Brochado, A., Santos, M., Oliveira-Brochado, F. & Esperança, J. (2018). Gambling behavior: instant versus traditional lotteries. *Journal of Business Research*. 88, 560-567

Gambling behavior: Instant versus traditional lotteries

ABSTRACT

This study sought to determine the main attributes of the frequency of participation by gamblers in different types of lotteries (i.e., traditional vs. instant). The results are based on a survey of occasional or regular buyers of lottery tickets. The data were collected from 748 voluntary respondents while they were gambling in stores.

The present study used the fuzzy-set qualitative comparative analysis method to examine gambling participation. The research model focused on how gamblers' motivations and demographic and socioeconomic profiles combine to form different configurations affecting gambling activities. The analysis revealed that lotteries should not be treated as a homogeneous product. For instance, instant lotteries are popular among younger individuals, females, and individuals from lower income and educational groups with self-esteem motivations. National lottery gamblers are older and driven by safety motivations. The Euromilhões game attracts males with financial motivations. Therefore, different types of lotteries appeal to heterogeneous demographics and motivations.

Keywords: Gambling fsQCA Survey Lottery Motivation

1. Introduction

The gambling industry has expanded significantly in recent years and attracted increased attention from academia, business managers, and policymakers (Fang & Mowen, 2009). From a policymaking perspective, gambling legalization and regulation have rapidly spread as a way to both reduce illegal gambling and increase tax revenues (Ariyabuddhiphongs, 2011). However, the legalization of gambling by governments has intensified the controversy surrounding gambling's costs and benefits (Lam, 2007). Nonetheless, gambling is still considered a recreational activity that can significantly support national economies despite its various troubling social implications (Fang & Mowen, 2009; Griffiths & Wood, 2001; Vergura & Luceri, 2015).

Gaming services are part of the entertainment sector, in which product and marketing innovations are necessary to adapt and renovate offers to match customers' preferences and remain competitive and attractive (Fang & Mowen, 2009). Strategies have been developed and implemented that encourage consumers to buy lottery tickets, visit casinos, and gamble in various ways (Lam, 2007). Therefore, understanding the participation in and frequency of gambling for different products is of utmost importance to managers seeking to keep up with market needs (Gandolfo & De Bonis, 2015). The sector's structural characteristics (i.e., types of games and places of purchase) differ across countries (Vergura & Luceri, 2015), and the sociocultural characteristics of each population play a crucial role in the development and maintenance of gambling behaviors (Abt, McGurrin, & Smith, 1985). Thus, this field of research must include investigating gambling patterns in specific countries. According to Ariyabuddhiphongs (2011, p. 25), "studies on demographic and psychological characteristics of lottery gamblers … still needed to update [the information on] patterns of behaviors of lottery gamblers."

Previous studies have reported that the impact of socioeconomic variables and motivations vary according to the type of gambling (Welte, Barnes, Wieczorek, Tidwell, & Parker, 2002). Rogers and Webley (2001) claim that the notion that the "typical" national lottery player "could be anybody" has been challenged by the existing studies on lotteries. Thus far, this research has apparently still not considered different types of lotteries offered by the same distribution channel. Most researchers have studied the gambling behaviors of lottery players in aggregate on a regional level (e.g., a study in Portugal by Kaizeler, Faustino, & Marques, 2014), or attempted to compare lotteries with other skill games (e.g., Gandolfo & de Bonis, 2015). These approaches do not consider the individual motivations of lottery consumers.

The present study focused on the specific European country of Portugal. Lotteries are extremely popular in Portugal. They have registered fast sales growth that were around €2775.2 billion in 2016, which was more than double the sales figures for 2010 (Santa Casa Misericórdia de Lisboa [SCML], 2017). One of the more interesting phenomena in the Portuguese market is the increased interest in instant lotteries (compared to traditional lotteries) in which players find out immediately whether they have won. Instant lotteries represented only 7.6% of the market in 2010 but accounted for 49% of total sales in 2016.

The present study sought to provide a deeper understanding of the typical behaviors in lotteries by studying the consumption patterns of both traditional and instant lotteries. This research contributed to the existing literature by examining whether demographic, socioeconomic, and motivational data are linked to different types of lotteries (i.e., traditional vs. instant) offered by the same type of retail outlet (i.e., omine) and promoted by the same agency.

The structure of this paper is as follows. The literature review provides an overview of the theoretical and empirical studies of lottery gambling. The data collection and analysis procedures are described next. Then, the results section discusses the major findings for each lottery product. The study's conclusions and theoretical and managerial implications are presented in the last section.

2. Literature review

The following subsection provides an overview of the main theories of gambling. This subsection discusses the correlates of gambling activities, with a specific focus on lotteries.

2.1. Theories of gambling

Lotteries have two distinctive features: an extremely low probability of winning and a high but rare return. This results in a low payout ratio. Despite this expected loss, individuals continue to buy lottery tickets. The recent literature on lottery gambling provides three tentative explanations of this behavior (Ariyabuddhiphongs, 2011). First, people may not behave rationally while gambling (Sevigny & Ladoucer, 2003). Second, lottery gambling may be done for fun. Last, lotteries may be so common that they are not viewed as a vice or form of gambling (Lange, 2001). They have instead become a leisure activity and refuge for women from a sense of alienation (Casey, 2006), a forum providing social support for older adults (Vander Bilt, Dodge, Pandav, Shaffer, & Ganguli, 2004), and a general social and recreational activity (McNeilly & Burke, 2001).

The main theories of lottery gambling are the cognitive theory of gambling, the theory of judgment under uncertainty, and the theory of demand for gambles (Ariyabuddhiphongs, 2011). The first, cognitive-based theory is the most comprehensive and popular model of gambling (Rogers, 1998). It emphasizes gamblers' faulty or flawed reasoning at different stages of their activities. That is, gamblers behave as if they can control the outcome of unpredictable events and/or think that an event is more predictable than it actually is (Miyazaki, Brumbaugh, & Sprott, 2001). These erroneous beliefs have been discussed thoroughly by a number of authors. Gamblers' beliefs are often used by researchers to explain gambling motivations and describe behaviors, such as why individuals gamble despite losses (Miyazaki et al., 2001; Rogers, 1998). The main types of cognitive distortions are entrapment, the gamblers' fallacy, and the near miss or failure that comes close to winning (Rogers, 1998). All of these have been found to influence gambling frequency and the volume of lottery gambling (Ariyabuddhiphongs & Phengphol, 2008). Another cognitive distortion is a belief in "hot" and "cold" numbers, including those perceived as being drawn with regularity (i.e., hot) versus those that have seldom been drawn in recent games (i.e., cold) (Rogers, 1998). Other distortions are unrealistic optimism or perceived luckiness (Gibson & Sanbonmatsu, 2004), superstitious beliefs that increase involvement in lottery gambling (Ariyabuddhiphongs & Chanchalermporn, 2007), illusions of control, and the roll-over effect (Forrest, Gulley, & Simmons, 2008).

The second model is the theory of judgment under uncertainty (Tversky & Kahneman, 1981). It explains lottery participation in terms of gamblers' perceptions of patterns of numbers and probabilities of winning. This theory suggests that lottery gamblers use different heuristics (mental shortcuts that usually involve focusing on one aspect of a complex problem and ignoring others) to select their lottery numbers. Some of the heuristics used by gamblers are representative- ness, availability, framing of decisions, and anchoring and adjustment (McMullan & Miller, 2009).

The last model is the theory of demand for gambles. It is based on the premise that individuals gamble to obtain potential income that they do not have to work to get, thus adding to the utility of winning the belief that costs are saved by not having to work to earn that ad- ditional income (Nyman, Welte, & Dowd, 2008). This theory suggests that gambling should be particularly appealing to economically vul- nerable people. This consequently lays a disproportionate burden of paying gambling taxes on those who are the most disadvantaged and vulnerable in the job market.

2.2. Empirical research on gambling

Studies of gambling correlates vary according to their research context (e.g., target countries and games), level of analysis (i.e., macro or micro), statistical methods, measures of gambling activity and in- volvement, and correlates of gambling activity. Several countries have been analyzed in previous studies of lotteries, such as the United States (Horváth & Paap, 2012; Lam, 2007; Welte et al., 2002), Australia (Layton & Worthington, 1999), the United Kingdom (Casey, 2006; Coups, Haddock, & Webley, 1998; Forrest & Gulley, 2009), Portugal (Kaizeler et al., 2014), Thailand (Ariyabuddhiphongs, 2006), Italy (Bastiani et al., 2013), and China (Zhou & Zhang, 2017). With respect to the level of analysis, some studies have analyzed macro data (Blalock, Just, & Simon, 2007; Forrest & Gulley, 2009; Kaizeler et al., 2014), while others have focused on micro data (Casey, 2006; Forrest & Gulley, 2009; Layton & Worthington, 1999; Welte et al., 2002). Macro data research has examined gambling correlates at the national or regional level (e.g., Kaizeler et al., 2014).

A broad number of gambling products have been covered by pre- vious studies. Layton and Worthington (1999) researched lotteries, the lotto and instant lotto, Totalisator Agency Board racecourse betting, poker machines, and casino-type games. Welte et al. (2002) analyzed 15 different games. Forrest and Gulley (2009) examined national lot- teries. Lam (2007) focused on six types of games (lottery, bingo, racing, casino, charitable and card rooms) and different scenarios (private, store, bar, restaurant, and unlicensed gambling). Barnes, Welte, Tidwell, and Hoffman (2011) studied lottery products including instant scratch-off tickets. Gandolfo and De Bonis (2015) researched skill and luck games. Vergura and Luceri (2015) investigated lottery, lotto, bingo, sports betting, slot machines, horse racing poker, and football pools, while Zhou and Zhang (2017) studied sports lotteries. The results have been presented and models were estimated for specific types of games (Lam, 2007) or at an aggregate level (Vergura & Luceri, 2015). Different variables of gambling activities have been considered, such as the likelihood to gamble (Layton & Worthington, 1999; Welte et al., 2002), frequency (Barnes et al., 2011; Welte et al., 2002), ex- penditures (Forrest & Gulley, 2009; Horváth & Paap, 2012; Kaizeler et al., 2014; Vergura & Luceri, 2015), and wins and/or losses (Welte et al., 2002).

The statistical methods applied correspond to the speci- fications of the dependent variable, including correlation analysis (Coups et al., 1998), regression analysis (Forrest & Gulley, 2009; Kaizeler et al., 2014; Lam, 2007; Vergura & Luceri, 2015), probit re- gressions (Forrest & Gulley, 2009), negative binomial regressions (Barnes et al., 2011), logistic regressions (Layton & Worthington, 1999), and covariance analysis (Welte et al., 2002). Empirical research on gambling has been based on various frameworks using psychological variables (e.g., motivations) and demographic variables, including gender, age, education, and socioeconomic status (Ariyabuddhiphongs, 2011).

Previous findings have shown equal rates of participation in lot- teries across genders (Barnes et al., 2011; Welte et al., 2002). None- theless, males gamble more frequently (Barnes et al., 2011) and spend larger amounts (Forrest & Gulley, 2009; Welte et al., 2002). Men are more likely to engage in skill games, while women tend to have a higher preference for games of chance (Ariyabuddhiphongs, 2006). However, Kaizeler et al. (2014) found that this gender-based difference does not appear in lottery sales at the district level.

For Welte et al. (2002), the percentage of those betting on lotteries appears to decrease with age, but the opposite happens regarding the mean amount of individual involvement as measured by expenditures. However, other studies have shown that adults are more likely to gamble than young people up to their 70s (Barnes et al., 2011). A po- sitive relationship has also been found between playing and age (Lam, 2007; Layton & Worthington, 1999), and some results show that gam- bling frequency increases with age (Lam, 2007). Kaizeler et al. (2014) concluded that regions with a higher percentage of their population between 15 and 24 years old exhibit a relatively lower level of lottery expenditures.

The frequency of gambling (Coups et al., 1998; Forrest & Gulley, 2009; Lam, 2007) and level of expenditures (e.g., Forrest & Gulley, 2009; Lam, 2007; Vergura & Luceri, 2015) appear to be negatively correlated with education. An international comparison study found that countries with higher levels of education show less interest in lottery products (Kaizeler & Faustino, 2008). The same conclusion was drawn after comparisons of different regions within the same country (Kaizeler et al., 2014).

However, some researchers have observed a general tendency for the gambling participation rate to increase as socioeconomic status rises, although this appears not to be true for lotteries (Ariyabuddhiphongs, 2006). Overall, the lowest socioeconomic groups seem to gamble more intensely on lotteries, and the frequency and in- volvement with lottery play declines as socioeconomic status improves (Welte et al., 2002). Ariyabuddhiphongs's (2006) study revealed that around two-thirds of lottery gamblers are in a low-income bracket. An inverted u-shape relationship has been found between per capita gross domestic product and per capita sales of lottery products both at the national (Kaizeler & Faustino, 2008) and regional levels (e.g., Kaizeler et al., 2014). In addition, a negative correlation with income was found by both Ariyabuddhiphongs (2006) and Herring and Bledsoe (1994).

At the regional level, Kaizeler et al. (2014) confirmed that higher lottery sales are associated with a higher proportion of district Catholic marriages. In addition, Horváth and Paap (2012) examined the effects of financial and economic crises on gambling activities using time series analyses. The results indicate that the only gambling sector that is re- cession proof is lotteries.

Earning a monetary prize is not the only motive for gambling. Based on the literature, five broad functional motives for gambling have been identified. The first is monetary reasons, such as winning money, prizes, and/or rewards (Ariyabuddhiphongs & Chanchalermporn, 2007; Clarke, 2005; Francis, Dowling, Jackson, & Christensen, 2015; Gibson & Sanbonmatsu, 2004; Lam, 2007). The second motive is social. Gambling is a way to be with friends, socialize with other people, or gain affec- tion, social validation and enhancement (Coups et al., 1998; Francis et al., 2015; Rogers,

1998). The last three motives are coping and/or escaping (Loroz, 2004; Neighbors, Lostutter, Cronce, & Larimer, 2002), recreation (i.e., fun, positive feelings, amusement, and/or relaxation) (Francis et al., 2015; Miyazaki, Langenderfer, & Sprott, 1999; Neighbors et al., 2002), and enhancement (i.e., challenges, learning, knowledge, self-esteem, and/or excitement) (Francis et al., 2015). Gambling motivations appear to vary according to the regularity of gambling and the preferred gambling activity (Clarke, 2004, 2005; Fang & Mowen, 2009; Francis et al., 2015; Lam, 2007).

In the case of luck games, Gandolfo and De Bonis (2015) concluded that the most important motivations are winning money, entertainment and/or excitement. Francis et al. (2015) assert that money is the most important motivation to play lotteries. Lam (2007) examined nine different forms of gambling and found that excitement and money were the primary motivations for playing the lottery.

Thus, previous studies have reported that the influences of motivations and demographic and socioeconomic variables on gambling behaviors vary according to the type of gambling (Francis et al., 2015; Welte et al., 2002). Based on this conclusion, the following proposition was defined for the present study:

P: *A few specific sociodemographic and motivational combinations correlate with high-frequency gambling in different types of lotteries* (i.e., *traditional* vs. *instant lotteries*).

3. Methodology

3.1. Research context

Gambling activities in Portugal are highly legislated and heavily regulated. Gambling operations are entirely dependent upon government-issued authorizations. Only the government may directly operate gambling activities or entrust their management to a third party according to specific legislation. This can take the form of conceding dealerships to private entities through administrative contracts (Governo de Portugal, 2005).

Games of chance are those in which the outcome is uncertain since it depends exclusively on luck. The Portuguese government has legalized seven different games of chance, each subject to different legislation and regulations. These are (1) chance games in casinos; (2) bingo and keno; (3) lotteries, parimutuel betting, and other social games; (4) parimutuel betting on horse racing; (5) other types of games of chance (i.e., rames, draws, publicity competitions, and trivia contests and pastimes); and (6) automatic, mechanical, electrical, and electronic fun machines. A seventh, more recent type of legalized gambling is on-line gambling (Governo de Portugal, 2005).

An example of third-party gambling operations is social games. These differ from other types of gambling in that the activities' objective is to generate revenue to finance the social welfare activities of the SCML and numerous other institutions and activities that benefit communities. Social games in Portugal are exclusively administered and managed by the SCML through the Jogos Santa Casa (Santa Casa Games). By means of a statutory authority set up inside the SCML, the institution channels the public's demand for gambling towards the government's legalized offerings, thereby ensuring responsible gaming practices and giving back to society what individuals spend on gambling. This is done either through prizes or the distribution of net results to a wide range of beneficiaries running social welfare, healthcare, sports, and cultural activities (SCML, 2016).

In 2015, the games registered €2.24 billion in gross sales. Of these revenues, approximately 97% of the Jogos Santa Casa's gross sales were redistributed to the Portuguese society in the form of prizes, fees paid by gamblers to mediators, stamp duties, financial support of charitable causes, sponsorships, and investments in campaigns to promote legal and responsible gaming (SCML, 2016). Of the games offered by the SCML in 2015, the present study focused on the Euromilhões (Euromillions), *lotarias* (traditional national lotteries) and *raspadinhas* (instant scratch-off card lotteries). These three games represented 87% of the Jogos Santa Casa's gross sales.

Euromilhões is a transnational lottery in which the players select 5 main numbers from 1 to 50 and 2 different "lucky star" numbers from a pool of 11 numbers. Euromilhões draws are held twice a week on Tuesdays and Fridays. Lotarias involve the selection of numbered tickets to participate in number draws. The "traditional" lottery is drawn every Monday and the "people's" lottery is drawn every Thursday.

Raspadinhas is an instant lottery in which players scratch-off cards on which appear combinations of numbers, symbols, and/or characters determining prizes. Players immediately find out whether they have won. Raspadinhas are becoming increasingly popular. In 2010, Euromilhões's revenues were 63.9% and raspadinhas were 7.6% of gross gambling sales. In 2016, the percentages changed to 49.0% and 29.2%, respectively. The present paper focused on Euromilhões, lotarias, and raspadinhas, as these traditional and instant lotteries account for approximately 80% of the gambling market in Portugal (SCML, 2015).

3.2. Focus group

Two focus groups with a total of eight regular gamblers were formed in order to identify motivations for gambling in lotteries. Participants were recruited from the non-academic staff of a university located in Lisbon, Portugal. All participants had gambled at least once with one gambling product during the previous two months. In each group, half of the participants were male and half were female. In addition, half of each group had not earned a university degree.

Each focus group lasted for 45 min, and they were moderated by a member of the research team. The interview guide comprised two sections. First, participants were asked to recall their gambling behavior in lotteries over the last two months (i.e., types of games and frequency). Second, participants were asked to identify the general population's main motivations to gamble in lotteries. In the introduction to the sessions, the researcher mentioned the main motive for participating in luck games (i.e., money) highlighted in Gandolfo and De Bonis's (2015) study. The ensuing discussion elicited the following motivations in both focus groups: buy a car, enjoy intellectual challenges, pay debts, help family in need, buy a house, save money, gain status, and travel.

3.3. Survey

A self-administered, close-ended questionnaire was then developed and distributed to gamblers on-site at three main points of sale of the Jogos Santa Casa in three different cities: Lisbon, Oporto, and Braga. These three cities are among the cities registering the highest figures for gambling retailers and sales in Portugal. This meant that the data were collected while the respondents were gambling, ensuring that they were at least occasional

players of one of the games. Therefore, this study employed a non-probabilistic convenience sampling procedure.

The structure of the survey was as follows. Respondents were first asked to provide information about the games they play, their frequency of gambling, and their gambling expenses in a regular or jackpot week. Frequency was measured using an ordinal scale with the following categories for traditional lotteries: "Don't play," "Occasionally play," "Play monthly," "Play weekly," and "Play twice a week." The option of "Play daily" was added for instant lotteries. Participants were then asked to select their main motivations to gamble using the eight items obtained from the focus groups, based on an importance scale ranging from 1 = "Not important" to 5 = "Extremely important." Last, respondents were asked to provide sociodemographic and economic data such as gender, marital status, education, income, likelihood to save, and benchmarks of their financial situation.

3.4. FsQCA

This study employs fuzzy-set qualitative comparative analysis (fsQCA) to conduct set-theoretical analysis of the causal conditions that lead to gambling behaviors (Ragin, 2008). The basic assumption underlying fsQCA is that cases can be described as configurations of conditions and outcomes. FsQCA models assess causation by assuming that combinations of diverse causal conditions are linked with specific outcomes, thereby facilitating the detection of multiple causal paths. The links between diverse combinations of causal conditions and outcomes are represented by sufficient and necessary conditions (Schneider, Schulze-Bentrop, & Paunescu, 2010).

FsQCA uses Boolean algebra and algorithms to reduce a large number of complex causal conditions to a small set of configurations that lead to specific outcomes. FsQCA proceeds in three main steps. First, all variables are calibrated into fuzzy variables and transformed into sets. This produces a truth table comprising all possible combinations. In the second step, the number of rows is reduced according to whether each solution has the minimum consistency level (in this case, 0.90).

In the third step, an algorithm based on Boolean algebra is used to further reduce the truth table rows into simplified combinations based on logic. Then, FsQCA produces a complex solution, a parsimonious solution, and an intermediate solution. The intermediate solution was considered the most viable for the present research, as it had been cited in previous studies (Fiss, 2011; Santos, Brochado, & Esperança, 2016; Schneider et al., 2010). Rihoux and Ragin (2009) argue that generally the intermediate solution is superior. It offers more benefits than the complex and parsimonious solutions do, especially the benefit of preventing the removal of necessary conditions.

Another of fsQCA's outputs (the consistency index), assesses the degree to which cases share a simple or complex configuration in displaying the outcome condition (Woodside, Prentice, & Larsen, 2015). The calibration from the original scores to fuzzy-set values requires external information to assess each variable's degree of membership (Fiss, 2011; Schneider et al., 2010). The endpoints are 0.00 for full non-membership and 1.00 for full membership. Three breakpoints are defined based on external information as follows: (1) 0.05 for the threshold of full non-membership, (2) 0.50 for the crossover point or maximum ambiguity and (3) 0.95 for the threshold for full membership (Woodside et al., 2015).

The final calibrated scores for ordinal and scale variables consider the 0.05 percentile, the median, and the 0.95 percentile. One exception to this is the items of five-point scale evaluations by consumers that have been calibrated as 1.00 for full non-membership that were based on the gamblers' evaluation of their motivations. The crossover point was an evaluation equal to 3 (which was the neutral point), and full membership was 5. Nominal variables (i.e., gender and marital status) were calibrated (e.g., 1, 0.5, and 0). The calibration of outcomes and conditions is presented in Tables 1 and 2 below.

4. Results

4.1. Sample profile

The data were collected from 748 voluntary respondents who were mainly males with an average age of 44 years old. About half the respondents were married or cohabitating. Regarding education, 62% had at least a high school diploma. The largest income group of the respondents (41%) was those reporting monthly earnings between €751 and €1500.

The eight gambling motivations identified were subjected to factorial analysis. The Kaiser-Meyer-Olkin statistic (0.741) and the results of Bartlett's test ($x2 = 1188.903$; $p = 0.000$) confirmed the sampling's adequacy for the gambling motivations under analysis. The analysis also revealed the existence of three factors with eigenvalues higher than 1, which together explain 80.133% of the total variance.

The first factor includes the motivations to buy a car, buy a home, and pay off debt. This factor was termed "financial motivations." The second factor encompasses the motivations to increase savings and help family. Therefore, this factor was labelled "safety motivations." The third factor comprises the motivations to experience challenges, travel, and increase status, thus representing "self-esteem motivations."

Table 1
Sample profile and calibration of conditions.

Variable	Description/code	N	%	Calibrations (0.95, 0.50, 0.05)
Gender	Female [0]	276	36.9%	(1, 0.5, 0)
	Male [1]	472	63.1%	
Age (mean, standard deviation)		44.3	15.3	(71, 43, 23)
Residence	Lisbon	382	51.1%	
	Oporto	202	27.0%	n.a.
	Braga	164	21.9%	
Marital status	Married [1]	384	51.3%	
	Single [0]	204	27.3%	(1, 0.5, 0)
	Divorced/widow (er)ed [0]	160	21.4%	
Education	Less than high school [1]	288	38.5%	
	High school degree [2]	242	32.4%	(3, 2, 1)
	University degree [3]	218	29.1%	
Monthly income	€500 [1]	92	12.3%	(6, 3, 1)
	€501–750 [2]	138	18.4%	
	€751–1000 [3]	152	20.3%	
	€1001–1500 [4]	154	20.6%	
	€1501–2500 [5]	142	19.0%	
	> €2500 [6]	70	9.4%	
Variation in household income over last two years	Worse [1]	346	46.3%	(3, 2, 1)
	Equal [2]	298	39.8%	
	Better [3]	104	13.9%	
Likelihood to save in the next year	Low [1]	329	44.0%	
	Medium [2]	303	40.5%	(3, 2, 1)
	High [3]	116	15.5%	
F1. Safety needs (mean, standard deviation)		3.85	1.08	(5, 3, 1)
F2. Financial needs (mean, standard deviation)		3.25	1.11	(5, 3, 1)
F3. Esteem needs (mean, standard deviation)		2.63	1.19	(5, 3, 1)

Note. N = number.

Table 3
Results of intermediate solutions (Euromilhões).

	1	2	3	4	5	6
Male	●	○	●	●	●	○
Age		●	○	●	○	
Married		●			○	
Education	○	○	○		●	●
Income	○	○	○	○	●	●
Household income (last two years)		○	○	○	○	●
Likelihood to save (next year)			○	○		●
Financial motivations	●		●	●	●	
Safety motivations		●	●		●	
Self-esteem motivations			●		○	●
Raw coverage	0.287	0.175	0.148	0.167	0.149	0.126
Unique coverage	0.027	0.048	0.033	0.045	0.044	0.038
Consistency	0.898	0.901	0.924	0.923	0.944	0.967

Solution coverage: 0.636; solution consistency: 0.799.

4.2. Findings on high-frequency gambling

The data analysis started with testing whether any causal condition could be considered a necessary condition of the three outcomes under analysis. Conventionally, a condition is defined as necessary if the consistency measure exceeds the threshold of 0.90 (Schneider et al., 2010). In the present study, this score revealed that all the causal conditions and their negations were necessary in order to account for.

The three factors were expected to satisfy the construct validity criteria since they were obtained from the focus groups on actual gamblers' motivations for playing the lottery. The factors identified were in agreement with the findings of previous studies on lottery motivations, including gambling for money (Francis et al., 2015; Lam, 2007), self-esteem and/or challenges (Fang & Mowen, 2009). The average weight of the items that make up each factor was higher for safety needs, followed by financial needs and then self-esteem needs.

Euromilhões is the most popular form of gambling for the sample, followed by raspadinhas and lotarias. The game played with the highest frequency is raspadinhas, which 14.2% of the sample played on a daily basis. Raspadinhas offer consumers an immediate result every time they gamble. These three games were retained for further analysis. Approximately 42.5% of the players only played one game, and the remaining were multiple game players. Most of the latter (26.2%) played two games, while 15.5% participated in three games, 6.1% four, 4.0% five, and 2.4% six.

The safety motivation is a sufficient condition for the outcome of high-frequency lotaria gambling (consistency = 0.84) and Euromilhões gambling (consistency = 0.83). The self-esteem motivation is a sufficient condition for the outcome of high-frequency raspadinhas gambling (consistency = 0.76). All the consistency values registered above the minimum threshold of 0.75 (Mas-Verdú, Ribeiro-Soriano, & Roig-Tierno, 2015).

Next, the analysis identified the combinations of demographic, socioeconomic, and motivational variables that lead to high-frequency Euromilhões gambling. The results for the different solutions for Euromilhões gambling have good consistency and solution coverage. Table 3 shows six intermediate solutions that predict high levels of gambling. For example, Solution 1 indicates that being male with low education and income and having financial motivations leads to high-frequency gambling. The majority of these solutions consist of males with lower incomes who have experienced a decrease in their household income during the last two years and who are driven by financial motivations.

Table 4 contains the intermediate solutions for high-frequency gambling in lotarias. The results also exhibit good consistency and solution coverage. Most of the solutions include elderly gamblers with lower incomes who are motivated by safety issues. Males are included in four of the six solutions. The two solutions that include females are linked also with older consumers motivated by safety reasons.

Most of the solutions show that being younger and female, having lower income and education, and being motivated by self-esteem reasons lead to high-frequency raspadinha gambling. In the two configurations that include males, either financial or safety motivations are involved instead of self-esteem motivations (see Table 5).

Table 2
Frequency of gambling by product and calibration of outcomes.

Game	% (total)						Calibration
	Don't play [1]	Occasionally [2]	Monthly [3]	Weekly [4]	Twice a week [5]	Daily [6]	(0.95, 0.50, 0.05)
Euromilhões	22.19%	4.81%	4.01%	36.10%	32.89%		(1, 3, 5)
Raspadinhas	53.74%	6.68%	2.94%	15.51%	6.95%	14.17%	(1, 2, 6)
Lotarias	71.12%	2.41%	3.48%	17.65%	5.35%		(1, 2, 5)

Table 4
Results of intermediate solutions (lotaria).

	1	2	3	4	5	6
Male	●	●	●	○	○	●
Age	●		●	●	●	
Married		●			○	●
Education	○	●	○	●	○	
Income	○	●	○	●	○	○
Household income (last two years)	○		○			
Likelihood to save (next year)	○		○			●
Financial motivations			●		●	●
Safety motivations	●	●		●	●	
Self-esteem motivations					○	
Raw coverage	0.221	0.184	0.172	0.167	0.149	0.146
Unique coverage	0.027	0.048	0.033	0.045	0.044	0.038
Consistency	0.974	0.975	0.988	0.923	0.944	0.967

Solution coverage: 0.656; solution consistency: 0.933.

Table 5
Results of intermediate solutions (raspadinhas).

	1	2	3	4	5	6
Male	●	○	○	○	●	○
Age			○	●	○	○
Married						●
Education	●	○	○	○	●	○
Income		○	○			
Household income (last two years)	○	○	○		○	
Likelihood to save (next year)	○	○			○	
Financial motivations			●		●	
Safety motivations	●		●			●
Self-esteem motivations		●	●	●		●
Raw coverage	0.221	0.184	0.172	0.167	0.149	0.118
Unique coverage	0.017	0.028	0.034	0.011	0.020	0.032
Consistency	0.979	0.975	0.932	0.912	0.903	0.900

Solution coverage: 0.545; solution consistency: 0.960.

Thus, the research proposition was verified by the results. The empirical data support the conclusion that a few specific socio- demographic and motivational combinations correlate with high-frequency gambling in different types of lotteries (i.e., traditional vs. in- stant lotteries).

5. Discussion and conclusions

This study investigated whether motivations and demographic and socioeconomic profiles are linked with different types of lotteries of- fered by the same type of retail outlet (i.e., online) and promoted by the same agency. The fsQCA method was employed to examine gamblers' frequency of participation. The research model focused on how gam- blers' motivations and demographic and socioeconomic profiles com- bine to form different configurations affecting gambling activities.

The results reveal that being male is linked with playing the Euromilhões and lotarias. Females are more likely to play raspadinhas. Thus, these findings that indicate that males are strongly involved in traditional games (such as Euromilhões and lotarias) are in accordance with previous studies (Barnes et al., 2011; Forrest & Gulley, 2009). The present study also offers new findings since the results show that ras- padinhas (an instant lottery game) appeals more to females. Kaizeler et al. (2014) concluded that gender data are not statistically significant enough to explain gambling expenditures across different regions in Portugal. Therefore, this previous result is challenged by the present research's findings, which include the different types of games played. In terms of age, elderly players are linked with lotarias, which confirms Kaizeler et al.'s (2014) and Lam's (2007) results. However, the same conclusion does not hold for raspadinhas, where high-frequency playing of this game is linked with younger people. Regarding educa- tion levels, no dominant path was found for lotaria gambling, but lower education levels are linked with raspadinhas. In general, the findings provide support for the negative relationship between education and gambling in lotteries that were reported in the literature (Coups et al., 1998; Forrest & Gulley, 2009; Kaizeler et al., 2014; Lam, 2007; Vergura & Luceri, 2015). With respect to income, consumers with lower incomes are more likely to play raspadinhas with greater frequency. These findings agree with Ariyabuddhiphongs's (2006) and Herring's and Bledsoe's (1994) results.

In terms of motivations, Euromilhões is mainly associated with financial motivations, while lotaria players' frequency is linked with safety needs. Raspadinha play is connected with self-esteem and safety motivations. These results are in accordance with the findings reported by Francis et al. (2015), Gandolfo and De Bonis (2015), and Lam (2007),

who found that money motivations are satisfied by lottery products. Moreover, instant lotteries such as raspadinhas appear to be associated with seeking challenges and excitement.

Regarding specific configurations, older players are linked with financial motivations (i.e., Euromilhões), whereas younger gamblers and self-esteem motivations are more closely connected (i.e., raspadinhas). These results match Francis et al.'s (2015) findings for gambling in general. They stated that gamblers in the age group of 35–55 years old are driven by financial motivations, and gamblers aged 18–34 years old present relatively higher scores for challenge motivations. In the specific case of raspadinhas, the present study found that four combinations indicate that females are also linked with self-esteem motivations. For this game, combinations that include males are associated most often with financial and safety motivations.

5.1. Theoretical contributions

This study sought to determine the main combinations of factors that lead to high-frequency gambling activities for different games of chance. The results reveal that different mixtures of motivations and demographic and socioeconomic variables contribute to players gambling more often with the Euromilhões, lotarias, and raspadinhas. Moreover, combinations of causal conditions vary across different types of games.

This research thus extended the existing literature by studying different games of chance offered by the same distribution channel (i.e., omine) instead of treating all lotteries as one generic type of game (Gandolfo & De Bonis, 2015). The present results are of value to academia since the findings highlight the heterogeneity of gambling combinations across different gambling products.

While Woodside et al. (2015) applied fsQCA to studying casino gambling behaviors, the present study added to the previous research from a methodological perspective by using fsQCA to study consumer behaviors in a different gambling context (lottery playing). Based on micro data instead of using aggregate data (as in Kaizeler et al., 2014), the present research's findings offer a different understanding of lottery consumption in Portugal. Thus, past results on the typical profile of lottery players are challenged by considering new types of games launched in the market (e.g., raspadinhas). In addition, micro level data facilitates including demographics and socioeconomic variables and also motivational data. Therefore, this study makes an important contribution by identifying the different profiles of traditional versus instant lottery players.

5.2. Managerial implications

This study identified combinations of sociodemographic and motivational variables that can lead to higher participation in three lotteries in Portugal. These results are of significant value to the entertainment industry since they help identify the motivations of different profiles of gamblers. This could guide the development of new products to match gamblers' motivations, thereby promoting their participation.

The different causal combinations for the three games under study call for different promotion strategies. Since each game appears to appeal to different player profiles, product innovation in this sector could be a good way to increase sales. Instant lotteries (which have registered the highest revenue growth) seem to appeal to a different gambler profile than Euromilhões and national lottery players. Moreover, the results reveal both inter-heterogeneity and intra-heterogeneity between groups. Therefore, in order to increase lottery sales, continuous product innovation and promotion strategies are needed to appeal to different market segments.

5.3. Limitations and avenues for future research

This study also has limitations. Since the data were collected in retail stores, the respondents were occasional or regular gamblers. Due to this nonprobabilistic convenience sampling procedure, concerns about selection bias need to be highlighted, since some individuals who do not gamble have the same sociodemographic characteristics. The results of the fsQCA analysis of participation patterns thus preclude studying the correlates of non-gamblers of the selected games of chance, and the results are conditional on the respondents playing one game at least occasionally. In addition, the behavior of those who buy lottery products online was not studied.

In terms of variables considered by future studies, for greater parsimony, social class could be used instead of separately considering income, education, and occupational data. Studying gambling motivattions for males and females regarding different lottery products also merits further research. Finally, the present study focused on frequency data, whereas future studies could follow a more holistic approach by considering participation, frequency, and expenditures as outcomes.

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