” (such as from a sponsor), then the game would have positive EV even though some less skilled contestants would still play with long-term negative EV (A. Reber, personal communication, July 24, 2008).

Given these concerns, it might be valuable for researchers to further explore the predominance rule as one criterion for determining whether an activity is gambling. The advantages of the predominance rule are that it is theoretically parsimonious, it can be operationalized easily, it may more clearly distinguish between contests and activities traditionally considered to be gambling, and it is recognized by the legal system as a legitimate way to make the distinctions explored in this research. An important contribution of Study 1 is that it has demonstrated the usefulness of the predominance rule in gambling research. Study 2 tends to confirm the results of Study 1. In the future and as accumulated evidence begins to mount, such findings may be more amenable to legal purposes.

Despite our initial empirical findings concerning the skill-to-chance ratio of fantasy baseball, there are additional questions that need to be addressed to move the issue forward. On the one hand, the findings of Study 1 seem to be in line with Reber’s EV theory, which states that some forms of gambling have an EV that depends on the skill of the participant, whereas others do not. On the other hand, what adds support to the position taken by the Unlawful Internet Gambling Enforcement Act is that in Study 1, non-owners also viewed fantasy baseball as more skill based. For a court or anyone to rule that an activity meets or does not meet the predominance rule, some formal empirical supporting evidence may be useful. As a starting point in ultimately determining the status of fantasy sports, responses of the participants in Study 1 suggest that fantasy baseball may not be a form of gambling, but rather may be more akin to a contest.

Because there appears to be little research in this area, we consider the current studies to be initial steps in a line of research that could help to clarify the nature of gambling and, more specifically, the nature of fantasy sports. Several issues need to be addressed before any definitive conclusion concerning the status of fantasy sports can be made. First, we based the skill-chance determination on the perceptions of team owners and college student non-owners. As can be said about real sports performances, perceptions can be swayed by biases. An illusion of control that many gamblers possess (Langer & Roth, 1975) may have affected the owner perceptions in Study 1; however, the non-owner perceptions also indicated that skill was predominant. The convergence of perception across two very different populations increases the internal validity of our findings. However, an exploration of the viewpoints of other populations is recommended. Assessments of gambling counselors, gambling researchers, the spouses of fantasy baseball owners, athletes, and other adult populations could be evaluated. Convergence of perceptions, one way or another, would increase our understanding of fantasy baseball.

Study 1 used the predominance rule to operationally define gambling, whereas Study 2 used actual and objective win-loss records. However, a potential problem with real win-loss records is that skill level may not be static. Over time, skill could increase or decrease relative to other players. Losers of previous seasons may expend more time and energy in hopes of improving their record. In an analysis of skill and chance components involved

in poker card playing, Fielder and Rock (2009) proposed that skill should be viewed as “relative” to other players, rather than as an “absolute” characteristic. In other words, skill is relative to those you are playing against. Therefore, one could conclude that if the skill level of players is similar, then only chance factors remain to determine outcomes. Fielder and Rock concluded that “poker is in a continuum between being a game of chance and being a game of skill” (p. 57). They mentioned that this should put its legal status in question. To determine the extent to which skill level is dynamic or static across time, the analysis of additional league records might be revealing.

Study 1 found that differences existed in the skill-to-chance estimates between different forms of fantasy baseball. For example, owners of the more complicated rotisserie style perceived this game to involve more skill than the HTH fantasy style. With this being the case, another recommendation for future research is to further investigate the different forms of fantasy sports within a particular sport and across different fantasy sports.

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Competing interests: The first author was a member of a fantasy baseball league in which some of the participants from Study 1 were recruited.

Ethics approval: The ethics of the project were examined and approved by the Institutional Review Board of Adams State College on September 6, 2007. The title of the project was as follows: “An Analysis of Chance vs. Skill Components Involved in Fantasy Baseball.” All research was carried out in accordance of the guidelines of the American Psychological Association.

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Contributors: All three authors were involved in conducting the research study, drafting the first manuscript, and editing final versions of the manuscript.

Stephen M. Weiss, PhD, is currently a visiting faculty member at Three Rivers Community College in Connecticut after spending 5 years (2005–2010) at Adams State College in Colorado, where he was an associate professor of psychology. Originally from Stamford, Connecticut, he has a background in experimental psychology (PhD; The City University of New York) and sport psychology (MS; Springfield College). He has been interested in empirical investigations that look at the maladaptive behaviors of those immersed in the athletic environment. While his main research interests have focused on the gambling problems of these individuals, he has recently expanded this focus by exploring other problem behaviors that they sometimes encounter. In these studies, he has examined problems both within the college setting (student athletes) and afterwards (former athletes). He has also published articles contributing to the literature in the sport psychology/motor learning area.

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book review

The International Encyclopedia of Gambling (2 vols.)

Thompson, William N. (2010). Santa Barbara, CA: ABC-CLIO. ISBN 978-1-59884-225-8. 732 pp., plus front matter and indices. US \$180.00. This book is also on the web as an e-book; visit abc-clio.com for details.

Reviewed by: Marianna Toce-Gerstein

From Adam and Eve's gambling with the future of humanity until today, our human propensity to take risks and enjoy the knowledge and fruits that come from them — and the inevitable losses — appears to be a cultural universal that is with us to stay.

This comprehensive, two-volume reference work is a broad and yet detailed look at gambling within the United States and around the globe. The editor William Thompson, along with more than 30 contributors, compiled this book as an update and revision of his 2001 book, *Gambling in America: An Encyclopedia of History, Issues, and Society*. Most entries from the earlier work are updated here, while much new material has been added. Ultimately, the new work explores gambling in more than 75 countries, plus individual entries for each Canadian province and U.S. state. This work illuminates the interconnections between types of gambling and the increasingly blurred cultural and geographic boundaries of the games and the economic interests that promote them — a reflection of the increased globalization of gambling over the last decade.

The 2010 version is now two volumes instead of one, in order to accommodate the additional material. The first volume is organized into three major sections, including (1) General Topics, (2) Games, and (3) Biographies of Leading Figures in Gambling. The second volume includes the sections (4) Venues and Places, (5) Annotated Bibliography, (6) Leading Law Cases, (7) Glossary, and (8) Selected Essays on Gambling. Since the sections have no narratives that introduce them, it is sometimes difficult to know the logic behind the structure within them. For example, I was puzzled by the decision to put pieces on “Dog Racing” and “Sports Betting” into the General Topics section, and not Section 2 (Games). I also did not understand the inclusion of Section 8 and how it was intended to relate to the rest of the book.

Tucked between the Introduction and Section 1 is a multi-page “Chronology of Gambling Events.” I found this section an enjoyable exploration of the role gambling has played throughout human history, dipping its toe into the moral ambiguities and ethical issues regarding gambling, the economic and sociological implications of gambling within communities, and the waves of regulation and deregulation of gambling activities throughout history — themes which permeate the rest of the book.

The first section, General Topics, is a hodgepodge of articles on a variety of subjects with no similar theme except perhaps their diversity. Essays in this section range from cheating schemes, to federal lottery laws, to Native American gaming, to problem gambling, to religion and gambling, and plenty more. Some additional structure would have benefited this section and helped it feel more cohesive with the rest of the book. However, the topics are not so numerous that it is difficult to scan them in the table of contents, and there appear to be adequate signposts for the reader within the index. One word of warning about this section is that it is very U.S.-centered; the “international” in the title of the book mainly refers to the gazetteer in Section 4. Even the pieces on Native American gambling in this section focus almost exclusively on tribes in the United States.

The second section is entitled “Games” and covers 18 broad types. If you are at all familiar with the subject, you know how difficult it can be to know where to draw the line between certain games, as established types develop entirely new variations on the theme and other types (or venues) merge in new and unexpected ways (e.g., the racino). An introduction to the section would have helped illuminate the decisions made (as I am sure there were some difficult ones) and provided the editor an opportunity to offer signposts to other relevant pieces throughout the two volumes. Baccarat, bingo, card games, dice games, lotteries, slot machine games, and wheel games such as roulette are among the types discussed. I enjoyed reading the histories of the games and their influence on popular culture, as well as the succinct overviews of how the games are played. As mentioned earlier, the focus is on games that currently are popular in the United States (though they may have their roots elsewhere).

Section 3 is dedicated to the lives of “leading figures” in gambling, and is yet another reason to look for the newest edition of this book. These 43 mini-biographies range in length from a couple paragraphs to several pages and describe the contributions of such figures as William Bennett, Frank Fahrenkopf, Kirk Kerkorian, Blaise Pascal, Stephen Wynn, and — rather sweetly, I thought — Cassius Marcellus Coolidge, the artist and creator of those cigar-chomping, poker-playing canines that grace the walls of countless pool halls, saloons, and man-caves.

The bulk of the second volume is contained in Section 4, Venues and Places. It is organized roughly by continent, and the regions within each. Most of the material on gambling outside the western hemisphere was not found in the last edition. The photographs peppered throughout help give the reader more of a feel for the areas and local establishments. Most of the articles in this section are based on material from the book *International Casino Law* (Cabot, Thompson, Tottenham, Braulich, eds., 1999) and articles from *International Gaming and Wagering Business*, along with newspaper articles and promotional websites. The shortage of sources written by natives of these areas is a major opportunity lost. Finally, while Canada was given a multipage introduction before discussion of individual provinces, no comparable introduction was written for the United States. The failure to include even a couple paragraphs pointing to relevant sections elsewhere in the book (e.g., the Commission on the Review of National Policy toward Gambling in the 1970s and the National Gambling Impact Study Commission in the 1990s, described in Section 1, or some further explication of the attempts by Congress to put limits on gambling, as mentioned in the Chronology) is unfortunate.

Section 5 — toward the end of the second volume — includes an annotated bibliography, organized alphabetically by author, with overviews of more than 75 publications. Thematically, these works mostly include books on the history of gambling and publications of historical importance to the modern field of gambling studies. It should come as no surprise by now that these books almost exclusively focus on gambling in the United States, although a handful are nonspecific. Section 6 comprises short descriptions of the 30 leading law cases and case series on gambling, compiled by Professor I. Nelson Rose. These do not appear to be in any particular order. They are certainly interesting reading, and if you are in a hurry to find a particular case, you can find it in the book's index. Section 8 is the Glossary of Gambling Terms, which includes discussion of about 20 terms ranging from broad expressions such as “gambling” and “luck” to more specific jargon including “junket” and “hit.” This tiny section is all of $2\frac{1}{2}$ pages; I hope to see it broadly expanded in the next edition.

Finally, Section 8 is a collection of essays on a range of topics. These are short, informal pieces mostly adapted from articles and presentations the editor published elsewhere (dating mostly from the 1990s), as well as what appears to be original writing done for this book, but with no clear author identified (one presumes the author is Thompson, but it is unclear to me how a reader would cite one of these essays). The dating problem is evident in the inclusion of the second essay, “The Family that Gambles Together,” which is about Las Vegas' rebranding itself as a family destination and the author's predictions about why this will not work. The casual tone of these essays and their emphasis on the author's opinions on various topics make them seem out of place in a reference book.

Despite the comprehensive nature of this work, and precisely because of it, one omission that particularly seems lacking is that of an integrated bibliography or reference list. Each individual piece, if only a few paragraphs in length, has its own list of references, which I appreciated for the easy access it provided. Yet nowhere is there a bibliography where all the reference materials are listed in one place — a surprising and frustrating omission as I went through this lengthy work. To make matters worse, the index is skeletal, being fewer than 12 pages in regular type, with no authors or separate author index provided. A “Thematic Index” is included, but a great deal of it reiterates what is found in the table of contents; what it does not reiterate would have been better included in the table of contents and/or inserted into the general index, to save the reader from having to search in a third place for what they need.

All in all, despite these shortcomings, I am happy to have reviewed this set, as it is now a permanent fixture on my bookshelf. The writing is accessible and a pleasure to read and the style is consistent throughout, despite the book having multiple authors. Thompson's ability to incorporate a variety of sources ranging from folk songs, to photographs, to entertaining anecdotes, to an abundance of useful information, makes this set a valuable addition to any library.

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book review

What's Luck Got To Do With It? The History, Mathematics, and Psychology of the Gambler's Illusion

By Joseph Mazur. (2010). Princeton, NJ: Princeton University Press. xvii, 277 pp. ISBN 978-0-691-13890-9; U.S. \$29.95 (hardcover edition).

Reviewed by N. Will Shead, Ph.D., Assistant Professor, Department of Psychology, Mount Saint Vincent University

In the introduction to *What's Luck Got To Do With It?*, author Joseph Mazur provides a brief account of his early indoctrination into the gambling world. Mazur's recollection of conversations on luck and odds with his uncles suggests he had a precocious fascination in understanding why people gamble despite the inherent mathematical disadvantage. Later in life, the question still lingered as he watched patrons at local convenience stores buying fistfuls of lottery tickets. This book is the result of his long-held interest in gambling, which aims to explore the gambler's illusion (or "gambler's fallacy") that deviations from average outcomes of random events should correct themselves in the short term. Although it might seem ambitious to write an entire volume on a gambling-related cognition, Mazur nevertheless demonstrates in three sections the incredibly deep historical, mathematical, and psychological significance of this human fallacy.

The first section of the book is less an historical recap of the gambler's illusion *per se*, and more a brief history of gambling in general. Mazur takes on the lofty challenge of trying to sum up gambling activity from the Ice Age onward in a few short chapters. Unfortunately, the outcome is largely a narrative of disjointed tidbits of gambling lore. On a positive note, a description of the evolution of probability theory and its application to gambling provides useful context for the second section, which covers mathematics.

The standout chapter in this first section covers the 2008 world economic crisis, describing how the catastrophic effect of the housing and loan crisis in the United States led to the ultimate crash of the global economy. He provides salient examples illustrating how many of the calamitous financial decisions that contributed to the crash were, in fact, based on the gambler's illusion. For instance, he delineates how some individuals overestimated the likelihood that a market downswing would inevitably be followed by an upswing. Mazur does an admirable job of presenting the complicated aspects of financial markets. He aims his discussion at a lay audience, but many aspects would still be difficult to grasp without a background in finance or economics. Regardless, one can glean his main point, which is

that the market is chaotic and does not act in a rational way, even though individuals will try to spot patterns that simply do not exist.

The second section of the book examines the mathematics behind the gambler's fallacy. Mazur—a professor emeritus of mathematics at Marlboro College—has an enthusiasm for numbers that shines through in his writing. His discussion of the law of large numbers is punctuated with exclamation marks, and his excitement over the eloquence of this theorem is palpable.

A logical succession of formulae and examples together lay out a cogent argument for how a slight mathematical advantage for the casino ultimately translates into a nearly impossible win for the individual gambler in the long term. Using the example of betting red in roulette compared to betting heads with a fair coin, Mazur is able to demonstrate the insidiousness of the slight mathematical disadvantage inherent in casino games, and how this disadvantage is compounded with an increasing number of trials. He also patiently explains how the law of large numbers does not apply to individual, independent events. His presentation is convincing and should provide *eureka* moments for those who have struggled to understand the math behind what is known as “the house advantage.” The math is quite dense at times, and portions may be inaccessible to individuals without a background in statistics. Consequently, some parts of the book may be found lacking by clinicians and educators who are in need of ways to elucidate the gambler's fallacy to a lay audience.

The final section of the book seeks to explore the psychology behind gambling addiction. Curiously, Mazur spends a significant portion of this section examining early psychodynamic explanations that center on gambling as a self-destructive impulse. At one point, he even uses the archaic term “neurotic gamblers” (p. 193). These theories are not only outdated in terms of our current understanding of the etiology of problem gambling, but they have little to do with the main subject of the book. Mazur ultimately falters in his attempt to synthesize the history and mathematics of gambling with the psychology of the gambler's illusion. While some interesting discussion can be found concerning faulty cognitions such as the “house money effect” and the “hot hand fallacy,” the final section would have been significantly strengthened with further exploration of current psychological theories that seek to integrate cognitive distortions with the gambler's illusion.

On the whole, this volume is a thoroughly fascinating and well researched book. Mazur's passion for the topic is contagious, and he has a keen ability to involve readers who may not share his background in mathematics. The second section should be required reading for anyone interested in understanding the math behind gambling. Although this book may not add much to our understanding of the psychology behind gambling, it compellingly demonstrates the fallacy that a string of losses is likely to be followed by a win. The approach Mazur uses to establish this point is, at times, bogged down by complex mathematical details; however, the overall message is clear and powerful.

book review

She Bets Her Life

By Mary Sojourner. (2010). Seal Press, Berkeley, CA, USA. 281 pp. ISBN 978-1-58005-298-6. \$17.95 USA (softcover).

Reviewed by: Roberta Boughton

In the book *She Bets her Life: A True Story of Gambling Addiction*, Mary Sojourner combines her personal memoirs with stories about other women's gambling experiences, and supplements this rich anecdotal base with findings from the scientific literature on addiction. The result is a refreshing and candid look at the problematic gambling behaviors that some women experience.

A writer by profession, Mary recounts her 14 years of gambling, nine of them "compulsively". A testament to her compositional skill, the account is beautifully written and seamless. She interweaves the stories of seven other women who share her journey of recovery in a self-help group known as Scheherazade's Sisters. These women come from diverse cultural backgrounds, range in age, and represent different sexual orientations. They disclose unique histories and identify personal mental health struggles – but all have become overwhelmed with the consequences of problematic slot machine play.

Mary goes beyond these individual stories and provides multiple vantages from which to observe gambling, using her own experience and examinations of the problem gambling literature to do so. One chapter focuses on the role of the brain in addiction, considering the contribution of genetics, and noting the brain's inability to fully utilize the neurotransmitter dopamine. She writes: "Brain chemistry and the unwillingness to grow up account for. . . 90 percent. . . of why I became a full tilt gambling addict" (p. 149).

In another chapter, Mary summarizes psychotherapeutic explanations of gambling, and meanders at a leisurely pace through the works of Freud and Jung. She then describes Blaszczynski's Pathways Model, and stops to examine the colourful discoveries of Skinner and the behaviorists in understanding the role of intermittent reinforcement in creating compulsion. She goes on to expose the manipulations of the gaming industry in their commitment to push the player to financial "extinction" through casino design, promotion, and the mechanics of the slot machines themselves.

I found the chapter on gender particularly important. Here, Mary highlights the function of gambling as an escape mechanism for the Sisters. Among other things, the chapter speaks to the power of a women's group for energizing and nurturing recovery.

As a whole, Sojourner's book is a vivid and multi-faceted exploration of women's gambling and recovery, and one that does more than educate—it inspires and validates women's experiences of gambling. A wonderful addition to the literature, *She Bets her Life* is a critically important read for women struggling with slot machine gambling and others who may want to learn more about what makes women's recoveries unique. I will recommend it to my clients.

I will add a few caveats to this recommendation, however. As a clinician specializing in women's gambling, I found certain parts of *She bets her Life* a little unsettling. A few elements in Mary's reflections did not easily collate with my experiences. Mary writes, for example, of the easy laughter the women share in group, explaining it as a jubilation "about having gotten away with mischief" (p. 17). Women do laugh a lot in group—sometimes about the crazy and embarrassing things they have done, sometimes to relieve stress, and always in relief to feel less isolated and weird. But in my personal experience I have never heard women laugh at "getting away with something".

Elsewhere, Mary describes feeling a lack of remorse after gambling, and an ongoing exhilaration. At one point, for example, she had lost all her savings and money, but recalls that she was "still a little high" while driving home. Her dominant feeling is nostalgia:

Memories of hot wires under my skin pale against recollection of the fun. . . Three hours later . . . I'm grateful I don't feel worse than I do. I'm still a little high. I know it will last for maybe a day. I'll ride it while I can. And then maybe something will happen . . . am still in a lingering buzz. The crash will come. (p. 144)

The attraction of gambling for Mary is strong. She wishes that looking back would "provoke feelings of embarrassment, regret, even anger. Instead I am always longing - for the way my heart leapt the instant I thought I'm going, for the heedless joy felt every second on the way to the casino, for the sheer relief that flooded me as I slide my first five into the bill receiver"(p. 133). In a rare moment of depersonalization, she adds: "Even to this day she [Mary's gambling self] isn't angry about what we lost in the casinos (p. 134).

Mary claims that powerful euphoric recall is typical of the Sisters:

Not one of us has ever said that the thought of gambling disgusts us. . .although we are shaken by our memories of how deeply hooked we were and the consequences of our gambling. . .we still live with the sparkly memories and urges more often than we would like. Perhaps that is the power of euphoric recall specific to slot machines. Perhaps we are unusual in our lack of disgust. (p. 162)

Perhaps the Sisters are unusual in this regard. Euphoric recall does often lurk in the shadows, especially early in recovery when the addictive habit still exerts itself. I have yet to meet a client in early recovery from gambling or drugs who does not experience some ambivalence about making changes. Yet it is also common for women to ultimately shift in their thoughts and feeling about gambling, to react with anxiety and disgust, not excitement, to the thought of gambling and all it entails.

Thus the personal experience of Mary and the Sisters—being so far along in their recovery—does appear to be somewhat atypical, running counter to the pained reactions of many women in treatment who describe remorse as immediate and overwhelming, and who are often riddled with shame and depression as they confront consequences similar to those reported by the Sisters: consequences such as relationship stress, loss of self-esteem, financial devastation, lost homes, legal charges, incarceration, and suicidal urges or attempts.

For me, there were two levels from which to appreciate this book: first, as a book about women's gambling—articulating lives and struggles, the triggers, the lure of gambling as an escape from stress, and the painful aftermath that ripples through the many areas of their lives. It conveys beautifully how women become ensnared in a cycle of chasing, describes cogently the manipulation by the gaming industry, and outlines practical treatment options and resources.

A second vantage highlights (or identifies) the high levels of comorbidity among many women who struggle with problematic gambling. Mary speaks candidly of her own struggles: "I suspect I have a graduate degree in comorbidity. Most of the women in Scheherazade's Sisters feel the same. All of us have gambled to medicate our feelings" (p. 194).

Anxiety is one of the feelings that the gambling serves to soothe. Mary writes of anxious thoughts as triggers for gambling as a compulsive behavior:

I remember so many gambling trips that began with my obsessive compulsive brainstorm—not bright ideas but finding myself suddenly thinking I couldn't think. My miracle drug was my slot machine. The second I made my first bet my brain stopped rattling. I could think through situations. . . plan for the future, feel optimism. . . I felt like myself again. Gambling was my medicine. *I'd still use it if the side effects hadn't become intolerable (italics mine).* (p. 195)

Over time, gambling progressed from being a fun (but not intoxicating) effort to win to "trancelike preoccupation in which perpetuating the trance was reward enough" (p. 148). Mary felt "calm and whole" and fully herself only in the hours between the decision to gamble. . . and a day or two later when the *drug (italics mine)* finally wore off", after which she returned to the "dead zone in her mind and heart" (p. 154).

Mary also reveals childhood trauma, describing her coping as a training ground for becoming a "classic addict". Her pain is palpable when she tells the Sisters of her childhood experience during her mother's first psychotic break. Kept from attending kindergarten—her mom was afraid to be alone—Mary recalls:

Except this time there was no radio coming from the kitchen. Instead there was just a crazy singing that sounded like it was coming from a monster. I had a coloring book in my lap. I didn't read yet. So there was this terrible monster singing in the kitchen where my mom was supposed to be. Footsteps started coming towards the

bedroom. . . Here's where the slots come in. I heard the footsteps and all I could think to do was look down really hard at that page in the coloring book, and when it didn't make what was happening go away, turn the page like a little robot and stare down at that page, and the next.

I was five and I had already taught myself to go away from reality into something I was staring at. . . So I learned how to go away and I learned how to be compulsive. Being able to do those two things saved my life as a child. . . I suspect that gambling compulsively gave me a place to retreat from crippling anxiety so that I could stay alive and write (p. 49)

Mary's anxiety permeates her life. Gambling has the allure of Christmas morning, "the only four hours of guaranteed safety in my childhood" (page #). The anxiety follows her to University where, at the age of 18, she has a debilitating anxiety attack in her new college dorm: "In those days no one knew. . . about anxiety disorder, PTSD, separation anxiety or depression, much less how a young woman who'd been her mother's mom might feel the loss of that role [a mother figure] as utter annihilation" (p. 129).

Mary's resilience is evident as she describes the moment she made a conscious choice not to give in to anxiety in a graphic moment of derealization. Thoughts of her mother's illness prompted her to keep her feet planted on the asphalt. Mary practiced her own version of cognitive behavioural therapy (CBT) for decades, teaching herself to "walk through difficulties" because of her feeling that ". . . if I give in to the fear that has arisen I will make it stronger" (p. 197).

Mary also writes of a family history of bi-polar illness and laments the seething turmoil of her own moods:

I have never fully accepted the depth and persistence of my mood swings—and the even more painful reality that I cannot seem to sustain ordinary happiness or remain interested in a loving relationship once it stabilizes. (p. 194)

Mary's struggles with mental health may contribute to the difficult "withdrawal" that she describes. When she stops gambling she is overwhelmed with anxiety, which she poetically describes as a "brain on automatic horror" (p. 180). She fears that she is losing control of her mind, waking up early in the morning, riddled with phobic fears that she has Alzheimer's, brain cancer, or insanity.

In her efforts to understand what is happening Mary discovers information on gambling withdrawal, "which can involve symptoms such as sweating, palpitations, depression, confusion, stomach troubles, headaches, physical tension, irritability, trouble concentrating/ listening/ remembering, agitation, inability to feel pleasure (or). . . look forward to future events" (p. 187). Finding these explanations provided Mary with great relief. Indeed, she indicates that her desire to share was "the primary reason" she writes the book.

There is no question that recovery for Mary has been a heroic struggle. At the same time, from a clinical perspective, it is important to recognize that not all women suffer

the extremes of withdrawal described by Mary. Mary, like many women, did not start gambling until later in life. But she writes: “I’ve been an addict all my life, I’ve been in withdrawal all my life”. This reference to earlier struggles provides important information about premorbid conditions that made the gambling fit for her like a hand in a glove. The gambling was a bandage and she bleeds profusely when it is removed, less able to cope with the pre-existing anxiety and finding a resurgence of previous coping strategies (e.g., overeating, bad relationships).

Many of the women who seek treatment have no prior history of addiction and may not face the extreme symptoms of “withdrawal” that Mary describes. From a clinical vantage point, then, there are concerns about the impact on a woman gambler reading the account. First such extremes are not universally or even commonly a consequence of stopping gambling. I would not want women to fear or anticipate the dramatic consequences of stopping that Mary describes. There is grief, yes, and yearning, and some euphoric recall. But women can and do learn to walk, in their minds, through the glitter of the casino to the reality of the distressful aftermath of gambling. This cognitive skill serves to counter the emotion-based, impulsive urges and images. The second concern is that some readers, when comparing their own experience to the extremes described by Mary, might incorrectly decide that their own gambling is not problematic.

Making changes is not easy. Some find it easier than others. Those who, like Mary, have a stronger attachment to gambling because of the payoffs in dealing with mental health issues and the monsters threatening them from the kitchen, may have a tougher battle in that both the gambling and the underlying stressors must be addressed in recovery.

Caveats aside, Mary is a gifted writer, and offers a wealth of invaluable information that every woman who gambles would be wise to absorb. However, it could be helpful to also read it as a phenomenological study of gambling by a woman with a complex history, and whose recovery is not necessarily normative. Overall though, it is a true gem of a book—one that I found brilliantly orchestrated, compelling and empowering.

book review

The Drunkard's Walk: How Randomness Rules our Lives

By Leonard Mlodinow. (2008). Vintage Books: New York. (252 pages; \$17.50 CND; 15.00 USD).

Reviewed by: Nigel E. Turner, Ph.D

Should you put your money into a mutual fund that has been outperforming the market for the past twelve years, one that has been lagging behind the rest of the market (but is perhaps due to catch up), or throw a dart at the list of funds and pick the one that the dart selects. If Leonard Mlodinow is right, pretty much any selection has the same chance of success or failure.

Mlodinow's book *The Drunkard's Walk: How Randomness Rules Our Lives*, is a fascinating account of how important random chance is in our lives. Random chance is often hidden by apparent order and skill. In addition, as Mlodinow points out, humans are predisposed to see order and impose order even when none exist. I have read other books that attempt to discuss probability in ordinary life and even written papers on the topic (see Turner, 1998; Turner, 2000; Turner & Horbay, 2003; Turner & Powell, 2007), but this book is perhaps the most successful at bridging the gap between the scholars who understand this stuff and the general public.

The book discusses the history of ideas about random chance from ancient civilization to modern times. Simple chances such as a coin coming heads up are quite easy to understand but combinations of chances quickly become quite complicated. During the Roman era people understood the idea of a half truth. In Roman law it was believed that two half truths equaled a certainty. Mlodinow points out that in reality two half chances (assuming the chances were indeed 50%), would equal a three quarters truth ($1 - .5 \cdot .5 = .75$). However, something as simple as which is more likely, the chance of rolling a 9 or a 10 with 3 dice, would have been beyond the capacity of anyone in the world to compute until an easy-to-use system of mathematics was developed during the Renaissance. It was in fact not until 16th century that Cardano started to make any real headway towards an understanding of random chance. Cardano's ideas were then synthesized into a more general account by Pascal in the 17th century. In particular, Pascal developed a triangle based on very simple math that could be used to work out the opportunities for something to occur. The problem is that it was quite tedious to use for complex problems. Working out the opportunities for an event is a key to determining the chance that it could happen. Today factorial mathematics¹ is used to work out the chances of winning a lottery or other probabilities.

The book examines several other developments including ideas that lead ultimately to game theory and statistics and includes short biographies of some famous and some rather obscure mathematicians who contributed to these developments. For example, although Einstein is often quoted as believing that God does not play dice with the universe, the book nonetheless points out that Einstein's most cited work was a 1905 paper on the use of statistics in physics.

In addition, *The Drunkards Walk* examines errors in human reasoning and the psychological illusions that are most often found when people are dealing with random events. This book in fact is relevant to this journal precisely because many of the problems people have dealing with random chance are related to the reasons people keep gambling. The book does not discuss problem gambling, but does discuss the flaws in human reasoning related to the gamblers fallacy and other errors in reasoning.

There were a small number of flaws in the book. One problem I noticed is that he introduces the concept of significance, but does not explain what "significance" means for a couple more chapters. Also I found the book to ramble at times, meandering between the past and the present. In addition, the book ends with a discussion of the emergence of chaos theory in modern mathematics based on the discovery that over time uncertainty accumulates in a manner that makes long term predictions nearly impossible in most human endeavors such as forecasting the weather or the economy. The brief mention of chaos left me wanting more. Finally I found it somewhat frustrating that Mlodinow never clearly distinguished between when a system is entirely random and one that is only partially random. In particular he often seems to attribute all of the variance to chance even when there may be some non-random component to the data. For example, on page 200 he provides a graph of fund manager's relative rank to show that there is little relationship between how a fund was doing from 1991 to 1995 and how it was doing from 1996 to 2000. But in fact in the graph he provides the top 100 ranked funds from 1991 to 1995 were mostly above 0 (average) and the bottom 50 funds were mostly below 0 (average) indicating that success during the two time periods was not entirely random.

Mlodinow is right that randomness plays a larger role in our lives than we might care to admit, but humans rarely experience anything that is entirely random. Although at the atomic level true random chance may dominate, at the level in which we live out our lives, complete random chance is relatively rare. Casinos for example have to take special precautions in order to make dice, roulette wheels, card games and even slot machines random enough to ensure a reliable house profit and protect themselves from skilled players (see Turner & Fritz, 2007; Turner & Horbay, 2004). The rarity of pure random chance in our lives may explain in part why humans have difficulty dealing with random events. Our brains have evolved to sort out the order from a noisy messy background. In so doing, we have not developed a means of perceiving or appreciating pure random chance.

Overall, this book is fascinating but I found myself thinking throughout it that I could have written this myself. A colleague of mine has politely pointed out that I could not, by which she meant that I could not have written such an entertaining and easy to read book. Perhaps she is right. This book is geared towards the general public and Mlodinow manages to bring very complex mathematical concepts down to a level that can be understood by

the average person. Mlodinow has made the mathematics of random chance interesting by filling his book with real world examples such as wine ratings, sports records, mutual fund performance, film ticket sales, school grades, and political polls. The Drunkard's Walk is a potentially useful source of information to counselors who treat people with gambling problems or recovering problem gamblers who are interested in improving their own understanding of random chance. It may also be a valuable source of information to people who wish to develop prevention materials.

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¹The factorial of a number (e.g., 7) is the product of all positive integers less than or equal to 7 (e.g., $7! = 7*6*5*4*3*2*1 = 5040$). This means there are in fact 5040 different ways of combining the numbers from 1 to 7. A lottery in which the player selects 6 numbers out of 49 numbers has a probability of $((49!) / ((49 - 6)!)) / (6!) = 13,983,816$ or 1 in 14 million.

book review

Global Gambling: Cultural Perspectives on Gambling Organizations

Edited by Sytze Kingma. (2010). New York: Taylor & Francis. Routledge Advances in Criminology, Vol. 8. Xi, 248 pp. ISBN 978-0-415-99677-8; U.S. \$125 (hardcover edition).

Reviewed by: Gerda Reith, Professor of Social Science, University of Glasgow, U.K.

This broad-ranging and ambitious volume covers new ground in the study of gambling organisations and, it is hoped, will go some way toward opening up the subject to a wider and more theoretically informed range of debates.

The individually authored chapters are characterised by a shift in focus away from partial accounts of gambling as pathology, and even gambling as consumption, toward a broader and more complex analysis of structure and organisation across a variety of international contexts. The volume thereby moves away from a focus on the micro-level analysis of the problem gambler, which defines much existing gambling research, toward a macro-level analysis of the social, cultural, political, and economic organisational arrangements that make gambling—and problem gamblers—possible in the first place.

In a scene-setting introduction, Kingma situates gambling in the postmodern tradition of Baudrillard and Ritzer, describing it as “the ultimate form of contemporary consumer culture” (p. 4) based on spectacle, rationalisation, and enchantment. This wide-ranging essay locates the socio-political legitimization of commercial gambling, as well as the social symbolic development of its language and norms, in recent developments in sociological theory—most notably, those dealing with postmodern consumer culture and globalisation. The “grand theory” that grounds this perspective is nevertheless rooted in actual, real-life conditions—no easy task to pull off, but one that is achieved gracefully. “Glocalisation”¹ and the local variation of gambling organisations and cultural forms serve as leitmotifs through the book.

The nine chapters in the collection are organised (with a nod to Goffman) into three sections: Gambling Backgrounds, Gambling Scenes, and Gambling Contexts; these divisions are considered to provide the graduated perspectives of microscope, binoculars, and radar, respectively. I am not entirely convinced the analogy works, as some of the selections seem rather arbitrary and thereby suggest groupings based on a desire for neat section breaks, rather than distinct and separate categorisations. Regardless of its structuring, the book is certainly successful in shedding light on a range of perspectives, with a focus that takes

readers from the “micro” to the “macro” issues of gambling organisations in the modern world.

Both geographically and theoretically, the range here is wide. Within the section entitled “Gambling Backgrounds,” contributions cover the role of the state, industry, civil society, and nongovernmental organizations in Finland, Australia, South Africa, and California. The section “Scenes” deals with the culture of casinos in North America, Macau, and the Netherlands, while “Contexts” has Swedish advertising, Norwegian household gambling, and the cultural economy of Australian gambling as its foci. These analyses are informed by an impressively wide range of theoretical perspectives, from symbolic interactionism to post-structuralism, by way of Goffman, Mauss, Bourdieu, Castoriadis, Lefebvre, Bakhtin, Foucault, and Sara Ahmed, amongst others.

The importance of social context is stressed throughout—both in terms of place, with a consistent focus on diverse regions and cultures, and in terms of history, with an ongoing sensitivity to the changing policy environments that influence and are influenced by gambling.

Although somewhat uneven in places, as most edited collections inevitably tend to be, the volume is stimulating and refreshing overall. Its greatest value, I think, lies in its reframing of some of the key issues around gambling and problem gambling, as it contextualises these issues within wider debates about consumerism, globalisation, and culture. In so doing, the book opens up the debate about gambling and problem gambling, highlighting their multidisciplinary relevance to a wider audience within the traditions of sociology, cultural studies, and politics.

¹According to Kingma, this concept refers to the “unbreakable unity of globalizing and localizing pressures” (p. 5).

book review

Problem and pathological gambling

By James P. Whelan, Timothy A. Steenbergh, & Andrew W. Meyers. (2007). From Hogrefe's Advances in Psychotherapy Series, Vol. 8. Cambridge, MA: Hogrefe Publishing Corp. x; 114 pp. ISBN 978-0-88937-312-9; U.S. \$29.80.

Reviewed by: Gary Lange, Ph.D, Licensed Marriage and Family Therapist,
Certified Gambling Counselor, Rancho Mirage, California, USA

This very well-researched, quick-read manual is intended for therapists who are in search of statistics and methods for treating problem gambling. The volume summarizes the typical concomitant issues of problem gamblers, such as alcohol abuse, smoking, depression, and suicidality. Contextual variables—including relationship issues, as well as legal and financial issues—are also addressed. Since this book's publication, new research has become available on the etiology of problem gambling—particularly on the involvement of neurotransmitters. However, the manual offers the advantage of brevity and practicality in comparison with similar volumes (see, e.g., Nancy Petry's thorough 2005 work on the subject).

This book is helpfully organized and outlined, and it includes numerous graphs and a full clinical vignette. Throughout, the authors promote a Motivational Interviewing style and its adaptation using Sobell's Guided Self-Change Program for Gamblers (see, e.g., Klingemann & Carter-Sobell, eds., 2007). The five phases involve (1) information-gathering; (2) engaging the client; (3) adopting a motivational, empathic style; (4) reviewing triggers; and (5) setting goals. Appendices have practical self-help worksheets that may be reproduced for use by problem gamblers in treatment; note that based on my personal experience, most gambling clients would likely need assistance with these (especially the initial Gambling Timeline Follow-Back activity).

As is typical for Motivational Interviewing, total abstinence and Gamblers Anonymous are not required components. Those new to treatment may find this book's lack of emphasis on abstinence appealing. However, in my clinical experience, while many pathological gamblers may start with a harm-reduction attitude, more long-term success ultimately comes from total abstinence.

In sum, this concise and practical volume offers problem gambling therapists a number of useful treatment strategies and provides them with worksheets intended to both facilitate introspection and enhance the dialogue between client and therapist.

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