Experiencing a significant win and its socio-demographic and motivational
predictors: A comparative analysis between pure-chance gamblers from Poland
and France

Short title: Experiencing a significant win among pure-chance gamblers from Poland and France

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23 **Abstract**

24 The research on the relationship between wins and gambling behaviour most often
25 focuses on winning considerably large amounts of money. It seems, however, that it is not the
26 amount of the win that exerts a decisive influence on gambling behaviour but the significance
27 that the player assigns to the win. Therefore, we adopted the concept of “significant win”, a win
28 perceived by gamblers as important to them. The research aimed to discover what kind of wins
29 are experienced as significant and what factors explain experiencing wins as significant. The
30 research conducted in Poland (N = 3,143) and France (N = 5,692) also had a comparative goal:
31 discovering intercultural differences in experiencing significant wins. The computer-assisted web
32 survey was conducted among gamblers engaging in pure-chance gambling, selected from
33 representative samples in both countries. Logistic regression models were used to examine
34 predictors of significant win experience in both countries and cross-countries differences
35 between them. The results demonstrated that Polish gamblers more frequently considered wins
36 significant when accompanied by strong, often negative emotions and were objectively higher
37 than French gamblers. A significant win was more frequently associated with a positive
38 experience in the view of French gamblers. The common predictors of a significant win
39 experience in both countries were: being in debt, experiencing the win of a close person,
40 gambling in a game of pure chance other than lotteries, more systematic pursuit of gambling,
41 enhancement and coping gambling motivations. The age of the initiation into gambling was a
42 significant predictor only in the French sample, while financial motivation – in the Polish one.
43 The results confirmed that the subjective perception of gambling wins is only partially related to
44 the amounts of wins, which has practical implications for planning prophylactic strategies.

45 **Introduction**

46 Winning at gambling seems to be the main incentive to gamble, and gambling is
47 undoubtedly associated with money. According to some authors, a financial reward or the hope
48 of it is the main factor that makes gambling attractive [1,2]. The importance of financial winning
49 in gambling has been discussed for years, and, at the same time, there is a noticeable difficulty in
50 precisely defining the framework of winning, in which it begins to have a significant impact on

the involvement in the game. However, it is noticeable that the gamblers individually experience winnings, and the gamblers who have won a small amount may also consider themselves the winner [3,4]. Nevertheless, the scientific literature focuses mainly on the so-called “big win”, defined differently depending on the author. The so-called big winners (most often lottery amateurs) to whom press materials are devoted and the attention of private companies offering them support in managing their winnings. In Poland, state-owned gambling operator Totalizator Sportowy (TS) keeps records of paid winnings, the value of which is at least PLN 2,280; however, the winner’s personal data is protected [5]. The personal data of the winner is also protected in France [6]. The research on winning focuses on several main issues. One of them is the influence of winning on the quality of life of the winner (in various aspects), as well as on her or his environment; another is the association of winning with gambling-related harm and problem gambling; the last is the relationship between cognitive distortions and the experience of winning.

The results regarding the impact of winning gambling on the winner’s quality of life are not conclusive. Researchers pointed to an increase in the quality of life after a significant win [7,8] as well as to the lack of this effect [9]. Winners keep their jobs more often, especially when the job is important and satisfactory for them; some limit it or allow themselves to take longer unpaid leave; unskilled people have more significant tendencies to leave their jobs [10–13]. Very interesting conclusions can be drawn from the research of Agarwal et al. [14]. They showed that a high win by a resident in a neighbourhood was associated with an increase of financial problems of neighbours in the following years after this event (which may result, among others, from increased consumption or taking loans). The experience of someone else’s victory is also a significant factor that intensifies the willingness of witnesses to gamble [15]. Furthermore,

observing a third party winning in laboratory conditions led to taking more risks in placing bets [16]. Martinez et al. [17] showed that it is not just watching a win, but the belief that a winner was influential in achieving the win, that increases risk-taking in the game.

When it comes to researching the link between the win-lose experience and gambling addiction, neurobiological research has made a significant contribution to understanding this relationship. For example, Hollander et al. [18] showed increased limbic and sensory activation in response to a blackjack game with a cash prize compared with a game with a token point reward. In experimental studies by Dixon et al. [19], it was shown that among pathological gamblers playing the random machine simulator, there was a neuronal activation in the dopamine pathway in response to a significant win, and not in response to small wins, which also confirms the existence of a “dose effect” with gambling analogous to that of medicinal substances. In addition, a winning situation causes a significant increase in skin conductivity, the effect of which is absent in a lost situation [20]. Lole and Gonsalvez [21] describe the significant phenomenon of reduced sensitivity to winning by problem gamblers. In the light of the previous research [22], unproblematic gamblers show more substantial skin conductivity in response to significant wins than to poor wins and losses, while in short reactions to big and small wins, there were no significant differences among problem gamblers. The authors even suggest the existence of a potential biological marker of problem gambling.

Studies show an association between winning and increased risk-taking, which is a risk factor for problem gambling [23,24]. However, the relationship between the experience of a significant win and problem gambling is not clear. In the light of the recent meta-analysis, the experience of the signifier at the beginning of the play is not significantly related to problem gambling in the later period [25]. However, most studies support this relationship [26–28].

Another interesting issue is the estimation of winnings and money spent on the game. It turns out that gamblers tend to underestimate their gambling expenditure, a phenomenon that mainly affects problem gamblers [29]. However, distortions also affect winnings and involve overestimating winnings [30]. An important conclusion comes from Kassam et al.'s (33) research, which showed that winners in scratch cards derive satisfaction from the idea of winning, regardless of its amount, while losers react both to the idea of a loss and its amount. These results may suggest that the risk factor that induces people to continue gambling may be the idea of winning, regardless of the amount. Interestingly, in light of Ginley et al. [31], losing and winning gamblers react differently to the warning messages displayed when playing a random slot machine. While the winning gamblers play less in response to these messages, the effect is very weak in the case of the losing gamblers.

Another factor associated with the experience of winning and losing is cognitive distortions. In the light of the research by Dong et al. [32], a gambler maintains a distorted belief after a losing streak, while after a winning streak, the player's tendency to make decisions based on erroneous beliefs intensifies, considering the increase of the chance of winning after experiencing a win. Research by Xu and Harvey [33], based on an analysis of more than 500,000 bets made on sporting competitions, showed an increased tendency for gamblers to fall into the "gambler's fallacy" trap, i.e., believing that luck will "reverse". Therefore, after winning, they make safer bets and after losing riskier ones. In turn, Monaghan et al. [34], in research conducted among students, showed that the tendency to make cognitive errors is significantly weaker in the case of students who lost than in those who won. Verbruggen et al. [35] report that the experience of a loss, in the context of a potential win, leads to an inducement to impulsivity. Impulsivity, in turn, is indicated by researchers as a risk factor for problem gambling [27].

According to Young et al. [36], reactions to the result of a game differ depending on the nature of the game. For example, recreational gamblers who play on online slots decrease their desire to play after experiencing a significant win or a series of small wins, while among problematic gamblers, the desire to play after experiencing a significant win intensifies. Kassinove and Schare [3], on the other hand, demonstrated no differences concerning continued play between gamblers who experienced a significant win and a series of losses. An essential aspect of the impact of a win on a gambler is also the moment of occurrence. Weatherly et al. [4] showed that gamblers who experienced a significant win in the first round dropped out of the game earlier than those who experienced it in the fifth. However, Mentzoni et al. [37] demonstrated in laboratory studies that there were no significant differences in the severity of game craving between non-problematic gamblers who experienced a significant win under laboratory conditions at the beginning and end of the game session.

A literature analysis of the subject shows the ambiguity of the terms “significant/big win” and the implications of its relationship with the nature of subsequent gambling. Quite many studies were carried out in laboratory conditions, while field studies were usually concerned with selected aspects of this phenomenon, such as the impact of winning for the choice of healthcare, neighbourly life, professional career, and life satisfaction. Depending on the study, the winnings defined as “significant/large” include various amounts, from \$1.6 [4], \$10 [3], and \$50 [37], in laboratory studies up to over \$29,000 CA [14] or \$50,000 [12], in studies primarily involving lottery gamblers.

140 **The present study**

141 This article aims to undertake a comparative analysis between pure-chance gamblers
142 from Poland and France to define the concept of a “significant win” and psychosocial factors
143 coexisting with experiencing a significant win. Since gamblers individually define significant
144 wins, their understanding and experience may be influenced by various factors, including
145 socioeconomic status and cultural context. Therefore, we carried out an international study in
146 two countries with different gambling regulations as well as a diversified socioeconomic context
147 (for example, the average household income in Poland in 2020 was €8,000, while in France, it
148 was €27,000, according to Eurostat [38]).

149 Since some studies also prove the influence of small wins on the intensified willingness
150 to continue gambling [4], we concluded that in order to get the complete picture of the
151 phenomenon, which is the importance of winning for the gambler, we could not limit ourselves
152 to very high amounts, i.e., the concept of “big win” that appears in the literature. Considering the
153 research results, we adopted the concept of a “significant win”, i.e., any critical win for the
154 reasons indicated by the winner herself or himself. Additionally, bearing in mind that the nature
155 of the research considers winning, we decided to look at this phenomenon from a broader
156 perspective by taking into account various factors related to winning, including the type of
157 gambling, the intensity of gambling, life context, experiences after winning, the change of the
158 nature and beliefs of gambling after winning, the definition of a significant win as well as using a
159 win, experiencing another person’s winning, and psychological factors. Principally, gambling
160 and the probability of winning are perceived differently by gamblers, which is influenced, among
161 others, by the type of gambling. There is a distinction between pure chance games and games of
162 chance and skill [39]. To increase the validity of generalizing the obtained research results, we

163 decided to include only pure chance gambling, in the case of which there are no additional
164 factors that could objectively affect the result of the game: lotteries, scratch cards, slot machines,
165 roulette and casino games based on pure chance. Its representativeness, first of all, justifies this
166 choice of pure chance in the different samples in all French and Polish gambling (9 out of 10
167 gamblers say they have played scratch cards, draws, slot machines in the last 12 months)
168 (Moskalewicz et al., 2019, Costes et al. 2020), but also because the share of chance in gambling
169 requiring skill is not comparable (poker, sports betting, etc.) [41–43].

170 The gambling offer of legal pure chance games in Poland includes lotteries (stationary
171 and online from 2019), scratch cards (only at stationary points), slot machines (in stationary slot
172 machines, land-based casinos and the only legal online casino), and roulette (in land-based
173 casinos and an online casino). All these games, except for scratch cards, are subject to state
174 monopoly [44]. Private operators (19 in 2021) can only organize bookmakers in Poland (both
175 stationary and online). In France, the gambling offer of legal pure chance games includes
176 lotteries and scratch cards (stationary and online from 2010) and scratch cards and slot machines
177 in land-based casinos only.

178 **Materials and methods**

179 The online surveys were conducted in parallel in France and Poland among adults (age
180 18-64) by companies via research panels, ensuring anonymity and the same methodology in both
181 countries. The typical stratified sample selection of the first stage of the research considered
182 gender, age and size of hometown.

Participants

The Polish sample comprised 3,143 pure chance case gamblers, selected from a representative sample of 7,320 adult Internet users aged 18 to 64.

The French sample was composed of 5,692 pure chance case gamblers, selected from a representative sample of 10,004 people aged 18 to 64, representative of the general population and selected using the quota method.

For the inclusion in the sample of pure chance case gamblers, two questions were asked:

During the past twelve months, what games have you gambled by wagering money, online or at a point of sale? And Among the gambling games mentioned by you, which one did you spend the most time or money on? The study sample included people who selected one answer from among lotteries, scratch cards, slot machines, other casino games except for poker. The socio-demographic variables

other than gender, age and size of hometown were also included in the study: education, marital status, monthly income, debts. Table 1 presents the exact characteristics of the respondents in terms of socio-demographic variables. Samples differed due to socio-demographic variables, as societies differ, Internet users differ, and players differ. The statistical significance of these differences was tested, and the analysis results are summarized in Table 1.

Table 1. Socio-demographic characteristics of French (n = 5,692) and Polish (n = 3,143) sample.

Variable	Category	Country				Test	
		FR		PL			
		n	%	n	%	df	χ^2
Place of residence	Rural communes	1158	20.34%	1030	32.77%	4	500.79***
	2,000 to 20,000	880	15.46%	429	13.65%		

	inhabitants						
	20,000 to 100,000 inhabitants	793	13.93%	722	22.97%		
	More than 100,000 inhabitants	1897	33.33%	811	25.80%		
	Capital agglomeration	964	16.94%	151	4.80%		
Gender	Males	2538	44.59%	1475	46.93%	1	4.48*
	Females	3154	55.41%	1668	53.07%		
Vocational activity	Present	4092	71.89%	2286	72.73%	1	0.72
	None	1600	28.11%	857	27.27%		
Education level	Primary	146	2.57%	84	2.67%	6	431.92****
	Basic vocational	1012	17.78%	357	11.36%		
	Secondary with secondary school certificate (SSC)	1500	26.35%	946	30.10%		
	SSC + post- secondary school	1302	22.87%	407	12.95%		
	Undergraduate	753	13.23%	319	10.15%		
	Master's degree Engineering	895	15.72%	1000	31.82%		
	Doctorate	84	1.48%	30	0.95%		
Relationshi p status	Single	1488	26.14%	533	16.96%	3	135.22****
	Divorced widowed separated	473	8.31%	192	6.11%		

	Married	2776	48.77%	1713	54.50%		
	Cohabiting	955	16.78%	705	22.43%		
Children	None	1454	34.59%	1351	42.98%	2	103.99****
	1 to 2 children	2186	52.00%	1572	50.02%		
	3 or more children	564	13.42%	220	7.00%		
Debts	None	2703	47.49%	1813	57.68%	2	84.32****
	In the past	2183	38.35%	977	31.08%		
	Present	806	14.16%	353	11.23%		
Household income	Less than 500 €/m-th // Less than PLN 2,000/m-th	162	2.80%	250	8.00%		
	Between 500 and 999 €/m-th // Between 2,000 and 3,999 PLN/m-th	286	5.00%	702	22.30%		
	Between € 1,000 and € 1,499/m-th // Between 4,000 and 5,999 PLN/m-th	731	12.80%	773	24.60%		
	Between € 1,500 and € 2,249/m-th // Between 6,000 and 9,999 PLN/m-th	1210	21.30%	643	20.50%		
	Between € 2,250 and € 3,000/m-th // Between 10,000 and 11,999 PLN/m-	1212	21.30%	111	3.50%		

	th						
	Between 3,001 and 4,500 €/m-th // Between 12,000 and 17,999 PLN/m-th	1396	24.50%	70	2.20%		
	Between € 4,501 and € 6,000/m-th // Between 18,000 and 23,999 PLN/m-th	475	8.30%	19	0.60%		
	Over € 6,000/m-th // Over PLN 24,000/m-th	182	3.20%	43	1.40%		
	No answer	38	0.70%	532	16.90%		

202 Table cells with a significantly greater proportion of a given category in one of the countries
203 (according to p -values adjusted for multiple comparisons with Benjamini-Hochberg method, $p <$
204 .05) are in bold type. Household income was not compared between different currencies. * $p <$
205 .05, ** $p < .01$, *** $p < .001$

206 The Polish sample is characterized by a rural population and a population in
207 agglomerations of 20,000 to 100,000 inhabitants or higher, while in France, it is agglomerations
208 of 2,000 to 20,000 inhabitants and large agglomerations that stand out. The sample is more
209 female than in Poland, and the number of children in the household is higher than in Poland. The
210 French sample includes more single people, while it is the most numerous couples in Poland.
211 Regarding debt, the French seem more concerned than the Poles.

Measures

The surveys were conducted through an online questionnaire developed by Marie-Line Tovar and Jean-Michel Costes, validated by a steering committee within the *Etude sur les impacts des gains marquants* – ENIGM (Study on the Impacts of Significant Wins). The questionnaire consisted of seven modules. Three modules focused on the gambler's current situation: socio-demographic characteristics, gambling practice and additional signage. Three other modules collected the presence or absence of a significant event resulting from their gambling on the history of "winning" gamblers and, for multiple winners, the description of the first and last significant win. And finally, a final module looked at the impulsive traits of these gamblers.

Socio-demographic and gambling-related variables

The socio-demographic and gambling-related variables were measured using a questionnaire. The questions are presented in Table. For logistic regression analysis, the answers to the questions have been recoded (dichotomized or trichotomized). Table 2 shows the recoding schemes.

Table 2. Socio-demographic and gambling-related variables used in the study – their measurement and transformation.

Variable	Questionnaire question	Transformation	Categories [code]
Gender	<i>What is your gender?</i> [2 categories]	none	Male [1] Female [2]
Age	<i>What is your age?</i> [5 categories]	dichotomized	<= 34 [1] 35+ [2]
Education level	<i>What is your highest obtained level of education?</i> [7 categories]	dichotomized	<= SSC [1] SSC+ [2]

Household income	<i>Considering all household income sources, i.e., net income, family benefits, pensions and other net income, what is the current level of your household income?</i> [9 categories]	dichotomized according to mean household income (MHI)	<= MHI [1]
			MHI+ [2]
Debts	<i>Does your household have difficulties with financial obligations (rent, taxes, loans etc.) or securing expenses for the entire month?</i> [3 categories]	none	None [1]
			In the past [2] Present [3]
Age of gambling onset	<i>How old were you when you played gambling for money for the first time?</i> [open-ended numeric]	dichotomized	<=19 [1]
			20+ [2]
Significant win in an environment	<i>Before you started to gamble for money, did you know anyone in your close vicinity (family, friends, partner) who had won a significant gambling win at money?</i> [2 categories]	none	Yes [1]
			No [2]
The preferred pure chance game (PCG)	<i>Among the gambling games mentioned by you, to which you devoted the most time or spent the most money?</i> [4 categories]	dichotomized	Lottery [1]
			Other PCG [2]
Spending on gambling	<i>How much money did you spend on {selected game} in the last month?</i> [open-ended numeric]	trichotomized based on quartiles	1Q [1]

			2Q & 3Q [2]
			4Q [3]
Frequency of gambling	<i>How often do you play</i> {selected game}? [5 categories]	dichotomized	At least once a week [1] Regularly, but less than once a week [2]

229 Categories used as reference categories in logistic regression are bolded. MHI was taken from
230 Eurostat data [38].

231 **Definitions of the significant win**

232 An international project team developed a proprietary questionnaire to identify how the
233 respondents defined their first and last significant win. The question was, *To be precise, on*
234 *account of what do you consider the first/last win significant for you...?* The respondent had the
235 multiply choice of twelve categories (Table 3). The categories of responses were developed
236 based on a literature review and the results of the qualitative research on significant wins that had
237 been carried out by the French team earlier [45].

238 The respondents were also asked about the amount of the “significant win”: *What was the*
239 *amount of the first/last significant win?* (free-answer formula). Finally, the respondents replied
240 regarding the currency of their country (zloty or euro). Due to the economic differences between
241 Poland and France, the winnings were normalized and compared to the average income for one
242 week per person in both countries based on Eurostat data [46].

243 **Motivation to Gamble**

244 Gambling motivation was measured with the Gambling Motives Questionnaire–Financial
245 (GMQ-F) [47]. The Polish translation of items (except the financial dimension) [48] was used,
246 while the authors translated the financial items. In the French survey, appropriate adaptation [49]

was used. The questionnaire comprises 15 questions to which the respondent gives answers on a 4-point response scale (1 = *Never or almost never*, 2 = *Sometimes*, 3 = *Often*, 4 = *Almost always*). The tool allows researchers to determine the intensity of the four motives of gambling: financial, social, enhancement, coping. Since we intended to conduct cross-cultural comparisons in the study, we did the GMQ-F cross-cultural invariance analysis using confirmatory factor analysis (CFA). As a criterion of invariance, we adopted, as suggested by Cheung and Rensvold [50], a decrease of .01 or larger in the CFI index (ΔCFI) due to the sensitivity of the χ^2 test to the sample size. After fitting the original model, the invariance at the level of factor loadings could not be found due to the difference in the loading of item 8 (to earn money). After removing this item, the method reached invariance, allowing for intercultural comparisons (results of model comparisons in S2 Table). We calculated the results on the Financial Motive subscale without that item. In the present study, Cronbach's α reliability coefficients for subscales in Poland and France were as follows: enhancement, .87 and .82; social, .86 and .83; coping, .89 and .88; and financial, .84 and .79, respectively.

Statistical Analysis

Standard statistical procedures were used to analyze the dataset. Descriptive statistics were used to describe each country's socio-demographic characteristics and variables of interest. One-variable group comparisons were made using the χ^2 -test or *t*-Student test. Logistic regression models were used to examine predictors of significant win experience in both countries and cross-countries differences in them. Analyses were done using SPSS statistical package [51].

Ethics

Ethical review and approval were not required for the study on human participants under the local legislation and institutional requirements. The study procedures were carried out under the Declaration of Helsinki and according to the standards of good research practice recommended by the American Psychological Association. The participants were informed about the confidentiality and anonymity of the research and the right to resign from participation. The Polish study was approved by the Ethics Committee of the Institute of Psychology at The John Paul II Catholic University of Lublin (KEBN_35/2020). The French study was approved by the steering committee of the research project, which gives it consensus validity and its realization within the framework of the GDPR and the CNIL standards imposed on the sector of the Institutes of French Studies.

Results

Preliminary analysis

All variables in the study were compared between the Polish and French samples. The results of the analysis are in the S1 Table. Significant differences between the two countries were revealed in the following areas: the experience of a significant win in the environment (significantly more often in Poland), the preferred type of game (the lottery is chosen significantly more often in Poland), spending on gambling (in Poland, they significantly more often include average amounts (second and third quartile), and in France, the lowest and highest amounts (the first and fourth quartiles)), the frequency of gambling (significantly higher in the group of French gamblers).

Significant wins and their naïve definitions among winners

When it comes to a significant win, 32.0% of the French sample reported having had a significant win experience (95% CI[30.8%, 33.3%], $n = 1824$); in the Polish group, it was 38.7% (95% CI[37%, 40.4%], $n = 1216$), and it was significantly more frequent than in France ($\chi^2(1) = 39.61$, $p < .001$). The nature of a significant win (one, multiple, series), experienced by the respondents, differed significantly in both countries ($\chi^2(2) = 64.13$, $p < .001$). Numerous significant wins (37.1%; $e = 6.7$) and a series of significant wins (5.1%; $e = 3.6$) were more often indicated by Polish respondents than French respondents, while only one significant win was experienced significantly more often by French gamblers (71.6; $e = 7.9$). It is worth noting that in both countries, the category of one significant win was most often indicated.

The next step was to analyze the respondents' meanings from both countries ascribed to the “significant win”. Table 3 shows the respondents' frequency of indications of particular meanings and the differences between the two countries.

Table 3. Comparison of definitions of significant win chosen in both countries.

Definition	FR ($N = 1824$)		PL ($N = 1216$)		$\chi^2(1)$
	n	%	n	%	
Because of its value (quantity)/it was a large amount of money	428	23.46%	217	17.85%	13.78***
It was a win exceeding my standard of everyday life	179	9.81%	133	10.94%	1.0007
It was a win that I used entirely for gambling and lost	80	4.39%	78	6.41%	6.09*
It was a win which I added to my budget	739	40.52%	390	32.07%	22.28***
This win covered all of my losses/covered some of my losses	114	6.25%	127	10.44%	17.58***
This win happened after a series of losses/after a major loss	66	3.62%	108	8.88%	37.45***

Because the starting stake was low	621	34.05%	243	19.98%	70.92***
It was a win on a gaming machine	178	9.76%	109	8.96%	0.54
This win was not enough to cover my losses	110	6.03%	114	9.38%	11.96**
It was a win of another player (family/friends/acquaintance)	95	5.21%	66	5.43%	0.07
It happened at a difficult time (problems related to relationship, work, social or financial situation)	138	7.57%	141	11.60%	14.21***
It happened at the right moment (e.g., just before the holiday...)	330	18.09%	219	18.01%	0.003

For players experiencing a streak or multiple significant wins, the definition of the last significant win was considered. * $p < .05$, ** $p < .01$, *** $p < .001$

French gamblers considered “significant wins” to be more often “significant” than Polish gamblers, which included a large amount and were added to the personal budget; also, the ones that followed a significant loss resulted from a low stake. On the other hand, for Polish gamblers, a win was perceived as “significant” more often when it occurred in the context of losses and adverse events: it was intended for the game and the loss, it did not allow for covering losses, or it allowed to cover only a part of all losses, or it appeared in difficult life circumstances.

The two countries were also compared in terms of the amounts of wins the players considered significant. Due to economic differences between Poland and France, these amounts were normalized in terms of both countries' average monthly personal income [46]. Because of the discrepancy between the distributions of the amounts and normal distribution, the comparison was performed using a nonparametric Mann-Whitney U-test. Significant differences were found ($U = 1,345,059$, $p < .001$). In Poland, the median of normalized wins was higher ($M = 0.1659$) than in France ($M = 0.0879$).

Prediction of a significant win experience

The next step of the analysis was to compare the predictors of experiencing significant winnings in France and Poland, which was carried out using logistic regression. Cross-cultural differences in prediction by individual factors were modelled through the interactions of these factors with the country variable. Regression was performed in blocks to incrementally analyze the prediction of groups of variables and their intercultural differentiation. In Block 1, socio-demographic variables related to the social status of the respondent were introduced: country, gender, age, education, household income, debt. Block 2 contained the interactions of these variables with the country variable. Subsequently, non-significant interactions were removed. In block 3, variables related to the social impact of gambling onset were introduced: the gambling onset year and the presence of a significant win in the immediate environment of the respondent. Block 4 contained interactions; only the significant ones were retained. Block 5 and 6 contained variables related to behavioural patterns of gambling, respectively: the type of gambling game, spending on gambling, frequency of the gambling, and their interactions with the country. Block 7 and 8: gambling motivations and their interactions with the country. Demographic variables related to the social and behavioural pattern have been previously recoded (recoding description is in Table). The results of the procedure are included in the S3 Table. Based on this, the final common model was built after the irrelevant interactions were finally removed. Then, to assess what the interaction effects are, simple effects tests were carried out: logistic analyses were carried out separately for both countries (see S4 Table).

The results of the analysis are presented in Table 4.

Table 4. Summary of logistic regression models built in the study.

Model	χ^2	df	p	-2LL	Cox-Snell-R ²	Nagelkerke-R ²	$\Delta\chi^2$	Δdf	p
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Block 1	247.99	7	<.001	10328.1	.03	.04			
Block 2	255.29	9	<.001	10320.8	.03	.04	255.29	9	<.001
Block 3	789.30	11	<.001	9786.8	.09	.13	534.01	2	<.001
Block 4	798.09	12	<.001	9778.0	.09	.13	8.80	1	.003
Block 5	1244.50	16	<.001	9331.6	.14	.19	446.41	4	<.001
Block 6	1250.85	18	<.001	9325.3	.14	.20	6.35	2	.042
Block 7	1576.76	22	<.001	8999.3	.18	.24	325.91	4	<.001
Block 8	1596.01	24	<.001	8980.1	.18	.24	19.25	2	<.001
Final	1592.06	22	<.001	8984.0	.18	.24			

The analysis showed that some predictors worked similarly in both countries, while the predictive power of others differed between countries. Moreover, among those that differed between the two cultures, some differed in effect size or the effect's occurrence. However, most of the outcomes did not differ from country to country. These included: debt, a significant win in the environment, the type of game, the frequency of gambling and the enhancement motive of gambling. Although significant in both cultures, two predictors had a greater effect in Poland: gambling and coping gambling motive. The effect of gambling onset age was significant only in France, and the financial gambling motive only in Poland. To summarize the results, there are more convergences than differences between the predictors of experiencing a significant win in Poland and France.

Having debts, both past ($\text{Exp}(B) = 1.51$; $p < .001$) and present ($\text{Exp}(B) = 1.34$; $p < .001$), increased the likelihood of experiencing significant wins. Despite the country differences in defining a "significant win" mentioned above, generally, gamblers had a greater tendency to perceive a win as significant when they were in debt. Another factor with a positive effect is practising a game of pure chance other than the lottery: this intensified the likelihood of declaring a significant win regardless of the sample ($\text{Exp}(B) = 1.2$; $p = .001$). Enhancement

motivation to gamble worked similarly: it intensified the likelihood of feeling a significant win in both countries ($\text{Exp}(B) = 1.45$; $p < .001$). A win of another person from the gambler's immediate environment increased the chance of this experience ($\text{Exp}(B) = 2.36$; $p < .001$). Similarly, the gambling frequency – playing at least once a week – significantly increases the likelihood of experiencing a significant win ($\text{Exp}(B) = 1.50$; $p < .001$).

As for the differences between countries in the prediction of experiencing a significant win, they concerned the effects of the following variables: age of gambling onset, spending on gambling, coping motive and financial motive. The age of gambling initiation was a predictor of the experience of a significant win for French gamblers; as the age of onset increased (over 20 years), the likelihood of experiencing a significant decrease ($\text{Exp}(B) = 0.63$; $p < .001$). On the other hand, in Poland, the age of gambling onset was not explanatory ($\text{Exp}(B) = 0.88$; $p = .191$).

Another difference between both countries relates to gambling spending. Even though in both countries there is a positive relationship between the spending on gambling and the experience of a significant win, in Poland, the effect of the highest stakes was more substantial ($\text{Exp}(B) = 2.68$; $p < .001$) than in France ($\text{Exp}(B) = 1.90$; $p < .001$). There were also differences in the motivation to gamble. In both countries, coping motivation is positively associated with the experience of a significant win, but this effect is more substantial in Poland ($\text{Exp}(B) = 1.84$; $p < .001$) than in France ($\text{Exp}(B) = 1.48$; $p < .001$). In turn, the financial motivation reduces the likelihood of this experience in the group of Polish gamblers ($\text{Exp}(B) = 0.73$; $p < .001$); among French gamblers this motivation is not predictor of significant winning experience ($\text{Exp}(B) = 0.96$; $p = .067$).

Discussion

Initial analyses of the differences between countries demonstrated that players experienced a win in their close personal circle more often in Poland, lottery games are also more frequently chosen than other games of pure chance, and the stakes more often fall within average ranges. In France, a greater frequency of gambling and occurrence of stakes in the low and high amount ranges was recorded.

The results obtained in the study showed that a significant win is experienced significantly more often by Polish gamblers than by French gamblers. The definition of a significant win (no objective criterion, e.g., amount) adopted by us means that we are talking primarily about the subjective experience of gamblers. However, this understanding of winning seems to be more critical in its influence on further gambling. The total winnings may have different meanings for different gamblers, depending on their material status. To sum up, Polish players of pure chance games of chance more often claim that they have had an important win. Additionally, significantly more often than French gamblers, they state that they have experienced many of these wins, while French gamblers more often declare a single win than Polish gamblers. It is interesting how gamblers from both countries defined a win they considered significant. Such an event was overwhelmingly positive for French gamblers and marked a strong emotional memory [52]. It is therefore all the context in which the win occurs, the level of gambling practise or the uses that the French gamblers will make with this win that validate the concept of “significant win”. For Polish gamblers, a win was perceived as significantly more often when it occurred in the context of losses and adverse events. The most apparent difference that emerges between gamblers concerns the “overtones” of such a win. In the case of French gamblers, it is accompanied by a halo of positive impressions; in the case of

Polish gamblers, memories of adverse events. The results showed a more intense orientation of Polish gamblers towards financial wins than French ones. This fact may further intensify the tendency of Polish players to complain about the game's result due to the increased experience of losses, which is inevitable in gambling. The results of other Polish nationwide surveys of gamblers show that the primary motivation for Polish players engaging in lotteries is financial [53]. However, qualitative research on French seniors has shown that this motivation is not essential [54]. Cultural differences in the perception of success may be another factor in interpreting the obtained results. It is mainly about the so-called culture of complaining [55]. Polish research drew attention to the culture of complaining that characterizes Polish society. There is resistance among Poles against talking about successes because it is perceived negatively, while complaints dominate the discourse. Also, in Polish society, successful people (politicians or businessmen) are perceived as less moral [55–57]. Interestingly, when relativized towards average monthly income, the significant wins were notably higher in the Polish sample than in the French one, confirming the Polish tendency to complain.

Logistic regression allowed for the development of the explanatory model, common for both countries, including the following factors: having debts, age of gambling onset, significant win in a particular environment, type of game, spending on gambling, frequency of gambling, and motivation to gamble.

Being in debt may render any additional amount (of a win, no matter how high) perceived as significant, giving hope for another influx of cash obtained through gambling. Previous studies demonstrate that indebtedness is strongly related to impulsive gambling and problem gambling and also plays a mediating role between gambling and experiencing stress [58–60]. This result is consistent with the outcome concerning another explanatory factor – the frequency

424 of gambling – which may be related to the level of indebtedness. According to the rules of
425 gambling, the player loses money to the operator in the long term: the more intense the game
426 (more frequent, lasting longer), the more intense the subjective sense of winning (unsystematic
427 positive reinforcements necessary to continue the game), but, at the same time, the higher the
428 objective debt, as confirmed by research [53,61,62]. On the other hand, in the light of the
429 cognitive approach, the more financial losses the player experiences, the more they try to justify
430 their gambling, which may explain reporting significant wins more often [63]. Another factor
431 explaining the claims of a significant win was experiencing a significant win by another person
432 in their close personal circle. The players who stated they had such an experience must have
433 witnessed a vividly etched win in their memory due to its objective amount or the surrounding
434 circumstances (e.g., high intensity of emotions involved). In the light of cognitive psychology,
435 events accompanied by additional strong stimuli intensify the experience, which makes such
436 events appear more attainable in the future, and therefore more frequent [64,65]. Playing pure-
437 chance gambling games other than lotteries, i.e., slot machines, roulette, scratch cards, and other
438 casino games, except for poker and sports betting, was also a factor that explained reporting a
439 significant win. Lotteries are the most popular game in Poland and France [40]. Playing the
440 lottery usually involves low stakes and frequent small wins, with huge wins occurring more
441 rarely [53]. Interestingly, while the ratio of the game expenditure and the wins reported by Polish
442 players is similar in various gambling games (the expenses are almost twice the wins), it is the
443 objective value of expenses, and thus wins, that is several times lower for lotteries, compared
444 with other gambling games, especially slot machines and casino games [53]. This may result in a
445 poorer memory record of the lottery wins due to their subjectively lower value. Also, losing on
446 slot machines is often disguised as a win (losses disguised as a win – LDW), i.e. the actual win is

smaller than the money wagered, which may result in an overestimation of wins, including significant wins [66]. The research confirms the underestimation of losses on slot machines [59]. Additionally, winning a casino or slot machine game is accompanied by audio-visual stimuli, which enhance the sensation of experiencing a win, even if it is LDW [65]. Here, it is worth mentioning that an important factor explaining a significant win was also the quantity of game expenditure: the higher it was, the greater was the probability of experiencing a significant win, which may also result from the intensity of the game and subjective impression of frequent wins.

The last, equally important factor in explaining the significant win in both countries was the enhancement motivation to gamble, that is, to experience positive emotions while gambling. It can be expected that players who look for such experiences derive satisfaction from the uncertainty accompanying the game, and wins are an additional enhancement for them, providing further emotional stimulation, regardless of the objective amount. Such motivation causes wins to be experienced more intensely and thus described by players as significant. Interestingly, in the light of other studies, enhancement motivation is attributed to the players engaging in skill games [67,68].

Another motive explaining a significant win experience was the coping motive, which exerted a more substantial effect on the group of Polish players, but increased the probability of experiencing significant wins in both groups. This is another motive related to emotional management, except that, in this case, it is the reduction of negative emotions. Gambling wins as a source of enjoyable experiences, allowing, at least temporarily, to reduce unpleasant sensations. In the case of players with such orientation, each win, as something very desirable, is intensely experienced and probably perceived more intensely. Interestingly, the coping motivation is attributed to players choosing games of luck [67,68]. The financial motivation, in

turn, reduces the probability of experiencing a significant win, but only among Polish gamblers. This might mean that the Polish players oriented towards a financial win have higher expectations regarding wins, so small and medium amounts are less likely to mean “significant” to them, while in France, the financial value of the win seems to weigh less in this definition. This is confirmed by analyzing the amounts defined as significant, which were higher for Polish players than for French players. The last factor separating Polish and French players in explaining a significant win was its connection with the age of gambling initiation. In the French group, players under 20 years of age have had more experience than older ones. In Poland, the age effect has not occurred. This outcome can be explained by, for example, the popularity of games in particular age groups in France. For example, lotteries (games that do not explain experiencing a significant win) are the most popular among people over 35, and slot machines (one of the types of games that explain the significant win experience) are most popular among the youngest group of adults [69].

Summarizing the importance of the factors explaining the experience of a significant win in both countries, the following results draw attention. First, there were no reverse patterns for both countries (positive factor relationship in one country and negative in another). Second, country-specific explanatory factors were observed. In the case of Polish gamblers, this is the financial motivation; for French gamblers, the age of gambling onset. Other differences concern the intensity of the effect (in the same direction) of specific factors: spending on gambling (higher in Poland), coping motivation (higher in Poland).

Limitations and conclusion

First, the representative sample of the French and Polish population, aged 18 to 64 in terms of distribution by sex and age, may have biases because it is not random. Online surveys

are generally non-probabilistic – i.e., their sample is not controlled – it is not known who answers them or who can answer them. In addition, information about significant winnings, the gambler’s situation and reactions are necessarily retrospective, which means that there are memorization biases (biases related to the player’s current situation, reconstruction of his past to trace a coherent history of his life).

References

1. Ladouceur R, Sévigny S, Blaszczynski A, O’Connor K, Lavoie ME. Video lottery: winning expectancies and arousal. *Addiction*. 2003;98: 733–738. doi:10.1046/j.1360-0443.2003.00412.x
2. Wulfert E, Roland BD, Hartley J, Wang N, Franco C. Heart rate arousal and excitement in gambling: Winners versus losers. *Psychology of Addictive Behaviors*. 2005;19: 311–316. doi:10.1037/0893-164X.19.3.311
3. Kassinove JI, Schare ML. Effects of the “near miss” and the “big win” on persistence at slot machine gambling. *Psychology of Addictive Behaviors*. 2001;15: 155–158. doi:10.1037/0893-164X.15.2.155
4. Weatherly JN, Sauter JM, King BM. The “big win” and resistance to extinction when gambling. *The Journal of Psychology*. 2004;138: 495–504. doi:10.3200/JRLP.138.6.495-504
5. Ustawa z dnia 19 listopada 2009 o grach hazardowych [Act on the gambling activities of 19 November 2009]. *Dziennik Ustaw*. Sect. 1540, Dz.U.2020.0.2094 Nov 19, 2009 pp. 1–90. Available: <https://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20092011540/U/D20091540Lj.pdf>
6. groupefdj.com. FDJ Corporate Website - Players - Supporting our major prize winners. 2021 [cited 12 Nov 2021]. Available: <https://www.groupefdj.com/en/players/supporting-our-major-prize-winners.html>
7. Gardner J, Oswald AJ. Money and mental wellbeing: A longitudinal study of medium-sized lottery wins. *Journal of Health Economics*. 2007;26: 49–60. doi:10.1016/j.jhealeco.2006.08.004
8. Lindqvist E, Östling R, Cesarini D. Long-run effects of lottery wealth on psychological well-being. *The Review of Economic Studies*. 2020;87: 2703–2726. doi:10.1093/restud/rdaa006

- 524 9. Brickman P, Coates D, Janoff-Bulman R. Lottery winners and accident victims: Is
525 happiness relative? *Journal of Personality and Social Psychology*. 1978;36: 917–927.
526 doi:10.1037/0022-3514.36.8.917
- 527 10. Arvey RD, Harpaz I, Liao H. Work centrality and post-award work behavior of lottery
528 winners. *The Journal of Psychology*. 2004;138: 404–420. doi:10.3200/JRLP.138.5.404-420
- 529 11. Furaker B, Hedenus A. Gambling windfall decisions: Lottery winners and employment
530 behavior. *UNLV Gaming Research & Review Journal*. 2009;13. Available:
531 <https://digitalscholarship.unlv.edu/grrj/vol13/iss2/1>
- 532 12. Kaplan HR. Lottery winners: The myth and reality. *Journal of Gambling Behavior*. 1987;3:
533 168–178. doi:10.1007/BF01367438
- 534 13. Larsson B. Becoming a winner but staying the same: Identities and consumption of lottery
535 winners. *American Journal of Economics and Sociology*. 2011;70: 187–209.
536 doi:10.1111/j.1536-7150.2010.00768.x
- 537 14. Agarwal S, Mikhed V, Scholnick B. Does the relative income of peers cause financial
538 distress? Evidence from lottery winners and neighboring bankruptcies. Rochester, NY:
539 Social Science Research Network; 2018 May. Report No.: ID 3192154.
540 doi:10.21799/frbp.wp.2018.22
- 541 15. Mushquash CJ. Examination of the cue-reactivity of reports of gambling wins. Master
542 Thesis, Lakehead University. 2004. Available:
543 <https://knowledgecommons.lakeheadu.ca/handle/2453/4053>
- 544 16. Le Floch V, Martinez F, Gaffié B. L'annonce du résultat d'autrui dans un jeu de hasard: Un
545 second point de référence? *Canadian Journal of Behavioural Science*. 2004;36: 310–320.
546 doi:10.1037/h0087239
- 547 17. Martinez F, Le Floch V, Gaffié B, Villejoubert G. Reports of wins and risk taking: An
548 investigation of the mediating effect of the illusion of control. *J Gambl Stud*. 2011;27: 271–
549 285. doi:10.1007/s10899-010-9204-2
- 550 18. Hollander E, Pallanti S, Rossi NB, Sood E, Baker BR, Buchsbaum MS. Imaging monetary
551 reward in pathological gamblers. *The World Journal of Biological Psychiatry*. 2005;6: 113–
552 120. doi:10.1080/15622970510029768
- 553 19. Dixon MR, Wilson A, Habib R. Neurological correlates of slot machine win size in
554 pathological gamblers. *Behavioural Processes*. 2014;104: 108–113.
555 doi:10.1016/j.beproc.2014.02.007
- 556 20. Wilkes BL, Gonsalvez CJ, Blaszczyński A. Capturing SCL and HR changes to win and loss
557 events during gambling on electronic machines. *International Journal of Psychophysiology*.
558 2010;78: 265–272. doi:10.1016/j.ijpsycho.2010.08.008

- 559 21. Lole L, Gonsalvez CJ. Does size matter? An examination of problem gamblers' skin
560 conductance responses to large and small magnitude rewards. *Psychophysiology*. 2017;54:
561 1541–1548. doi:10.1111/psyp.12897
- 562 22. Lole L, Gonsalvez CJ, Barry RJ, Blaszczyński A. Problem gamblers are hyposensitive to
563 wins: An analysis of skin conductance responses during actual gambling on electronic
564 gaming machines. *Psychophysiology*. 2014;51: 556–564. doi:10.1111/psyp.12198
- 565 23. Cummins LF, Nadorff MR, Kelly AE. Winning and positive affect can lead to reckless
566 gambling. *Psychology of Addictive Behaviors*. 2009;23: 287–294. doi:10.1037/a0014783
- 567 24. Kostek J, Ashrafioun L. Tired winners: The effects of cognitive resources and prior
568 winning on risky decision making. *J Gambl Stud*. 2014;30: 423–434. doi:10.1007/s10899-
569 013-9365-x
- 570 25. Dowling NA, Merkouris SS, Greenwood CJ, Oldenhof E, Toumbourou JW, Youssef GJ.
571 Early risk and protective factors for problem gambling: A systematic review and meta-
572 analysis of longitudinal studies. *Clinical Psychology Review*. 2017;51: 109–124.
573 doi:10.1016/j.cpr.2016.10.008
- 574 26. Turner NE, Zangeneh M, Littman-Sharp N. The experience of gambling and its role in
575 problem gambling. *International Gambling Studies*. 2006;6: 237–266.
576 doi:10.1080/14459790600928793
- 577 27. Turner NE, Jain U, Spence W, Zangeneh M. Pathways to pathological gambling:
578 Component analysis of variables related to pathological gambling. *International Gambling*
579 *Studies*. 2008;8: 281–298. doi:10.1080/14459790802405905
- 580 28. Williams RJ, Hann RG, Schopflocher DP, West BL, McLaughlin P, White N, et al. Quinte
581 longitudinal study of gambling and problem gambling. Ontario Problem Gambling
582 Research Centre; 2015. Available: <https://opus.uleth.ca/handle/10133/3641>
- 583 29. Orford J, Wardle H, Griffiths M. What proportion of gambling is problem gambling?
584 Estimates from the 2010 British Gambling Prevalence Survey. *International Gambling*
585 *Studies*. 2013;13: 4–18. doi:10.1080/14459795.2012.689001
- 586 30. Braverman J, Tom MA, Shaffer HJ. Accuracy of self-reported versus actual online
587 gambling wins and losses. *Psychological Assessment*. 2014;26: 865–877.
588 doi:10.1037/a0036428
- 589 31. Ginley MK, Whelan JP, Keating HA, Meyers AW. Gambling warning messages: The
590 impact of winning and losing on message reception across a gambling session. *Psychology*
591 *of Addictive Behaviors*. 2016;30: 931–938. doi:10.1037/adb0000212
- 592 32. Dong G, Lin X, Zhou H, Du X. Decision-making after continuous wins or losses in a
593 randomized guessing task: implications for how the prior selection results affect subsequent
594 decision-making. *Behavioral and Brain Functions*. 2014;10: 11. doi:10.1186/1744-9081-10-
595 11

- 596 33. Xu J, Harvey N. Carry on winning: The gamblers' fallacy creates hot hand effects in online
597 gambling. *Cognition*. 2014;131: 173–180. doi:10.1016/j.cognition.2014.01.002
- 598 34. Monaghan S, Blaszczynski A, Nower L. Consequences of winning: The role of gambling
599 outcomes in the development of irrational beliefs. *Behavioural and Cognitive*
600 *Psychotherapy*. 2009;37: 49–59. doi:10.1017/S135246580800502X
- 601 35. Verbruggen F, Chambers CD, Lawrence NS, McLaren IPL. Winning and losing: Effects on
602 impulsive action. *Journal of Experimental Psychology: Human Perception and*
603 *Performance*. 2017;43: 147–168. doi:10.1037/xhp0000284
- 604 36. Young MM, Wohl MJA, Matheson K, Baumann S, Anisman H. The desire to gamble: The
605 influence of outcomes on the priming effects of a gambling episode. *J Gambl Stud*.
606 2008;24: 275–293. doi:10.1007/s10899-008-9093-9
- 607 37. Mentzoni RA, Laberg J, Brunborg G, Molde H, Griffiths M. Effects of sequential win
608 occurrence on subsequent gambling behaviour and urges. *Gambling Research: Journal of*
609 *the National Association for Gambling Studies (Australia)*. 2012;24: 31–38.
610 doi:10.3316/informit.859174546454951
- 611 38. Eurostat. Eurostat - Data Explorer - Mean and median income by household type - EU-
612 SILC and ECHP surveys. 2021 [cited 12 Nov 2021]. Available:
613 https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_di04
- 614 39. Spiegelhalter D. 'Pure chance', probability and the regulation of gambling. *The UK*
615 *Supreme Court Yearbook*. 2019;9: 312–318. doi:10.19152/ukscy.789
- 616 40. Moskalewicz J, Badora B, Feliksiak M, Głowacki A, Gwiazda, Magdalena G, Herrmann M,
617 et al. Oszacowanie rozpowszechnienia oraz identyfikacja czynników ryzyka i czynników
618 chroniących hazardu i innych uzależnień behawioralnych – edycja 2018/2019 [Estimation
619 of prevalence and identification of risk and protective factors for gambling and other
620 behavioral addictions - 2018/2019 edition]. Warszawa: Centrum Badania Opinii
621 Społecznej; 2019. Available: https://www.kbpn.gov.pl/portal?id=15&res_id=9249205
- 622 41. Bjerg O. Problem gambling in poker: money, rationality and control in a skill-based social
623 game. *International Gambling Studies*. 2010;10: 239–254.
624 doi:10.1080/14459795.2010.520330
- 625 42. Fiedler IC, Rock J-P. Quantifying skill in games—theory and empirical evidence for poker.
626 *Gaming Law Review and Economics*. 2009;13: 50–57. doi:10.1089/glre.2008.13106
- 627 43. Meyer G, von Meduna M, Brosowski T, Hayer T. Is poker a game of skill or chance? A
628 quasi-experimental study. *J Gambl Stud*. 2013;29: 535–550. doi:10.1007/s10899-012-9327-
629 8
- 630 44. Ustawa z dnia 15 grudnia 2016 o zmianie ustawy o grach hazardowych oraz niektórych
631 innych ustaw [Act of 15 December 2016 on the amendment of the Gambling activities act
632 and certain other acts]. *Dziennik Ustaw*. Sect. 88, Dz. U. 2016 poz. 88 Dec 15, 2016 pp. 1–

- 633 22. Available:
634 <http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU20170000088/T/D20170088L.pdf>
- 635 45. Tovar M-L, Costes JM, Benoit E, Coutant E, Lignier JB, Romo L. Rapport: Les impacts
636 des gains marquants chez les joueurs d'argent et de pur hasard. Synthèse des résultats des
637 études qualitative et quantitative. 2021; 33.
- 638 46. Eurostat. Eurostat - Data Explorer - Mean and median income by age and sex - EU-SILC
639 and ECHP surveys. 2021 [cited 12 Nov 2021]. Available:
640 https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_di03
- 641 47. Dechant K. Show me the money: Incorporating financial motives into the Gambling
642 Motives Questionnaire. *J Gambl Stud.* 2014;30: 949–965. doi:10.1007/s10899-013-9386-5
- 643 48. Niewiadomska I, Augustynowicz W, Palacz-Chrisidis A, Bartczuk RP, Wiechetek M,
644 Chwaszcz J. Bateria metod służących do oceny ryzyka zaburzeń związanych z hazardem [A
645 battery of methods to assess the risk of gambling-related disorders]. Lublin: Instytut
646 Psychoprofilaktyki i Psychoterapii: Stowarzyszenie Natanaelum; 2014.
- 647 49. Devos G, Challet-Bouju G, Burnay J, Maurage P, Grall-Bronnec M, Billieux J. Adaptation
648 and validation of the Gambling Motives Questionnaire-Financial (GMQ-F) in a sample of
649 French-speaking gamblers. *International Gambling Studies.* 2017;17: 87–101.
650 doi:10.1080/14459795.2016.1264080
- 651 50. Cheung GW, Rensvold RB. Evaluating goodness-of-fit indexes for testing measurement
652 invariance. *Structural Equation Modeling.* 2002;9: 233–255.
653 doi:10.1207/S15328007SEM0902_5
- 654 51. IBM Corporation. IBM SPSS Statistics for Windows. Armonk, NY: IBM Corporation;
655 2020.
- 656 52. Ladouceur R, Sylvain C, Boutin C, Doucet C. Le jeu excessif. Comprendre et vaincre le
657 gambling. Montreal: Les Editions de L'Homme; 2000.
- 658 53. Gwiazda M. Hazardziści [The gamblers]. Warszawa: Centrum Badania Opinii Społecznej;
659 2017. Report No.: 68/2017. Available:
660 https://cbos.pl/SPISKOM.POL/2017/K_068_17.PDF
- 661 54. Gaimard M, Gateau M. Seniors and gambling: pleasure or addiction: a French example.
662 *Revista Universitara de Sociologie.* 2016;2016: 25.
- 663 55. Blodgett J, Hill D, Bakir A. Cross-cultural complaining behavior? An alternative
664 explanation. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior.*
665 2006;19: 103–117.
- 666 56. Wojciszke B, Baryła W. Kultura narzekania, czyli o psychicznych pułapkach ekspresji
667 niezadowolenia [The culture of complaining, i.e. about the mental traps of expressing

- dissatisfaction]. Jak Polacy przegrywają, jak Polacy wygrywają [How Poles lose, How Poles win]. Gdańsk: Gdańskie Wydawnictwo Psychologiczne; 2005. pp. 35–68.
57. Wojciszke B, Dowhyluk M. Immorality of success: When legitimization does not work. *Polish Psychological Bulletin*. 2006;37: 213–220.
58. Håkansson A, Jönsson C, Kenttä G. Psychological distress and problem gambling in elite athletes during covid-19 restrictions—A web survey in top leagues of three sports during the pandemic. *International Journal of Environmental Research and Public Health*. 2020;17: 6693. doi:10.3390/ijerph17186693
59. Markham F, Young M, Doran B. The relationship between player losses and gambling-related harm: evidence from nationally representative cross-sectional surveys in four countries. *Addiction*. 2016;111: 320–330. doi:10.1111/add.13178
60. Oksanen A, Savolainen I, Sirola A, Kaakinen M. Problem gambling and psychological distress: a cross-national perspective on the mediating effect of consumer debt and debt problems among emerging adults. *Harm Reduction Journal*. 2018;15: 45. doi:10.1186/s12954-018-0251-9
61. Clark L. Decision-making during gambling: An integration of cognitive and psychobiological approaches. *Philosophical Transactions of the Royal Society B: Biological Sciences*. 2010;365: 319–330. doi:10.1098/rstb.2009.0147
62. López-Torres I, León-Quismondo L, Ibáñez Á. Impulsivity, lack of premeditation, and debts in online gambling disorder. *Frontiers in Psychiatry*. 2021;11: 618148. doi:10.3389/fpsyt.2020.618148
63. Coventry K. Rationality and decision making: The case of gambling and the development of gambling addiction. In: Marotta JJ, Cornelius JA, Eadington WR, editors. *The downside Problem and pathological gambling*. Reno: Institute for the Study of Gambling and Commercial Gaming, College of Business Administration, University of Nevada, Reno; 2002. pp. 43–68.
64. Cieślak A. Behawioralna ekonomia finansowa Modyfikacja paradygmatów funkcjonujących w nowoczesnej teorii finansów [Behavioral financial economics. Modification of paradigms in modern financial theory]. Narodowy Bank Polski; 2003. Available: https://www.nbp.pl/publikacje/materialy_i_studia/ms165.pdf
65. Wagenaar W. *Paradoxes of gambling behaviour*. London: Routledge; 1988. Available: <https://www.routledge.com/Paradoxes-of-Gambling-Behaviour/Wagenaar/p/book/9781138687219>
66. Jensen C, Dixon MJ, Harrigan KA, Sheepy E, Fugelsang JA, Jarick M. Misinterpreting ‘winning’ in multiline slot machine games. *International Gambling Studies*. 2013;13: 112–126. doi:10.1080/14459795.2012.717635

67. Bonnaire C, Bungener C, Varescon I. Subtypes of French pathological gamblers: Comparison of sensation seeking, alexithymia and depression scores. *J Gambl Stud.* 2009;25: 455–471. doi:10.1007/s10899-009-9142-z
68. Bonnaire C, Barrault S, Aïte A, Cassotti M, Moutier S, Varescon I. Relationship between pathological gambling, alexithymia, and gambling type. *The American Journal on Addictions.* 2017;26: 152–160. doi:10.1111/ajad.12506
69. Costes J-M. Evolution of online gambling practices in France over the past 5 years: lessons for the regulation and prevention of problem gambling. 6th International Conference on Pathological Gambling and Behavioral Addictions; 2018; Warsaw.

Supporting information

- S1 Table. Comparison of gambling-related variables between Polish and French samples.
- S2 Table. Testing of GMQ-F invariance between Polish and French samples.
- S3 Table. Logistic regression – results of the block procedure.
- S4 Table. Logistic regression – the final common model and simple effects testing.