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## Influence of Mobile Online Battle Arena (MOBA) Addiction on Psychological Discomfort

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### ABSTRACT

An American Psychological Association study indicates that engaging in video games can improve a variety of cognitive abilities, including problem-solving, memory, spatial navigation, and reasoning. However, significant studies on the detrimental impacts of gaming, such as addiction, depression, and aggressiveness, have been found in several studies. Nevertheless, there is a lack of exploration of the effect of specific game genre addiction on the psychological well-being of students, not only in the Philippines but also around the world. The researchers used a quantitative, predictive design for this study. A total of 350 respondents participated in the study. In terms of MOBA usage, the average engagement level among college students was  $\bar{x} = 3.04$ ,  $SD = 1.25$ . The study findings suggest that college students, on average, reported mild levels of psychological discomfort ( $\bar{x} = 2.27$ ,  $SD = 0.742$ ). Despite their involvement in MOBA activities, there appears to be a baseline level of psychological discomfort among participants. The researchers concluded that there is a positive significant correlation between MOBA addiction and psychological discomfort. Regression analysis, conducted with a significance threshold of 0.05, revealed that only the "Withdrawal" subscale of MOBA Addiction exhibited a predictive relationship ( $p = 0.03$ ). Despite the significance of these findings, it is essential for future studies to address potential biases in participants' responses. Additionally, it is recommended that future researchers conduct qualitative inquiries to provide a comprehensive understanding of the variables involved.

## INTRODUCTION

### Background of the Study

Gamers can interact with one another through gaming, which goes beyond just a fun pastime and becomes a virtual community as players work together to accomplish common goals. Nevertheless, excessive gaming poses mental and physical health risks to players (Harvard Health, 2020). According to the World Health Organization's 11th Revision of the International Classification of Diseases (ICD-11), gaming addiction is defined as a collection of noteworthy behavioral patterns that cause problems in a number of important spheres of life, including social, educational, professional, personal, and relationship. Internet Gaming Disorder (IGD) is included in the research appendix of the DSM-5 due to evidence of significant harm. While the workgroup acknowledged the increasing evidence indicating the potential for significant impairment in individuals with Internet Gaming Disorder (IGD), they highlighted the lack of sufficient data to officially classify it as a mental disorder. The inclusion of IGD in Section III of the DSM-5 aims to encourage further research that could solidify its status as a distinct mental disorder in future revisions of the DSM (Petry, Rehbein & O'Brien, 2015). Based on statistical data, the prevalence of gaming addiction in Southeast Asia was 10.1% (95% confidence interval: 7.3%-13.8%). (C. Lee, et. al., 2020). Meanwhile, between 1.7% and 10% of the American population is affected by video game addiction, with 21% of U.S.

gamers spending over 20 hours per week playing MOBAs (Miller, 2024).

Mobile Online Battle Arena (MOBA) is an online game sub-genre under real time strategy that consists of two teams, with each team consisting of five players. To destroy the opponent's primary object (referred to as ancient, vain, etc.) while preserving the team's main object, each player employs magical skills (hero). If the primary object of the opponents is destroyed, one team is deemed the winner. Mobile Legends, Glory of Kings, and DOTA are some examples of this type of game (Intan & Amalia, 2020). Unlike traditional real-time strategy games, there's no building or unit construction in MOBA. Instead, its strategy centers on individual character growth and teamwork during battles (Mora-Cantalops & Sicilia, 2018). 554 million people were playing online games as of the end of December 2021. A total of 709,000 apps, or 28.2% of all apps, are game apps. The Chinese mobile game "Glory of Kings" is the most downloaded app among Chinese college students as it has a high rating (Huang, 2021). In the Philippines, the Esports scene has a massive community of more than 43 million active gamers, steadily increasing by 12.9% each year since 2017. This growth is fueled by the widespread availability of smartphones and mobile internet. At the forefront of the gaming scene is Mobile Legends, a hugely popular MOBA game (YCP Solidiance, 2021).

Casual online gaming can positively contribute to players' social connections and personal psychological growth.

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Online games have been shown in earlier research on their emotional effects to have the ability to reduce stress and depression while increasing happiness (Ari *et al.*, 2020; Pine *et al.*, 2020). Previous research indicates that games can foster reflection on an individual's personal development and values, augmenting their sense of self-awareness, particularly for those who perform well in online gaming (Li *et al.*, 2023). Nevertheless, as noted by Castillo *et al.* (2022), multiplayer online games encourage active interaction among players and contribute to enjoyment. Their research, conducted in Bansalan, Davao del Sur, highlights a significant correlation between sociality in multiplayer online games and the overall gaming experience, indicating a robust connection between social interactions and gaming enjoyment.

Even though playing video games can seem to have a positive effect on a person, research in this area frequently centers on online game addiction, which is one of the most serious behavioral addictions (Lopez-Fernandez, 2018). It may result in a number of medical and psychological issues, including poor sleep, sadness, anxiety, and even death, much like other addictions (Li *et al.*, 2023). It is characterized as an irresistible tendency to immerse oneself in video games which could cause damage to various life aspects (Ivanova, 2023).

'Escapism' can be defined as the pursuit of escaping from real life into another fictional world (Marques, Uchida, Aguiar *et al.*, 2023). Markovic (2023) indicated in their article that when a player's extreme immersion in a game is associated with escapism, they may have a higher chance of developing internet gaming disorder. Gaming withdrawal is also a factor associated with Internet Gaming Disorder (IGD). Irritability, anxiety, and sadness are withdrawal symptoms that happen when someone is made to discontinue their use of the internet for gaming (Cleveland Clinic, 2022). Lastly, as highlighted in Kowalik, Delfabbro & King's (2024) study, a key component of addictive illnesses, such as gaming disorder (GD), is impaired control (IC). Impaired control refers to the sensation of losing control and the inability to resist urges when engaging in specific activities like gaming.

As previously implied, gaming addiction can cause psychological discomfort such as depression, anxiety, and stress. Depression is characterized by a lingering feeling of emptiness, melancholy, or the inability to enjoy life, sometimes seemingly for no apparent reason (Goldman, 2024). Meanwhile, anticipating a future worry is called anxiety. It is a typical reaction to stress. However, when the anxiety becomes excessive, it would cause impairment to daily activities (American Psychiatric Association, 2023). Stress, however, is a typical human response that spurs us to confront challenges and perils in our daily lives. Everybody experiences stressful times. However, how people respond to stress determines how it affects their psychological health.

Because so many students spend a great deal of time, money, and effort on these platforms, teachers are against online gaming because it significantly affects

students' social connections, academic performance, physical and mental health, and ultimately leads to the dreadful epidemic of online gaming addiction (Li *et al.*, 2023). Shouman, Elez, Ibrahim *et al.* (2023) observed in their investigation that psychological well-being ratings decreased as Internet Gaming Disorder levels rose, suggesting the negative effect of IGD to psychological well-being of students. In the Philippines, numerous parents' express concerns about their children being excessively focused on mobile phones and developing addictions to certain games, instigating the need to address the issue (Kapoor & Subida, 2022). According to a study conducted by Goh, Jones, and Copello (2019) exploring the impact of online gaming on the psychological well-being of DOTA 2 players, the research reveals that an increased amount of playing time is linked to diminished psychological well-being.

Despite the widespread popularity of MOBA games, there is a lack of sufficient local studies examining potential risk factors among youth. Consequently, there's an ongoing necessity to gather current knowledge in this research domain, influencing future directions for research, practice, and policy. The rapid evolution of the online gaming scene in recent years, such as the transition from computer games to mobile games, also underscores a significant gap in the literature that warrants further exploration (T'ng, Ho, & Pau, 2022). Another literature gap that the researchers of this study seek to fill is the lack of exploration of the effects of a widely known specific game genre—MOBA—on the psychological well-being of students in the Philippines. The purpose of this research is to investigate the correlation between college students' psychological health and MOBA addiction in order to add to the body of information regarding Internet Gaming Disorder (IGD), as it is included in the DSM-5 under the "Conditions for Further Study" section.

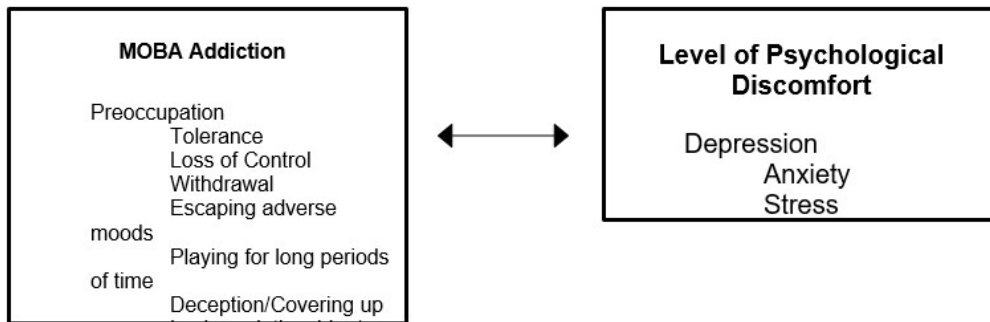
### Research Objectives

This study specifically seeks to determine the following:

1. What is the level of MOBA addiction of the respondents in terms of:
  - 1.1 Preoccupation
  - 1.2 Tolerance
  - 1.3 Loss of Control
  - 1.4 Withdrawal
  - 1.5 Escaping Adverse Moods
  - 1.6 Playing for Long Periods of Time
  - 1.7 Deception/Covering Up
  - 1.8 Losing Relationships or Opportunities
  - 1.9 Persistence Despite Problems
  - 1.10 Giving Up Other Activities
2. What is the level of Psychological Discomfort of the respondents in terms of:
  - 2.1 Depression
  - 2.2 Anxiety
  - 2.3 Stress
3. Is there a significant relationship between MOBA

Addiction and Psychological Discomfort of the respondents? between MOBA addiction and Psychological discomfort?

4. What is/are the predictors of the relationship **Conceptual Framework**



**Figure 1:** Schematic Diagram Showing the Variables of the Study

Figure 1 shows the relationship between the two variables in this study, which are MOBA addiction as the independent variable and psychological discomfort as the dependent variable. The MOBA addiction variable in this study refers to how much the participants played MOBA recently and how much it affected their everyday lives. This addiction level is assessed through several indicators: preoccupation, indicating an excessive focus on online/offline gaming; tolerance, reflecting the need for increasing time investment in gaming; loss of control, where individuals struggle to manage their gaming habits; withdrawal, involving unpleasant symptoms (irritability anxiety, or sadness), experienced when gaming is restricted; escaping adverse moods, referring to using games to alleviate negative emotions, playing for long periods of time, meaning spending extended periods of time gaming; deception, described as deceiving others about gaming habits; losing relationships/opportunities, described as jeopardizing relationships, jobs, or educational opportunities due to gaming, persistence despite problems, characterized as persisting with gaming despite knowing it causes problems; and giving up other activities, which refers to abandoning previous hobbies and interests in favor of gaming (Luo *et al.*, 2022).

Meanwhile, the psychological discomfort variable refers to how psychologically healthy the respondents were at the time of the survey. The following indicators are

used to gauge the degree of psychological discomfort: depression, which is characterized by a persistently poor mood, loss of pleasure, or lack of interest in activities (World Health Organization: WHO, 2019); anxiety, a mood that manifests as tense feelings, racing thoughts, and bodily symptoms as elevated blood pressure (APA, 2022); and stress, defined as a condition of anxiety or mental strain brought on by a challenging circumstance (World Health Organization; WHO, 2023).

**METHODOLOGY**

A thorough discussion of the research design, participants, instruments, design and procedure, ethical considerations, and the limitations of the study.

**Research Respondents**

The samples from this study were taken from the population of a certain university in the Davao region. The researchers utilized the purposive sampling method to select respondents that are most likely to yield appropriate and useful information; in this case, respondents who play MOBA were appropriate for this study, (S. Campbell, et. al., 2020).

A total of 350 respondents were given survey questionnaires to answer, with their voluntary participation and autonomy to withdraw from the survey when they were not comfortable.

**Table 1:** Frequency Distribution on the Demographics (n = 350)

	Profile	f	%
<b>Gender</b>	Male	189	54
	Female	158	45
<b>Age</b>	Non-Binary	3	0.9
	17	5	1
	18	49	14
	19	95	27
	20	107	31
	21	2	15
	23	9	3

	24	9	3
	25	2	0.6
	27	1	0.3
	28	1	0.3
<b>Year Level</b>			
Grade 12		14	4
First Year		117	33
Second Year		145	41
Third Year		58	17
Fourth Year		16	5
<b>Department</b>			
Arts and Sciences		41	12
Criminal Justice Education		110	31
Teacher Education		25	7
Technical Programs		46	13
Accounting Education		35	10
Business Administration		79	23
Senior High School		14	4

The year level with the most respondents was the second year ( $n = 145$ , 41%), followed by the first year ( $n = 117$ , 33%), then third year ( $n = 58$ , 17%), and fourth year ( $n = 16$ , 5%), with the least participants from grade 12 ( $n = 14$ , 4%). Meanwhile, the majority of the respondents on the Gender demographics were males ( $n = 189$ , 54%), followed by females ( $n = 158$ , 45%), with the least respondents from the non-binary ( $n = 3$ , 0.9%). Additionally, the Age with the most respondents was 20 years old ( $n = 107$ , 31), followed by 19 ( $n = 95$ , 27%), then 21 ( $n = 52$ , 15%), 18 ( $n = 49$ , 14%), 23 and 24 ( $n = 9$ , 3%), 17 ( $n = 5$ , 1%), 25 ( $n = 2$ , 0.6%), with the least respondents from the ages 27 and 28 ( $n = 1$ , 0.3%). Finally, the Department with the most respondents was the Criminal Justice Education ( $n = 110$ , 31%), followed by the Business Administration ( $n = 79$ , 23%), then Technical Programs ( $n = 46$ , 13%), Arts and Sciences ( $n = 41$ , 12%), Accounting Education ( $n = 35$ , 10%), Teachers Education ( $n = 25$ , 7%), and the department with the least respondents was the Senior High School ( $n = 14$ , 4%).

### Research Instruments

The researchers utilized questionnaires with Cronbach's alpha coefficients exceeding 0.80 to ensure data reliability. The Game Addiction Questionnaire, a 6-point Likert scale, was adapted from Gonzales-Bueso *et al.* (2013), comprising 15 questions with an alpha coefficient of 0.884. It encompassed 10 indicators including preoccupation, tolerance, loss of control, withdrawal, mood regulation, prolonged play, deception, social or occupational impairment, persistence, and neglect of other activities. Meanwhile, the Psychological Discomfort Questionnaire, adapted from S.H. and Lovibond (1995), featured 42 questions across three indicators: Depression

( $\alpha = 0.91$ ), Anxiety ( $\alpha = 0.84$ ), and Stress ( $\alpha = 0.90$ ). Permission was sought from the original authors prior to questionnaire adaptation. A pilot test was conducted on the university's population to evaluate the reliability and validity of both questionnaires. Results indicated a Cronbach's alpha coefficient of 0.884 for the Gaming Addiction Questionnaire and 0.959 for the Psychological

**Table 2:** Psychological Discomfort Mean Interpretation

Mean Interval	Description	Interpretation
1.00 – 1.75	Normal	The discomfort level is normal.
1.76 – 2.51	Mild	The discomfort level is mild.
2.52 – 3.26	Moderate	The discomfort level is moderate.
3.27 – 4.00.	Severe	The discomfort level is severe.

**Table 3:** Mobile Online Battle Arena (MOBA) Addiction Mean Interpretation

Mean Interval	Description	Interpretation
1.00 – 1.82	Normal	There is no MOBA addiction.
1.83 – 2.66	Low	MOBA addiction is low.
2.67 – 3.50	Average	MOBA addiction is average.
3.51 – 4.32	Above Average	MOBA addiction is above average
5.17 – 6.00.	Very High	MOBA addiction is very high.

Discomfort Questionnaire, suggesting high levels of reliability and validity within the specific population. The MOBA Addiction Questionnaire employs a 6-point Likert scale, ranging from 1 (Never) to 6 (Very Often). Conversely, the Psychological Discomfort Questionnaire utilizes a 4-point Likert Scale, ranging from 1 (Did not apply to me at all) to 4 (Applied to me very much or most of the time). Below are the mean interpretations for each questionnaire.

Below are the mean interpretations of each questionnaire.

### **Design and Procedure**

The researchers utilized the descriptive-predictive research design to gather data from a large sample size to ensure the reliability and validity of the findings. Before distributing the questionnaires, the researchers sent letters of permission to conduct the study, signed by the course's adviser and favorably endorsed by the Dean.

During the sampling phase, the researchers distributed the questionnaires and the informed consent which consisted of the ethical considerations of the study. The distribution of the questionnaires lasted from February 9 to 16, 2024, and was conducted in two ways: Physically and digitally. Digitally, they created Google Forms with the informed consent on the first page, and the questionnaires on the following pages. There were 89 respondents online. The researchers ensured that the accounts used to handle the Google Forms were accessed by no one but them to keep the data from leaking.

Meanwhile, during the physical survey, the researchers distributed the printed informed consent and questionnaires around the school. Before distributing the papers, they would ask the students if they played MOBA games. When the latter answered "Yes", the researchers gave them informed consent and asked if they had time and were willing to participate in the survey; otherwise, the students were not asked any more questions by the researchers. When the students finished reading the informed consent and gave their voluntary participation, the researchers then gave them the questionnaires. When the respondents finished answering, they were given tokens by the researchers for their participation. Lastly, after collecting the answered questionnaires, the data was tabulated and analyzed by the researchers with the help of the Jamovi Software, utilizing the statistical treatment needed, as determined by the study's objectives.

### **Statistical Treatment**

During the analysis of the data, the researchers began by inputting the raw data from both questionnaires into Microsoft Excel. Then, they calculate the mean scores per respondent in each subscale of the two questionnaires. After that, they transferred the age, department, and year level of the students, together with the mean per subscale to the Jamovi app. The researchers then used the descriptive tool to calculate the overall mean of both questionnaires and to determine the normality of the data. They utilized Shapiro-Wilk and found out that the data was

not normally distributed ( $p = 0.002$ ) relative to the alpha level of 0.05. Considering this finding, the researchers decided to use a nonparametric tool for a correlation study, which is the Spearman Correlation Coefficient ( $p=0.05$ ). Since there is a significant relationship between the variables ( $p = 0.019$ ), the researchers also conducted a regression analysis to determine the predictors of the dependent variable, psychological discomfort ( $p = 0.05$ ).

### **Ethical Considerations**

To ensure the safety of both oneself and any potential respondents, the researchers in this study complied with the rules set forth by the Research Ethics Committee.

### **Voluntary Participation**

Consent-obtaining procedures ought to be seen as voluntary. It makes sense that the researchers asked the respondents to sign an informed consent form, indicating their voluntary involvement and consent.

### **Privacy and Confidentiality**

Before and following the survey, the researchers made sure that the information provided by the respondents would be kept private. They made the name section of the questionnaire optional so that individuals wouldn't have to fill it out. Additionally, upon retrieving the questionnaires from the respondents, the researchers placed them into a sealed container. To prevent losing the papers, one researcher put it in a place in their home that only they could reach.

### **Informed Consent Process**

Before giving out the questionnaires, the respondents were given informed consent and were given time to read it. The researchers made sure that the respondents knew their autonomy to withdraw from the study if they felt uneasy upon participating. When the participants were done reading, they were asked to sign if they were willing to participate in the study

### **Risks**

The respondents were unable to experience negative effects from the study. The goal of the research was to pursue beneficence and non-maleficence. As they conducted the survey, the researchers were aware of several possible risks, such as the possibility that some respondents' confidentiality would be compromised in the event that the data was misplaced -which was close to impossible since the researchers keep the data safe all the time -and the loss of time that the respondents could have used to learn in class.

### **Benefits**

The researchers aimed to maximize the benefits of participating. After answering the questionnaires, the respondents were given a token of appreciation at the end of the experimentation as compensation for the time they provided for the study.

**Plagiarism**

There are no depictions in the report that could encourage plagiarism. Researchers made sure that the recommended authors’ and experts’ research concepts and findings were properly cited.

**Permission from Organization or Location**

The researchers have gotten the approval from the Dean to conduct their study in the university. Additionally, they also asked the professors to use the room to conduct the study to MOBA player students during a portion of their class time.

**LIMITATIONS**

There were few factors that might have contributed to the limitations of this study. First, was the environment; since the data gathering was conducted all around the campus, the varying environment in which the students answered the questionnaires might affect their responses. Additionally, the number of participants may not be sufficient to generalize the findings in this study.

**RESULTS AND DISCUSSION**

This chapter includes illustrations of the data, conclusions, interpretation, discussion, and data analysis based on respondents’ responses about their current psychological state and degree of game usage. The respondents’ psychological discomfort, respondents’ level of game usage, and regression analysis for variables predicting participants’ psychological discomfort are the subheadings under which the tables are arranged.

**Table 4:** Level of Mobile Online Battle Arena (MOBA) Addiction of the Respondents

Indicator	Mean	Std. Deviation
Preoccupation	3.34	1.48
Tolerance	3.23	1.39
Loss of Control	3.26	1.62
Withdrawal	2.82	1.52
Escaping adverse moods	3.47	1.47
Playing for long periods of time	2.93	1.42
Deception	2.78	1.68
Losing relationships or opportunities	2.92	1.59
Persistence despite problems	2.75	1.68
Giving up other activities	2.86	1.59
<b>Overall</b>	<b>3.04</b>	<b>1.25</b>

Table 4 presents the mean scores for each indicator of the MOBA Addiction Questionnaire. The findings reveal that the indicator Escaping adverse moods had the highest mean score, indicating an average level of escapism ( $\bar{x} = 3.47$ ,  $SD = 1.47$ ). Conversely, the indicator Persistence despite problems had the lowest mean score,

also reflecting an average level ( $\bar{x} = 2.75$ ,  $SD = 1.68$ ). This suggests that respondents’ level of MOBA addiction falls within the average range. The overall MOBA addiction score was also found to be average ( $\bar{x} = 3.04$ ,  $SD = 1.25$ ). The result indicating Escaping adverse moods as the highest-scoring indicator supports the conclusions drawn by Melodia, Canale & Griffiths (2020), who found escapism to be a predictor of Internet Gaming Disorder and a mediator of various psychological factors, such as anxiety, in problematic online gaming. Similarly, Wang *et al.* (2022) demonstrated that individuals with High-Risk Internet Gaming Disorder are significantly affected by escapism-based motivation. While Escaping adverse moods had the highest mean score, it’s noteworthy that other indicators were also interpreted as average, suggesting a need to explore similar studies or articles linking them to gaming addiction. For instance, Preoccupation has been associated with gaming addiction, according to Willacy (2023), as it involves constant thoughts about past and future gaming sessions, potentially leading to addiction. Furthermore, the study by Dahl and Bergmark (2020) provided evidence of persistent symptoms of problematic internet use, particularly in gaming addiction, despite variations. This implies that students may primarily play MOBA games to escape from stressors such as academic pressure. However, since all indicators were interpreted as average, it suggests that gaming addiction may be influenced by these indicators equally, rather than being predominantly driven by a single factor.

Table 5 presents the level of discomfort experienced by

**Table 5:** Level of Psychological Discomfort of the Respondents

Indicator	Mean	Std. Deviation
Depression	2.18	0.790
Anxiety	2.27	0.729
Stress	2.35	0.708
<b>Overall</b>	<b>2.27</b>	<b>0.742</b>

the respondents. The highest mean is observed in the indicator ‘stress’, which interprets to mild deficiency ( $\bar{x} = 2.35$ ,  $SD = 0.708$ ), while the lowest mean is from the indicator ‘depression’, also translating to mild deficiency ( $\bar{x} = 2.18$ ,  $SD = 0.790$ ). Overall, the level of psychological discomfort among the respondents is interpreted as ‘mild’ ( $\bar{x} = 2.27$ ,  $SD = 0.742$ ). Although stress received the highest mean score among the three indicators, it is noteworthy that all indicators were interpreted as mild. Therefore, while not severe, all of them warrant attention. Various studies have concluded that stress is one of the primary indicators of psychological discomfort among students (Kumar, Mandal, Bharti, 2020; Dhanabhakyaam, and Sarath, 2023; Schneiderman, Ironson, and Siegel, Klainin-Yobas, et. al., 2021). This could be attributed to the experience of discomfort due to academic and non-academic activities, leading to a decline in psychological well-being and possibly resorting to unhealthy habits.

Meanwhile, Tiwari and Tripathi (2015) concluded that students with high depression may have a low positive relation and self-acceptance dimension of psychological well-being, indicating that depression can diminish psychological well-being by fostering negative thoughts that distort social and personal perspectives. Additionally, individuals with high anxiety may struggle to let go of their concerns, potentially leading to physical and

psychological exhaustion (Bruce, 2022), suggesting that anxiety can contribute to psychological discomfort due to constant worrying about future situations. Furthermore, the mild overall mean of psychological discomfort may indicate that students are not primarily experiencing psychological discomfort because of Multiplayer Online Battle Arena (MOBA) activities).

With a weak positive correlation coefficient of  $r = 0.125$ ,

**Table 6:** Spearman Correlation Coefficient Analysis between the variables

Independent Variable	Overall Psychological Discomfort		
	R	p-value	Remarks
MOBA Addiction	0.125	0.019	Significant

the results demonstrated a significant p-value ( $p = 0.019$ ), which was smaller than the 0.05 correlation coefficient. This suggests that MOBA addiction may have an impact on students' level of psychological discomfort. It may also be possible that other factors aside from MOBA addiction contributed to the psychological discomfort

that the students felt. Similar research discovered a link between game addiction and psychological discomfort (Moore, Satel & Pontes, 2022; Labana, et. al., 2020; New, Rodriguez & Santos, 2020; Navarro & Generalao, 2022; Kapoor, Kumari & Marietta, 2023; Calvario, 2024).

Table 7 shows the regression analysis for variables

**Table 7:** Regression Analysis for variables predicting respondents' Psychological Discomfort ( $n = 350$ )

Predictor	B	SE	t	p
Intercept	2.03	0.106	19.23	<.001
Preoccupation	-0.03	0.049	-0.63	0.530
Tolerance	0.05	0.055	0.83	0.410
Loss of control	-0.01	0.039	-0.21	0.835
Withdrawal	0.09	0.034	2.61	0.009
Escaping adverse moods	-0.01	0.042	-0.24	0.807
Playing for long periods of time	-0.02	0.046	0.50	0.619
Deception	-0.002	0.037	-0.06	0.951
Losing relationships or opportunities	0.04	0.042	0.94	0.346
Persistence despite problems	0.04	0.038	-1.20	0.231
Giving up other activities	0.03	0.039	0.87	0.384
<b>R<sup>2</sup></b>		<b>0.0507</b>		
<b>F</b>		<b>1.81</b>		

predicting the psychological discomfort level of the respondents. The table shows that the 5% of the variance is explained by one predictor,  $F(df1 = 10, df2 = 339) = 1.81, p = 0.058$ . Specifically, "withdrawal" ( $\beta = 0.09, t = 2.61, p = .009$ ) is positively associated with psychological discomfort. 'Withdrawal' predictor has the highest estimate ( $\beta = 0.09$ ). This implies that when the withdrawal symptoms of the participants increase by one value, the expected increase in psychological discomfort is 0.09, suggesting that it had the strongest impact on psychological discomfort compared to other predictors. The 5% variance of Withdrawal may mean that other factors aside from MOBA addiction affects the psychological discomfort of students. Moreover, the findings may suggest that students experience psychological discomfort when they withdraw from gaming, potentially due to conflicting emotions. These

emotions arise from their simultaneous desires to play games to satisfy their wants and to stop playing to eliminate the unhealthy habits caused by gaming. Kaptis *et al.* (2016) concluded that game withdrawal can affect an individual's psychological discomfort, often manifesting as "irritability" and "restlessness" following the cessation of gaming. Research by Esposito *et al.* (2020) found that young people with gaming addictions were more likely to experience irritability or low mood compared to those without such issues. Furthermore, the study by Yen, Lin, and Wu (2022) indicated that individuals with Internet Gaming Disorder experience more severe withdrawal-related symptoms than regular gamers. On the other hand, Preoccupation ( $\beta = -0.03, t = -0.63, p = n.s$ ), Tolerance ( $\beta = 0.05, t = 0.83, p = n.s$ ), Loss of control ( $\beta = -0.01, t = -0.21, p = n.s$ ), Escaping adverse moods ( $\beta = -0.01, t = -0.24, p = n.s$ ), Playing for long periods of time ( $\beta =$

-0.02,  $t = 0.50$ ,  $p = n.s.$ ), Deception ( $\beta = -0.002$ ,  $t = -0.06$ ,  $p = n.s.$ ), Losing relationships or opportunities ( $\beta = 0.04$ ,  $t = 0.94$ ,  $p = 0.346$ ), Persistence despite problems ( $\beta = 0.04$ ,  $t = -1.20$ ,  $p = n.s.$ ), and Giving up other activities ( $\beta = 0.03$ ,  $t = 0.87$ ,  $p = n.s.$ ) were not significant predictors of psychological discomfort.

## CONCLUSIONS

In conclusion, this research has proven that MOBA addiction indeed influences the psychological discomfort of university students. This provided insights on the issues that have to be addressed, and ways to address them. 'Escaping adverse moods' as the one with the highest mean ( $\bar{x} = 3.47$ ,  $SD = 1.47$ ) among the predictors suggests the prevalence of students who use gaming as a way to escape from real life problems. On the other hand, the indicator 'Withdrawal' predicts the psychological discomfort of university students ( $p = 0.009$ ,  $t = 2.61$ ). This implies that among university students, those who exhibit withdrawal behaviors are more likely to experience psychological discomfort. This could be due to various reasons, such as the lack of social support, feelings of isolation, and reduced engagement in activities that promote well-being and mental health. Although MOBA addiction is known to be a contributing factor, the results of the linear regression analysis indicate that gaming withdrawal, the sole predictor in this model, accounts for only 5% of an individual's psychological discomfort. The remaining 95% of this discomfort is likely due to other external factors, such as life circumstances or various real-life challenges affecting the respondents' psychological well-being. Given the significant findings of this paper, it can contribute to understanding Internet gaming disorder within the DSM-5 framework. While the disorder may not be widely recognized at present, insights from this research could lead to its formal acknowledgment in future updates of the DSM-5. By highlighting both the positive and negative effects of gaming and distinguishing between healthy and problematic behaviors, the study provides valuable evidence that could inform updates to the diagnostic criteria.

## RECOMMENDATIONS

After examining the outcomes and previously drawn inferences, the following suggestions are formulated from this study. For students who engage in MOBA gaming, moderation is advised, and they are encouraged to seek healthier alternatives to fulfill their dopamine cravings while minimizing the potential risks to their psychological well-being. Parents are urged to actively manage their children's gaming habits and intervene promptly to safeguard their well-being. Educators should cultivate supportive environments and offer assistance, including consultations, for students grappling with mental health issues. School administrators are encouraged to arrange seminars and school events that educate students about the benefits, risks, and strategies for gaming responsibly, aiming to prevent addiction. In future

research concerning gaming addiction and students' discomfort levels, it is prudent to gather respondents in a single location to ensure consistency when exploring identical variables. This precautionary measure aims to minimize external influences that could affect their participation, thus reducing the likelihood of obtaining inconsistent responses. Additionally, due to the study's limited scope, qualitative investigations into similar topics are recommended to gain a deeper understanding of variables like MOBA addiction and its correlation with real-life aspects. Furthermore, when replicating this study, it is advisable to select respondents who meet the criteria for gaming addiction to achieve more conclusive results. Finally, to enhance the reliability and validity of the findings, it is suggested to expand the study's scale by involving two or more colleges. Such additional studies would offer more comprehensive insights into gaming, addiction, and their impact on students' discomfort levels.

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