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The effects of irrational gambling beliefs on game preference types and participation attitudes: Focusing on university students

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Abstract: This study investigates the influence of irrational gambling beliefs on game preference types and participation attitudes among university students in South Korea. A structured questionnaire survey was conducted with 179 participants, and statistical analyses were performed using SPSS 21.0. The research model includes three hypotheses examining the relationships between irrational gambling beliefs, game preferences, and gambling participation attitudes. The findings indicate that irrational gambling beliefs, particularly overconfidence and skill overestimation, significantly affect game preference types. Game preference types also show a substantial impact on participation attitudes, while skill overestimation has a stronger influence on deep participation attitudes than overconfidence. The results suggest the need for educational programs that correct gambling misconceptions and promote responsible gaming behavior. Additionally, attention should be given to the growing prevalence of Hold'em pubs and the need for stricter regulation and student awareness. This study provides practical insights for university administrators, policymakers, and mental health professionals to develop proactive strategies for preventing gambling addiction in young adults. The findings contribute to the growing body of literature on gambling behavior and provide empirical evidence to support preventive measures in university settings.

Keywords: *Game preference type, Irrational gambling beliefs, Participation attitude, University student.*

1. Introduction

According to Article 3 of the Tourism Promotion Act, Casino is defined as "a business that operates specialized facilities using certain equipment such as dice, cards, or slot machines, where the outcome is determined by chance, providing financial benefits to certain participants while causing losses to others" [1].

According to a 2024 report by the Ministry of Culture, Sports, and Tourism's Convergent Tourism Industry Division, released under the Korea Open Government License Type 3, South Korea has 14 casino operators and 18 gaming establishments. This includes 13 operators with 17 casinos exclusively for foreigners and one casino (Kangwon Land Casino) that allows both domestic and international visitors [2]. Statistical data indicates that the total number of employees in these casinos is 8,760, with 6,683 employed in the 17 foreigner-only casinos and 2,077 in the mixed-access casino. In 2023, the total number of casino visitors was 4,480,166, and the revenue amounted to 2,727.3 billion KRW, with 1,407 billion KRW from the 17 foreigner-only casinos and 1,320 billion KRW from Kangwon Land Casino. This revenue is approaching the 2019 pre-COVID-19 pandemic of 2,930.4 billion KRW [2].

Amid the rapidly changing domestic environment of the integrated resort industry, the government issued joint guidelines on May 10, 2024, titled "Prohibition of Casino-like Activities." These guidelines address the illegal operation of "Hold'em pubs," which have recently emerged as a significant issue due to regulatory blind spots. A Hold'em pub is a hybrid of "Hold'em," a card game played with a dealer, and

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a "pub," where patrons can purchase alcohol while participating in games. The guidelines aim to curb illegal activities by establishing criteria for what constitutes casino-like operations. These criteria include penalties for exchanging chips, seed tickets, or points obtained at Hold'em pubs for cash or goods as well as the prohibition of tournaments funded by entry fees, especially when participant identification cannot be verified [3].

The 2020 survey by the National Gambling Control Commission on gambling industry participation revealed that 18.2% of respondents, representing about 5.95 million people among the total population over 20 years old (approximately 32.69 million), had engaged in gambling activities during their youth [4]. Moreover, advances in IT technology and the widespread use of mobile devices have made it easier to participate in games, leading to the belief that understanding the house edge (the advantage of the casino in each game) can result in superior gameplay strategies, such as betting techniques and the use of game options [5]. This belief can foster irrational gambling beliefs, which are cognitive distortions about the process or outcome of gambling, potentially leading to problem gambling behaviors among youth [6, 7]. Research has shown that irrational gambling beliefs significantly influence problematic gaming behaviors among adolescents, with a higher level of such beliefs correlating with increased gambling behavior [5, 8].

The purpose of this study is to examine the impact of irrational gambling beliefs on game preference types and participation attitudes among university students. Additionally, it aims to provide direction for preventing gambling problems in this demographic and offer insights that can serve as foundational data for managing student gambling behavior and preventing addiction.

2. Theoretical Background

2.1. Irrational Gambling Beliefs

The definition of irrational gambling beliefs is as follows: gamblers develop a set of misguided beliefs that encourage them to continue gambling, even when they have negative expectations about winning [9]. These irrational beliefs about gambling are defined as the underlying cause that compels gamblers to persist in or return to gambling despite ongoing losses [10].

In research aimed at conceptualizing irrational gambling beliefs, Toneatto identified three categories of cognitive errors associated with gambling [10]. The first is the belief that one can control the outcome of gambling through personal skill, ability, or knowledge [10]. This belief is particularly strong in games like casino games, poker, and horse racing, where early success can lead individuals to recall past successes more vividly and overestimate their chances of future success [11]. The second category involves believing that one can accurately predict gambling outcomes based on past wins and losses [10]. For instance, in Blackjack (a card game where the goal is to have a hand value close to 21), a gambler might believe that if a Blackjack hasn't appeared for several rounds, it is more likely to appear in the next round. If a Blackjack does indeed appear, the gambler perceives this as validation of their prediction and calculations [6]. The third category is interpretative bias, which involves reinterpreting outcomes to justify continued gambling, even when experiencing losses [10]. Gamblers with interpretative bias maintain their existing gambling patterns and behaviors, continuing to gamble even when they expect to lose, driven by these erroneous beliefs [9].

According to previous studies, the belief that understanding the house edge (the advantage the casino has in each game) allows one to employ superior gambling strategies (such as betting techniques and the use of game options) can lead to the development of irrational gambling beliefs. These beliefs involve cognitive expectations or assumptions about the gambling process or outcomes that are misguided [6]. Moreover, research on the impact of media exposure on adolescent gambling behavior has shown that higher levels of irrational gambling beliefs are associated with an increase in gambling behavior among youth [5].

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2.2. Game Preference Type

The term "game preference type" refers to the specific types of casino games that an individual prefers [12]. This includes measuring preferences for various casino games such as roulette, blackjack, baccarat, poker, war, big wheel, and sic bo. Researchers emphasize that the most crucial factors in measuring these preferences are the structural differences of the games, specifically the "skill-chance" dimension and the "frequency of game occurrence" [13].

According to previous studies, an analysis of the differences between irrational gambling beliefs perceived by casino employees and game preference types showed that games like blackjack, baccarat, and poker, which have the lowest house edge and where a gambler's strategy and experience can influence the outcome to some extent, were the most preferred. On the other hand, games like Sic bo and Big wheel, which rely purely on luck and have a high house edge, were found to be the least preferred [6]. Additionally, a study investigating the relationship between participation motivation and game preference types among customers of Kangwon Land Casino found that different motivations for participating in casino activities lead to different game preferences. Customers motivated by factors such as competitiveness, recreation, and novelty showed preferences for games like baccarat, poker, sic bo, dice, and big wheel [14].

2.3. Participation Attitude

The unique characteristic of casino games is that, unlike typical products, the "product" in a casino context can be considered the player's victory in the game [15]. Research has shown that the higher an individual's perceived value of casino games, the stronger their participation attitude, which includes sensation-seeking and impulsivity, competitive spirit, level of engagement, and analytical approach to the game [16]. According to previous studies, Goffman, who worked as a casino dealer in Las Vegas, observed that casino patrons engage in behaviors to mitigate risks by demonstrating positive traits associated with casino games, such as courage, tactical use of strategies to defeat opponents, diligence, and maintaining composure within a controlled environment [17].

Upon reviewing existing research, no studies were found that specifically examine the impact of irrational gambling beliefs, game preference types, and participation attitudes among students at four-year universities. Therefore, the purpose of this study is to analyze the relationship between irrational gambling beliefs, game preference types, and participation attitudes. The findings aim to provide foundational data for managing and preventing gambling problems among university students.

3. Method

3.1. Research Model

This study aims to examine how irrational gambling beliefs influence game preference types and participation attitudes among university students. To achieve this, the research model depicted in Figure 1. is proposed.

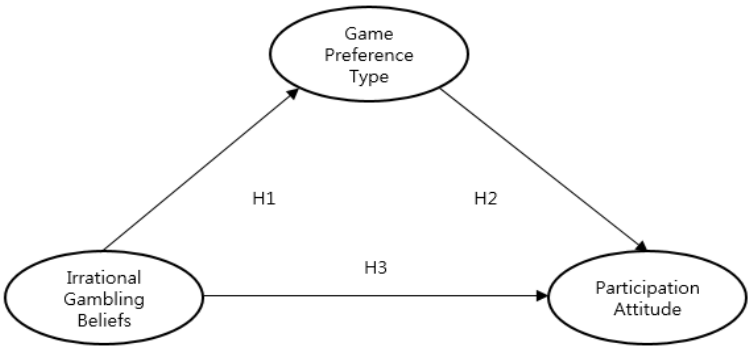

Figure 1.
Research Model.

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3.2. Hypothesis Formulation

3.2.1. Relationship Between Irrational Gambling Beliefs and Game Preference Types

By understanding the house edge of each game, individuals may believe they can employ superior gaming skills (such as betting strategies and game options) compared to others. This belief can lead to irrational gambling beliefs, resulting in cognitive expectations or thought patterns regarding the gambling process or outcome, even when they are flawed. In an analysis of the differences between irrational gambling beliefs and game preference types as perceived by casino employees, it was found that games like blackjack, baccarat, and poker, which have the lowest house edge and where a gambler's strategy and experience can somewhat influence the outcome, are preferred. Based on these previous studies on how irrational gambling beliefs influence game preference types, the following hypothesis is proposed.

H_1: Irrational gambling beliefs will have a positive (+) influence on game preference types.

3.2.2. Relationship Between Game Preference Types and Participation Attitudes

A study on customer usage tendencies and preferences in casinos found no significant differences between nationalities (Japanese and Chinese) regarding components such as facilities and services within the casino. Both Japanese and Chinese casino visitors rated "casino employee service" the highest. Additionally, research on participants' concepts of winning in situations of regular monetary loss in casino games revealed that customers were more conscious of winning than losing. Based on demographic characteristics, men showed a stronger awareness of winning than women. Based on these findings, the following hypothesis is proposed.

H_2: Game preference types will have a positive (+) influence on participation attitudes.

3.2.3. Relationship Between Irrational Gambling Beliefs and Participation Attitudes

Goffman, who has experience working as a casino dealer in Las Vegas, found that casino users exhibit behaviors that reduce risk by demonstrating positive traits such as courage, the use of strategies to outplay opponents, diligence, and maintaining composure in the controlled environment of casino-operated games. To examine the impact of irrational gambling beliefs on participation attitudes among university students, the following hypothesis was formulated.

H_3: Irrational gambling beliefs will have a positive (+) influence on participation attitudes.

3.3. Operational Definition of Variables and Measurement Items

Irrational gambling beliefs are described as a set of misguided beliefs that encourage gamblers to continue gambling even when they have negative expectations about winning [9]. Based on both domestic and international literature and prior research, irrational gambling beliefs are categorized into two factors: overconfidence and skill overestimation. These factors are comprised of 13 items and measured using a 5-point Likert scale [6, 18].

Game preference types refer to the kinds of casino games that individuals prefer [12]. Four out of the seven items from the game preference scale used in previous studies on casino customer usage tendencies and preferences were selected for measurement using a 5-point Likert scale [19].

Participation attitudes were developed to measure the concepts of fantasy and immersion in casino game participation [20]. A modified 5 items, adapted from the tool developed by Swanson and revised by Bae Su-kyung to study participation attitudes, was used, with responses measured on a 5-point Likert scale [16, 20].

3.4. Data Collection and Analysis Methods

To achieve the purpose of this study, a survey was administered to university students from May 20, 2024, to May 31, 2024, over a period of 12 days. Out of 200 distributed questionnaires, 179 were returned and used for final analysis. The data analysis for this study was conducted using IBM SPSS

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Statistics 21.0. The collected data underwent statistical processing through data coding and was analyzed with the statistical package program.

4. Empirical Analysis

4.1. Demographic Analysis of the Sample

Table 1 presents the sample's demographic characteristics, consisting of 179 individuals. Among them, 110 were male (61.5%) and 69 were female (38.5%). The sample included 85 students majoring in Casino Studies (47.5%) and 97 non-majors (52.5%). In terms of age, 178 individuals were in their 20's (99.4%), and one person was in their 30's (0.6%), indicating that over 90% of the sample was in their 20's. Regarding residence, 22 individuals were from Seoul (12.3%), 83 from Gyeonggi (46.4%), two from Busan (1.1%), three from Daegu (1.7%), and 69 from other regions (38.5%), with the highest proportion residing in Gyeonggi. Number of Casino visits was as follows: 151 individuals reported no visits (84.4%), 22 reported 1 to 3 visits (12.3%), 5 reported 4 to 7 visits (2.8%), and 1 reported 8 to 10 visits (0.6%). For Hold'em Pub usage, 155 individuals reported no visits (86.6%), 20 reported 1 to 3 visits (11.2%), 2 reported 4 to 7 visits (1.1%), 1 reported 8 to 10 visits (0.6%), and 1 reported more than 16 visits (0.6%).

Table 1.
Demographic characteristics of the sample.

Variables	Classifications	Frequency (n=179)	Sample percentage(%)
Gender	Male	110	61.5%
	Female	69	38.5%
Major	Casino Major	85	47.5%
	Non-major	97	52.5%
Age	20's	178	99.4%
	30's	1	0.6%
Residence	Seoul	22	12.3%
	Gyeonggi	83	46.4%
	Busan	2	1.1%
	Daegu	3	1.7%
	Other regions	69	38.5%
Number of Casino visits	0	151	84.4%
	1~3	22	12.3%
	4~7	5	2.8%
	8~10	1	0.6%
	16 or more	0	0%
Number of Hold'em Pub visits	0	155	86.6%
	1~3	20	11.2%
	4~7	2	1.1%
	8~10	1	0.6%
	16 or more	1	0.6%
Sample size		179	100.0

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4.2. Casino Major Status and Game Preference Types

Table 2 illustrates the game preference types based on whether respondents majored in Casino Studies. Among the 85 respondents who were Casino majors, their game preference types were as follows: Blackjack 34 (40.0%), Baccarat 34 (40.0%), Hold'em Poker 11 (12.9%), Roulette 5 (5.9%), and Slot Machines 1 (1.2%). For the 94 respondents who were not majoring in Casino Studies, the game preference types were Hold'em Poker 50 (53.2%), Blackjack 15 (16.0%), Baccarat 14 (14.9%), Roulette 11 (11.7%), Slot Machines 3 (3.2%), and Big Wheel 1 (1.1%).

Table 2.
Game Preference Types and Major and Non-major in Casino.

Variables	Classifications	Casino Major		Non-major		Total	
Major and Non-major in Casino		85	47.5%	94	52.5%	179	100%
Type of Game Preferences	Blackjack	34	40.0%	15	16.0%	49	27.4%
	Baccarat	34	40.0%	14	14.9%	48	26.8%
	Roulette	5	5.9%	11	11.7%	16	8.9%
	Taisai	0	0%	0	0%	0	0%
	Big Wheel	0	0%	1	1.1%	1	0.6%
	Slot machines	1	1.2%	3	3.2%	4	2.2%
	Hold'em Poker	11	12.9%	50	53.2%	61	34.1%
	Total	85	100%	94	100%	179	100%
Sample size		179					

4.3. Validity and Reliability Analysis of Measurement Items

4.3.1. Validity and Reliability Verification of Irrational Gambling Beliefs

Table 3 presents the results of the factor analysis conducted on the 13 items related to irrational gambling beliefs. The analysis revealed two factors. Factor 1 (34.069%) was labeled 'Skill overestimation' and Factor 2 (27.482%) was labeled 'Overconfidence.' The factor loadings and communalities of the items in the irrational gambling beliefs survey were all above 0.4, and the culminative variance ratios explained by these factors were 61.551%. All individual items had communalities and factor loadings of 0.4 or higher. The Cronbach's α values were .897 for 'Skill overestimation' and .849 for 'Overconfidence', indicating that both validity and reliability were achieved. The KMO measure for irrational gambling beliefs was .894, and Bartlett's test of sphericity yielded $x^2=1406.411$ ($p<.000$), suggesting that the use of factor analysis was appropriate.

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Table 3.
Validity and Reliability Verification of Irrational Gambling Beliefs.

Items	Communality	Irrational Gambling Beliefs	
		Skill Overestimation	Overconfidence
09. You need to have a good strategy to win at casino games.	0.664	0.803	0.139
11. If you predict future games based on the results of past games, you have a higher chance of winning.	0.706	0.792	0.280
08. When playing casino games, the results depend on your judgment and skills.	0.643	0.788	0.152
10. It is much better to win a few times, rather than winning less frequently.	0.584	0.700	0.308
12. I won in the past because I analyzed and reasoned well in the game.	0.657	0.689	0.427
13. I won at the casino because my skills were good or backed up.	0.568	0.636	0.404
01. There is a "lucky" technique that I often use when playing casino games.	0.623	0.596	0.518
05. Even if you haven't won recently, you should maintain the number of times or amount of money you bet now because you can win someday.	0.699	0.083	0.832
07. You can win someday because you have the skills and knowledge about casino games.	0.563	0.161	0.733
04. There were many times when I narrowly missed a game that I almost won or almost won.	0.689	0.419	0.716
06. If you lose in a casino game, you should try to win the next game.	0.562	0.437	0.609
02. I can accurately predict the "chance (when it feels right)" when playing casino games.	0.581	0.512	0.565
03. I have special habits or routines when playing casino games. If I do that, my chances of winning will increase.	0.462	0.388	0.558
Eigenvalue		4.429	3.573
Variance Explanation (%)		34.069	27.482
Culminative variance ratio (%)		34.069	61.551
Cronbach's α		.897	.849
KMO measure: .894, Bartlett's test of sphericity: x^2=1406.411 (p<.000)			

4.3.2. Validity and Reliability Verification of Game Preference Types

Table 4 presents the results of the factor analysis conducted on the four items related to game preference types. The analysis revealed a single factor. Factor 1 (89.606%) was named 'Game Preference Types' based on the central concept of the items constituting this factor. The factor loadings and communalities of the game preference types survey items were all above 0.4, and the culminative variance ratio explained by this factor was 89.606%. All individual items had communalities and factor loadings of 0.4 or higher. The Cronbach's α value was .961, indicating that both validity and reliability were achieved. The KMO measure for game preference types was .816, and Bartlett's test of sphericity yielded x^2=906.253 (p<.000), confirming that factor analysis was appropriate.

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Table 4.
Validity and Reliability Verification of Game Preference Types.

Items	Classifications	
	Communality	Game Preference Types
04. I am satisfied with the casino facilities.	0.946	0.973
03. I am satisfied with the use of the casino facilities.	0.913	0.956
02. I am satisfied with the service of the casino staff.	0.876	0.936
01. I am satisfied with the casino comp (food, beverages, & airline tickets) service.	0.848	0.921
Eigenvalue	3.584	
Variance Explanation (%)	89.606	
Culminative variance ratio (%)	89.606	
Cronbach's α	.961	

4.3.3. Validity and Reliability Verification of Participation Attitudes

Table 5 presents the results of the factor analysis for the five items related to participation attitudes. The analysis identified two factors. Based on the central concepts of the items, Factor 1 (37.639%) was named 'Participation Attitude 1,' and Factor 2 (29.549%) was named 'Participation Attitude 2.' The factor loadings and communalities of the participation attitude survey items were all above 0.4, and the culminative variance ratio explained by these factors was 67.188%. All individual items had communalities and factor loadings of 0.4 or higher. The Cronbach's α value was .697, indicating that both validity and reliability were achieved. The KMO measure for participation attitudes was .666, and Bartlett's test of sphericity yielded $x^2=173.817$ ($p<.000$), confirming that factor analysis was appropriate.

Table 5.
Validity and Reliability Verification of Participation Attitudes.

Items	Communality	Participation Attitude	
		1	2
02. I am also an impulsive person.	0.753	0.845	-0.196
04. I strive to improve my performance or become perfect in games.	0.659	0.740	0.333
05. My competitive spirit of wanting to win and be the best is why I play games.	0.522	0.626	0.360
01. I only play games where I know the rules.	0.830	-0.019	0.911
03. Games require a lot of stamina or perseverance.	0.596	0.477	0.607
Eigenvalue		1.882	1.477
Variance Explanation (%)		37.639	29.549
Culminative variance ratio (%)		37.639	67.188
Cronbach's α		0.697	
KMO measure: .666, Bartlett's test of sphericity: $x^2=173.817$ ($p<.000$)			

4.4. Hypothesis Testing

4.4.1. Correlation Analysis of Variables

In this study, a correlation analysis was conducted between the defined factors of irrational gambling beliefs, including their sub-factors. The Pearson correlation coefficient was used to determine these relationships. The analysis aimed to assess the linear relationships and independence between the factors. Table 6 presents the results of the correlation analysis between factors.

The analysis revealed that overconfidence was positively correlated with game preference types ($r = 0.197$, $p < 0.01$), Participation Attitude 1 ($r = .244$, $p < 0.01$), and Participation Attitude 2 ($r = 0.275$, $p < 0.01$). Overconfidence was also found to be positively correlated with game preference types ($r = 0.288$, $p < 0.01$) and Participation Attitude 1 ($r = 0.505$, $p < 0.01$). Game preference types showed

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positive correlations with Participation Attitude 1 ($r = 0.375$, $p < 0.01$) and Participation Attitude 2 ($r = 0.419$, $p < 0.01$), indicating statistically significant results at the 0.01 level.

Table 6.
Correlation Analysis of Variables.

Variables	Skill Overestimation	Overconfidence	Game Preference Types	Participation Attitude 1	Participation Attitude 2
Skill Overestimation	1				
Overconfidence	0.000	1			
Game Preference Types	0.197**	0.288**	1		
Participation Attitude 1	0.244**	0.505**	0.375**	1	
Participation Attitude 2	0.275**	-0.070	0.419**	0.000	1

Note: **. p<0.01.

4.4.2. Irrational Gambling Beliefs and Game Preference Types

H_1: Irrational gambling beliefs will have a positive (+) impact on game preference types.

$H_{1\text{-}1}$: Overconfidence will have a positive (+) impact on game preference types.

$H_{1\text{-}2}$: Skill overestimation will have a positive (+) impact on game preference types.

Table 7 presents a multiple regression analysis conducted to test the impact of irrational gambling beliefs on game preference types. Before analyzing the results, the Durbin-Watson statistic was checked and found to be 1.428, close to 2, indicating no correlation among residuals. The significance level of 0.000 confirmed that at least one of the paths was significant. The influence of irrational gambling beliefs on game preference types was found to explain 12.2% of the variance, with tolerance and VIF values indicating no multicollinearity (tolerance above 0.1 and VIF below 10).

Further analysis of the significance of each path revealed that both skill overestimation ($p < 0.01$) and overconfidence ($p < 0.001$) significantly impact game preference types. The unstandardized coefficients showed that both skill overestimation ($B = 0.197$) and overconfidence ($B = 0.288$) had positive effects, indicating that as these factors increase, game preference types also increase. The standardized coefficients revealed that the impact of overconfidence (Beta = 0.288) on game preference types was greater than that of skill overestimation (Beta = 0.197), indicating that overconfidence plays a more significant role in influencing game preference types.

Table 7.
Effects of Irrational Gambling Beliefs on Game Preference Types.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
Dependent Variables	(Constant)	1.001	0.070		.000	1.000		
Game Preference Types	Skill Overestimation	0.197	0.071	0.197	2.788	0.006**	1.000	1.000
	Overconfidence	0.288	0.071	0.288	4.074	0.000***	1.000	1.000
R^2=.122, Adjusted R^2=.112, F=12.186, Prob.=.000, Durbin-Watson=1.428								
Note: *:p<.05,**:p<.01,***:p<.001								

4.4.3. Game Preference Types and Participation Attitudes

H_2: Game preference types will have a positive (+) effect on participation attitudes.

$H_{2\text{-}1}$: Game preference types will have a positive (+) effect on Participation Attitude 1.

$H_{2\text{-}2}$: Game preference types will have a positive (+) effect on Participation Attitude 2.

Table 8 presents a simple regression analysis conducted to verify the effect of game preference types on Participation Attitude 1. Before analyzing the results, the Durbin-Watson statistic was checked, and a value of 1.925, which is close to 2, confirmed that there is no correlation in the residuals. Furthermore,

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the relationship between game preference types and Participation Attitude 1 showed an explanatory power of 14.1%. Both tolerance and VIF values were within the acceptable range (tolerance > 0.1, VIF < 10), indicating no multicollinearity issues.

The significance of the path was confirmed, with game preference types ($p < 0.001$) having a significant impact on Participation Attitude 1. The unstandardized coefficient for the significant variable indicated that game preference types (B = 0.375) were positively related to Participation Attitude 1, meaning that as game preference types improve, Participation Attitude 1 increases.

Table 8.
Effect of Game Preference Types on Participation Attitude 1.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
Dependent Variables	(Constant)	1.000	0.069		0.000	1.000		
Participation Attitude 1	Game Preference Types	0.375	0.070	0.375	5.386	0.000***	1.000	1.000

R^2=.141, Adjusted R^2=.136, F=29.008, Prob.=.000, Durbin-Watson=1.925

Note: *:p<.05,**:p<.01,***:p<.001.

Table 9 presents a simple regression analysis conducted to examine the effect of game preference types on Participation Attitude 2. Before analyzing the results, the Durbin-Watson statistic was checked, and a value of 1.879, which is close to 2, confirmed that there was no correlation in the residuals. Additionally, the relationship between game preference types and Participation Attitude 2 showed an explanatory power of 17.5%. Both tolerance and VIF values were within acceptable limits (tolerance > 0.1, VIF < 10), indicating no issues with multicollinearity.

The significance of the path was confirmed, with game preference types ($p < 0.001$) having a significant effect on Participation Attitude 2. The unstandardized coefficient indicated that game preference types (B = 0.419) were positively associated with Participation Attitude 2, meaning that as game preference types improve, Participation Attitude 2 increases.

Table 9.
Effect of Game Preference Types on Participation Attitude 2.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
Dependent Variables	(Constant)	-1.002	0.068		0.000	1.000		
Participation Attitude 2	Game Preference Types	0.419	0.068	0.419	6.136	0.000***	1.000	1.000

R^2=.175, Adjusted R^2=.171, F=37.649, Prob.=.000, Durbin-Watson=1.879

Note: *:p<.05,**:p<.01,***:p<.001.

4.4.4. Irrational Gambling Beliefs and Participation Attitudes

$H_{3\text{-}1}$: Irrational gambling beliefs will have a positive (+) effect on Participation Attitude 1.

$H_{3\text{-}1\text{-}1}$: Skill Overestimation will have a positive (+) effect on Participation Attitude 1.

$H_{3\text{-}1\text{-}2}$: Overconfidence will have a positive (+) effect on Participation Attitude 1.

Table 10 presents the results of the multiple regression analysis conducted to examine the effects of irrational gambling beliefs on Participation Attitude 1. Before analyzing the results, the Durbin-Watson statistic was checked, and a value of 2.094, close to 2, confirmed no correlation in the residuals. The significance probability was .000, indicating that at least one of the paths is valid. The relationship between irrational gambling beliefs and Participation Attitude 1 showed an explanatory power of 31.4%,

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and both tolerance and VIF values were within acceptable ranges (tolerance > 0.1, VIF < 10), confirming no multicollinearity issues.

The significance of each path was then assessed, and both skill overestimation ($p < .001$) and overconfidence ($p < .001$) were found to have a significant impact on Participation Attitude 1. The unstandardized coefficients showed that skill overestimation (B = 0.244), and overconfidence (B = 0.505) were positively associated with Participation Attitude 1, meaning that as these irrational gambling beliefs increase, so does Participation Attitude 1.

Finally, an examination of the standardized coefficients revealed that overconfidence (Beta = 0.505) had a stronger influence on Participation Attitude 1 compared to skill overestimation (Beta = 0.244), indicating that overconfidence plays a more critical role in shaping Participation Attitude 1.

Table 10.
Effects of Irrational Gambling Beliefs on Participation Attitude 1.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
Dependent Variables	(Constant)	1.000	0.062		0.000	1.000		
Participation Attitude 1	Skill Overestimation	0.244	0.062	0.244	3.913	0.000***	1.000	1.000
	Overconfidence	0.505	0.062	0.505	8.088	0.000***	1.000	1.000

R^2=0.314, Adjusted R^2=0.307, F=40.361, Prob.=0.000, Durbin-Watson=2.094

Note: *:p<.05,**:p<.01,***:p<.001.

$H_{3\text{-}2}$: Irrational gambling beliefs will have a positive (+) effect on Participation Attitude 2.
$H_{3\text{-}2\text{-}1}$: Skill overestimation will have a positive (+) effect on Participation Attitude 2.
$H_{3\text{-}2\text{-}2}$: Overconfidence will have a positive (+) effect on Participation Attitude 2.

Table 11 presents the results of the multiple regression analysis conducted to examine the effects of irrational gambling beliefs on Participation Attitude 2. Before analyzing the results, the Durbin-Watson statistic was checked, and a value of 1.807, close to 2, confirmed no correlation in the residuals. The significance probability was .001, indicating that at least one of the paths is valid. The relationship between irrational gambling beliefs and Participation Attitude 2 showed an explanatory power of 8.1%, with tolerance and VIF values both within acceptable ranges (tolerance > 0.1, VIF < 10), confirming no multicollinearity issues.

When examining the significance of each path, only skill overestimation ($p < .001$) was found to have a significant impact on Participation Attitude 2, while overconfidence was rejected with $p = .337$. The standardized coefficients revealed that skill overestimation (Beta = .275) was positively associated with Participation Attitude 2, meaning that as skill overestimation increases, so does Participation Attitude 2.

Table 11.
Effect of Irrational Gambling Beliefs on Participation Attitude 2.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
Dependent Variables	(Constant)	-1.002	0.072		.000	1.000		
Participation Attitude 2	Skill Overestimation	0.275	0.072	275	3.808	0.000***	1.000	1.000
	Overconfidence	-0.070	0.072	-0.070	-0.962	0.337	1.000	1.000

R^2=.081, Adjusted R^2=0.070, F=7.714, Prob.=0.001, Durbin-Watson=1.807

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

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5. Conclusion

The purpose of this study is to examine the impact of irrational gambling beliefs on game preference types and participation attitudes among university students. Additionally, it aims to provide direction for preventing gambling problems in this demographic and offer insights that can serve as foundational data for managing student gambling behavior and preventing addiction.

Firstly, the findings reveal that both skill overestimation and overconfidence, as factors of irrational gambling beliefs, significantly influence game preference types. Overconfidence plays a more critical role in shaping these game preference types. Previous studies have shown that when students develop irrational gambling beliefs, they are more likely to continue gambling despite losses, leading to an increased risk of gambling addiction. To prevent this, it is essential to develop a self-assessment program for students that evaluates their risk level related to gambling. This program should include ongoing education on game guidelines and encourage healthy, legal leisure activities.

Secondly, the study found that game preference types significantly affect participation attitudes, with an increase in game preference types leading to higher participation attitudes. For instance, students majoring in casino studies preferred blackjack and baccarat (both 40.0%), while non-majors preferred Hold'em poker (53.2%). This game preference can be attributed to casino studies majors being aware of the house edge, leading them to choose games with better odds like blackjack and baccarat. In contrast, non-majors tend to prefer Hold'em poker. Given the increasing illegal operation of Hold'em pubs, highlighted in a May 10, 2024, press release by the Ministry of Culture, Sports, and Tourism, it is crucial to educate students on the proper understanding of gambling and the legal guidelines surrounding it. Additionally, there is a need to strengthen legal regulations against illegal gambling and enforce penalties for activities that promote illegal gambling.

Thirdly, the study reveals that irrational gambling beliefs, specifically overconfidence and skill overestimation, have a significant impact on participation attitudes, with skill overestimation being the more influential factor. However, when examining the relationship between irrational gambling beliefs and participation attitude 2, only skill overestimation showed a significant impact, while overconfidence was not significant. It is important to provide education on the risks and negative consequences of gambling to students with irrational gambling beliefs to foster a correct attitude towards gambling participation.

These findings align with recent literature that emphasizes the central role of irrational gambling beliefs in shaping gambling attitudes and behaviors among young people. Monson, et al. [21] argued that passive superstition, rather than the traditional illusion of control, was a stronger predictor of distorted gambling perceptions. This suggests that interventions should address not only players' perceived control but also their deeper belief systems, such as luck, fate, or superstitious routines. In addition, Lee and Lee [22] identified a dual mediation effect, showing that speculative gaming experiences foster irrational gambling beliefs, which in turn shape more favorable gambling attitudes and increase problem gambling tendencies. Their findings highlight the importance of early exposure as a cognitive gateway to gambling behavior and reinforce the need for preventive education that directly targets these misbeliefs.

Building on these insights, there is a critical need for broader societal efforts to develop and implement structured programs that promote healthy and legal forms of leisure among university students. Such initiatives can play a key role in fostering a safe, responsible, and law-abiding environment that supports positive student development and reduces the risks associated with irrational gambling beliefs.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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