

# Problem Gambling in the College Male Students: A Structural Equation Modeling Approach

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**Abstract: Background/Objectives:** This study aims to investigate a relationship between problem gambling and irrational gambling belief and impulsivity of college male students. **Methods/Statistical analysis:** Data were collected from the participants of 263 college male students in Korea. A cross-sectional research design was used to examine the relationship of problem gambling, irrational gambling belief, and impulsivity. Statistical Package for the Social Sciences and the Analysis of Moment Structures programs were used to analyze the data. Structural equation modeling techniques were utilized to examine the model fits. **Findings:** In this study, the level of problem gambling, irrational gambling belief, and impulsivity were  $0.18 \pm .35$ ,  $2.22 \pm .90$ , and  $1.97 \pm .57$  points respectively. Problem gambling was significantly positively related to irrational gambling belief ( $r = .38, p < .001$ ), impulsivity ( $r = .24, p < .001$ ). The model fit indexes of the hypothesized model were;  $\chi^2 = 1.61, df = 1, p = 0.21, TLI = 0.99, CFI = 0.99, RMSEA = 0.05$ . To improve the model fit, a competing model without the path from the impulsivity to problem gambling was explored. The competing model didn't show a better fit than a hypothesized model ( $\chi^2 = 7.42, df = 2, p = 0.02, TLI = 0.94, CFI = 0.98, RMSEA = 0.10$ ). Comparing the hypothesized model with the competing model ( $\Delta\chi^2 df=1=5.81$ ), the hypothesized model is a superior fit to the data. Male student's irrational gambling belief partially mediates the association between impulsivity and problem gambling ( $\beta = .10, p < .001$ ; Sobel test  $Z = 3.51, p < .01$ ).

**Improvements/Applications:** This study shed light upon the mediating effect of irrational gambling beliefs on the relationship between male college students' impulsivity and gambling addiction.

**Keywords:** problem gambling, irrational gambling belief, impulsivity, college male students, Korea

## I. INTRODUCTION

Gambling is a potentially addictive, and the progress of gambling is habitual and chronic. Gambling shows spectra ranging from leisure activities of mere joy or interests to pathological gambling[1]. Even if a gambler starts with small bets for fun at first, the gambler is getting the wrong idea that he or she can easily make big money by absurd anticipation for a jackpot[2]. This idea leads to an increase in the amount and frequency of betting and the desire to become obsessed with it, which eventually leads to addictions as a result of dysfunctional consumption behavior such as illegal purchasing[3]. Illegal gambling is a criminal act that can lead to gambling addiction, unemployment, personal bankruptcy, and family breakdown[4]. Korea's illegal gambling industry

sales of 2015 are estimated to total 83.8 trillion won, illegal sports betting is the largest with 21.8 trillion won, followed by illegal gaming room (14.5 trillion won) and illegal online webboard game (12.5 trillion won) respectively[5].

College students are more likely to enjoy in online gambling because they use the internet more than older generation. They are also more likely to become addicted by recognizing gambling as a type of play or a one-off stress relief[6]. In fact, in the previous study, it has been reported that among the total members of private sports betting sites, college students in their twenties were 34% [7]. Another study reported that the rate of moderate risk gambler and problem gambler was 11.1% of college students, especially the rate of male college students was 14.6% and the rate of female college students was 6.6% which showed that the rate of male students were significantly higher than that of female students[8]. Therefore, gambling problem of college male students was examined in this study.

Regarding individual determinants, adolescents impulsivity influenced on problematic gambling [9, 10] and irrational gambling beliefs[11]. Irrational gambling beliefs were also associated with development of problematic gambling[12]. As these reasons it was expected that male adolescents impulsivity directly affected irrational gambling beliefs and gambling addiction, and indirectly influenced gambling addiction via irrational gambling beliefs (See Figure 1).

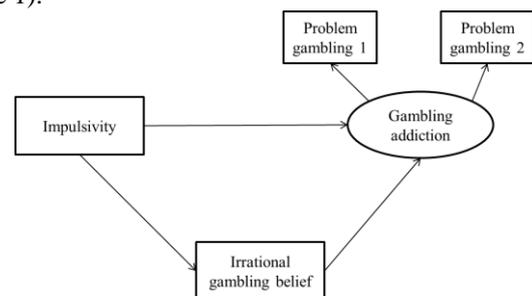


Fig 1. A hypothesized model

## II. MATERIALS AND METHODS

### 2.1. Participants

Data were collected from the participants of 263 college male students of Seoul, Gyeonggi-do, Chungcheong -do, and Kyungsang-do area. A cross-sectional research design was used to examine the relationship of problem gambling, irrational gambling belief, and impulsivity among college male students in Korea.

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2.2. Research Design and Data analysis

The purpose of this study is to investigate a relationship between problem gambling and irrational gambling belief and impulsivity of college male students. Data were analyzed using Statistical Package for the Social Sciences and the Analysis of Moment Structures statistical software programs

2.3. Measurement

2.3.1. Problem gambling

Problem Gambling was measured by the Canadian Problem Gambling Index (CPGI) which is composed of 9 items[13,14]. The 9 items were evaluated with the Likert scale from 0 to 3 points (0 point=never, 1 point=sometimes, 2 points=most of the time, 3 points=almost always) and problem gambling was shown by the average points of the 9 items. A higher score means a severe level of Problem Gambling. The Cronbach’s alpha coefficient was .83.

2.3.2. Irrational gambling belief

In this study, irrational gambling belief scale is composed of 10 items which were selected by Kwon[15] from the items developed by Lee[16] on the basis of Steenbergh’s questionnaire for Gambling belief[17]. Each item is evaluated with the 5 point Likert scale. A score of irrational gambling belief was indicated by average points of ten items. A higher score means a higher level of an irrational gambling belief. The Cronbach’s alpha coefficient was .91

2.3.3. Impulsivity

Impulsivity used by Kim et al. were utilized[18]. It was composed of 8 items asking about a impulsivity. Each item is evaluated with the 4 point Likert scale. A score of impulsivity was indicated by average points of 8 items. A higher score means a higher level of impulsivity. The Cronbach’s alpha coefficient was .87

III. RESULTS

3.1. Demographic characteristics

The numbers of participants were 263 college male students as seen in Table 1. The average age was 21.34±2.42 years old. In the college grade, freshman was 41.1%, 2nd grade was 24.7%, 3rd grade was 16.7% and 4th grade was 17.5%. In the majority field, 14.4% were in the humanities, 63.1% were in natural science and 22.4% were in the arts and physical education. In residence, 24.0% lived in Seoul, 37.8% in Gyeonggi-do, 20.2% in Chungcheong-do, and 17.9% in Gyeongsang-do.

Table 1. General characteristics (N=263)

Variable	Category	N (%), Mean±SD
Age	-	21.34±2.42
College grade	Freshman	108 (41.1%)
	2 <sup>nd</sup> grade	65 (24.7%)
	3 <sup>rd</sup> grade	44 (16.7%)
	4 <sup>th</sup> grade	46 (17.5%)

Majority field	Humanities	38 (14.4%)
	Nature Science	166 (63.1%)
	Arts and Physical education	59 (22.4%)
Residence	Seoul	63 (24.0%)
	Gyeonggi-do	99 (37.8%)
	Chungcheong-do	53 (20.2%)
	Gyeongsang-do, etc	47 (17.9%)

3.2. Descriptive statistics

Descriptive statistics for problem gambling, irrational gambling belief, and impulsivity are described as seen in Table 2. The level of problem gambling, irrational gambling belief, and impulsivity were 0.18±.35, 2.22±.90, and 1.97±.57 points respectively.

Table 2. Descriptive statistics (n=263)

Variables	Range	Mean±SD
Problem Gambling	0~3	0.18±.35
Irrational gambling belief	1~5	2.22±.90
Impulsivity	1~4	1.97±.57

3.3. Correlation between main variables

Correlations among main variables are described as seen in Table 3. Problem gambling was significantly positively related with irrational gambling belief (r = .38, p<. 001) and impulsivity (r = .24, p<. 001).

Table 3. Correlation among main variables

Variable	Problem gambling	Irrational gamble belief	Impulsivity
Problem gambling	1		
Irrational gambling belief	.377***	1	
Impulsivity	.238***	.267***	1

3.4. The model testing

The model fit indexes of the hypothesized model were;  $\chi^2 = 1.61$ ,  $df = 1$ ,  $p = 0.21$ ,  $TLI = 0.99$ ,  $CFI = 0.99$ ,  $RMSEA = 0.05$  as seen in Table 4. All specified paths were significant as seen in Table 5. To improve the model fit, a competing model without the path from the impulsivity to problem gambling was explored (See Figure 2). The competing model didn’t show a better fit than a hypothesized model as seen in Table 4 ( $\chi^2 = 7.42$ ,  $df = 2$ ,  $p = 0.02$ ,  $TLI = 0.94$ ,  $CFI = 0.98$ ,  $RMSEA = 0.10$ ). Comparing the hypothesized model with the competing model ( $\Delta\chi^2 df = 1 = 5.81$ ), the hypothesized model is a superior fit to the data as seen in Table 4. Regression weights of hypothesized model and competing model were presented in Table 5. The standardized direct and indirect effects are presented as seen in Table 6. Male student’ irrational gambling belief partially mediates the association between impulsivity and problem gambling ( $\beta = .10$ ,  $p < .001$ ; Sobel test  $Z = 3.51$   $p < .01$ ).

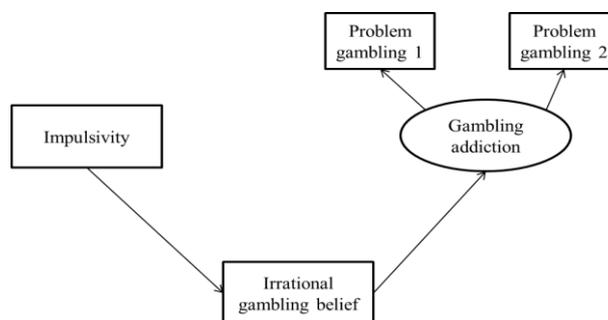
**Table 4. Model fitness index for hypothesized model and final model (n=263)**

Model	$\chi^2$	df	p	TLI	CFI	RMSEA	$\Delta\chi^2$
Competing model	7.42	2	0.02	0.94	0.98	0.10	-
Hypothesized model	1.61	1	0.21	0.99	0.99	0.05	5.81

**Table 5. Regression weights of the hypothesized model (n=263)**

Description	Estimate (Unstandardized)	Estimate (Standardized)	S. E	C. R
Impulsivity--> Irrational gambling belief	.42	.27***	.09	4.49
Impulsivity--> Problem gambling	.11	.16*	.04	2.46
Irrational gambling belief --> Problem gambling	.16	.36***	.03	5.69

\*\*\* $P < .001$ , \* $P < .05$

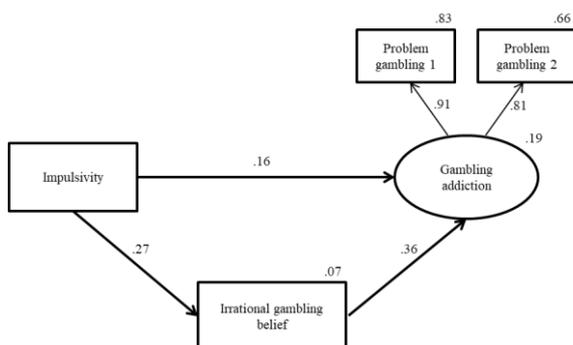


**Fig 2. A competing model**

**Table 6. Direct and indirect standard coefficient in the final model (n=263)**

Description	Standardized direct effect	Standardized indirect effect	Standardized total effect	SMC
Impulsivity--> Irrational gambling belief	.27***	-	.27	.07
Impulsivity--> Problem gambling	.16*	.10**	.25	
Irrational gambling belief --> Problem gambling	.36***	-	.36	.19

\*\*\* $P < .001$ , \* $P < .05$



**Fig 3. Final study model**

**IV. DISCUSSION**

This study was to investigate whether male college students' impulsivity and irrational beliefs predicted gambling addiction intention and to examine the mediating effect of irrational gambling belief. First, the results showed that male college students' impulsivity and irrational gambling belief are significant predictors of gambling addiction. This result is in line with preceding studies indicating the adolescents impulsivity lead to a problematic

gambling behavior[9]. Impulsive adolescents tend to participate in behaviors without proper regard for consequences or inherent risks[19], therefore, are at higher risk of falling into problematic behaviors. Impulsive adolescents tend to be a hypo-aroused psychological state[20] and try to pursue more stimulating behavior like gambling. As gambling involves a higher level of sensory stimulation[21], impulsive adolescents who have experienced gambling are much more likely to develop the problematic gambling behavior. Considering the significant relationships between male college students' impulsivity and gambling addiction, educational and intervention programs to prevent impulsive adolescents from problematic gambling should be provided.

As predicted, male college students' irrational gambling beliefs was associated with their gambling addiction. This result is consistent with preceding studies that young male problem gamblers are poor at assessing their abilities to control gambling[22].



Considering the fact that irrational belief was improper judgement developed by the individuals themselves for their personal problems[23], adolescents who are prone to irrational beliefs could be susceptible to problematic behavior such as gambling. Also, young gamblers' own irrational beliefs could result in more intense and risky gambling. Adolescents with irrational beliefs tend to have 'illusion of control'[24] which leads overestimation of their ability to win. The illusion of making a big money by outsmarting the system may be a motivator toward gambling for young gamblers[22]. It is imperative to change the cognitive biases of young gamblers to prevent gambling addiction.

Second, the mediating effect of the irrational gambling beliefs in the relationship between male college student's impulsivity and gambling addiction was examined. Male college students' impulsivity directly affect gambling addiction and indirectly influenced gambling addiction via irrational gambling beliefs. This result reconfirms the importance of irrational gambling beliefs in adolescent gambling addiction[22, 23, 24]. Even impulsive adolescents could reduce the risk of being addicted to gambling if they have rational thoughts and beliefs. To prevent or diminish male adolescent gambling addiction, it is necessary to take a more interest in the cognitive process of young gamblers. Above all, it is important to find out what irrational beliefs the young gamblers have; interventions and gambling educational programs should include the clear distinction between real control and illusions of control[22].

To conclude, this study suggested further evidence the relationships among male college students impulsivity, irrational gambling beliefs, and gambling addiction, and shed light upon the mediating effect of irrational gambling beliefs on the relationship between male college students impulsivity and gambling addiction.

## V. CONCLUSION

This study was to investigate whether male college students' impulsivity and irrational beliefs predicted gambling addiction intention and to examine the mediating effect of irrational gambling belief. First, the results showed that male college students' impulsivity and irrational gambling belief are significant predictors of gambling addiction. Second, the mediating effect of the irrational gambling beliefs in the relationship between male college student's impulsivity and gambling addiction was examined. This study suggested further evidence the relationships among male college students impulsivity, irrational gambling beliefs, and gambling addiction, and shed light upon the mediating effect of irrational gambling beliefs on the relationship between male college students impulsivity and gambling addiction

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