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To Gamble or Not to Gamble? The Role of Gender, Sociality, and Attitudes Toward Risk

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ABSTRACT

Gambling has become a leading leisure activity in many developed and emerging countries, and its popularity continues to increase. Although research on gambling is extensive, several gaps remain, in particular as regards the identification of the exogenous and endogenous factors that explain why some individuals develop a propensity to gamble. In this exploratory study, we seek to integrate the sociopsychological analysis of gambling behavior with the economic one. In particular, on the basis of a questionnaire administered to 855 young adults, university students, we construct a variable measuring the individual's attitudes toward risk, or, more precisely, the amount at stake at which preference for certainty prevails. We can thus integrate the analysis of the determinants of gambling with an element deriving from the economic analysis of behavior under uncertainty.

KEYWORDS

Attitudes toward risk;
propensity to gamble;
young adults

Introduction

The gambling¹ industry has undergone a relevant expansion in recent years, reaching a value of over \$399 billion in 2013 worldwide; the upward trend is expected to continue, with total revenues exceeding \$500 billion in 2018 (GBGC 2014; MarketLine 2014). The expansion of the sector is a clear evidence that gambling is "... an increasingly mainstream recreational and leisure time activity" (Pinto and Mansfield 2011; p. 210) that "... is increasingly accepted as popular leisure for both men and women, along with the marketing of new products" (Austrin and West 2014; p. 144). Italy, where the current study was performed, is among the leading countries for the "consumption of game" (Gandolfo and De Bonis 2011). Actually, in 2014, the state-controlled gaming sector (which includes betting, bingo halls, scratch cards, lotteries, new slot machines, and online games) reached a total turnover close to €85 billion and total revenues (given by the difference between the total amount staked and total winnings) amounting to €17,5 billion (Agenzia delle Dogane e dei Monopoli 2015). According to an estimate of the National Research Council of Italy,

17 million Italian residents aged 15–64 years, i.e., 42% of the total age group, play at least once a year (CNR 2015). The share rises to 54% in the age group of 19–25 years, which is an evidence of the diffusion of gambling among young adults (Nomisma 2015). Thus, in Italy, as well as in several other countries, people continue to gamble even though betting does not appear to be a sound financial move.

The continuous expansion of the sector has renewed the interest in understanding the determinants of gambling behavior. The aim of this paper is to integrate the existing literature on the topic by assessing to what extent the attitude toward risk can explain why some people develop a propensity to gamble, while others do not. To our knowledge, this variable has not been explicitly considered so far. The hypothesis is that a high degree of risk aversion is negatively correlated to the probability of becoming involved in gambling. The paper proceeds as follows. In section 2, we review the literature on the differences between gamblers and non-gamblers, emphasizing the role of the economic determinants and thus the role played by attitudes toward risk. A variable directly

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¹*Gambling*, also referred to as *gaming* or *betting*, has been defined as any act that involves risking something of value, either money or valuables, on the unpredictable outcome of a game, contest, or event (National Center for Responsible Gaming 2007; Watson 2002).

connected to attitudes toward risk, that is, the stake value at which the respondent shifts from being risk lover to risk averse, is added to the determinants already considered in the literature in the theoretical framework presented in section 3. Section 4 illustrates the methodology of the research, the characteristics of the sample, and the content of the survey questionnaire. Responses are analyzed in section 5. Section 6 contains the regression analysis and its main results, while their implications and possible extensions are discussed in sections 7 and 8, respectively.

Economic determinants of gambling behavior: A review of the literature

Gambling and young adults

Because of the concern toward the social costs of gambling activity, in particular the effects on excessive gamblers and the ease of criminal involvement, the gaming sector has always been a matter of public concern in countries where gambling is permitted and has traditionally been marked by a legacy of prohibition (Eadington 2004; Smith 2000; Taylor and Kopp 1992; Mascarenhas 1991). The move to a legal status has typically gone through state monopolization, followed by a gradual liberalization, with firms operating under regulatory regimes. Licensing, by introducing taxation and regulation, was considered a more effective way than prohibition in securing government control.

Nevertheless, gambling has not become normal business. Despite this, the recent changes in the technological and legal environment have impaired government control. In particular, barriers such as the introduction of electronic commerce, the extraordinary growth of Internet transactions, and the resulting fall in trade barriers have made it easy to access facilities that are outside its enforcement power, since they might take place in an unregulated online space that is accessible from home (Cotte and Latour 2009; Humphreys 2010a, 2010b; Siemens and Kopp 2011). The processing of information in the virtual world and its impact on purchase intentions has also been analyzed (Schlosser 2003).

In particular, there is a great concern about the involvement of adolescents and young adults, who have always lived in a largely liberalized environment and among whom gambling is common, also in its online form (see, among others, Olason et al. 2006; Welte et al. 2008). This explains the presence of

several studies on the determinants of gambling behavior conducted on school and university students all over the world (see, just to mention some examples, Williams et al. 2006; Browne and Brown 1994; Forrest and McHale 2012; Arthur et al. 2008; Neighbors et al. 2002; Griffiths et al. 2010).²

Psychological and sociodemographic explanations

Research on young people's gambling did not find relevant differences between gamblers and non-gamblers in aspects such as *introversion* or *extroversion*, *psycho-neurotic tendencies*, or *intelligence* (Browne and Brown 1994; Kusyszyn 1984). This led to a social interpretation of gambling behavior, stressing the influence of parents and peers in facilitating it (Smith and Abt 1984; Griffiths 1990, 1995; Browne and Brown 1994). In addition, gambling among parents was shown to be correlated to locus of control, in that students with an external locus of control, i.e., believing in chance rather than in individual control over one's destiny, have been found to be more likely to have parents who were gamblers (Browne and Brown 1994; see also Rotter 1966; Rotter et al. 1972).

Demographic variables such as *gender* (Kusyszyn 1984; Browne and Brown 1994; Volberg 2003; Williams et al. 2006), *education level* (Brown et al. 1992), *ethnicity* (Williams et al. 2006), and so forth have also been shown to be predictors of gambling behavior among young people.

Another factor analyzed in the literature is derived from the cognitive-based explanation of gambling motivations, typically assuming that the behavior is reasoned and can be best explained by attitudes models such as the Theory of Reasoned Action and the Theory of Planned Behavior (Miyazaki et al. 2001). This strand of the literature focuses on the existence of a faulty reasoning: first, gamblers behave as if they could control the outcome of unpredictable events; second, they think that an event is more predictable than it actually is (Ladouceur and Walker 1996).

As for the first aspect, gamblers and bettors tend to consider losses or wins as depending on their ability and competence—in luck games—more than on luck. Langer (1975) called “illusion of control” the fallacious belief held by individuals about their control over

²González-Ibañez et al. (2005) analyze differences in gambling behavior according to age, in the context of pathological gambling.

uncontrollable events. The individual thinks to possess a skill or ability that can influence the outcome of a random or chance-determined event. Specifically, some people believe that they are more skilled at predicting an outcome than other people. The illusion of control can explain why gamblers, especially frequent gamblers, keep on engaging in behaviors that result in financial losses, in spite of their previous experiences.

As for the second aspect, Clotfelter and Cook (1993) coined the term “gambler’s fallacy” to denote the belief that the probability of a gambling event is lower once that event just occurred, even if the probability of its occurrence is independent across periods.

Actually, from an economic perspective, gambling consists of putting a given amount of money at stake, bearing the risk of losing it, but with the chance of winning a larger amount. Given that the amount of money staked by gamblers is lesser than that distributed in winnings, the activity entails an expected loss.

For many people, although not for all, gambling “... reflects *human desires to get something for nothing and to get rich quick* (Aasved 2003, p. 36).” However, winning money is not the only motive why people gamble: several studies have shown that people do it also for excitement, challenge, socialization, and escape. In particular, McConkey and Warren (1987), Walker (1992), Griffiths (1995), Rogers (1998), Lam (2007), and Aasved (2003) found that people derive pleasure from gambling by the social interactions with dealers and other gamblers. This is in line with the findings on the influence by peers and parents (Browne and Brown 1994).

Gambling motivations and the emotions linked to it interact with demographic variables: for instance, motives such as *excitement*, *challenge*, and *escape* are gender-dependent; in particular, they are stronger in men than in women (McDaniel and Zuckerman 2003). Thus, factors others than money may represent a sort of reward, which may well exceed the expected loss from gambling. Under this perspective, regular gambling (not problem gambling) might look *less irrational*, even if its expected monetary gain is negative: gambling is a leisure activity and, in order to undertake it, people are willing to pay.

This is of course not to say that the aim of winning money should be underscored and together with it the relevance of attitudes toward risk, when looking for the determinants of gambling behavior.

The economic perspective

In an economic perspective, recent studies have tried to reconcile observed behavior in betting markets with standard theory. For instance, Peel and Law (2009) provide a non-expected utility model explaining why people gamble at actuarially unfavorable odds, or display risk-seeking behavior in gambling and risk-averse behavior in insurance. They allow for heterogeneity in individual probability distortions to be associated with cultural or institutional factors. Their model is based on Markowitz (1952), Kahnemann and Tversky (1979), and Tversky and Kahnemann (1992). Markowitz (1952) assumed that, from the agent’s normal level of wealth, the agent is initially risk loving, then risk averse over gains (while being initially risk averse and then risk loving over losses). Kahnemann and Tversky (1979) and Tversky and Kahnemann (1992) assumed that agents subjectively distort the probability of events, overestimating low probabilities and underestimating high ones, thus providing an explanation for the Allais (1953) paradox, an example of what they called the *certainty effect*: people giving an excessive weight to certain results with respect to results that are only probable.

Recently, Bombardini and Trebbi (2012) have experimentally analyzed the relevance of the amount being staked in the gaming context. Also, the link between probability estimation and personality type has been explored in a neuropsychological perspective: Capra et al. (2013) find that “motivated” people, that is, people who are controlled and emotionally stable, consider gambling more attractive than impulsive people, since, though being risk averse, they positively focus on payoffs.

Theoretical framework

Against this background, in the present exploratory study, we examine gambling behavior among young adults (university students), focusing on the characteristics differentiating (nonproblem) gamblers from non-gamblers, seeking to integrate the sociopsychological analysis with the economic one. In particular, we try to assess the role of the attitude toward risk in predicting gambling behavior, beside the variables already studied in the literature.

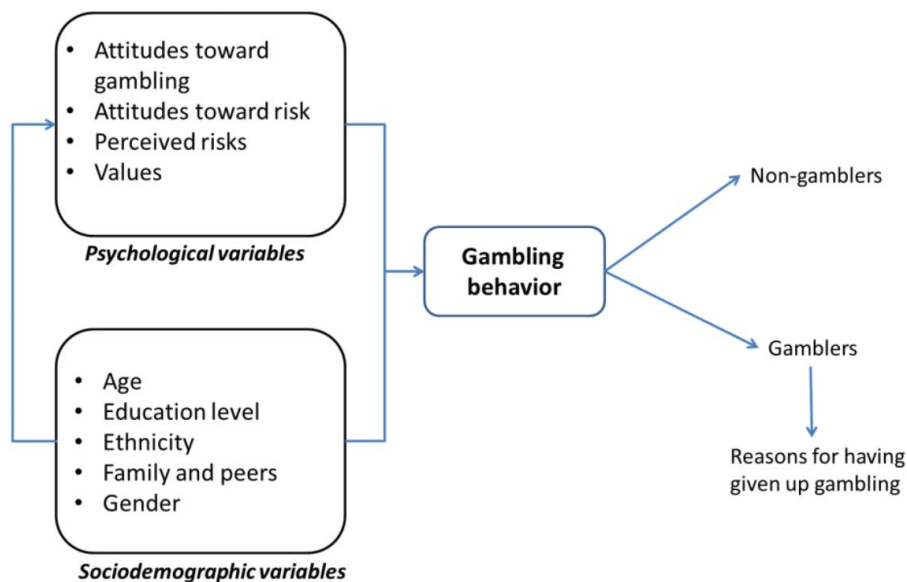


Figure 1. Predictors of gambling behavior among young people.

Based on the existing literature on the topic, we consider both sociodemographic and psychological factors influencing gambling behavior (Figure 1)³. As for the former, we include gender and the presence of players among relatives and friends. Given the focus on university students, we do not use other demographic variables, like current age, education level, and income.

Also, the composition of the sample does not allow one to investigate the role of ethnicity or university major (for an analysis of the influence of these and other demographic variables on gambling behavior see, for instance, Herring and Bledsoe 1994; Abbot and Cramer 1993, Brown et al. 1992; Bontempo, Bottom, and Weber 1997; Kwak et al. 2004). As for psychological variables, we examine attitudes toward gambling by extending the Gambling Attitude Scale (Williams et al. 2006), risk perception (Spurrier et al. 2015), and life values, extending the items considered in Kusyszyn (1984).

Finally, we add a variable, to our knowledge not considered in the literature so far, that is directly connected to attitudes toward risk: the stake value at which the respondent shifts from being risk lover to risk averse. We thereby try to integrate the psychological analysis with a measure of probability distortion, an element deriving from the economic analysis of

behavior under uncertainty. In particular, we try to assess *if* and *how the attitude toward risk* relates to involvement in gambling and can explain why some people develop a propensity to wager, while others do not. Our hypothesis is that a high degree of risk aversion is negatively correlated to the probability of becoming involved in gambling.

All variables are described and discussed in the next section.

Methodology

Research design

The basis of our research is a self-reporting survey conducted among students of the University of Pisa (Italy). A standardized questionnaire constructed based on the variables adopted in the literature was used for data collection. Participants were recruited by a notice sent to the e-mail address that each student must indicate at the enrollment. The notice contained a presentation of the research—the participants were told that the investigation concerned their attitudes toward gambling and their gambling behavior—and the link to access the online compilation of the questionnaire, administered in the period July 31–October 17, 2014. The inclusion criterion was having taken at least one examination among the courses taught in the Department of Economics and Management. Students who had taken courses in theories of evaluation of prospects were excluded from the survey through a filter question. Because attitudes toward gambling and

³Situational factors appear to be relevant in gambling behavior in the choice between skill and luck games rather than in the decision whether to be a gambler or not (see, for instance, Gandolfo and De Bonis 2015).

gambling behavior might vary with nationality, but the vast majority of respondents were Italian, in this study, we only considered data relative to students who had grown up in Italy. The link to the questionnaire was sent by e-mail to 8,942 out of the 45,567 students of the University of Pisa, obtaining 855 assessable answers. Participation was voluntary, and anonymity of data was fully granted.

Figure 2 shows the dynamics of the students' participation in the survey along the 78 days during which they had access to the online questionnaire. The solid curve represents the number of questionnaires completed at 11.00 p.m. of each day, while the dashed curve shows the number of questionnaires, the compilation of which was interrupted before ending. Only data from completed questionnaires were used in our analysis. It is possible to distinguish five phases in the collection trend of responses. The first phase is characterized by a consistent inflow of questionnaires (200 of them were completed in 7 days). The second phase, coinciding with academic vacations, is characterized by a moderate participation in the survey. The third and fourth phases were triggered by a reminder sent by e-mail to students (on the 11th and on the 16th of September 2014, respectively), followed by the ending phase (the survey was closed on October 16, 2014). Overall, 1,069 questionnaires were registered on the server, of which 855 were completed ones and 476 had been only partially filled or interrupted before

completion. Considering only the completed questionnaires, the *redemption rate* was 9.57%.

Demographic characteristics of the respondents

Based on the data collected, 56.7% of the respondents were female. Respondents' ages ranged from 20 to 31 years, with a mean age of 25.2 years and standard deviation (*SD*) of 1.8 (25.5 years for men, *SD* 1.9; 24.9 for women, *SD* 1.7). About 51.6% of respondents stated they had never gambled (35.7% of male students and 63.7% of female students). Among those who had played at least once in their lives, 4.0% consider themselves "passionate gamers" (7.3% of males and 1.4% females), 39.2% consider themselves "occasional players," that is, a person who plays once every 2 or 3 weeks or less (10.1% of males and 29.1% females), and 5.3% were "former players" (8.4% of male and 2.9% of female students).

Gambling activities

Table 1 indicates the gambling activities in which participants had been engaged at least once in the last three months. The results revealed that there are significant differences in the gambling behavior of respondents according to gender: in particular, raffles and lottery were the most often used gambling activities among female students, while among male players betting sportive and raffles are the preferred ones.

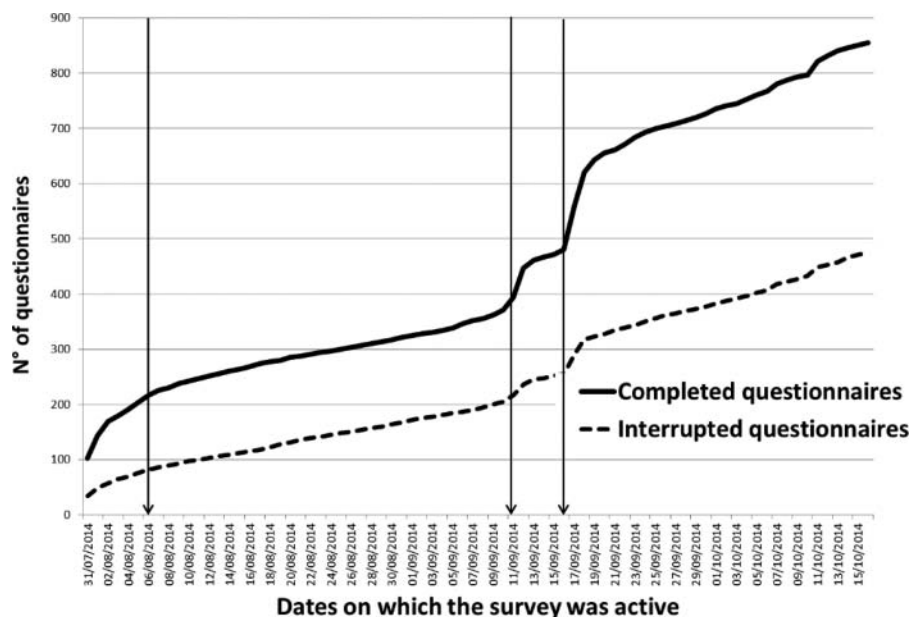


Figure 2. The dynamics of the students' answers.

Table 1. Gambling activities during the last 3 months by gender.

| Games ^(*) | Gender | |
|--------------------------|----------|------------|
| | Male (%) | Female (%) |
| Lottery | | |
| Lottery | 2.9 | 3.9 |
| Scratch cards | 19.0 | 29.2 |
| Betting | | |
| Betting | 24.4 | 9.2 |
| Raffles | | |
| Lotto | 4.5 | 4.7 |
| SuperEnalotto | 11.6 | 13.5 |
| Dieci e lotto | 13.8 | 17.6 |
| Win for Life | 6.8 | 10.2 |
| Bingo | 3.0 | 3.6 |
| Casino's games | | |
| Slot machine/Video poker | 4.3 | 2.2 |
| Internet games | | |
| Poker online | 5.4 | 1.7 |
| Scratch cards online | 1.1 | 0.6 |
| Raffles online | 1.3 | 0.9 |
| Other traditional games | 1.8 | 2.5 |
| Other online games | 0.2 | 0.3 |

^(*) Respondents could answer on various games.

Online gambling does not appear to be much practiced, mainly by male players.

Measures

The questionnaire used in this survey was divided into 8 sections, each of them concerning a particular aspect. In the present analysis, the relevant ones are attitudes toward gambling, perceived risks, reasons for having given up gambling behavior, attitudes toward risk, values, and the students' sociodemographic background.⁴

Attitudes toward gambling

For all social phenomena, attitudes⁵ cultivated and conveyed are linked to the system of societal values; they influence the behaviors adopted and can therefore be used to predict them (Jodelet 1989). Thus, attitudes toward gambling—as attitudes toward the act—are a component of the theory of reasoned action (Fishbein and Ajzen 1975), which explains an individual's intention toward performing a behavior; they are therefore relevant in predicting gambling behavior (Inglin and Gmael 2011). From a public policy viewpoint, the debate on gambling is centered upon

⁴Other aspects concerned the choice between skill and luck games (Gandolfo and De Bonis 2015).

⁵Attitude can be defined as "the mental state of a consumer which predisposes him/her to respond in a certain way to a given stimulus. In marketing this can be perceived as a consumer's predisposition to respond to a product or service" (Gupta 2003; p.123). For a connection between attitudes and online gambling, see Humphreys and LaTour (2013).

weighing its entertainment value against the social ills it might generate. It is thus important to assess the consumers' point of view with respect to the amusement derived from gambling vis-à-vis their perception of the connected social dangers and their assessment of state involvement.

Our sample was formed by Italian young consumers; as mentioned in the introduction, gambling is a vastly diffused and discussed phenomenon in Italy, especially as for state involvement. In order to take into account these aspects, we have not used the Gambling Attitude Scale, a three-item scale developed to study gambling in adults (see, for instance, Williams et al. 2006). Instead, we have extended it, asking respondents to state whether they agreed or not on nine judgments concerning the entertainment value of gambling, social dangers connected to it, and state intervention.

Perceived risks

Another aspect possibly differing between gamblers and non-gamblers is their perception of the risks connected to gambling (for a recent analysis on gamblers' risk perception and on the role of risk perception in disordered gambling based on interview data, see Spurrier et al. 2015). Respondents were therefore asked to evaluate, by means of a 0–10 scale, the importance of five risks: loss of control, developing a dependency similar to drug addiction, loss of family/friends esteem, becoming indebted, and loss of time.

Attitudes toward risk

One of the objectives of our study was to find a variable related to attitudes toward risk, to test its role and significance in predicting gambling behavior. Our reference points were individual probability distortions and the relevance of the amount at stake.

As for the first aspect, respondents were asked to choose among lotteries characterized by the same expected payoffs, but by different probabilities of the respective outcomes. Based on the choice made, we defined three different types of individuals. First, the *risk lover*, who always chooses the lottery with the highest possible win. Second, the *risk averse*, who always chooses the lottery with the highest probability of winning. Finally, the *typical*, who chooses the lottery with the highest probability of winning when probabilities of winnings are high and the lottery that gives the highest possible win when the probabilities

of winnings are low (these individuals are called typical because they take the modal choice, as in Allais (1953) and in several studies replicating his finding).

The second aspect is centered on Markowitz (1952) observations on the point at which people change from being risk lover to risk averse. We asked respondents to choose among the possibility of obtaining a certain amount of money for sure and an amount ten times larger with a probability of 10%. We started with the choice between €1.00 for sure and €10.00 with a 0.1 probability (level 1) until that between €1 million for sure and €10 million with a 0.1 probability (level 5—level 2 corresponded to a stake of €10.00; level 3 to a stake of €100, 00; level 4 to a stake of €1000, 00; and level 6 represents those who prefer having €10 million with a 0.1 probability than €1 million for sure). The answers given to these questions allowed us to construct a variable, that we shall call *certainty*, for the sake of brevity, representing the amount of money at which respondents became risk averse. We can thereby test the hypothesis that this variable is negatively related to the probability of becoming involved in gambling.

Values

Kusyszyn (1984), considering a sample of university students, noted that gamblers gave less importance to solidarity than non-gamblers. In order to extend this analysis, we asked respondents to measure the importance of 13 life values in their lives: being well off, self-realization, social esteem, success in sport, love, friendship, solidarity, passion, health, beauty, fitness, spirituality, and being a winner. These items were scored on a 10-point Likert-type scale anchored by the end points *not important at all* (1) and *very important* (10).

Sociodemographic variables

Respondents were asked basic demographic questions: for example, age, residence, family economic status, and so forth. For the present analysis, the relevant questions concerned the gender and the presence of gamblers in the family.

Reasons for having given up gambling

In the survey, we also sought to investigate the reasons why people give up gambling behavior. Participants were asked to evaluate, on a 10-point Likert-type scale, the strength of the following items: *gambling was no*

longer amusing; I had no time; I lost too much money; I was losing control; and I was prohibited to gamble or advised to stop. Although not being, of course, among the determinants of gambling, these reasons can help in better understanding the role of some of them (for instance, the role of the family). This question also helped in detecting the real number of gamblers. In fact, interestingly enough, several respondents did not admit to have gambled at least once in their lives when asked at the start of questionnaire (only 48.42% did it), but only when they arrived at this section.

Data analysis and results

Gambling behavior, gender, and family

Overall, 43.16% of respondents declared to be at present involved in gambling activities; in particular, more than half of men (55.95%) and one-third of women (33.40%) gambled. If we consider those who have gambled at least once in their lives, the share of gamblers becomes 67.84%; among men, the share is 80%, among women, 58.56%. As noted above, several former gamblers did not immediately admit to have once gambled, declaring it only when given the opportunity of describing the reasons why they had decided to put an end to the activity. More precisely, only 48.42% of the respondents immediately declared to have gambled at least once in their lives (64.32% of men and 36.29% of women), which corresponds to 19.42% of the sample (15.68% of men, 22.27% of women) having initially hidden it.

The result confirms the literature finding that men display a higher propensity to gamble than women do. This is also confirmed by the results on gambling frequency: in our sample, 81.84% of women actually involved in gambling activity declared to gamble less than once a month (for men, the share was 56.52%).

Looking at the influence of the family on gambling behavior, we found that almost half (49.12%) of the respondents had at least one gambler in their families (50.64% did not have any, 0.23% did not answer the question), and that the presence of other gamblers in the family appears to influence gambling behavior. Actually, considering those who have gambled at least once in their lives, 58.1% had at least one gambler in their families (41.55% had not, 0.34% did not answer), against only 30.18% of non-gamblers. Comparing those who gamble at present with those who do not,

Table 2. Influence of gender and family on gambling behavior.

| Actual gamblers <i>Gamblers in family</i> | Men | Women | Total |
|--|--------|--------|--------|
| At least 1 | 59.90% | 71.60% | 65.04% |
| None | 40.10% | 27.16% | 34.42% |
| Does not answer | — | 1.23% | 0.54% |
| Total | 100% | 100% | 100% |

the influence of the family appears even stronger, especially for women, as summarized in Table 2.

Given the age structure of the sample, we do not consider current age as a determinant of the probability of becoming a gambler. However, the age at which respondents started gambling is correlated to gambling behavior. In our sample, the average starting age was 17.9. The debut of male gamblers was earlier than that of female gamblers (17.6 vs. 18.3 years). More than half (54.4%) of gamblers started gambling between the ages of 18 and 21 years. Those who started earlier have a higher probability of becoming regular (playing almost every week) or frequent (playing at least once a week) gamblers (Table 3). Actually, looking at those who started gambling before the age of 14 years, slightly less than 8% have become passionate gamblers, against a value of 2.8% for the whole sample (Table 3, part A). Thus, they amount to the 10% of passionate gamblers, although being only 3.7% of the sample. Further research should verify the existence of different motivations for gambling according to the age of debut in the gambling arena.

Attitudes toward gambling, gender, family, and gambling behavior

Even if non-gamblers display a more negative attitude toward gambling than gamblers do, they are aware of

the social dangers and criticisms toward state involvement (these results are in line with those found for problem gamblers by Prentice and Woodside 2013, and Woodside et al. 2015). Less than half of the gamblers agree that the activity is particularly exciting (63.4% of non-gamblers disagree). The majority of both gamblers (58%) and non-gamblers (80.1%) do not consider gambling a leisure activity like the others, with 62.1% of non-gamblers and 31.9% of gamblers agreeing on the necessity of banning it. Overall, 77.3% of gamblers and 75% of non-gamblers think that gamblers are subject to a fiscal illusion, paying taxes to the government without realizing it; 77.2% of non-gamblers and 54.5% of gamblers even consider the activity a fraud against consumers. Collecting revenues from taxing games is not considered a valid way of financing public expenditure (65.5% of non-gamblers, 55.0% of gamblers), unless it helps avoiding the introduction of new taxes (43.1% of non-gamblers, 31.9% of gamblers). These results cast doubts on the possibility of increasing the acceptability of the state financial stake in the gaming industry by earmarking its proceeds for charity and the like. Almost all (94.5% of gamblers, 96.3% of non-gamblers) believe that the activity can be a cause of financial ruin. However, 43.1% of gamblers and 32.7% of non-gamblers believe that, for some people, it represents the only possibility of improving their economic situation.

It should be noted that differences between gamblers and non-gamblers also derive by the fact that, as illustrated above, the majority of gamblers are men: actually, women in our sample display a more negative attitude toward gambling than men. Similarly, the presence of other gamblers in the family is associated to a more favorable attitude.

Table 3. Debut age and frequency of gambling behavior.

| Part A Gambling behavior | < 14 years old | 14–17 years old | 18–21 years old | ≥ 22 years old | Total |
|---|-----------------|------------------|------------------|-----------------|------------------|
| Plays seldom (once every 2–3 months). | 76.9% | 66.1% | 68.4% | 64.0% | 67.6% |
| Plays sometimes (once every 2–3 weeks). | 15.4% | 24.0% | 22.8% | 32.0% | 23.6% |
| Plays regularly (almost each week). | 0.0% | 7.4% | 6.2% | 0.0% | 6.0% |
| Passionate, plays regularly (at least once a week). | 7.7% | 2.5% | 2.6% | 4.0% | 2.8% |
| Total | 100.0% (n = 13) | 100.0% (n = 121) | 100.0% (n = 198) | 100.0% (n = 25) | 100.0% (n = 352) |
| Part B Gambling behavior | < 14 years old | 14–17 years old | 18–21 years old | ≥ 22 years old | Total |
| Plays seldom (once every 2–3 months). | 4.2% | 33.6% | 55.5% | 6.7% | 100.0% (n = 238) |
| Plays sometimes (once every 2–3 weeks). | 2.4% | 34.9% | 53.0% | 9.6% | 100.0% (n = 83) |
| Plays regularly (almost each week). | 0.0% | 42.9% | 57.1% | 0.0% | 100.0% (n = 21) |
| Passionate, plays regularly (at least once a week). | 10.0% | 30.0% | 50.0% | 10.0% | 100.0% (n = 10) |
| Total | 3.7% | 34.4% | 54.8% | 7.1% | 100.0% (n = 352) |

The finding that gamblers display a negative attitude toward gambling appears to be at odds with the theory of reasoned action. It can, however, be interpreted as evidence of a lack in volitional control, possibly leading to problem gambling (see “Perceived risks” section).

Perceived risks

In general, people gamble despite a clear perception of the dangers being involved, which is typical of behaviors at the risk of creating an addiction. This appears in line with the attitude toward state involvement: many gamblers would welcome more intervention, as illustrated in the “Attitudes toward gambling, gender, family, and gambling behavior” section. We find that average values do not differ much between gamblers and non-gamblers, although the former underscores risks with respect to the latter. However, other variables are involved: gender, with men consistently underscoring risks with respect to women; and family influence, with people having gamblers in their families underscoring risks with respect to people coming from families of non-gamblers. In addition, the average score among former gamblers who did not initially admit having been involved in the activity is higher than that of other people not gambling at present; their reluctance might therefore derive from a negative experience from gambling.

A 10-point Likert scale was used, which ranged from 1 to 10. The average scores obtained are summarized in Table 4. The scale reliability coefficient (Cronbach’s alpha) is 0.93, suggesting a strong reliability.

Reasons for having given up gambling

Among those who once gambled, the most important reason for giving up is that *gambling was not an amusement any longer* (average score: 4.73); the second most

important motive was *lack of time* (average score: 2.85). For the other reasons, all scored around 1 on average; the order of importance is somehow different across gender and type of family (with or without gamblers). An *excessive loss of money* is the third one for men, as it is for women coming from a gamblers’ family (for women coming from a non-gamblers’ family, it is the fourth). For women coming from a non-gamblers’ family, instead, the third most important reason is *I was prohibited to gamble or advised to stop* (this reason is the fifth for those coming from a gamblers’ family). *Loss of control* is the fourth for both men (together with *I was prohibited to gamble or advised to stop*) and women coming from gamblers’ family, and the fifth for those coming from a non-gamblers’ one. The result on *I was prohibited to gamble or advised to stop* for women, together with the one obtained on family’s influence on gambling behavior, indicates that women are more responsive to their social context when deciding their participation in gambling (Table 5).

Attitudes toward risk

As described in the methodological section, we defined three profiles for individual probability distortions and six levels for the relevance of the amount being staked.

As for the first aspect, our sample resulted in 488 (57.08%) typical individuals, (237 men—64.05% and 251 women—51.75%), 315 (36.84%) risk-averse individuals (109 men—29.46% and 206 women—42.47%), and 52 (6.08%) risk lovers (24 men—6.49% and 28 women—5.77%). The individual type is correlated to gender, with women being more risk averse than men.

As for the second aspect, 381 individuals (244 men and 381 women) started preferring certainty at level 1; 99 (53 men and 46 women) at level 2; 174 (89 men

Table 4. Average score of perceived risks.

| Risk | Gamblers (N = 357) | | Non-gamblers (N = 445) | | x-y |
|-----------------------|-----------------------|------|---------------------------|------|--------------------|
| | Mean ^(*) | SD | Mean y | SD | |
| Loss of control | 6.20 | 3.01 | 6.98 | 2.30 | -0.78 (-4.1589)*** |
| Addiction | 6.70 | 3.11 | 7.20 | 2.34 | -0.5 (-2.5969)*** |
| Loss of social esteem | 5.05 | 3.04 | 5.87 | 2.33 | -0.82 (-4.3235)*** |
| Becoming indebted | 6.75 | 3.26 | 7.19 | 2.41 | -0.44 (-2.1959)** |
| Loss of time | 5.52 | 3.02 | 6.67 | 2.46 | -1.15 (-5.9430)*** |

Note. t-values in parentheses.
***p < 0.01. **p < 0.05.

Table 5. Reasons for having given up gambling.

| Items | Man (N = 88) | | Women (N = 119) | | All (N = 207) | |
|---|---------------------|------|--------------------|------|------------------|------|
| | Mean ^(*) | SD | Mean | SD | Mean | SD |
| Gambling was not an amusement any longer | 4,29 | 3,30 | 5,06 | 3,79 | 4,73 | 3,60 |
| Lack of time | 2,95 | 2,91 | 2,77 | 3,52 | 2,85 | 3,27 |
| Excessive loss of money | 1,31 | 1,82 | 1,34 | 2,18 | 1,33 | 2,03 |
| I was prohibited to gamble or advised to stop | 1,08 | 1,69 | 1,35 | 2,30 | 1,24 | 2,06 |
| Loss of control | 1,11 | 1,76 | 1,14 | 2,11 | 1,13 | 1,96 |

(*)A 10-point scale was used, which ranged from 1 to 10.

and 85 women) at level 3; 110 (51 men and 59 women) at level 4; 48 (20 men and 28 women) at level 5 while 4 (2 men and 2 women) always preferred the possibility of a higher win to certainty; 29 (18 men and 21 women) did not answer the relevant questions.

Responses are in line with those obtained in the literature on individual probability distortions (Etner and Jeleva 2014; Nivoix 2008). The data show a difference between gamblers and non-gamblers: 60% of gamblers prefer to risk at level 1 against 47% of non-gamblers; at level 2, almost 50% of gamblers still prefer to risk, while only 33% of non-gamblers do so. Note that €1.00 and €10.00 are typical stakes for the games played by respondents.

In addition, in this case, gender is a relevant factor: half of the women would not put at stake €1.00 to win €10.00 with a 0.1 probability. At that level, instead, 63% of men would take the risk (and 49% would still do it at level 2).

Even if connected to gender, the level at which risk aversion prevails appears to be a distinct factor: female gamblers are more likely to risk than male non-gamblers (49% against 36%). It can thus explain gambling behavior of both men and women. These aspects are summarized in Table 6 and in figures 3, 4, and 5.

Note that the level at which certainty preference prevails is just one factor in explaining gambling behavior: even individuals who would not risk €1.00 do gamble. This is because, as argued above, people do not gamble just to win money.

Table 6. Certainty level and gender.

| Part A Level | Gamblers Men | Women | Total |
|-----------------|---------------------|--------|--------|
| 1 | 35.14% | 45.77% | 40.34% |
| 2 | 13.18% | 8.10% | 10.69% |
| 3 | 26.35% | 18.31% | 22.41% |
| 4 | 13.18% | 13.38% | 13.28% |
| 5 | 6.08% | 7.75% | 6.90% |
| 6 | 0.68% | 0.00% | 0.34% |
| No answer | 5.41% | 6.69% | 6.03% |
| Total | 100.0% | 100.0% | 100.0% |
| Part B Level | Non-gamblers Men | Women | Total |
| 1 | 44.59% | 56.72% | 53.45% |
| 2 | 18.92% | 11.44% | 13.45% |
| 3 | 14.86% | 16.42% | 16.00% |
| 4 | 16.22% | 10.45% | 12.00% |
| 5 | 2.70% | 2.99% | 2.91% |
| 6 | 0.00% | 1.00% | 0.73% |
| No answer | 2.70% | 1.00% | 1.45% |
| Total | 100.0% | 100.0% | 100.0% |

Values

Also, in this case, we used a 10-point scale, which ranged from 1 to 10. The scale reliability coefficient (Cronbach's alpha) is 0.80, suggesting a fairly strong reliability. Love, passion, and health resulted to be the most highly scored items on average. Gamblers and non-gamblers do not differ much as for values, unless for two items: friendship and solidarity. The former obtained an average score of 6.32 for gamblers and of 6.13 for non-gamblers; the latter obtained an average score of 5.95 for gamblers and of 6.33 for non-gamblers. The first result can be connected to the importance of the social element in gambling behavior: university students are often led into gambling by their peers (see, for instance, Browne and Brown, 1994). The second result can be connected to those reviewed in Kusyszyn (1984), according to which, among male university students, gamblers are less socially responsible than non-gamblers; in our sample, however, the difference applies also to women.

Regression analysis

We use the data collected in our survey to integrate the existing literature on the determinants of gambling by testing the hypothesis that gambling behavior might be predicted by gender, family influence, the level of stake at which preference for certainty prevails (certainty variable), and the importance of values such as friendship and solidarity.

Gender is an explanatory variable of the choice of the game type, in that it summarizes traits that specifically characterize men with respect to women, rather than gamblers with respect to non-gamblers (in particular: attitudes toward gambling, perception of risks connected to gambling, and individual distortion of probabilities). The higher propensity to gamble that characterizes men with respect to women, already pointed at in the literature (see, for instance, Volberg 2003; McDaniel and Zuckerman 2003; Welte et al. 2002), can in part be explained by the different strength of these factors.

Parental and peers' influence has already been linked to gambling behavior (see, for instance, Smith and Abt 1984; Griffiths 1990, 1995; Browne and Brown 1994) within the social interpretation of gambling framework. We consider these factors by means of a variable indicating the presence or absence of (other) gamblers in the respondent's family. Moreover, the strength of friendship among values is

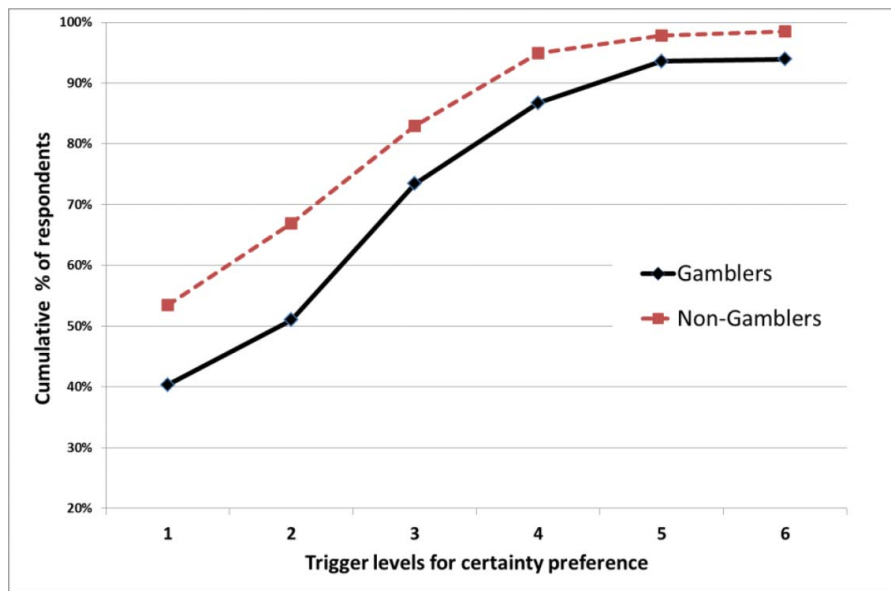


Figure 3. Trigger levels for certainty: Gamblers vs. non-gamblers.

another variable accounting for the social element in gambling behavior. We also use the strength of solidarity as an explanatory variable, as suggested by the survey and by the literature result according to which students who gamble are less socially responsible than non-gamblers (Kusyszyn 1984).

Differently from previous research, we also use a variable directly connected to attitudes toward risk, that is, the stake value at which the respondent shifts from being risk lover to risk averse. We can thus integrate our explanatory variables with an element

deriving from the economic analysis of behavior under uncertainty.

Our dependent variable is being a gambler or not (gamblers include those who have gambled in the past). It is, therefore, an indicator variable, which reflects a qualitative rather than a quantitative description of the data. To be included in the regression, it must be represented numerically, which is achieved by defining a variable that takes the value 1 in the case of a gambler and 0 in the case of a non-gambler.

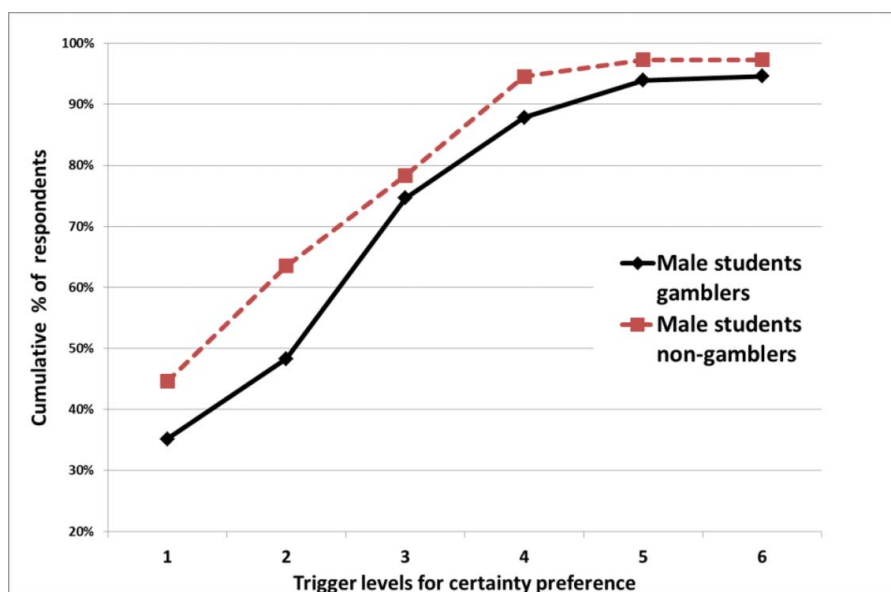


Figure 4. Trigger levels for certainty for male students: Gamblers vs. non-gamblers.

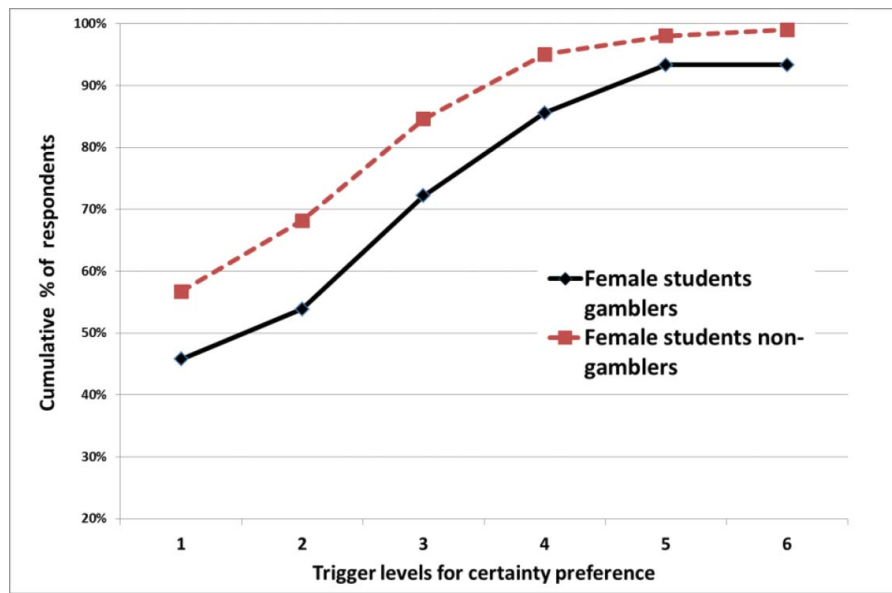


Figure 5. Trigger levels for certainty for female students: Gamblers vs. non-gamblers.

The explanatory variables are *gender, presence of gamblers in the family, the certainty variable, friendship, and solidarity*. A constant is also included among the regressors. The level at which risk aversion starts is a quantitative variable, as explained previously. Friendship and solidarity are quantitative variables, their value being given by the score attributed to it by the respondent on a 0–10 scale, as explained above. Gender is a qualitative variable, which takes the value 0 if the respondent is a female and 1 if the respondent is a male. Being a woman is a benchmark—the coefficient of the variable gender estimating the impact of being a male rather than a female on the probability of being a gambler. The same applies to the family variable, the benchmark being a family without gamblers.

Given the discrete nature of the dependent variable, we use a logistic regression (the results with a *probit* model are, as one would expect, very similar, apart from a scale factor); coefficients estimate the impact of the relevant variable on the probability of being a gambler. Table 7 summarizes the results.

As the results show, the respondents’ gambling behavior can be explained in a way that is consistent with the analysis of the previous sections. All explanatory variables are highly significant. To summarize:

- Gender influences the probability of being a gambler, in that the behavior is positively correlated to being a man.

- In addition, the presence of gamblers in the family increases the probability of becoming a gambler.
- The importance of friendship among values is positively correlated to being a gambler, which should be connected to the fact that their peers often lead university students into the activity. On the contrary, solidarity is negatively related to being a gambler, confirming a trait already pointed at in the literature.

Table 7. Regression results.

| | Coefficient | Std. Error | t-value | t-prob |
|--|-------------------|------------|-------------|--------|
| Constant | 0.728435 | 0.3552 | 2.05 | 0.041 |
| Certainty | 0.127507 | 0.06251 | 2.04 | 0.042 |
| Gender | −1.01209 | 0.1711 | −5.91 | 0.000 |
| Family | 1.11935 | 0.1661 | 6.74 | 0.000 |
| Solidarity | −0.131243 | 0.04886 | −2.69 | 0.007 |
| Friendship | 0.104927 | 0.04307 | 2.44 | 0.015 |
| Log-likelihood | −451.040264 | | | |
| No. of states | 2 | | | |
| No. of observations | | 795 | | |
| No. of parameters | 6 | | | |
| Baseline log-likelihood | −504.6311 | | | |
| Test: Chi2(5) | 107.18 [0.0000]** | | | |
| AIC | 914.080528 | | | |
| AIC/n | 1.14978683 | | | |
| Mean (Y) | 0.669182 | | | |
| Var (Y) | 0.221377 | | | |
| Newton estimation (eps1 = 0.0001; eps2 = 0.005): Strong convergence | | | | |
| | Count | Frequency | Probability | LL |
| State 0 | 263 | 0.33082 | 0.33082 | −255.0 |
| State 1 | 532 | 0.66918 | 0.66918 | −196.0 |
| Total | 795 | 1.00000 | 1.00000 | −451.0 |

- The certainty variable, that is, the value of the stake at which people become risk averse, positively affects the probability of being a gambler, as one would expect. As far as we know, this variable has never been added to personality and sociodemographic factors in explaining differences between gamblers and non-gamblers.

Discussion and implications

In this exploratory study, we have sought to integrate the sociopsychological analysis of gambling behavior with the economic one. In particular, we have found that attitudes toward risk, more precisely the amount at stake at which preference for certainty prevails, contributes to predicting the probability of becoming a gambler.

The results can contribute to improve the understanding of the personal and environmental conditions influencing the development of a propensity to become engaged in gambling. This might have relevance to business and public policy decision making.

Our results confirm the correlation between gender and gambling behavior. Besides replicating the result that men display a higher propensity to gamble than women (the share of gamblers is higher for men than for women; moreover, among gamblers, men play more frequently than women do), we also find that women are more sensitive to the influence of family and friends in inducing both to take up and to give up gambling.

In general, we find evidence on the role of family and friends in inducing both to take up and to give up gambling. Sociality is thus a double-edged factor. It can act as a safeguard against excessive and compulsive gambling, so that the socialization motive could be used to find ways to involve friends and family members in tackling excessive gambling problems, once detected. However, it can also be the way people are led into gambling, because of family or peer induction. It must be noted that the positive role of sociality as a safeguard against problem gambling appears jeopardized in the case of online gambling by its “virtual” character. On the contrary, the negative effect of being introduced into gambling by friends appears very relevant because we find that this is the case for about 50% of Internet gamblers.

In line with the literature on the adverse attitudes toward gambling displayed by gamblers (see, for

instance, Youn et al. 2000), we find that gamblers are aware of the dangers involved in the activity, which is typical of behaviors at the risk of creating an addiction, and would welcome a more restrictive government intervention. Similarly, the state financial stake in the gaming industry is criticized. Also, collecting revenues from taxing games is not considered a valid way of financing public expenditure—a result that casts doubts on the possibility of increasing the acceptability of the state financial stake in the gaming industry by earmarking its proceeds for charity and the like.

Our finding that a relevant share of both gamblers and non-gamblers believe that for some people games represent the only possibility of improving their economic situation call for a cooperation between companies providing gaming services and regulators to fight the risk of problem gambling. In particular, the possibility of winning large amounts of money should not be exaggerated in commercial messages.

The findings have further implications for marketers. The promotion of gambling products may have to differ according to the characteristics of the target, at least in the case of young adults. In particular, attitudes toward risk cannot be neglected in designing advertising campaigns or promotional initiatives in this market segment. Thus, for instance, thrill should be an ingredient of advertisements directed to gamblers. Specific recommendations, however, cannot leave aside the kind of game (De Bonis and Gandolfo 2015). Moreover, in order to make and keep clients faithful customers, attention should be paid to those aspects that make people perceive gambling as dangerous business. Further research is necessary to provide guidance to managers.

Limitations and avenues for further research

This research is based on self-reported data. The literature has raised several criticisms toward self-report surveys (e.g., Lee, Hu, and Toh 2000; Feldman and Lynch 1988; Wind and Lerner 1979). First, participants may not understand their own behavior clearly and/or be unable to convey their understanding. Second, self-report may be subject to bias. For example, Woodside and Wilson (2002) find that consumers often do not truly report their purchases, often reporting purchases that they never made. This is true also

in the case of purchases of gaming services (Lange 2001). In order to avoid false reporting of purchase and/or recall bias, the present study did not look at gambling expenditure.

However, some authors find that self-reporting is more dependable than generally assumed. Extending the general results obtained by Nisbett and Wilson (1977) to the particular case of self-reported gambling behavior, Hodgins and Makarchuk (2003) found that consumers are generally accurate and consistent with reports of their perceptions and behavior.

Moreover, the choice of sending invitations to participate in the survey by e-mail may have lowered the response rate, and ultimately our sample size, because students may have deleted the e-mail message considering it junk mail or spam. Against these disadvantages, however, one should consider the benefits from using online surveys, which have made it a widespread method in academic research: the speed of data collection, the low cost to the researcher, and the immediate access to a broader audience (Llieva, Baron, and Healey 2002). Furthermore, data entry is contextual to the phase of data collection, and data cleaning is not necessary.

A further limitation derives from the exploratory nature of the study, in particular, the size and composition of the sample drawn from students who had taken at least one examination among the courses taught in the Department of Economics and Management of the university. Although several findings confirm and extend results already obtained in the literature, the role of the new determinant of gambling behavior, that is, the *certainty variable*, should be tested in a wider, international context, and extended to other age groups. This would allow to generalize our results and to better understand its significance and role in gambling behavior, as well as its interactions with other factors, such as the gambler's motivational profile.

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