Significant wins and their impacts: Predictors of problem gambling in French and Polish national samples

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A B S T R A C T

Aim: We examined the role of significant win experiences alongside psychosocial factors in the risk of problem gambling.
Participants: The study involved adult pure-chance gamblers from representative Polish ($n = 3143$) and French samples ($n = 5692$).
Measurements: The questionnaire encompassed socio-demographic details, gambling behaviours, significant win experiences, gambling motivation, and problem gambling.
Design & setting: Logistic regression analyses unveiled universal and country-specific factors significantly linked to problem-gambling risk.
Findings: Universal factors comprised gender (lower risk among females), age (higher risk for ages 35+), household income (negative association), current and past debt (positive association), type of gambling game (higher risk for games other than lotteries), and gambling frequency (positive association). Risk factors also encompassed heightened coping and social motivations to gamble, while the financial motivation inversely correlated with risk. Inter-country differences featured significant wins in the player's environment, associated with problem-gambling risk only among the French. Then, only the highest amounts spent on gambling in the French group correlated with problem gambling, while lower amounts in the Polish group also did. Notably, a higher problem-gambling risk was observed in the Polish group compared to the French.
Conclusions: A crucial finding was that significant wins were associated with problem gambling, even when controlling for other essential factors. Our study highlights the role of significant wins, construed as subjective gambler experiences, in fostering problem gambling. This insight suggests the need for a paradigm shift in understanding the role of winning in gambling, representing a risky experience regardless of the objective amount gambled.

1. Introduction

The study of gambling winners and the influence of their winnings has often centred on "big winners," yet the criteria for inclusion in this category have varied across studies. The notion of winning, while seemingly conceptually unambiguous (i.e., one wins or loses at a game), is described as the main factor that makes gambling attractive (Ladouceur et al., 2003; Wulfert et al., 2005). The influence of winnings, particularly big wins, on gambling behaviour has been a subject of interest, with some studies suggesting that retrospective reports of substantial wins significantly impact subsequent gambling behaviour (Griffiths, 1995; Turner et al., 2008; Williams et al., 2015). Considering the theoretical framework explaining gambling engagement and the development of disordered gaming, the role of winning as reinforcement is particularly highlighted by learning approaches (James & Tunney, 2017; Weatherly & Flannery, 2008). Gambling research confirms the main findings of animal studies, including the important role of intermittent reinforcement schedules in the development of gambling behaviour (Porter & Ghezzi, 2006).

1.1. Uncertain role of the big win

Although the relationship between winnings and gambling behaviours has been confirmed many times and theoretically justified, the results from studies examining the relationship between "big wins" and problem gambling are less conclusive; there is no consensus among studies (Dowling et al., 2017; Williams et al., 2015).

Research has not yet been able to establish a threshold amount of winnings that would be associated with changes in players' gambling behaviour, which suggests that the primary motivating factor for continued gambling may be the idea of winning, regardless of the amount involved. Some studies indicate that even small winnings can increase the propensity to continue gambling (Weatherly et al., 2004) which may prove the internal subjectivity of this experience. The psychological mechanism here would consist in positive reinforcement, i.e. a rewarding experience for the player, experienced subjectively, depending on the situational context and current needs (therefore, one of the ways of understanding a significant win in our study is that it occurred "at the right moment" – as indicated by the player himself). Consequently, in order to comprehensively understand the role of winning in gambling, it is imperative to move beyond the traditional focus on substantial monetary gains, often referred to as the "big win" in existing literature (Ladouceur et al., 2003; Wulfert et al., 2005).

1.2. The concept of a significant win

To address the above issue, our research adopted an innovative methodological approach, emphasising the concept of "significant winnings" (Authors, 2022; Authors, 2021). This approach, rooted in gamblers' subjective perceptions regarding money and winnings, refrained from imposing any specific criteria, especially concerning the amount of winnings, allowing for a more holistic exploration of the gambler's perspective. In the study we decided to ask players about winnings that were important to them from their point of view and about experiences related to them, without specifying the amount from which the winnings are "important". Based on the analysis of the literature and on the results of the qualitative research on significant wins carried out by the French team earlier, we have developed twelve reasons why winning may be important to the player, and we have defined these winnings as "significant winnings" (Tovar et al., 2021). The reasons were not necessarily related to the amount of the winnings, e.g. "It happened at a difficult time", "This win happened after a series of losses/after a major loss", "Because the starting stake was low".

1.3. The role of winning in research

Furthermore, the influence of other individuals' winnings on gambling behaviour, especially among problem gamblers, has been well-documented. It has been observed that knowledge of someone else's win increases an individual's willingness to take risks (Le Floch et al., 2004; Martinez et al., 2005). However, the mechanisms underlying the effect of winnings ratios on gambling behaviour remain less explored.

However, the impacts of gambling winnings seem to be more widely accepted. There is a large body of work that demonstrates the impact of previous winnings on risk-taking during gambling. For example, in an examination of whether previous winning or losing experiences led to risky betting and positive or negative emotions, university students who had an initial winning experience bet more recklessly than those who had an initial losing experience. Initial winning may predict risky gambling (Cummins et al., 2009). A simulation of winning and losing situations in blackjack with American university students revealed that subjects were inclined to take more risks when their cognitive resources were not diminished after winning (Kostek & Ashrafioun, 2014).

1.4. Additional risk factors for problem gambling

While financial motives, such as the anticipation of winning money, are a significant driving force in gambling, the emotional rewards and mood alterations associated with gambling are also crucial factors, particularly for problem gamblers (Orford, 2011). Flack and Morris (2015) found that emotional motivation, rather than the pursuit of monetary gain, played a more prominent role in predicting problem-gambling scores. This underscores the multifaceted nature of gambling motivations, including the desire to assert social status (Dechant, 2014).

Monetary motives may be central to gambling, but in the transition from social to problem gambling, emotion and escape motives have been linked to various social and financial processes. In the final report, *Problem gambling and harm: Toward a national definition*, the Ministerial Council on Gambling of Australia recommends the following definition of problem gambling (PG): "Problem gambling is characterised by difficulties in limiting money and/or time spent on gambling, which leads to adverse consequences for the gambler, others, or for the community" (Neal et al., 2005, p. 5). This definition encompasses not only behaviour but also harm resulting from excessive gambling. This inclusive approach acknowledges the practical considerations of regulation and clinical interventions while promoting a greater focus on the gambling continuum model.

Reviews of the international problem-gambling literature support the idea that PG results from a complex interplay of bio-behavioural, psychological, social, and environmental factors (Goudriaan et al., 2004; Raylu & Oei, 2002; Volberg, 2002). Among the socio-demographic and economic risk factors for PG, young age and the male gender consistently emerge as significant predictors (Williams et al., 2012). Young adults aged 20–30 years are particularly vulnerable to gambling-related issues (Welte et al., 2011), and men compared to women are more likely to both gamble and develop gambling problems (Abbott et al., 2016; Boldero et al., 2010; Boldero & Bell, 2012). Men also exhibit a relatively higher prevalence of PG (Scholes-Balog et al., 2014). Other authors have also emphasised the importance of the type of gambling as a predictor of PG emphasizing the high additivity of slot machines (Mazar et al., 2020; Murch & Clark, 2021). Furthermore, early initiation into gambling and having close relatives with gambling problems are recognised risk factors for gambling disorders (Bondolfi et al., 2000; Vachon et al., 2004; Volberg et al., 2001).

In addition to socio-demographic factors, the financial situation of gamblers, including income and debt, has gained attention. Financial debt is often emphasised in accounts of problem gamblers, both as an outcome of their behaviour and as a motivation to continue gambling (Karter, 2012). Recent research, such as the study by Quilty et al. (2016), has begun to explore the relationship between money, income, debt, and gambling, highlighting the complex interplay of these factors.

In summary, while the scientific literature acknowledges the significant impact of winnings on gambling practices, there remains uncertainty regarding the precise influence of the winning experience on the development of PG. This ambiguity may stem from an overly narrow conception of winning, often centred on substantial wins. Our research tried to address this limitation by focusing on the gambler's subjective winning experience, using the concept of "significant win." This approach allowed for a more comprehensive understanding of the dynamics of gambling behaviour and PG.

The aim of this study is to examine the contribution of significant win experience to PG within the broader spectrum of risk factors.

2. Method

In France, an online survey targeted adults aged 18–64 and was conducted by Médiamétrie, an institute with a volunteer panel for online surveys. The participants were incentivised with rewards, such as gift vouchers, airline miles, or charitable donations. They maintained an ongoing, anonymous relationship with Médiamétrie, fostering openness

in disclosing gambling-related concerns. Survey invitations were emailed without specifying the survey's gambling nature to prevent recruitment bias. The initial stage of stratified sample selection considered variables including gender, age, occupation, conurbation size, and regional distribution, according to national census data (Insee, 2020).

In Poland, the online survey targeted adults aged 18–64 and was carried out through the nationwide research panel Ariadna (Panel Badawczy Ariadna, 2020). The research was conducted anonymously online. The participants voluntarily engaged in the research and received gratification in the form of points redeemable for gifts. To participate, subjects indicated their consent by unchecking the consent box in the questionnaire before the study commenced. The stratified sample selection in the initial research stage considered gender, age, and hometown size according to Statistics Poland's (2020) yearly data.

In order to minimize the potential confounding effect of gambling game diversity on the obtained results (Murch & Clark, 2021), we decided to focus only on players of so-called pure chance games as opposed to games of chance and skill (Spiegelhalter, 2019). Pure games of chance are those in which there are no additional factors that can objectively influence the game's outcome, e.g. knowledge or skills as in the case of sports betting or playing poker. This category includes lotteries, scratch cards, slot machines, roulette, and other casino games solely based on pure chance. Skill-based games feature skilled players who can win statistically more often than unskilled players. Pure chance games do not feature skilled players, and any betting strategy is no more profitable than playing based solely on chance (Orkin, 2024). The belief in one's own influence on the outcome in games of pure chance is based primarily on cognitive distortions (Wohl & Enzle, 2002). We therefore included only pure chance players in the study to eliminate the "skilling" factor, which could influence the probability of a significant win, but also the way it is experienced. In France, certain legal pure-chance games have been available in both land-based sales outlets and online since 2010; others are only available in land-based formats. The sale of lottery games (draws and scratch cards) is monopolized by Française des Jeux (on the Internet or at sales outlets), and only land-based casinos provide slot machines and other pure-chance casino games.

In Poland, legal pure-chance games are offered in land-based sales outlets, encompassing lotteries, scratch cards, and slot machines in slot machine arcades, all provided by Totalizator Sportowy, a government-owned company. Additionally, other pure-chance games are available in land-based casinos. Since 2018, Poland has also allowed legal online gambling, with one legal online casino and lotteries offered by Totalizator Sportowy.

Our research's decision to focus on pure-chance games was substantiated by their prevalence in both French and Polish gambling landscapes. Approximately 9 out of 10 players in France reported having engaged in scratch cards, draws, and slot machines in the last 12 months (Costes et al., 2020). Similarly, 8 out of 10 players in Poland had participated in these games (Moskalewicz et al., 2019). Furthermore, the degree of chance involved in gambling requiring skill, such as poker and sports betting, varies significantly (Stevens & Young, 2010).

2.1. Participants

The Polish sample consisted of 3,143 individuals engaged in pure-chance gambling, selected from a larger representative sample of 7,320 adult internet users aged 18 to 64. Similarly, the French sample included 5,692 pure-chance gamblers, filtered out from the pool of 10,004 individuals aged 18 to 64, representing the general population. Individuals were selected using the quota method.

To ensure the inclusion of only pure-chance game players in the study group, two specific questions were posed: "During the past 12 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 sample included only individuals who selected one response from the options:

"lotteries," "scratch cards," "slot machines," and "other casino games, excluding poker".

This study incorporated several socio-demographic variables, including gender, age, place of residence, education level, marital status, monthly income, and debts. A detailed breakdown of the sample's sociodemographics are provided in Table 1.

Notably, the two samples exhibited variations in socio-demographic factors: gender distribution, age, education level, household income, and debt status. Polish participants were slightly more likely to be male and younger compared to the French. Education levels were also higher among Polish participants, with more reporting education beyond SSC. Household income differed as well, with a larger share of Polish participants earning above the median household income, while the French were more likely to report having debts, particularly current debts.

Regarding gambling-related characteristics, Polish participants were more likely to have observed a significant win among their close contacts, and a larger proportion preferred lottery games compared to the French, who leaned more towards scratch cards and other forms. Differences in gambling expenditure were also evident, with Poles reporting higher spending overall. In terms of frequency, French participants were more likely to gamble weekly, while Poles – regularly, albeit less than once a week. Significant wins were more common among Polish participants, aligning with higher observed rates of problem gambling.

The comparison of gambling motives between participants from France and Poland also revealed significant cultural differences across four factors. Specifically, Polish participants reported higher enhancement motives ($M = 1.95$, $SD = 0.713$) than their French counterparts ($M = 1.88$, $SD = 0.716$), $t(6497.66) = -4.56$, $p < 0.001$, $d = 0.10$. Similarly, for social motives, Polish participants ($M = 1.53$, $SD = 0.649$) scored significantly higher than French participants ($M = 1.33$, $SD = 0.569$), $t(5798.70) = -14.78$, $p < 0.001$, $d = 0.39$. In the coping motive category, Polish individuals ($M = 1.55$, $SD = 0.647$) again exhibited significantly higher scores than those from France ($M = 1.34$, $SD = 0.577$), $t(5880.90) = -15.13$, $p < 0.001$, $d = 0.39$. Conversely, French participants reported higher financial motives ($M = 2.71$, $SD = 0.886$) compared to Polish participants ($M = 2.59$, $SD = 0.864$), $t(6621.20) = 5.91$, $p < 0.001$, $d = 0.09$. These findings indicate importance of cultural context in shaping motivational factors.

2.2. Measures

The surveys employed an online questionnaire developed by Marie-Line Tovar and Jean-Michel Costes. This online questionnaire was crafted based on findings from a preceding qualitative study validated by a steering committee within the Study on the Impacts of Significant Wins (ENIGM) project (Tovar et al., 2021).

The primary aim of the qualitative study was twofold: first, to enhance the design of the quantitative questionnaire, and second, to explore subjective dimensions that are challenging to investigate quantitatively. The gambling winning questionnaire consisted of five modules. Two modules delved into the gambler's current situation, encompassing socio-demographic characteristics and gambling practices (including motivation), while the remaining three modules gathered information related to significant wins.

2.2.1. Problem gambling

In this study, respondents who had gambled at least once in the 12 months preceding the survey across one or more types of pure gambling were presented with nine questions derived from the Problem Gambling Severity Index (PGSI) (Ferris & Wynne, 2001). This index generates a composite score spanning from 0 to 27.

The PGSI includes questions to evaluate an individual's gambling behaviour's potentially problematic or harmful aspects (Ferris & Wynne, 2001). Respondents provided their answers using a 4-point scale: 0 = never, 1 = sometimes, 2 = most of the time, and 3 = almost always. The scores for each question were then aggregated to

Table 1
Comparison of socio-economic characteristic and gambling behaviors between French (N = 5692) and Polish (N = 3143) participants.

		FR	PL	χ^2	df	p	V
Gender	1 Males	44.60 %	46.90 %	4.476	1	0.034	0.23
	2 Females	55.40 %	53.10 %				
Age	1 18–34	27.80 %	42.70 %	203.985	1	0<.001	0.15
	2 35 +	72.20 %	57.30 %				
Education	1 SSC or lower	46.70 %	44.10 %	5.377	1	0.02	0.02
	2 Higher than SSC	53.30 %	55.90 %				
Household income	1 <= MHI	42.30 %	36.50 %	24.882	1	0<.001	0.06
	2 > MHI	57.70 %	63.50 %				
Debts	1 None	47.50 %	57.70 %	84.323	2	0<.001	0.10
	2 In the past	38.40 %	31.10 %				
	3 Present	14.20 %	11.20 %				
Age of gambling onset	1 <= 19	50.60 %	50.40 %	0.026	1	0.873	0.002
	2 20+	49.40 %	49.60 %				
Big win in envronment	1 Yes	25.00 %	38.20 %	168.256	1	0<.001	0.14
	2 No	75.00 %	61.80 %				
Type of game	1 Lottery	52.80 %	59.70 %	38.572	1	0<.001	0.07
	2 Scratch cards and other	47.20 %	40.30 %				
Spending on gambling	1 1Q	30.70 %	26.70 %	124.658	2	0<.001	0.12
	2 2-3Q	45.60 %	57.30 %				
	3 4Q	23.70 %	16.00 %				
Frequency of gambling	1 At least once a week	34.30 %	25.90 %	66.092	1	0<.001	0.09
	2 Regularly, but less than once a week	65.70 %	74.10 %				
Significant win	0 No	68.00 %	61.30 %	39.607	1	0<.001	0.07
	1 Yes	32.00 %	38.70 %				
PGSI (Two categories 5 +)	0 No PG	86.80 %	74.40 %	214.499	1	0<.001	0.16
	1 PG	13.20 %	25.60 %				

calculate a total score for each participant, which was later categorised to determine the level of problematic gambling. Our analyses used 5 points or more as the cut-off point for PG. Several studies supported lowering the cut-off point. According to Williams and Volberg (2014), the PGSI 8 + cut point has a specificity of 99 % (almost no false positives). It only identified 49 % of the problem gamblers based on clinical ratings and many false negatives. Therefore, in the analyses, it was worth expanding the group of respondents who were at risk of gambling addiction to include players at moderate risk of addiction. According to the authors of the PGSI, these are people scoring 3–7 points, but research with various groups has shown that the optimal cut-off point for the moderate risk of addiction is 5 (Currie et al., 2013; Stone et al., 2015; Williams & Volberg, 2009, 2010).

2.2.2. Significant win and win in the close environment

An international project team developed a proprietary questions to identify how the gamblers defined their significant win and the win in their close environment. First question was, "In your gambling history, have you experienced a win or winnings that were significant to you because of the amount or what you used them for…?" The respondents had choice of 4 categories of answers, "1. One significant win (a win that stands out in your memory)", "2. Several significant wins (wins that stand out in your memory)", "3. A long streak of significant wins", "4. No significant wins". The question about a win in the close environment was, " Before you started gambling, did you know anyone in your close circle (family, friends, partner) who had won a significant amount while gambling for money?" with answer options "Yes" or "No".

2.2.3. Motivation to gamble

Gambling motivation was assessed using the Gambling Motives Questionnaire-Financial (GMQ-F) (Dechant, 2014). In the Polish survey, we utilised the Polish translation of the items, except for the financial dimension, which was translated by Niewiadomska et al. (2014). We employed an adaptation by Devos et al. (2017) for the French survey.

The GMQ-F comprises 15 items, and respondents rate their responses on a 4-point scale (1 = never or almost never, 2 = sometimes, 3 = often, 4 = almost always). This tool enables researchers to gauge the intensity of four gambling motives: (1) financial, (2) social, (3) enhancement, and

(4) coping. In our pursuit of cross-cultural comparisons, we conducted a GMQ-F cross-cultural invariance analysis using confirmatory factor analysis, as detailed in our previous publication (Authors, 2022). Upon achieving invariance, thus facilitating intercultural comparisons, we computed the Financial Motive subscale results, excluding item 8. In this study, the Cronbach's α reliability coefficients for the subscales in Poland and France were as follows: enhancement, 0.87 and 0.82; social, 0.86 and 0.83; coping, 0.89 and 0.88; and financial, 0.84 and 0.79, respectively.

2.2.4. Socio-Demographic and Gambling-Related variables

The study encompassed several socio-demographic and gambling-related variables, including gender, age, education level, household income, debts, age at the onset of gambling, significant wins in a specific environment, the preferred pure-chance game (PCG), expenditure on gambling, and gambling frequency. These variables were assessed using a questionnaire, and the questionnaire items can be found in Table S1.

For the logistic regression analysis, we re-coded specific responses as follows: place of residence: France = 1, Poland = 2; gender: male = 1, female = 2; age: ≤34 = 1, 35+ = 2; education level: ≤SSC = 1, SSC+ = 2; household income: ≤mean household income (MHI) = 1, MHI+ = 2; debts: none = 1; in the past = 2; present = 3; age at gambling onset: ≤19 = 1, 20+ = 2; significant win in the close environment: yes = 1, no = 2; preferred PCG: lottery = 1, other PCG = 2; spending on gambling: 1Q (quartile) = 1, 2Q & 3Q = 2, 4Q = 3; and frequency of gambling: at least once a week = 1, regularly, but less than once a week = 2.

2.3. Analyses

We employed standard statistical procedures to analyze the dataset, including Pearson correlation coefficients (*r*) for relationships between continuous variables, as well as between continuous and dichotomous variables (as point-biserial correlations), and between two dichotomous variables (as φ coefficients). We also used Cramér's *V* for associations between nominal variables and eta (*η*) to assess nonlinear associations between categorical and continuous variables.

Logistic block regression was used to both investigate predictors of PG in both countries and assess whether a significant win (and its

possible interactions) contributed more than essential factors only to explaining PG as well as to build the model of factor contributing to PG in both countries. The flow of the procedure is presented at Fig. 1. In the five blocks, the following predictors were added sequentially. In the first block, all factors were entered, including the country (the factors' main effects on PG test). In the second block, we added the interactions of the factors with the country to control for moderating the effects of factors on PG by cross-cultural differences. The significant win was added in Block 3 to see if it explained the variance over factor effects while considering cultural differences. In the fourth block, the interaction between a significant win and other factors (including country) was added to check if the significant win moderated the factor's effect on PG. Finally, the last block validated the three-way interactions by country, significant win, and factors to check whether the country moderated any possible significant win moderations of the factor' effects on PG. The model containing all predictors and related interactions constituted the full model.

After computing the full model, we analysed it backwards to eliminate higher-level interactions. This approach was applied to simplify the model by removing non-essential interaction terms, which allowed for clearer interpretation of the significant lower-order effects. Importantly, we adhered to the hierarchy principle, ensuring that if a higher-order interaction term was retained, the corresponding lower-order terms were also kept, regardless of their statistical significance.

The elimination process focused on the exploratory interactions included to assess their presence rather than to confirm any hypothesized effects. Specifically, while we anticipated cross-cultural differences in the factors influencing problem gambling risk, we had no strong theoretical expectations regarding interactions between significant wins and other variables. Therefore, the elimination aimed to enhance model

interpretability by pruning non-significant interactions.

Throughout the elimination process, we monitored the consistency of effect estimates across successive models to ensure robustness. Additionally, we assessed the model's goodness-of-fit at each step using several indices: the omnibus test of model coefficients, Cox & Snell pseudo-R^2, Nagelkerke pseudo-R^2, and the Hosmer-Lemeshow test. This comprehensive evaluation allowed us to maintain a balance between statistical rigor and model simplicity while ensuring the interpretability of our results.

First, we eliminated insignificant three-way interactions (from Block 5). Then, the two-way interactions of factors with a significant win (no moderators by a significant win of the factor effect from Block 4 were eliminated). Next, we skipped Block 3 and eliminated irrelevant two-way interactions with the country (i.e., insignificant cross-cultural differences from Block 2). Finally, we checked whether a significant win (and its possible interactions) contributed more than essential factors only to explaining PG. All eliminations of interactions were done using the backward elimination method to preserve consistency of the procedure. Throughout the process, we adhered to the hierarchy principle, ensuring that if a higher-order interaction was retained, the lower-order terms remained, regardless of significance.

The statistical analyses were conducted using SPSS (IBM Corporation, 2021). The data supporting the findings described in this manuscript have been deposited in a public repository at https://osf.io/zyh5m/?view_only=1a60843078b14cca8c87191f11cd2bb1.

2.4. Ethics

The study procedures adhered to the principles outlined in the Declaration of Helsinki and the standards of good research practice recommended by the American Psychological Association. Participants were informed about the research's confidentiality, anonymity, and right to withdraw.

In Poland, the study received approval from the Institute of Psychology Ethics Committee at the John Paul II Catholic University of Lublin (KEBN_35/2020). In France, the study was approved by the steering committee of the research project, ensuring compliance with the General Data Protection Regulation and the standards of the Commission Nationale de l'Informatique et des Libertés (National Commission on Information Technology and Liberties) imposed on the sector of the Institutes of French Studies.

All participants provided written informed consent. In the French study, individuals received an email invitation explaining the survey project and prompting them to access a dedicated website if they agreed to participate. By accessing the website and completing the questionnaire, they confirmed their participation. In Poland, respondents agreed to the research's terms and conditions, including receiving invitations to participate, by ticking a box during registration in the Ariadna Panel. Subsequently, the respondents affirmed their participation by accessing the research website and completing the questionnaire.

3. Results

3.1. Preliminary analysis

The preliminary analysis examined differences between two countries and (see Table 1) correlations between gambling-related variables within French (FR) and Polish (PL) samples (see Table 2).

A PGSI score of 5 or more showed a significant positive correlation with experiencing a significant win in both the French ($r = 0.31$, $p < 0.001$) and Polish ($r = 0.34$, $p < 0.001$) samples, suggesting a robust link between significant winning experiences and PG severity across these cultural contexts.

Further analysis revealed that among socio-demographic factors, age was negatively correlated with a PGSI score of 5 or more, suggesting that younger individuals were at greater risk (FR: $r = -0.20$, $p < 0.001$; PL: r
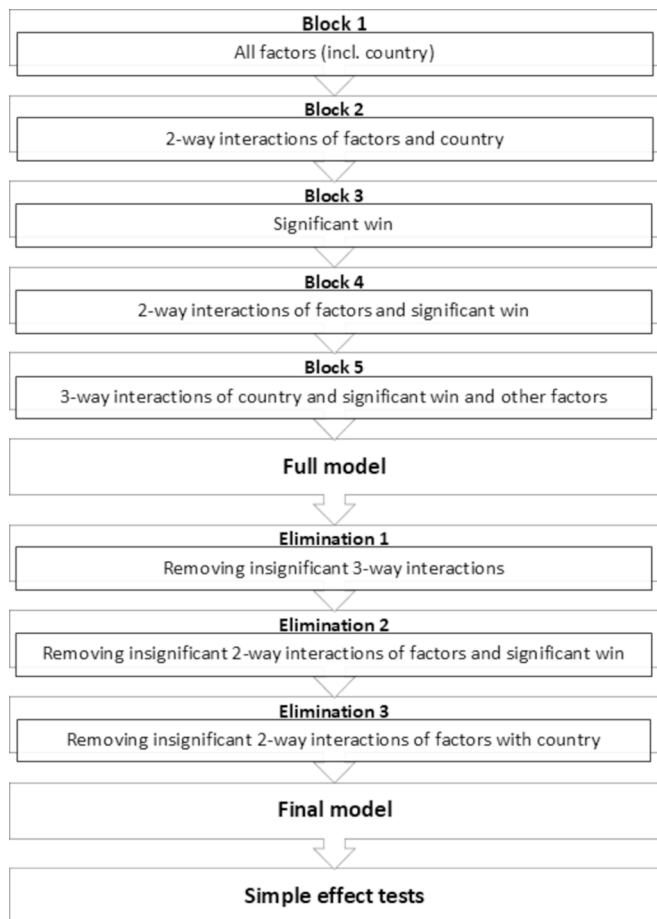

Fig. 1. Logistic Block Analysis Procedure.

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Table 2
Descriptive statistics and correlations between variables in the study for France (below diagonal) and Poland (above diagonal).

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
M			0.39	0.26	1.53	1.57	1.56	1.64	1.54	1.50	1.62	1.40	1.89	1.74	1.95	1.53	1.55	2.59
SD			0.487	0.437	0.499	0.495	0.497	0.481	0.688	0.500	0.486	0.491	0.645	0.438	0.713	0.649	0.647	0.864
1 Significant win	0.32	0.467		0.34***	0	−0.05**	0	0	0.14***	−0.04*	−0.27***	0.05*	0.25$_V$***	−0.24***	0.29***	0.31***	0.34***	0.05**
2 PGSI (Two categories 5+)	0.13	0.339	0.31***		−0.04*	−0.10***	−0.02	−0.07***	0.18$_V$***	−0.05*	−0.20***	0.10***	0.29$_V$***	−0.27***	0.43***	0.58***	0.65***	0.09***
3 Gender	1.55	0.497	−0.03*	−0.05***		−0.29***	0.09***	−0.02	0.03$_V$	0.08***	−0.05**	0.23***	0.12$_V$***	0.09***	−0.02	−0.03	−0.04*	0.01
4 Age	1.72	0.448	−0.09***	−0.20***	−0.18***		0.04*	0.06**	0.10$_V$***	0.24***	0.08***	−0.27***	0.12$_V$***	0	−0.06***	−0.10***	−0.06**	0.01
5 Education	1.53	0.499	0.01	0.01	−0.05***	−0.09***		0.16***	0.05*$_V$	0.06**	0	−0.09***	0.01$_V$	0.05**	−0.03	−0.03	−0.02	0.01
6 Household income	1.58	0.494	−0.01	−0.08***	−0.13***	0.14***	0.18***		0.15$_V$***	0.02	−0.01	−0.06**	0.09$_V$***	−0.03	0.04*	−0.06**	−0.05*	0.05*
7 Debts	1.67	0.711	0.11***	0.13***	0.12***	0.04*$_V$	0.12***	0.22***		0.01$_V$	0.07***	0.01$_V$	0.05**	0.11***	0.12***	0.12***	0.17***	0.11***
8 Age of gambling onset	1.49	0.500	−0.12***	−0.06***	0.03*	0.32***	−0.04**	0.05***	0.05**		0.06**	−0.03	0.05*$_V$	0.02	−0.11***	−0.06***	−0.04*	−0.11***
9 Big win in envronment	1.75	0.433	−0.27***	−0.33***	−0.03*	0.13***	0.03*	0.05***	0.11$_V$***	0.08***		−0.03	0.13$_V$***	0.11***	−0.19***	−0.26***	−0.23***	−0.09***
10 Type of game	1.47	0.499	0.08***	0.08***	0.17***	−0.20***	−0.05***	−0.09***	0.05**	−0.11***	−0.07***		0.11***	0.02	0.09***	0.09***	0.08***	−0.11***
11 Spending on gambling	1.93	0.734	0.21$_V$***	0.25$_V$***	0.11$_V$***	0.06$_V$***	0.07$_V$***	0.05$_V$**	0.01$_V$	0.07$_V$***	0.13$_V$***	0.10$_V$***		0.41$_V$***	0.30$_\eta$***	0.24$_\eta$***	0.30$_\eta$***	0.21$_\eta$***
12 Frequency of gambling	1.66	0.475	−0.19***	−0.25***	0.11***	−0.06***	0.07***	−0.02	0.03$_V$	−0.06***	0.13***	0.19***	0.51$_V$***		−0.27***	−0.23***	−0.29***	−0.14***
13 Enhancement motive	1.88	0.716	0.28***	0.42***	0	−0.14***	0.02	0.01	0.08$_\eta$***	−0.11***	−0.21***	0.18***	0.29$_\eta$***	−0.22***		0.63***	0.70***	0.47***
14 Social motive	1.33	0.569	0.27***	0.60***	−0.04**	−0.14***	0.01	−0.03	0.09$_\eta$***	−0.04**	−0.31***	0.08***	0.24$_\eta$***	−0.24***	0.54***		0.78***	0.16***
15 Coping motive	1.34	0.577	0.31***	0.68***	−0.02	−0.15***	−0.02	−0.07***	0.16$_\eta$***	−0.05***	−0.31***	0.08***	0.29$_\eta$***	−0.29***	0.63***	0.77***		0.29***
16 Financial motive	2.71	0.886	0.09***	0.06***	−0.02	0.04**	−0.01	0.02	0.14$_\eta$***	−0.06***	−0.04**	−0.19***	0.20$_\eta$***	−0.19***	0.34***	0.07***	0.17***	

**p < 0.001, *p < 0.01, p < 0.05.

Note: r Pearson correlation coefficients, without subscripts, are applied to two continuous variables, to one continuous and one dichotomous variable (as point-biserial correlation), and between two dichotomous variables (as φ).

V – Cramér's *V* measures association strength between nominal variables, ranging from 0 (none) to 1 (perfect association).

η – Eta (η) represents nonlinear associations between categorical and continuous variables, ranging from 0 (no association) to 1 (perfect association). *p*-values are derived from an ANOVA.

= -0.10, $p < 0.001$). Gender had a small but significant effect, with men more prone to gambling problems (FR: $r = -0.05$, $p < 0.001$; PL: $r = -0.04$, $p = 0.013$), while education did not show significant associations with a PGSI score of 5 or more in either country. Household income exhibited a weak inverse relationship, slightly stronger in France (FR: $r = -0.08$, $p < 0.001$; PL: $r = -0.07$, $p < 0.001$), and debts showed a moderate association with a PGSI score of 5 or more, more pronounced in the Polish sample (FR: $\eta = 0.13$, $p < 0.001$; PL: $\eta = 0.18$, $p < 0.001$).

Among gambling-related variables, spending on gambling had a moderate positive association with a PGSI score of 5 or more (FR: $V = 0.25$, $p < 0.001$; PL: $V = 0.29$, $p < 0.001$). Frequency of gambling was negatively correlated, suggesting that those who gambled more frequently exhibit more problem behaviors (FR: $r = -0.25$, $p < 0.001$; PL: $r = -0.27$, $p < 0.001$) (the negative correlation comes from the coding of the frequency of gambling). Type of game had a positive association with a PGSI score of 5 or more, indicating that the nature of the games played was linked to gambling problems (FR: $r = 0.08$, $p < 0.001$; PL: $r = 0.10$, $p < 0.001$). Big wins in the environment showed a significant negative correlation, indicating that individuals exposed to others' big wins were less likely to have a PGSI score of 5 or more (FR: $r = -0.33$, $p < 0.001$; PL: $r = -0.20$, $p < 0.001$). Age of gambling onset had a weak but significant negative association (FR: $r = -0.06$, $p < 0.001$; PL: $r = -0.05$, $p = 0.011$).

The analysis of gambling motives revealed that the coping motive had the strongest association with a PGSI score of 5 or more, indicating that individuals who gambled to manage stress or emotions were more likely to exhibit PG behaviors (FR: $r = 0.68$, $p < 0.001$; PL: $r = 0.65$, $p < 0.001$). The social motive was also significantly associated with a higher PGSI score of 5 or more, reflecting the role of social engagement in gambling behavior (FR: $r = 0.60$, $p < 0.001$; PL: $r = 0.58$, $p < 0.001$). The enhancement motive showed a moderate positive correlation (FR: $r = 0.42$, $p < 0.001$; PL: $r = 0.43$, $p < 0.001$), while the financial motive had a weaker association, though still significant (FR: $r = 0.06$, $p < 0.001$; PL: $r = 0.09$, $p < 0.001$).

These findings highlighted associations between gambling motives, significant wins, and socio-demographic factors with problem gambling, with some patterns varying between France and Poland.

3.2. Main analysis

A logistic block analysis integrated the study's variables into the data treatment. In the five blocks, the following predictors were added sequentially (see Fig. 1). In the first block, all factors were present, including the country (the factors' main effects test on PG). In the second block, we added the interactions of the factors with the country to control for moderating the effects of factors on PG by cross-cultural differences. The significant win was added in Block 3 to see if it explained the variance over factor effects while considering cultural differences. In the fourth block, the interaction between a significant win and other factors (including country) was added to check if the significant win moderated the factor's effect on PG. Finally, the last block validated the three-way interactions by country, significant win, and factors to check whether the country moderated any possible significant win moderations of the factor' effects on PG. The model containing all predictors and related interactions constituted the full model. After computing the full model, we analysed it backwards to eliminate higher-level interactions. First, we eliminated insignificant three-way interactions (from Block 5; Elimination 1). Then, the two-way interactions of factors with a significant win (no moderators by a significant win of the factor effect from Block 4) were eliminated (Elimination 2). Next, we skipped Block 3 and eliminated irrelevant two-way interactions with the country (i.e., insignificant cross-cultural differences from Block 2, Elimination 3). Finally, we checked whether a significant win (and its possible interactions) contributed more than essential factors only to explaining PG. All eliminations were done using the backward elimination method. All analysis steps are reported in the

"Models", and "Goodnes-of-fit indices" sheets in Supplemental Materials. The model acquired in the above way we called the Final Model, and it is presented in Table 3. When the interaction with the country was significant, tests of simple effects were computed (see Table S3).

The analyses allowed us to identify factors significantly associated with the risk of PG (problem gambling) in the study group. First of all, the risk of PG was significantly higher in Poland than in France ($p = 0.004$; OR = 1.90 [1.22, 2.94]). In addition, the risk of PG was lower among women ($p < 0.001$; OR = 0.68 [.56, 0.81]) and among respondents aged 35+ ($p < 0.001$; OR = 0.49 [.41, 0.60]), and it is also lower when household income is higher ($p < 0.001$; OR = 0.72 [.60, 0.86]). The risk of PG was positively related to the presence of debt – both in the past ($p < 0.001$; OR = 1.80 [1.48, 2.18]), as well as currently ($p < 0.001$; OR = 2.51 [1.94, 3.25]) and in the case of gambling games other than lotteries ($p = 0.006$; OR = 1.29 [1.08, 1.55]). The risk of PG is also higher as the frequency of gambling increased ($p = 0.004$; OR = 1.33 [1.09, 1.61]). The analyses also revealed the vital role of motivation in explaining PG. The coping motive was the most important predictor of PG ($p < 0.001$; OR = 9.91 [7.97, 12.32]). The social motive was also associated with PG ($p < 0.001$; OR = 2.18 [1.82, 2.61]). In turn, financial motivation was associated with a negative prediction in terms of PG ($p < 0.001$; OR = 0.69 [.60, 0.78]).

Our analyses found no significant three-way interactions (i.e., country x significant win x factor). This result means that the country did not moderate the possible significant win moderations of the factor effects on PG (Elimination 1). Then, there were no significant interactions of factors with a significant win: This did not moderate the effects of factors on PG (Elimination 2). Using the backward elimination method (Elimination 3), we obtained two significant interactions of factors with the country: country by a significant win in the environment on PG and country by spending on gambling on PG. The country moderated the effect of these two factors on PG. Taking into account the above results in the Final Model, we obtained the result that a significant win was a significant factor ($p < 0.001$; OR = 1.82 [1.52, 2.18]) and contributed to PG, even when controlling for other essential factors. However, the pseudo-R^2 increase was not impressive (<1%).

Taking into account cultural differences in predictors, simple effects showed that a significant win in the environment in France was significant in explaining PG (OR = 2.38 [1.86, 3.05], $p < 0.001$). In Poland it was insignificant (OR = 1.06 [0.81, 1.37], $p = 0.687$).

Another factor was spending on gambling. In France, the only amount of money from the fourth quartile (4Q) was significant in explaining PG in reference to Q1 (French: 2/3Q OR = 1.21 [0.85, 1.72], $p = 0.582$; 4Q OR = 1.99 [1.35, 2.93], $p < 0.001$). In Poland, the fourth quartile (4Q), but also the second and third quartile (2/3Q), were significant in explaining PG (Polish: 2/3Q OR = 1.79 [1.26, 2.55], $p = 0.001$; 4Q OR = 4.34 [2.78, 6.79], $p < 0.001$). It is worth noting that the effect of 4Q was two times stronger in Poland than in France.

4. Discussion

4.1. Significant win and problem gambling

While the role of a significant win in PG is controversial as it depends on researchers' definitions, we analysed the association between self-defined significant winning and gambling problems in our sample comparison of French and Polish pure-chance gamblers. A key finding was that a significant win was a significant factor and contributed to PG, even when controlling for other essential factors. It was not the case that the impact of winning on the development of PG depended on other moderating factors, which was of particular interest in our research. The experience of a situation where a gambler felt that they had won a significant win (important in a subjective sense) for themselves and which they particularly remembered turned out to be a significant predictor of the development of PG. This was related to positive arousal, as confirmed by studies among card players (Cummins et al., 2009). Our

Table 3
Final Model for Predicting Problem Gambling (N = 8,183).

Predictor	B	S.E.	Wald	df	p	OR	95 % C.I.for OR	
							Lower	Upper
Constant	−6.724	0.269	626.837	1.000	0<.001	0.001		
Country (PL)	0.639	0.224	8.120	1.000	0.004	1.895	1.221	2.941
Gender (Fem)	−0.392	0.093	17.913	1.000	0<.001	0.676	0.564	0.810
Age (35+)	−0.708	0.098	52.349	1.000	0<.001	0.493	0.407	0.597
Education (higher)	0.144	0.090	2.552	1.000	0.110	1.155	0.968	1.377
Household income (>MHI)	−0.328	0.093	12.519	1.000	0<.001	0.720	0.600	0.864
Debts			60.970	2.000	0<.001			
Debts (in the past)	0.586	0.098	36.082	1.000	0<.001	1.797	1.484	2.175
Debts (present)	0.920	0.131	48.973	1.000	0<.001	2.509	1.939	3.246
Age of gambling onset (1)	0.008	0.093	0.008	1.000	0.928	1.008	0.841	1.209
Big win in environment (present)	0.872	0.124	49.454	1.000	0<.001	2.391	1.875	3.048
Type of game (other)	0.255	0.093	7.526	1.000	0.006	1.290	1.076	1.548
Spending on gambling			22.628	2.000	0<.001			
Spending on gambling (2–3Q)	0.234	0.174	1.801	1.000	0.180	1.263	0.898	1.777
Spending on gambling (4Q)	0.775	0.187	17.169	1.000	0<.001	2.170	1.504	3.130
Frequency of gambling (at least once/week)	0.283	0.099	8.257	1.000	0.004	1.328	1.094	1.611
Enhancement motive	0.017	0.098	0.029	1.000	0.865	1.017	0.840	1.231
Social motive	0.778	0.094	68.890	1.000	0<.001	2.177	1.812	2.616
Coping motive	2.293	0.111	424.599	1.000	0<.001	9.908	7.966	12.323
Financial motive	−0.374	0.067	31.479	1.000	0<.001	0.688	0.604	0.784
Country by significant win in environment	−0.818	0.177	21.372	1.000	0<.001	0.441	0.312	0.624
Country by spending on gambling			4.991	2.000	0.082			
Country by spending on gambling 2/3Q	0.326	0.246	1.758	1.000	0.185	1.385	0.856	2.241
Country by spending on gambling 4Q	0.604	0.272	4.921	1.000	0.027	1.829	1.073	3.117
Significant win	0.597	0.092	42.020	1.000	0<.001	1.816	1.516	2.176

results thus support the thesis that the subjective experience is more important than the objective value in gambling wins, as confirmed by experimental studies of scratch card players (Kassam et al., 2011). The subjective experience of a significant win turned out to be a factor significantly associated with PG in both Poland and France. It can, therefore, be assumed that this is a universal cross-cultural risk factor for the development of PG. Our study now provides an improved understanding of the so-called "big win" concept from the players' perspective. Previous studies, including Canadian studies, indicated a link between a large win during the first gambling experience and PG (Turner, Zangeneh, et al. (2006)). However, according to Turner and colleagues, a big win for players is between $1,000 and $3,000, although depending on the individual, it can be as low as $25 (Turner, Sharp, et al., 2006). The inconsistent definition of "big win" makes it difficult to interpret data from various studies and understand the concept of big win. The concept of a significant win would allow for a more precise analysis of the role of winning in the trajectory of gambling, emphasising the important role of the player's subjective experience. This is the most important discovery of our research: Given that the objective value of the win is not the most important for the player, the subjective experience of a significant win may be a "loss disguised as a win," as described by Jensen et al. (2013). This means that despite the subjective feeling of winning, the player's overall gambling balance can be negative.

4.2. Universal risk factors for problem gaming for Polish and French gamblers

The research we conducted with representative samples of adult Poles and French allowed us to both determine the specifics of engaging pure-chance gambling in two countries and discover universal risk factors for problematic engagement in these games that are common to both countries.

The first intriguing finding was that among the gamblers we studied, the risk of developing a gambling addiction in pure-chance gambling was higher in the group in Poland than in France. Risky gambling behaviour is most often studied within the context of a single country, and there was a lack of comparative research based on a common methodology. We now have national data indicating that moderate-risk

gambling in France concerns 4.4 % of its gamblers, while 1.6 % of players were likely addicted to gambling, as indicated by the results according to the PGSI (Costes et al., 2020). In Poland, the moderate-risk gamblers constituted 2.4 % of all gamblers, and those likely addicted were 1.7 %. These estimates were made using the Polish adaptation of the PGSI (Moskalewicz et al., 2019). These indicators inform us about practically the same percentage of people with a gambling problem in both countries, which, however, is not reliable due to the varied methodologies of conducting research. Our comparative studies revealed the existence of differences. First of all, it should be taken into account that the average age of gamblers in the Polish group was lower than in the French group which could have affected the PGSI results. Further, the study group included only people who mainly played games of pure chance. The popularity of these games in both countries is different, which may affect the results obtained. Understanding these differences leads also, among others, to the legal regulations of both countries that condition the availability of pure-chance gambling. A significant difference between Poland and France is that in France, slot machines are only available in casinos, while in Poland, there are also gambling halls organised outside of casinos by Totalizator Sportowy, making them more widely available than in France. These gambling halls are located, among other places, in shopping malls frequented by Poles of practically every age. The tradition of slot machines outside of casinos has been long in Poland, only changed by an act of 2009 (i.e., Ustawa z dnia 19 listopada 2009o grach hazardowych [Act on the gambling activities of 19 November 2009]; 2009). However, slot machines outside of casinos functioned until 2015, based on concessions issued before the changes. Polish researchers list slot machines among the most addictive gambling in Poland (Badora et al., 2015), while in France, sports betting is indicated as the game most strongly associated with gambling addiction (Costes et al., 2020), which may be related to the different availability of these games in both countries. Additionally, it should be noted that in our research, we only considered PCGs (pure chance games), and only people who primarily played games of pure chance were included in the study group, therefore we do not have data regarding involvement in other types of gambling. The differences we found seem to be mainly due to different levels of involvement in the game on slot machines, as in light of the results, the risk of addiction to gambling is lowest in the case of playing other PGGs as number lotteries, which also, in the light of

population studies in both countries, have turned out to be the least addictive (Badora et al., 2015; Costes et al., 2020).

Regarding the universal risk factors for problematic gambling in both countries, our findings indicate the presence of current and past indebtedness as a significant factor. Indebtedness may be related to gambling in a bidirectional manner. Primarily, gambling is increasingly perceived as a public health issue, not only in the context of addiction but also in terms of the broader losses it generates, including financial consequences (Browne et al., 2017; Sulkunen et al., 2021). The first losses mentioned include finances (Marionneau et al., 2023). Debts may thus be a consequence of gambling, fuelling a cyclic need for further gambling, potentially as an attempt to recoup losses. Current or past indebtedness could also signal an unstable financial situation, which in turn may drive the need to gamble and consequently lead to problematic gambling behaviour. Recent research in Thailand found a link between the risk of increased gambling and financial instability (participants were individuals working without a contract) (Amonhaemanon, 2023). This dependency is consistent with another result we obtained, indicating that higher household incomes act as a universal protective factor against the development of gambling addiction in both countries. In Polish population studies, financial benefits were cited as one of the main factors encouraging gambling (Moskalewicz et al., 2019).However, it is also important to note the limitation of our results. The PGSI questionnaire contains items that directly refer to financial problems, which may increase the correlation between debts and PGSI results.

A meta-analysis by Tabri et al. (2022) also identified the role of the financial motive in the development of problematic gambling. However, our study found that financial motivation for gambling acted as a negative predictor of problematic gambling in both countries, which appears to contradict previous interpretations. One explanation for this discrepancy may lie in the nature of the questions regarding debts and motivations. The question about debts required a straightforward 'yes/no' response, whereas questions about motivations asked participants to express personal attitudes and behaviors. Research by Hing et al. (2014) suggests that gambling is often stigmatized, which can trigger defensive mechanisms to reduce internal discomfort. This could lead to a higher likelihood of downplaying financial motivations related directly to gambling, while still acknowledging the consequences (e.g., debts).

Additionally, the differences between bivariate and multivariate findings in our study reflect the complex interplay of motivations. The bivariate analysis showed a positive, albeit small, effect of financial motives, which aligns with the Tabri et al. (2022) meta-analysis, where the effect size was reduced when controlling for other motives. This suggests that, while financial motives are highly endorsed in our both samples, their association with PG may shift when considering other motives simultaneously. Future studies should further investigate how defensive reporting mechanisms might influence the self-reporting of gambling motivations, especially those related to finances.

Furthermore, Polish qualitative research on gambling motivation (Lelonek-Kuleta, 2022) has emphasized the need for qualitative studies to explore how individuals interpret and attribute meaning to different motives. Although our findings diverge from previous reports on the role of financial motives in gambling addiction, we have noted that other motivations, such as coping and social motives, were consistent predictors of problematic gambling in both countries.

The universal protective factors identified in our study included being female and being over the age of 35. Despite the gradual narrowing of the gender gap in the popularity of gambling, men still constitute a group more at risk of addiction, even in the case of pure-chance gambling games. This trend has been confirmed by population studies covering all gambling games conducted in both Poland and France (Badora et al., 2015; Costes et al., 2020).

4.3. Problem gambling risk factors specific to Polish and French gamblers

Beyond these universal factors, our research also revealed

differences between countries in terms of the risk of gambling addiction. Country moderated the effect of two factors on PG (problem gambling). Observing a significant win in someone's close environment in France explained PG, whereas in Poland, it did not. The phenomenon of the influence of a significant win experienced by someone in the player's close environment in France has been detailed by Tovar et al. (2021). Their analyses show that players who have witnessed someone else's win in their environment tend to gamble more frequently afterwards, exhibit more symptoms of PG, experience a stronger desire to gamble following this event, and are more likely to reinvest their winnings in further gambling compared to those who have not witnessed such wins. The connection between observing someone else's win and excessive engagement in gambling has also been noted in studies of adolescents aged 15–17 (Costes & Tovar, 2022). It is important to note that gambling activity in France appears to have a more social or familial character. According to studies by Costes and Tovar (2022), 70.9 % of gamblers aged 15–17 (those who gambled at least once in the year preceding the study) engaged in gambling activities with one of their parents. We do not have data regarding this phenomenon in Poland, but potential differences in family-based gambling practices in both countries might underlie the observed disparities. Young French people who observe a significant win among their closest relatives are more likely to model gambling, which translates into the normalization of this activity, more frequent engagement in it and the initiation of addiction development processes. Additionally, according to the Public Opinion Research Center (CBOS) studies in Poland, gamblers often conceal their gambling from their environment to avoid criticism (Badora et al., 2015). Gambling activity in Poland is rather perceived negatively, as something shameful. Interestingly, in the light of population studies, Poles identify the word gambler with disorder and problems (Moskalewicz et al., 2019). The differences found in our study can be also related to the perception of gambling, which is more positive in France than in Poland but this direction would require in-depth research. Another factor explaining the results may be the differences in players' exposure to messages about winners and big wins in gambling in both countries. Tovar et al. (2022) draw attention to the explosion of popularity of televised tournaments in France, which closely resemble casino games, and which have led to the omnipresence of the notion of winning and winner on French television. In Tovar's research, players emphasize the strong emotional impact on their desire to play and watch other players win (2022). In Poland this type of games are not usually presented on TV. Another factor that may explain these differences is the perception of a significant win in both countries. French players were significantly more likely than Polish players to describe their wins as significant because they had a high material value for them and because they could contribute them to their household budget (Lelonek-Kuleta et al., 2022). This indirectly indicates a higher financial motivation among French players, which, according to research, is associated with the risk of problem gambling. What is more, in our research, the relationship between motivation measured directly (with the GMQ-F questionnaire) was not confirmed, but this result confirms the hypothesis that methodological considerations and players' reluctance to speak directly about their motivation to play were important here.Another difference in explaining problematic gambling between the two countries is spending on gambling and their relationship with PG. In France, only the highest gambling expenditures were associated with PG, whereas in Poland, problematic gambling was also linked to spending smaller amounts on gambling. Additionally, the effect of the highest amounts in explaining PG was twice as strong in Poland as in France. This is important for recognizing problematic gambling, for which there is no objective indicator of amounts associated with PG. Perception of money and its value is a subjective phenomenon, which is particularly significant in relation to a "significant" win. These differences could be explained by the socio-economic situation in both countries (European Commission, 2022). It may be that the greater normalization of gambling in France is associated with more common recreational

gambling, with maintained control and limited stakes. This is partially confirmed by our results, in light of which the risk of problem gambling is higher in the Polish population. This results in a specific modeling of recreational gambling in France, which is associated with learning controlled gambling strategies that protect against addiction. The negative perception of gambling in Poland, the concealment of this activity, and social stigmatization may be a factor limiting the processes of modeling gambling.

The results obtained in our research lead to important practical implications. First, in the universal prevention of PG, providing education on the phenomenon of winning in gambling and the laws of randomness is particularly important. Furthermore, the player's perspective on perceived wins is more important than objective win values in supporting players, especially since studies show that players tend to incorrectly estimate their gambling wins and losses (Auer & Griffiths, 2017). The identified link between the risk of addiction and selected variables draws attention to groups at particular risk in both countries, such as people in worse socio-economic situations, younger individuals, and men.

Given the limitations of the study, a recommended direction for further research would be longitudinal studies examining behaviours before and after a significant win. It appears that intra-individual factors may play a significant role here.

4.4. Limitations

Our survey was conducted online, which may introduce bias regarding access to the Internet. The data were collected by survey companies, Médiamétrie and Ariadna, from a panel of individuals who had previously consented to participate in online surveys. To ensure a representative sample, we took several measures: the recruitment email did not specify the nature of the survey (i.e., it did not indicate that it focused on gambling) to avoid bias from the over-representation of gamblers and individuals interested in gambling.

Our samples were matched to that of the general French and Polish populations in terms of gender, age, occupation of the head of household, and place of residence. The methodological limitation is using slightly distinct sampling strategies for the Polish and French samples—Poland based on internet user statistics and France based on general population data, and no weights were applied in the analysis. Therefore, the generalizability and comparability of these samples may be limited, and merging them should be interpreted with caution.

It should be also recognised that in order to increase the likelihood that those contacted would agree to participate, a relatively short survey was used that did not include all the factors that might have been associated with gambling problems. As a result, it is possible that a factor the analysis found to be a significant predictor of PGSI score may no longer have been a significant predictor when these other factors were taken into account, and it might be a significant predictor when these other factors are included. In addition, the fact that some of the predictors were correlated reduced the stability of the results. However, the fact that a large number of participants were surveyed mitigated this problem to some extent. Other limitation was that the data were based on memories of past winnings, and memory bias was not controlled for. In addition, a limitation of our study is the inclusion of only pure chance gamblers in the group, which limits the possibility of generalizing the results to other types of games (skill-based). Also the use of backward stepwise regression in our analysis introduces the possibility of overfitting and model instability, which could affect the generalizability of the findings. To mitigate this, we recommend further validation with independent datasets in future research to confirm the robustness of our results.

5. Authors' contribution

Study concept and design (BLK, RPB, M−LT, J-MC), methodology (BLK, RPB, M−LTJ−MC), statistical analysis (RPB, J-MC), writing – original draft (BLK), writing – review & editing (BLK, M−LT, RPB, J-MC), obtained funding (BLK), study supervision (BLK).

The authors had full access to all data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

CRediT authorship contribution statement

Bernadeta Lelonek-Kuleta: Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Funding acquisition, Data curation, Conceptualization. **Marie-Line Tovar:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Funding acquisition, Data curation, Conceptualization. **Rafał P. Bartczuk:** Writing – review & editing, Visualization, Methodology, Formal analysis, Conceptualization. **Jean-Michel Costes:** Writing – review & editing, Methodology, Formal analysis, Conceptualization.

Funding

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.addbeh.2025.108266.

Data availability

Data will be made available on request.

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