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Sports Betting: Can Gamblers Beat Randomness?

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Although skills are not considered relevant in chance-governed activities, only a few studies have assessed the extent to which sport expert skills in wagering are a manifestation of the illusion of control. This study examined (a) whether expert hockey bettors could make better predictions than chance, (b) whether expert hockey bettors could achieve greater monetary gains than chance, and (c) what kind of strategies hockey gamblers rely on when betting. Accordingly, 30 participants were asked to report their state lottery hockey bets on 6 occasions. We suggest that the information used by bettors, along with near-misses, reinforces their perception of expertise. The results of this experiment suggest that the so-called "skills" of the sports bettors are cognitive distortions.

In Canada, sports betting is legal in all the provinces and is run by state lotteries. On the other hand, sports wagering is illegal in most states in the United States. It is only allowed in Nevada, Oregon, Delaware, and Montana (however, at present the two last states do not offer those kinds of games).

An important question remains about the nature of sports betting. Contrary to horse racing, where the skills and knowledge of those involved are of no help for winning money (Ladouceur, Giroux, & Jacques, 1998), the same has not been clearly established in other sports, such as football, basketball, tennis, and hockey. The main question under consideration in the present context is the following: Are the skills and knowledge used by the gamblers real or illusory? To answer this question, it is necessary to know whether or not sports betting is based on the principles of chance and randomness, as in a traditional lottery game.

With the exception of horse betting (Ladouceur et al., 1998), the relation between gamblers' skills and monetary outcomes in sports betting has been scarcely studied. Since the publication of Langer's (1975) study, researchers have argued that the various kinds of information gamblers rely on when they bet on events determined by chance only reinforces their illusion of control. Langer (1975) defined the *illusion of control* as follows: "an expectancy of a personal success probability inappropriately higher than the objective probability would warrant" (p. 313). For example, when tossing a coin, someone who contends that the probability of a head turning up is more than 50% if the preceding results are nine tails has developed an illusion of control. Although it is obvious that chance governs traditional lotteries, as well as coin tossing or dice playing (unless the dice are loaded), the fact that the information on which sport experts rely can, to a certain extent, be useful should not be ruled out.

Indeed, some studies conclude that factors such as the "home-field advantage" and team rankings significantly affect the game results (Boulier & Stekler, 1999; Vergin & Sosik, 1999). Some researchers suggest that skills could be useful when betting on sports events (Allcock, 1987; Burger, 1991; Rogers, 1998). Professional sports handicappers take into account a lot of facts about the teams and games (injuries of key players, last results of teams, home field/ice advantage, odds,[1] etc.) to determine the best wagering opportunities (York, 2002). Is this information really useful for sports gamblers, or does it simply reinforce an illusion of control?

Because a lot of information linked to games is available for sports bettors, it would be interesting to know whether this information is of any help for determining the games' outcomes. If this were not the case, that would mean that perceived skills in sports betting are only a manifestation of the illusion of control often found in most gambling activities.

The legal sports betting game in Québec is called *Mise-O-Jeu* (literally, "Bet-On-Game").[2] When betting at *Mise-O-Jeu*, participants must select from three to six games[3] of the program (published in most newspapers) for each bet. Programs are of variable length (i.e., the number of games to bet on varies) depending on the number of matches that take place during the week. The outcomes of the games that can be wagered on are (a) visiting team

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[1] The *Oxford English Dictionary Online* (Simpson & Weiner, 2002) defines *odds* as the "advantage conceded by one of the parties in proportion to the assumed chances in his favour; the inequality of a wager, consisting in the ratio in which the sum to be given stands to that to be received."

[2] Loto-Québec uses the terms *Mise-O-Jeu* and *Pari sportif* (i.e., sports wagering) also in English.

[3] In Canada, it is not legal to bet on the outcome of a single game. In addition to Québec, legal sports wagers similar to *Mise-O-Jeu* are available in the other Canadian provinces.

wins, (b) tie game, or (c) home team wins. Participants can calculate their potential winnings by multiplying the amount wagered by the product of the odds quoted for each of their predictions. The odds are set by Loto-Québec and are fixed once the program containing the weekly games is printed. Winnings occur only if all the predictions are correct (Loto-Québec, 2002a). The objective of the present study was to examine whether perceived skills (systems or strategies) in sports wagering (on hockey) are real or illusory.

Table 1 contains an example of odds set by the gaming corporation. If bettors decide to wager $2 on a four-game selection on Anaheim, Minnesota, Chicago, and a tie between Washington and North Carolina, then they would win $2 × 2.75 × 3.7 × 1.7 × 5.15, that is, $178.15 if all predictions are accurate. In any other cases they will lose their bets.

To evaluate whether the skills of bettors are real or illusory, it is necessary to verify whether the wagers of expert sports bettors are effective. The effectiveness of wagers needs to be measured at two levels: (a) the rate of accuracy of the wagers (without considering the monetary balance of the gambler) and (b), most important, the monetary results of the wagers (i.e., do they lead to a positive monetary return?).

Accordingly, we hypothesised that the accuracy of the predictions made by the participants would be superior to the accuracy of randomly selected wagers. Indeed, randomness does not take into account some basic rules known by bettors (e.g., based on the teams' ranking, the probability of a weak team to beat a strong team is lower than the opposite). The second hypothesis predicted that expert bettors could achieve greater monetary gains than what can be expected on the basis of chance. We also analyzed the strategies and information used by participants to play *Mise-O-Jeu*.

Method

Participants

Thirty-five adult regular sports (hockey) bettors were recruited through media advertisements and posters in convenience stores where they could purchase their tickets, in the province of Québec, Canada. The advertisement mentioned that experts in hockey betting at the *Mise-O-Jeu* game were wanted for research on gambling. Each participant received $20 for participation at the end of the experiment. All potential participants must have bet on *Mise-O-Jeu* game at least twice a month (36.7% played several times a week, 33.3% played on a weekly basis, and 30% played two to three times a month).

We used the telephone version of the South Oaks Gambling Screen (Lesieur & Blume, 1987) to screen for excessive gambling. Excessive gamblers were not included in the study for ethical reasons, because betting could be possibly harmful to them. Because participants were French speaking, we used a translation of the questionnaire as used by Ladouceur (1991). The final sample included in the analysis consisted of 30 male participants with a mean age of 28.6 years (SD = 9.4).

Table 1
Example of Odds Set by Loto-Québec at Mise-O-Jeu

Team	Visitor	Tie	Home team	Team
New Jersey	1.6	5.1	2.75	Anaheim
Minnesota	3.7	5	1.4	St. Louis
New York	2.5	5.1	1.7	Chicago
Washington	2.3	5.15	1.8	North Carolina

Material

On each selection slip, three different wagers could be placed. A questionnaire containing 21 items on hockey gambling (plus 5 demographic questions) was developed to assess the kind of information relevant to the bettors (e.g., source of documentation used when betting, importance of the precedent results of the teams and of the odds, role of home play, etc.). It also contained various questions on how gamblers usually bet (e.g., amount of money bet, frequency of the wagers, etc.) and on their perception of the game (e.g., possibility of improving, rate of return, etc.).[4]

Procedure

This experiment was carried out between January and April 2002, during the regular National Hockey League season. After the initial telephone assessment, participants first came to the laboratory for a 40-min initial meeting. Participants who met the criteria for excessive gambling were excluded and referred to appropriate resources.[5] All the participants filled out the short French version of the questionnaire on *Mise-O-Jeu* hockey individually. They were asked to bet as they would usually do and verbalize their thoughts so the experimenter could understand their strategies. To ascertain whether all participants were familiar with *Mise-O-Jeu*, they were told that a fixed but fictitious amount of $2 was bet on each selection. Participants were also given instruction to fill out three wagering slips with the following restrictions: one selection with three games and one with four games, and the last selection having no constraint. As the participants played *Mise-O-Jeu* regularly, they were invited to give their real bets.

Each participant bet on 18 selections ($2/bet) for a total amount of $36. The participants sent in their selections either over the Internet (66.7%) or onto a voice recorder (33.3%). Before the end of the appointment, they were given a short leaflet with the instructions, five selection slips, and the phone number and e-mail address of the experimenter. Regarding the random wagers, a random pick was made.[6] Both the program's games and the result of these games were selected with this method. Thus, in the present study the random selection served as a comparison group against which the participants' results could be compared.

The mean accuracy for all the games was also calculated. We computed accuracy by dividing the number of correct results by the total number of games on which the participants decided to wager. We calculated the mean percentage accuracy achieved by the gamblers by multiplying the latter result by 100. To calculate the monetary gains, we subtracted the total amount of money bet ($36) from the total money won.

Results

Accuracy of Wagers

Three series of forecasts from 1 participant were not understandable on the telephone's answering machine. As a consequence, 537

[4] The questionnaire is available on request from Robert Ladouceur.

[5] For 43.3% of the sample, the initial meeting took place in their community, as they lived too far away from the laboratory. Therefore, for these people a group format was used.

[6] We used the program NtRand (Numerical Technologies Random Generator for Excel, version 1.38; Numerical Technologies, 2001). This freeware is based on the pseudorandom generator Mersenne Twister, which was one of the most reliable free random generators available at the time of this study (Matsumoto & Nishimura, 1998). The program produced numbers between 0 and 1, which were further transformed for simulating random hockey bets.

wagers were analyzed (179 three-games wagers, 179 four-games wagers, and 179 three- to six-games wagers). The participants wagered on 1,963 hockey games, and the bets amounted to $1,074 in total.

We conducted an independent-sample t' test to evaluate the hypothesis that hockey experts were more accurate than random selection in picking the right result for hockey games. The Welch t' test is similar to a traditional t test, but it makes a correction for unequal samples variance. The test yielded significant results, revealing that the bettors ($M = .473$, $SD = .12$) were more accurate in their predictions than chance ($M = .333$, $SD = .01$), $t'(41) = 5.98$, $p < .01$, $d = 1.27$ (Cohen, 1988). The present results are consistent with our hypothesis in that they indicate that 47.3% of the game predictions made by participants were correct, compared with a 33.3% accuracy obtained by the random selection.

Monetary Gains

We conducted an independent-sample t' test to evaluate whether hockey experts won more money than the random selection. The result of the test, which evaluates the difference between the gamblers ($M = –14.43$, $SD = 18.27$) and the random selection ($M = –7.7$, $SD = 92.01$), was not significant, $t'(31) = 0.39$, $p = .70$. These results revealed that the mean loss of the participants was $14.4 compared with a loss of $7.7 obtained by the random selection. The average amount of money returned on a $2 wager was $1.19 (i.e., 59.5%) for experts and $1.57 (i.e., 78.5%) for the random selection (see Table 2). Contrary to what was expected, gamblers ($432.78 in losses) did not perform any better than chance ($230.95 in losses). This result did not confirm the second hypothesis.

Experts' Strategies and Ways of Playing

Participants had been playing *Mise-O-Jeu* for an average of 7.1 years ($SD = 3.4$). They had to answer a series of questions to estimate their perception of expertise in hockey betting. All the questions had to be rated on a 10-point Likert-type scale that ranged from 0 (*not at all*) to 100 (*extremely*). Participants believed they were still able to slightly improve themselves on the *Mise-O-Jeu* game: Their average rating was 33.1. When participants were asked to rate the degree to which their knowledge heightens their winning chances at *Mise-O-Jeu* hockey, they responded with an average rating of 62.5.

Moreover, participants rated high the importance of (a) considering previous results of the hockey teams when betting (75), (b) favoring home teams rather than visitors (72.67), and (c) that high odds associated with the ties indicate they are more difficult to predict than the wins and losses (93.67). Furthermore, when asked about the extent to which the odds influence their selections, their average rating response was 69.17, and 100% of them asserted that the odds are linked with the probabilities of wins and losses of the teams. Not surprisingly, when asked about the extent to which the monetary wins are important for them when they bet, they gave an average rating of 72. We categorized the gamblers' strategies to determine which was predominant. It appeared that the most relied-on strategy was based on the most recent results of the teams (e.g., series of wins or losses of a team). For example, most of the participants believed that after a streak of poor performances, a "good" team was due to win.

Table 2
Average Amount of Money (in Canadian Dollars) Returned on Bets Wagered by Experts and by Random Selection

	Expert selection			Random selection		
Kind of bet	*M*	*SD*	*n*	*M*	*SD*	*n*
From 3 games	1.69	1.87	30	0.69	1.44	30
From 4 games	1.25	1.89	30	3.67	15.41[a]	30
From 3–6 games	0.64	1.69	30	0.36	1.25	30
M	1.19	1.02	30	1.57	5.12	30

[a] This outlier is due to a big win.

Discussion

The aim of the present study was to evaluate whether the skills and knowledge used by gamblers are real or illusory. The results showed that gamblers have a greater accuracy rate than chance when picking the results of the games. However, their monetary outcomes were not significantly higher than chance. Similar results were obtained by Ladouceur et al. (1998), who analyzed betting on horses. The results of this experiment suggested that the so-called "skills" of the sports bettors are indeed cognitive distortions. Expert bettors did not achieve better monetary gains than chance despite relying on various bits of information (that chance does not take into account).

The bettors erroneously believe they have a higher probability of winning at *Mise-O-Jeu* when they rely on sports knowledge. Knowing the relative strengths and weaknesses of the hockey teams does not lead to more efficacious wagers, but it strengthens the illusion of control. This illusion of control could even be reinforced by the accuracy gamblers achieve. In fact, the results of this study show that experts are more accurate than the random selection when picking the right results of games. However, the structure of the *Mise-O-Jeu* game prevents them from winning money. Bettors must select at least three games when betting. If they focus on the outcome of a single game as a manifestation of success, they will focus on information that is not relevant. The probability of obtaining the correct result for a three-game selection is 1:27 ($1/3 \times 1/3 \times 1/3$). The probability of accurately predicting all outcomes in a six-game selection is much lower at 1:729.

Gamblers overestimate their ability to predict outcomes, and they use unreliable information based on past performances. This strategy resembles the *gambler's fallacy*, in which chance is viewed as a self-correcting process (Clotfelter & Cook, 1993). Wood (1992) examined in baseball and basketball the predictive validity of recent performances (team streak). He concluded that this is a very weak predictor. Gamblers give causal explanations to a phenomenon that relies entirely on chance. The fact that participants achieved a greater accuracy than chance may help researchers understand their persistence at betting. When evaluating one's

own accuracy, the player may include all the near-misses; therefore, events close to the desired outcome may reinforce the gambling behavior (Delfabbro & Winefield, 1999). Contrary to games of skills, near-misses do not provide useful feedback for players in a game of chance. They are not good predictors of future success when the result of the game (i.e., *Mise-O-Jeu*) is based on randomness (Griffiths, 1999), which is the conclusion of our study.

At a social level, the results of this study question the pertinence of lottery marketing strategies. When this experiment was carried out, the back of the page of the "Pari Sportif" programs contained the following sentence: "With Pari Sportif, Loto-Québec offers two betting games where your knowledge of hockey could help you become a winner" (Loto-Québec, 2002b). This statement is empirically unfounded, and it may reinforce the gambler's illusion of control. Governments should be attentive to marketing campaigns developed for the lottery because these may reinforce or even develop gamblers' false beliefs.

One additional point must be raised: As previously mentioned, all the participants in our study stated that the odds are linked with the probability associated with the different games' outcomes. This may be a biased observation made by the participants, because the bookmakers are in fact only evaluating the gambling public's expectation (Mallios, 2000). The bookmakers do not evaluate the real strength of the opponents; rather, they make forecasts about the gambling public. This gambling public can be compared to an economic market, where there are demand of and supply for goods. In this "betting market" there are gamblers who "buy" odds on outcomes of games and bookmakers (in the present study, the state lottery) who "sell" odds on these outcomes. In summary, the goal of the bookmaker is to divide the money bet by the public as evenly as possible (i.e., "setting the line";[7] Mallios, 2000). If this outcome is reached, the winners will be paid with the money from the losers.

Keeping in mind that the line of the bookmakers is not, as Mallios (2000) pointed out, a forecast of a game outcome "but rather, [their] opinion of what the public's opinion will be" (p. 25), the odds may only indirectly represent the relative strength of the opponents. The odds reflect the bookmakers' beliefs as to what the whole gambling public evaluate the relative strengths to be.

Being well informed on sports does not necessarily imply being well informed about the goal of odds making. A lot of information is available to sports bettors; because they try to decrypt from this information the relative strengths of the opponents to forecast the outcomes of games, bettors could be inclined to erroneously evaluate them. Further research should question the bettors' comprehension of the nature of odds and odds making so that a close examination of their arguments can be conducted.

It is interesting that the wagers of the experts produced an average return rate of 59.5%, which is similar to the official approximated return rate at *Mise-O-Jeu* (60%) given by the state lottery (Loto-Québec, 2001). The *rate of return* refers to a percentage representing the total amount of money bettors won over the total amount of money bettors bet, in the long run.

This study has practical implications. Research has already demonstrated that cognitive distortion is a pivotal factor in excessive gambling. However, the extent to which the knowledge of sports gamblers helps develop or maintain an illusion when gambling remained unclear. How could clinicians argue with clients who engage in excessive sports gambling that knowledge and skills are not relevant when betting on hockey or football? The results of this study, along with others (Ladouceur et al., 1998), could serve as a basis for correcting the myth of the "knowledgeable bettor" while conducting cognitive-restructuring therapy. There are no reliable systems or skilled bettors, there are just many gamblers who disregard their unsuccessful outcomes, deluding themselves with an illusion that it is not a game of chance but a game where skills are valuable, skills that they hope to acquire if they "train" well.

[7] The *line* is the odds quoted by a bookmaker and also the point-spread predicted in a football game from which such odds are calculated (Simpson & Weiner, 2002).

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