

FROM CLICKS TO CHOICES: THE ROLE OF GAMBLING MOTIVATION AND IMPULSIVITY TO THE SEVERITY OF ONLINE GAMBLING DISORDER

Elmy Bonafita Zahro¹, Cleoputri Yusainy², Dita Rachmayani³, Ridwan Aji Budi Prasetyo⁴, Razita Rana Huwaidah⁵, Ni Ageng Reksamukti⁶, Andryan Wardhanu⁷, Herdias Hayyal Falahi⁸, Maurice Shafina Hanum Hadi Elfahmi⁹, Hana Mawaddah¹⁰

{elmybonafita@ub.ac.id¹, cleo.yusainy@ub.ac.id², dh33ta@ub.ac.id³, ridwan.prasetyo@ub.ac.id⁴, rr.huwaidah@gmail.com⁵, niagengm19@gmail.com⁶, andryanwardhanu77@gmail.com⁷, herdiasfalahi@gmail.com⁸, shafina.hanum96@gmail.com⁹, hana.mawaddah1@gmail.com¹⁰}

Universitas Brawijaya, Malang, Indonesia^{1,2,3,4,5,6,7,8,9,10}

Abstract. The rise of online gambling behavior over recent times in Indonesia has shown worrying conditions. People can easily access it because promotions can be found openly through online media streamers, making it easy to access even though gambling in general is an illegal activity. This study aims to predict online gambling disorder by impulsivity and gambling motivation. The research method uses a non-experimental quantitative approach. Participants who have experienced online gambling and are from age 18 to 60 years old filled out a set questionnaire (n = 68; 94.12% male) with the Online Gambling Disorder Questionnaire (OGD-Q) instrument by Gonzalez-Cabrera, et al (2020), Modified Gambling Motivation Scale (MGMS) which was measured using Shinaprayoon, et al (2017), Impulsive Behavior Scale (UPPS-P) by Cyders, et al (2014). Statistical methods of linear regression are used to analyze this preliminary study (n = 68) to predict online gambling disorders by gambling motivation and impulsivity. The results show that gambling motivation can significantly predict online gambling disorder ($R^2 = 0.236$, $p < 0.001$). The other outcome is impulsivity can predict online gambling disorder ($R^2 = 0.148$, $p < 0.05$). The background people did online betting mostly without reason and just for excitement or thrilled experience. Because online gambling has the potential to lead to addiction that can harm both the gambler and those closest to them, people with impulsive tendencies should refrain from betting on it simply to pass the time or to experience a temporarily pleasant feeling.

Keywords: gambling disorder, gambling motivation, impulsivity, online gambling addiction.

INTRODUCTION

In contrast to overseas policies where gambling is legal, Indonesia does not have this option so people consider gambling to be unlawful as their national regulation. Online gambling activities are explained in Article 27 paragraph (2) of the Indonesia ITE Law, namely “Every person intentionally and without right distributes and/or transmits and/or makes accessible electronic information and/or electronic documents that contain gambling content.” Quoting Kompas, Indonesia is the country with the most online gambling players in the world with 3.2 million people. Most of the online gambling players come from the lower middle class with nominal transactions of under IDR 100 thousand per game. From data in March 2024, it was stated that the Financial Transaction Reports and Analysis Center of Indonesia or Pusat Pelaporan dan Analisis Transaksi Keuangan (PPATK) revealed that low-income residents such as students, workers, farmers, housewives, private employees, and others involved with online gambling activity. They come from low socio-economic backgrounds and are willing to spend money to gamble online. Previously, PPATK also said that the total turnover of funds related to the total online gambling transactions in Indonesia as of March 2024 had reached IDR 600 trillion. The promotion of online gambling itself is also increasingly widespread because it can be done through online game streamers. Meanwhile, online game users in Indonesia occupy the 3 countries with the most online game players after the Philippines and Thailand based on the We Are Social report in January 2022 with the age of internet users between 16 and 64 years (databoks.katadata.co.id, 2024).

Elmy Bonafita Zahro¹, Cleoputri Yusainy², Dita Rachmayani³, Ridwan Aji Budi Prasetyo⁴, Razita Rana Huwaidah⁵, Ni Ageng Reksamukti⁶, Andryan Wardhanu⁷, Herdias Hayyal Falahi⁸, Maurice Shafina Hanum Hadi Elfahmi⁹, Hana Mawaddah¹⁰
From Clicks To Choices: The Role Of Gambling Motivation And Impulsivity To The Severity Of Online Gambling Disorder

The increase in money flow and use of online gambling in Indonesia is already worrying. Considering that Indonesian people tend to be reluctant to talk about their gambling behavior, it is also difficult to identify people who have led to gambling addiction. Gambling disorder (GD) is a behavioral addiction first classified in the DSM-5 (American Psychiatric Association, 2013) and is characterized by persistent gambling behavior and problematic consequences that are often negative. One of the characteristic features of GD is a disturbance in decision-making, which is biased towards risky choices with high payouts or spending money to gamble with large amounts (van Holst et al., 2010). Indeed, compared with people without GD, people with GD tend to have risk-seeking behavior in several activities and tasks in experimental settings (Brevers, 2012; Spurrier & Blaszczynski, 2014). Risk-seeking behavior in people with GD is also associated with lower sensitivity to the expected value of the chosen option (Limbrick-Oldfield, 2021), and reduced loss aversion (Giorgetta, 2014). Some studies also show that risky decision-making in GD is associated with abnormal processing of rewards (Goudriaan et al., 2006). Another factor suggested to contribute to risky decision-making in people with GD is overconfidence, which can lead to overly optimistic behavior (Brevers, 2014).

Wynne (2004) identified gambling behavior as loss of control (betting more than one can afford to lose); motivation (need to bet a larger amount of money to get the same feeling of enthusiasm); chase (return to win back the money he has lost); and borrowing (borrowing money or selling anything to get money to gamble). Gambling behavior can be seen as a series of decisions that are related to each other. These decisions include whether to bet, betting platform (online or in person), gambling activity (e.g. horse racing, electronic gaming machines, casino games), event (e.g. sporting event, horse racing), type of bet (e.g. win or place, win or first goal scorer, number or red/black), which item to bet on (e.g. horse, team, person), and how much to bet. Several types of online gambling sites that are widely used by Indonesian people are slot, online casino, online poker, blackjack, betting on a soccer match, casino live streaming, etc. Some users said that they did online gambling because they are similar to online gaming with betting activities in it.

The severity of online gambling addiction is measured with The Online Gambling Diagnostic Questionnaire (OGD-Q) (Gonzalez-Cabrera, et al., 2020). It was designed according to national and international guidelines and standards for the design of questionnaires (American Educational Research Association, American Psychological Association, and National Council on Measurement in Education). The questionnaire was designed by adapting the criteria for the traditional gambling disorder of the DSM-5 to the online context, the ICD-11 criteria to predominantly online gambling disorder (6C50.1), and the recommendations of numerous experts. Because of the specification of the population, the researcher chooses OGD-Q to determine the severity level of online gambling addiction.

Problems related to gambling can occur when gambling behavior causes significant damage to oneself or friends, family, and community (Ferris & Wynne, 2001). They tend to have poor self-control and are impulsive so excessive gambling behavior can cause personal problems and relationships with other people because their daily life functions are disrupted. The risk factor for gambling behavior is that people with mental health problems such as anxiety and depression are more likely to experience problems due to gambling (Rockloff et al., 2020). Mental health problems are a common cause of social harm (Stanton et al., 2020) which combined with problems resulting from gambling can add to ongoing harm. However, the effects of both are still unclear. The causal effects and mechanisms underlying both remain unclear. Based on Moreira, et al. (2023) systematic reviews on risk factor gambling disorder being a single young male, or married for less than 5 years, living alone, having a poor education, and struggling financially.

Impulsive people take chances and choose short-term gains above long-term drawbacks (Moeller et al., 2001). Mania, substance abuse, and antisocial personality disorder are among the psychiatric and personality disorders linked to impulsivity, a personality feature defined as "acting without thinking" (Moeller et al., 2001). Impulsive people make dangerous decisions because they are more driven by the possibility of short-term gains than by the long-term consequences of their actions. This suggests that they are either less sensitive to negative outcomes or more sensitive to rewards (Ainslie, 1975).

Elmy Bonafita Zahro¹, Cleoputri Yusainy², Dita Rachmayani³, Ridwan Aji Budi Prasetyo⁴, Razita Rana Huwaidah⁵, Ni Ageng Reksamukti⁶, Andryan Wardhanu⁷, Herdias Hayyal Falahi⁸, Maurice Shafina Hanum Hadi Elfahmi⁹, Hana Mawaddah¹⁰
From Clicks To Choices: The Role Of Gambling Motivation And Impulsivity To The Severity Of Online Gambling Disorder

Attentional processes are active in decision-making (Orquin & Mueller Loose, 2013). Choosing long-term and frequency-focused options is often possible to choose (Thomas et al., 2019), and higher-value options attract more attention (Gluth et al., 2020). Indeed, research on healthy subjects (not experiencing mental health problems) has proven this by showing that attention directed to reward cues predicts levels of risk-taking, with a greater attentional bias towards high-value cues (San Martín et al., 2016). So far, research looking into attention in GD has mainly analyzed reaction times or fixation times when viewing addiction-relevant versus addiction-irrelevant stimuli, known as attentional bias studies (Field & Cox, 2008). These studies suggest that increased attention to addiction-relevant cues plays an important role in the onset and development of addictive (and thus gambling) behavior (Brevers, 2011; Sancho, 2021). These findings led to the development of attentional bias modification training as an intervention for addictive behavior (Heitmann et al., 2018), which is currently being tested in GD (Wittekind, 2019).

Vuorinen et al. (2022) study approached gambling problems as possible results of low-need satisfaction and high-need frustration. While need satisfaction was not associated with the absence of these problems, need frustration was associated with the severity of gambling problems. This study on self-determination theory (SDT) has placed satisfaction of basic psychological needs (autonomy, relatedness, and competence) at the core of well-being, whereas frustration of these needs results in multiple potentially unhealthy mental and behavioral patterns. This study analyzed how need satisfaction and frustration relate to the severity of gambling and gaming problems. A survey study with 18-75 year old Finnish participants (N = 1530; 50.33% male). The results show that mental health issues were associated with gambling and gaming problems, but this association became nonsignificant when basic psychological needs were added to the model. However, better mental health still was associated with the absence of gaming problems. While need satisfaction had no association with the absence of gaming or gambling problems, need frustration was associated with increases in the severity of both gaming and gambling problems. Frustration with basic psychological needs for autonomy, relatedness, and competence is associated with both gambling and gaming problems and should be considered when developing treatment and support for those who experience such problems.

The SDT states that for a person to thrive and perform healthily, their psychological needs (autonomy, relatedness, and competence) must be met. While the fundamental component of relatedness is the need to feel socially involved and connected, autonomy relates to the urge to self-regulate one's experiences and behaviors. Lastly, competency illustrates the need to feel as proficient and efficient as possible in one's endeavors. According to neurological descriptions, these needs are insular activity and reward processing networks, which are present in a variety of emotional and motivation-based tasks (Reeve & Lee, 2019), including addictive behaviors (Heilig et al., 2016; Volkow & Boyle, 2018). Therefore, it can be presumed that the trajectories of gambling and gaming habits also contain basic psychological requirements. Even though the satisfaction of basic psychological needs is a requirement for a person to flourish, social contexts may not always support the fulfillment of these needs, which can lead to various maladaptive substitute behaviors (Deci & Ryan, 2000).

Based on several references about gambling disorders, impulsivity, and gambling motivation are risk factors that are considered capable of predicting the severity of online gambling disorder. The trait impulsivity as part of an individual's internal characteristics has an important role and contributes to high-risk behavior such as online gambling disorder. Based on SDT theory, gambling motivation, whether originating from within (intrinsic) or outside (extrinsic), is considered capable of predicting the severity of online gambling disorder.

RESEARCH METHOD

This research uses a quantitative non-experimental method approach to predict online gambling disorder through gambling motivation and impulsivity. The researchers distributed questionnaires

online to see the severity level of online gambling addiction, gambling motivation, and impulsivity as screening data. It is challenging for online gambling perpetrators to be asked to admit their actions because their activities are classified as illegal. A brief description of the research procedure can be shown in **Figure 1** below.

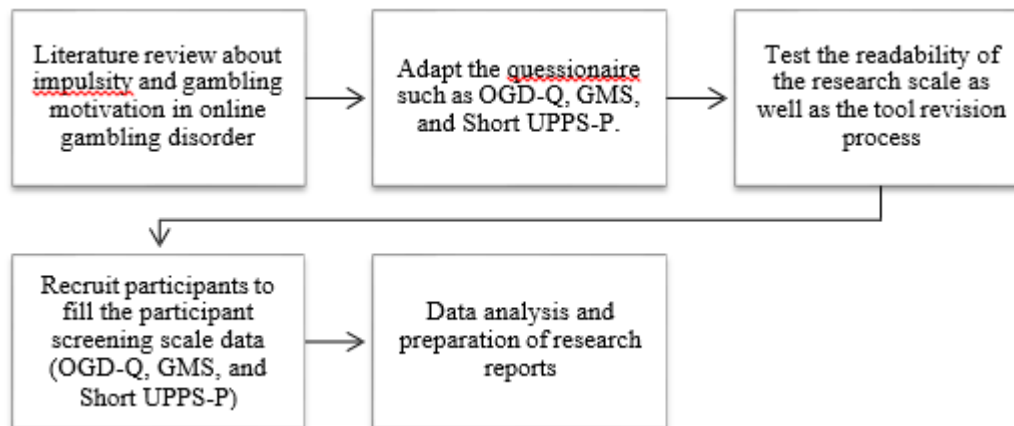


Fig. 1. Flow of research procedures.

The research begins with a literature review of gambling motivation and impulsivity in online gambling addiction. This foundational step involves thoroughly examining existing studies, theories, and findings related to the psychological traits of impulsivity and impulsivity in the context of online gambling. By analyzing prior research, this step identifies gaps in the literature, informs the research design, and helps establish a theoretical framework to guide the study. It also provides a basis for selecting appropriate methods and tools to investigate these phenomena. The next step is to adapt the screening questionnaires, including the Online Gambling Disorder Questionnaire (OGD-Q), Gambling Motivation Scale (GMS), and Short UPPS-P Impulsivity Scale, which are tailored for the same audience.

The Online Gambling Diagnostic Questionnaire (OGD-Q) was designed by adapting the criteria for the traditional gambling disorder of the DSM-5 (312.31) to the online context, the ICD-11 criteria to predominantly online gambling disorder (6C50.1), and the recommendations of numerous experts (Gonzalez-Cabrera, et al., 2020). Online gambling disorder could be diagnosed in an individual who shows persistent and maladaptive online gambling behavior that includes at least four or more of the criteria presented in the criteria (12 items). OGD-Q used a five-point Likert-type response scale that ranged from 1 (never) to 5 (every day) to measure the frequency of gambling. The total OGD-Q scores ranged between 11 and 55 points. In addition, those who reported at least one behavior had to indicate how long they had been performing it. The response options were recently (for less than a month), for more than a month, for more than six months, and for more than 12 months. Participants who scored four or more criteria in the last six months were classified as having a “problem with online gambling” and those who scored on four or more criteria in less than six months were categorized as being “at risk”. After converting the scale to the Indonesian language, OGD-Q is reliable (Cronbach $\alpha = 0.801$) without item deleted.

Modified Gambling Motivation Scale (MGMS) consists of 28 items using a degree of correspondence for each item (1 = strongly disagree to 7 = strongly agree) (Shinaprayoon, et al., 2017). The MGMS measures six motivations: intellectual challenge (e.g., “I enjoy learning new strategies”), excitement (e.g., “It is exciting to gamble”), socialization (e.g., “It is the best way to relax”), monetary gain (e.g., “I play for money”), social recognition (e.g., “It makes me feel important”), and amotivation (e.g., “I play for money, but I sometimes wonder what I get out of gambling”). The total gambling motivation score is the sum of the average of the six subscales, resulting in a range of 0-42. Higher scores indicate greater motivation to gamble for a specific reason or greater motivation to gamble in general. Each subscale score ranges from 0 to 7. This new formula introduces a simpler calculation and interpretation of the scores while allowing researchers to assess

Elmy Bonafita Zahro¹, Cleoputri Yusainy², Dita Rachmayani³, Ridwan Aji Budi Prasetyo⁴, Razita Rana Huwaidah⁵, Ni Ageng Reksamukti⁶, Andryan Wardhanu⁷, Herdias Hayyal Falahi⁸, Maurice Shafina Hanum Hadi Elfahmi⁹, Hana Mawaddah¹⁰
 From Clicks To Choices: The Role Of Gambling Motivation And Impulsivity To The Severity Of Online Gambling Disorder

specific motivations or a general motivation to gamble. After converting the scale to the Indonesian language, MGMS is reliable (Cronbach $\alpha = 0.938$) without item deleted.

Short Impulsive Behavior scale (S-UPPS-P) is an instrument composed of 20 items (Cyders, et al., 2014) rated on a four-point Likert scale (1) disagree strongly, (2) disagree some, (3) agree some, and (4) agree strongly. Five scales were computed by adding the 4 items corresponding to each scale: negative urgency, positive urgency, sensation seeking, lack of perseveration, and lack of premeditation. S-UPPS-P Impulsive Behavior Scale was used to measure impulsivity facets. After converting the scale to the Indonesian language, S-UPPS-P is reliable (Cronbach $\alpha = 0.806$) with 9 items deleted (item number 1, 2, 4, 5, 7, 12, 15, 19 and 20).

Following the adaptation process, the study proceeds to test the readability of the research scale This step involves conducting a pilot study with a small group of participants to assess the clarity, usability, and comprehensibility of the research materials. Participants' feedback is used to identify and address any ambiguities or challenges in understanding the tools. This revision process ensures that the tools are both valid and accessible to the target population, increasing the accuracy and reliability of the data collection process.

After refining the tools, the next phase is to recruit participants and conduct a preliminary study of screening scale data. Participants who meet the study criteria, such as those with experience in online gambling from the age of 18 to 60 years old ($n = 68$, 94,12% male and 5.88% female), are recruited. The screening tools (OGD-Q, GMS, and Short UPPS-P) are then administered to collect initial data, allowing researchers to evaluate the reliability and validity of these instruments. Finally, the collected data are subjected to data analysis and preparation of research reports. Statistical methods of linear regression are used to analyze the preliminary study ($n = 68$) to predict online gambling disorders by gambling motivation and impulsivity. Analyses were performed with JASP 0.19.1.0.

RESULT AND ANALYSIS

1.1 Descriptive statistics

Table 1. Demographic data

Data	Numbers	Percentage
Gender	68	100%
Male	64	94.12%
Female	4	5.88%
Age	68	100%
18 to 20 years old	7	10.29%
21 to 25 years old	31	45.59%
26 to 30 years old	16	23.53%
31 to 35 years old	1	1.47%
36 to 40 years old	5	7.35%
>40 years old	8	11.77%
Level of Education	68	100%
Higher education	14	20.59%
Senior high school education	45	66.18%
Junior high school education	8	11.76%
Elementary education	1	1.47%
Occupation	68	100%
College student	26	38.24%
Private sector employee	17	25%
Self employee	12	17.65%
Jobless	12	17.65%
Housewife	1	1.47%

Elmy Bonafita Zahro¹, Cleoputri Yusainy², Dita Rachmayani³, Ridwan Aji Budi Prasetyo⁴, Razita Rana Huwaidah⁵, Ni Ageng Reksamukti⁶, Andryan Wardhanu⁷, Herdias Hayyal Falahi⁸, Maurice Shafina Hanum Hadi Elfahmi⁹, Hana Mawaddah¹⁰
 From Clicks To Choices: The Role Of Gambling Motivation And Impulsivity To The Severity Of Online Gambling Disorder

Period of initiating online gambling	68	100%
Last 1 year (around 2024)	7	10.29%
1-2 years ago (2022-2023)	27	39.71%
3-5 years ago (2021-2019)	19	27.94%
>5 years ago (before 2019)	15	22.06%
Information about online gambling		
Website advertisement	23	55.88%
Family members	3	4.41%
Friends, and colleagues	57	83.82%
Social media influencer	9	13.24%
Type of online gambling sites		
Slot	48	70.59%
Casino online	13	19.12%
Poker online	12	17.65%
Domino QQ	17	25%
Blackjack	9	13.24%
Virtual sport (i.e. soccer betting)	21	30.88%
Lotre	9	13.24%

From Table 1 it is known that the number of participants from this study was 68, dominated by males at 94.12% and the rest were females with the largest age distribution in the 21 to 25-year group, namely 45.59% and 26 to 30-year-olds at 23.53%. Meanwhile, most of the education level is high school, 66.18%. The occupation distribution that dominates the participants in this research is students at 38.24%, followed by private workers at 25%. Other information that can be obtained from demographic data is that the first time participants started accessing or engaging in online gambling was mostly in the 2022-2023 time period, namely 39.71% followed by the second largest period, namely 2021-2019, amounting to 17.94%. These two largest periods were during the COVID-19 pandemic and after the pandemic era. Participants mostly got information about online gambling from friends and colleagues at 83.82% and website advertisements at 55.88%. Meanwhile, the types of online gambling that are most accessed are slots at 70.59%, virtual sports (such as soccer betting) at 30.88% and domino QQ at 25%.

Table 2. Numbers of participants with a severity level of online gambling disorder

Severity level of online gambling	Numbers	Percentage
Problem with online gambling Participants who scored four or more criteria in the last six months.	38	55.88%
High risk Participants who scored on four or more criteria in less than six months.	23	33.82%
Low risk Participants who score less than four criteria in less than six months.	7	10.30%

From Table 2 it is known that the distribution of participants in this study is based on the severity of online gambling addiction. Almost the majority of participants, namely 55.88%, were classified as having problems with online gambling or could be categorized as online gambling addiction, although this data cannot be directly used as a diagnostic tool because it requires direct confirmation from the person concerned. Furthermore, the second largest group of participants was at high risk of experiencing problems with online gambling behavior at 33.82%. Meanwhile, the remaining low-risk category experienced problems with online gambling behavior, only 10.30%. This shows that individuals who engage in online gambling are at long-term risk of experiencing pathologies if they are not stopped immediately.

Table 3. Motivation gambling types

Elmy Bonafita Zahro¹, Cleoputri Yusainy², Dita Rachmayani³, Ridwan Aji Budi Prasetyo⁴, Razita Rana Huwaidah⁵, Ni Ageng Reksamukti⁶, Andryan Wardhanu⁷, Herdias Hayyal Falahi⁸, Maurice Shafina Hanum Hadi Elfahmi⁹, Hana Mawaddah¹⁰
 From Clicks To Choices: The Role Of Gambling Motivation And Impulsivity To The Severity Of Online Gambling Disorder

Motivation gambling types	Σ Average score	Rank
Intellectual challenge Desire to learn the game, to learn strategies in the game, and to feel competent in gambling activities.	258.5	3
Excitement Desire to experience thrills and excitement induced by gambling.	285.5	2
Socialization Desire to build relationships with others, to relieve boredom and negative feelings (coping), and to relax via gambling.	210.5	5
Monetary gain Desire to win money from gambling activities.	247	4
Social recognition Desire to feel important and to increase self-esteem via gambling.	197.5	6
Amotivation Continue to gamble even without a purpose or a reason.	308.3	1

(Resources: Shinaprayoon, et al., 2018)

In Table 3 there is information that the gambling motivation scale has several subscales which can be grouped into the reasons someone gambles. There are 6 reasons why someone gambles, starting from the categories of intellectual challenge, excitement, socialization, monetary gain, social recognition, and amotivation. It turns out that most of them do online gambling primarily not to earn money but do not have a clear goal or reason or include amotivation which is the first place. Meanwhile, the second place is also to get an exciting or enjoyable experience from gambling activities. The third biggest is the desire to learn about gambling both in terms of games and strategies so that you can master or be competent at it.

1.2 Normality test of the variables

1.2.1 Normality test of online gambling disorder

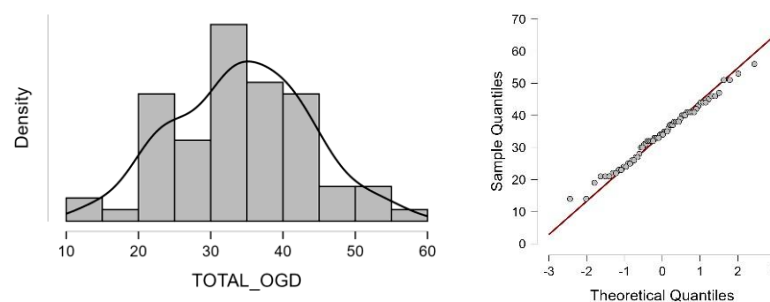
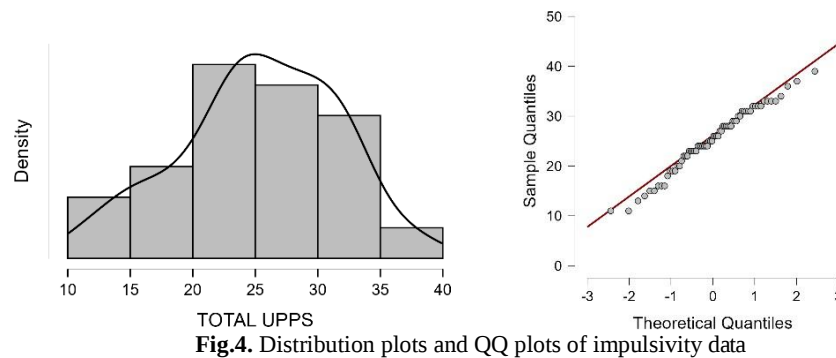


Fig.2. Distribution plots and QQ plots of online gambling disorder data
 d QQ plots of online gambling disorder data

Based on Figure 2, namely the distribution plot and QQ plots of online gambling disorder data, it is known that the distribution of the data is normally distributed. In the distribution plots graph the data does not show too much skewness and in the QQ plots the distribution of the data is also along the line. Statistically, it is known that the P-value of Shapiro-Wilk from online gambling disorder is 0.990 (P-value Shapiro-Wilk > 0.05), so it can be said that the data is normally distributed.

1.2.2 Normality test of gambling motivation



Based on Figure 4, the distribution plot and QQ plots of impulsivity data, it is known that the distribution of the data is normally distributed. In the distribution plots, the data does not show too much skewness and in the QQ plots the distribution of the data is also straight with the line. Statistically, it is known that the P-value of Shapiro-Wilk from impulsivity is 0.357 (P-value Shapiro-Wilk > 0.05), so it can be said that the data is normally distributed.

1.3 Correlation Analysis

Table 4. Correlation between online gambling disorder, gambling motivation, and impulsivity

Variable	OGD	GM	IMP
Online Gambling Disorder (OGD)			
Pearson's r			
p-value			
Gambling Motivation (GM)			
Pearson's r	0.486		
p-value	<0.001		
Impulsivity (IMP)			
Pearson's r	-0.385	-0.278	
p-value	<0.01	<0.05	

Table 4 provides information about the correlation between variables in this study, namely online gambling disorder, gambling motivation, and impulsivity. Considering that each variable's data is normally distributed, correlation is measured using Pearson product-moment statistical analysis. Based on the results of statistical analysis, it is known that there is a significant positive relationship between gambling motivation and online gambling disorder ($r = 0.486$; $p\text{-value} < 0.001$). These results show that the higher the gambling motivation score, the higher the online gambling disorder score, and vice versa. Meanwhile, other results show that there is a significant negative relationship between impulsivity and online gambling disorder ($r = -0.385$; $p < 0.01$), which means that the higher a person's impulsivity, the lower the online gambling disorder and vice versa.

1.4 Regression Analysis

Table 5. Linear regression

Variable	R ²	Coefficient	p-value
GM*OGD	0.236	0.574	<0.001
Intellectual challenge*OGD	0.101	1.769	0.008
Excitement*OGD	0.061	1.317	0.043
Socialization*OGD	0.084	1.620	0.016
Monetary gain*OGD	0.193	2.303	<0.001
Social recognition*OGD	0.173	2.582	<0.001
Amotivation*OGD	0.253	2.401	<0.001
IMP*OGD	0.148	-0.557	0.001

Based on the results of statistical correlation analysis, it is known that gambling motivation, online gambling disorder, and impulsivity are significant with online gambling disorder. From these results, this research meets the requirements to be measured using linear regression analysis to find the variance contribution of each predictor variable, namely gambling motivation and impulsivity towards online gambling disorder. From Table 5, it can be seen that gambling motivation can significantly predict online gambling disorder ($R^2 = 0.236$; $p\text{-value} < 0.001$). Gambling motivation can explain 23.6% of the variation in the online gambling disorder variable. The regression equation from hypothesis 1 is $\text{online gambling disorder} = 21.511 + 0.574 * \text{gambling motivation}$. This means that if gambling motivation increases by 1 point, online gambling disorder will increase by 22,085 points. From hypothesis 2, it is shown that impulsivity can significantly predict online gambling disorder ($R^2 = 0.148$; $p\text{-value} < 0.05$). Impulsivity can explain 14.8% of the variation in online gambling disorder. The regression equation from hypothesis 2 is $\text{online gambling disorder} = 48.344 - 0.557 * \text{impulsivity}$. This means that if impulsivity increases by 1 point, online gambling disorder will decrease by 47.787 points.

As a result of additional analysis, from the gambling motivation subscale it is known that 3 subscales can significantly be predictors of online gambling disorder, namely amotivation, monetary gain and social recognition. The amotivation subscale can significantly predict online gambling disorder ($R^2 = 0.253$; $p\text{-value} < 0.001$). These findings indicate that amotivation can explain 25.3% of the variation in online gambling disorder. Meanwhile, the monetary gain subscale can also significantly predict online gambling disorder ($R^2 = 0.193$; $p\text{-value} < 0.001$), which means that monetary gain as part of gambling motivation can explain 19.3% of the variation in online gambling disorder. The last subscale that contributes significantly is social recognition. Social recognition can significantly predict online gambling disorder ($R^2 = 0.173$; $p\text{-value} < 0.001$), which means that social recognition can explain 17.3% of the variance in online gambling disorder.

1.5 Discussion

The results of this research indicate that alternative hypothesis 1 and alternative hypothesis 2 are accepted. The first result is that gambling motivation can significantly predict online gambling disorder. These results show that when someone has a high desire to gamble online, it has the potential to lead someone to become a pathological gambler. The several types of motivation that can be strong predictors are amotivation, monetary gain, and social cognition. Amotivation can be

defined as continuing gambling activities without any specific purpose or reason (Shinaprayoon, et al., 2018) or it can be said to be just filling free time which can lead to bad habits. Amotivation can be classified as internal or external motivation. Control of this desire can come from oneself or stimulation from external parties such as looking for activities that make it difficult to access online gambling or prohibitions or restrictions on access to online gambling websites which can come from parties who have authority. Apart from that, the second strong predictor is the monetary gain subscale, which means the desire to win money from gambling activities (Shinaprayoon, et al., 2018). This form is classified as external motivation. When someone wants to pursue results in the form of money, he will continue to try until his desire is achieved. This condition has the potential to lead someone to continuously access online gambling sites in the hope of getting money as an instant reward which can lead to online gambling disorder. The third strongest predictor of the gambling motivation subscale is social recognition, which means the desire to feel important and increase self-esteem through gambling. The three subscales mentioned above are non-self-determined motivation. Motivations that are more autonomous and intrinsic were grouped in self-determined motivation, whereas motivations that are less autonomous and extrinsic were grouped in non-self-determined motivation (Shinaprayoon, et al., 2018).

Self-Determination Theory (SDT) was used to evaluate gambling motivation in the development of the GMS (Chantal et al., 1994). According to SDT, people's demand for autonomy, competence, and interpersonal relationships drive their behavior (Deci & Ryan, 2000; Ryan & Deci, 2000). The development and well-being of individuals may suffer if these basic needs are not met. The need to act freely in a way that supports one's development is referred to as autonomy. The demand for control and mastery is known as competence, whereas the need for approval or companionship from others is known as relatedness. These needs have to do with the internal and external forces that

drive behavior. The urge to participate in activities for one's growth or development is referred to as intrinsic motivation. A desire to participate in activities due to outside forces like money and social circumstances is known as extrinsic motivation. Because people seek out challenges and novelty for their personal growth, which has a positive relationship with their well-being, SDT contends that an intrinsic desire to participate in activities is more advantageous for well-being than extrinsic motivation. Based on the result of this study, external motivation takes place as a strong predictor of online gambling disorder. This means external control to access online gambling sites would be one of the most important thing. Besides, having productive activity which could alienate from online gambling would be a great benefit to minimize online gambling access that leads to pathologic behavior.

Impulsivity is regarded as a multi-dimensional construct in psychological studies, featuring models of measurement, such as the UPPS model (Cyders, et al., 2014). Some research on the relationship between online gambling disorder and impulsivity would find some specific dimensions of impulsivity to be inversely proportional to the gambling problems faced by the individuals. The UPPS model defines problems with impulsivity into at least four categories urgency, premeditation, perseverance, and sensation seeking. Urgency positive and/or negative is defined as having an urge and such high pressure that leads one to do rash acts under instigating situations with either strong positive or negative feelings. Premeditation is defined as self-control or forbearance, or being considerate of the implications of one's actions before acting on them. Perseverance is defined by self-control and focus on a task even when the task is difficult and full of life and minor distractions. The last one is sensation seeking which is an inherent need or tendency to look and try new and exciting things. Impulsivity could be a strong predictor of risk-taking behavior such as online gambling. The difference from other results is the negative correlation between impulsivity and online gambling disorder.

Negative correlation shows that certain traits of impulsivity might have a direct influence on the level of gambling problems an individual faces, in a negative aspect. This can be explained by focusing on certain UPPS dimensions. Individuals who have no high level of negative urgency tend to have low chances of making rash gambling decisions where they would easily want to place a gamble in a heated situation. Rash gambling during emotional distress is certainly off-limits for

people who have low levels of negative urgency and for this reason, they are less likely to develop a gambling disorder. A negative relationship with gambling probably means that people who tend to gamble less do this because they can reflect better on the implications of their actions (they have low impulsivity) and as a result don't end up gambling so much. The other possibility is that people with lower perseverance (having trouble concentrating) do not spend a long time gambling and because of that they are at lesser risk of developing online gambling disorder.

Other explanations using mechanism factors could be cognitive control, emotion control or behavioral precision. A lower degree of impulsivity has been observed to be associated with increased executive functioning and self-control, which facilitates resisting the immediate reward for gambling. Emotion regulation through reducing the urge to gamble can also help prevent individuals from gambling during emotional highs or lows, to deal with those instances. Increased premeditation makes individuals more likely to assess their gambling risk levels and thus more controlled and less intense gambling activities. The findings imply that specific characteristics of an individual that relate to impulsivity traits, more so for online gamblers, can be modified to reduce the chances of developing an online gambling disorder. For instance, enabling individuals to enhance their premeditation and reduce emotional responses may work. Overall, few of the variables of impulsivity such as, premeditation, or perseverance, act as protective variables against the development of an online gambling disorder because of their enabling effect towards better decision-making processes and securing control of emotions. This makes the relationship that exists complex and explains the need to adopt multi-dimensional scales like the UPPS in the assessment of impulsivity in addiction behaviors.

There are several limitations to this research. One of the limitations is the difficulty of getting participants because online gambling is illegal in Indonesia. It makes people reluctant to fill out

Elmy Bonafita Zahro¹, Cleoputri Yusainy², Dita Rachmayani³, Ridwan Aji Budi Prasetyo⁴, Razita Rana Huwaidah⁵, Ni Ageng Reksamukti⁶, Andryan Wardhanu⁷, Herdias Hayyal Falahi⁸, Maurice Shafina Hanum Hadi Elfahmi⁹, Hana Mawaddah¹⁰
From Clicks To Choices: The Role Of Gambling Motivation And Impulsivity To The Severity Of Online Gambling Disorder

questionnaires even though they are anonymous. Apart from that, the S-UPPS measuring instrument has poor reliability so it has to be reduced to 11 items so that it can be considered to use other measuring instruments to substitute or carry out a CFA test to ensure good validity and reliability before being used in research on populations in Indonesia. Apart from that, impulsivity might be better if responses are taken through experimental research simulations rather than through self-report so that the measurement results are more objective and have minimal bias.

CONCLUSION

The results of this research indicate that alternative hypothesis 1 and alternative hypothesis 2 are accepted. The first result is that gambling motivation can significantly predict online gambling disorder. These results show that when someone has a high desire to gamble online, it has the potential to lead someone to become a pathological gambler. The several types of motivation that can be strong predictors are amotivation, monetary gain, and social cognition. All subscales originate from external motivation. Another result is that impulsivity can be a predictor of online gambling disorder, although not as strong as gambling motivation. Based on the results of this research, restricting access to online gambling sites is very important for the authorities. Apart from that, people who risk filling their free time by gambling online need to replace it with other, more productive activities. Apart from that, based on the limitations of this research, it would be better to obtain participants through online gambling communities or sites that provide credible paid research participant services. Additionally, impulsivity can be measured using simulations through experiments such as simulation tests that have similarities with real online gambling and not through self-report questionnaires to minimize response bias.

Citations and References

- Ainslie, G. (1975). Specious reward: A behavioral theory of impulsiveness and impulse control. *Psychological Bulletin*, 82(4), 463–496. <https://doi.org/10.1037/h0076860>
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). American Psychiatric Publishing.
- Brevers, D., Bechara, A., Cleeremans, A., Kornreich, C., Verbanck, P., & Noël, X. (2014). Impaired Decision-Making Under Risk in Individuals with Alcohol Dependence. *Alcoholism: Clinical and Experimental Research*, 38(7), 1924–1931. <https://doi.org/10.1111/acer.12447>
- Brevers, D., Cleeremans, A., Bechara, A., Laloyaux, C., Kornreich, C., Verbanck, P., & Noël, X. (2011). Time course of attentional bias for gambling information in problem gambling. *Psychology of Addictive Behaviors*, 25(4), 675–682. <https://doi.org/10.1037/a0024201>
- Brevers, D., Cleeremans, A., Verbruggen, F., Bechara, A., Kornreich, C., Verbanck, P., & Noël, X. (2012). Impulsive Action but Not Impulsive Choice Determines Problem Gambling Severity. *PLoS ONE*, 7(11), e50647. <https://doi.org/10.1371/journal.pone.0050647>
- Chantal, Y., Vallerand, R. J., & Vallieres, E. F. (1994). Assessing motivation to gamble: On the development and validation of the Gambling Motivation Scale. *Society and Leisure*, 17(1), 189–212. <https://doi.org/10.1080/07053436.1994.10715471>
- Cyders, M. A., Littlefield, A. K., Coffey, S., & Karyadi, K. A. (2014). Examination of a short English version of the UPPS-P Impulsive Behavior Scale. *Addictive Behaviors*, 39(9), 1372–1376. <https://doi.org/10.1016/j.addbeh.2014.02.013>
- Deci, E. L., & Ryan, R. M. (2000) The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry*, 11:4, 227-268, DOI: 10.1207/S15327965PLI1104_01

Elmy Bonafita Zahro¹, Cleoputri Yusainy², Dita Rachmayani³, Ridwan Aji Budi Prasetyo⁴, Razita Rana Huwaidah⁵, Ni Ageng Reksamukti⁶, Andryan Wardhanu⁷, Herdias Hayyal Falahi⁸, Maurice Shafina Hanum Hadi Elfahmi⁹, Hana Mawaddah¹⁰
 From Clicks To Choices: The Role Of Gambling Motivation And Impulsivity To The Severity Of Online Gambling Disorder

Ferris, J., & Harold James Wynne. (2001). The Canadian Problem Gambling Index. Final Report: Submitted for the Canadian Centre on Substance Abuse.

Field, M., & Cox, W. (2008). Attentional bias in addictive behaviors: A review of its development, causes, and consequences. *Drug and Alcohol Dependence*, 97(1-2), 1–20. <https://doi.org/10.1016/j.drugalcdep.2008.03.030>

Giorgetta, C., Grecucci, A., Rattin, G., Guerreschi, C., Sanfey, A.G., Bonini, G. (2014). To play or not to play: A personal dilemma in pathological gambling. *Psychiatry Research*, 219 (3), 562-569. <https://doi.org/10.1016/j.psychres.2014.06.042>

Gluth, S., Kern, N., Kortmann, M., & Vitali, C. L. (2020). Value-based attention but not divisive normalization influences decisions with multiple alternatives. *Nature Human Behaviour*, 4(6), 634–645. <https://doi.org/10.1038/s41562-020-0822-0>

Goudriaan, A. E., Oosterlaan, J., de Beurs, E., & van den Brink, W. (2006). Neurocognitive functions in pathological gambling: a comparison with alcohol dependence, Tourette syndrome, and normal controls. *Addiction*, 101(4), 534–547. <https://doi.org/10.1111/j.1360-0443.2006.01380.x>

Heilig M., Epstein D.H., Nader M.A., Shaham Y. (2016). Time to connect: Bringing social context into addiction neuroscience. *Nature Reviews Neuroscience*. ;17(9):592–599. doi: 10.1038/nrn.2016.67.

Heitmann, J., Bennik, E. C., van Hemel-Ruiter, M. E., & de Jong, P. J. (2018). The effectiveness of attentional bias modification for substance use disorder symptoms in adults: a systematic review. *Systematic Reviews*, 7(1). <https://doi.org/10.1186/s13643-018-0822-6>

Katadata.co.id. (n.d.). Berita Judi Online Terbaru dan Terkini Hari Ini - Katadata.co.id.

Katadata.co.id. Retrieved March 1, 2024, from <https://katadata.co.id/tags/judi-online> Limbrick-Oldfield, E. H., Chua, C., Cringle, N., MacDonald, K., Ferrari, M. A., Zhang, K., & Clark,

L. (2021). Cashless gambling and the pain of paying: effects of monetary format on slot machine gambling. *Addiction Research & Theory*, 30(3), 220–230. <https://doi.org/10.1080/16066359.2021.2009465>

Moeller, F., Gerard, M.D., Barratt, E.S., Dougherty, D.M., Schmitz, J.M. and Swan, A.C. (2001). ‘Psychiatric aspects of impulsivity’, *American Journal of Psychiatry*, 158, 1783– 93. DOI: 10.1176/appi.ajp.158.11.1783

Moreira D, Azeredo A, Dias P. Risk Factors for Gambling Disorder: A Systematic Review. *J Gambli Stud*. 39(2):483-511. doi: 10.1007/s10899-023-10195-1.

Orquin, J. L., & Mueller Loose, S. (2013). Attention and choice: A review on eye movements in decision making. *Acta Psychologica*, 144(1), 190–206. <https://doi.org/10.1016/j.actpsy.2013.06.003>

Reeve J., & Lee W. A. (2019). Neuroscientific perspective on basic psychological needs. *Journal of Personality*; 87(1):102–114. doi: 10.1111/jopy.12390.

Rockloff, M, Browne, M, Hing, N, Thorne, H, Russell, A, Greer, N, Tran, K, Brook, K & Sproston, K. (2020). stVictorian population gambling and health study 2018–2019, Victorian Responsible Gambling Foundation, Melbourne.

Ryan R.M., & Deci E.L. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *The American Psychologist* ;1:68–78. doi: 10.1037//0003-066x.55.1.68.

San Martín, R., Appelbaum, L. G., Huettel, S. A., & Woldorff, M. G. (2014). Cortical Brain Activity Reflecting Attentional Biasing Toward Reward-Predicting Cues Covaries with Economic Decision-Making Performance. *Cerebral Cortex*, 26(1), 1–11. <https://doi.org/10.1093/cercor/bhu160>

Elmy Bonafita Zahro¹, Cleoputri Yusainy², Dita Rachmayani³, Ridwan Aji Budi Prasetyo⁴, Razita Rana Huwaidah⁵, Ni Ageng Reksamukti⁶, Andryan Wardhanu⁷, Herdias Hayyal Falahi⁸, Maurice Shafina Hanum Hadi Elfahmi⁹, Hana Mawaddah¹⁰
From Clicks To Choices: The Role Of Gambling Motivation And Impulsivity To The Severity Of Online Gambling Disorder

Sancho, M., Bonnaire, C., Costa, S., Casalé-Salayet, G., Vera-Igual, J., Rodríguez, R. C., Duran-Sindreu, S., & Trujols, J. (2021). Impulsivity, Emotion Regulation, Cognitive Distortions and Attentional Bias in a Spanish Sample of Gambling Disorder Patients: Comparison between Online and Land-Based Gambling. *International Journal of Environmental Research and Public Health*, 18(9), 4869. <https://doi.org/10.3390/ijerph18094869>

Shinaprayoon, T., Carter, N. T., & Goodie, A. S. (2017). The Modified Gambling Motivation Scale: Confirmatory Factor Analysis and Links With Problem Gambling. *Journal of Gambling Issues*, 37. <https://doi.org/10.4309/jgi.2018.37.5>

Spurrier, M., & Blaszczynski, A. (2013). Risk Perception in Gambling: A Systematic Review. *Journal of Gambling Studies*, 30(2), 253–276. <https://doi.org/10.1007/s10899-013-9371-z> Stanton, R., To, Q. G., Khalesi, S., Williams, S. L., Alley, S. J., Thwaite, T. L., Fenning, A. S., &

Vandelanotte, C. (2020). Depression, Anxiety and Stress during COVID-19: Associations with Changes in Physical Activity, Sleep, Tobacco and Alcohol Use in Australian Adults. *International Journal of Environmental Research and Public Health*, 17(11), 40-65. <https://doi.org/10.3390/ijerph17114065>

Thomas, T., La Paix Puello, L., & Geurs, K. (2019). Intrapersonal mode choice variation: Evidence from a four-week smartphone-based travel survey in the Netherlands. *Journal of Transport Geography*, 76, 287–300. <https://doi.org/10.1016/j.jtrangeo.2018.06.021>

van Holst RJ, van den Brink W, Veltman DJ, Goudriaan AE. Why gamblers fail to win: a review of cognitive and neuroimaging findings in pathological gambling. *Neurosci Biobehav Rev*. 2010 Jan;34(1):87-107. doi: 10.1016/j.neubiorev.2009.07.007.

Volkow N.D., & Boyle M. (2018). Neuroscience of addiction: Relevance to prevention and treatment. *American Journal of Psychiatry*;175(8):729–740. doi: 10.1176/appi.ajp.2018.17101174.

Vuorinen, I., Savolainen, I., Hagfors, H., & Oksanen, A. (2022). Basic psychological needs in gambling and gaming problems. *Addictive Behaviors Reports*, 16, 100445. <https://doi.org/10.1016/j.abrep.2022.100445>

Wittekind, C., Brierley, J. D., Lee, A., & Eycken, E. V. (2019). TNM Supplement: A Commentary on Uniform Use. In Google Books. John Wiley & Sons. <https://books.google.co.id/books?hl=en&lr=&id=6G2hDwAAQBAJ&oi=fnd&pg=PP10&dq=Wittekind>

Wynne, H. (2004). The impact of gambling in Canadian Aboriginal communities. Presentation at the National Aboriginal Gambling Awareness Conference, Winnipeg, MB.