Article

The Effect of Flow Experience on Online Game Addiction during the COVID-19 Pandemic: The Moderating Effect of Activity Passion

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Abstract: Stay-at-home mandates and quarantines related to the coronavirus disease of 2019 (COVID-19) pandemic have led to significantly increased participation in online gaming. However, as players continue to participate in online games, it may also trigger online game addiction. This study aimed to explore the relationship between players' flow experience and online game addiction, and to verify whether differences in the type of passion lead to online game addiction. This study used the structural equation model (SEM) to verify the causal relationship between the constructs and then considered model implications with the fit index measurement standard. After investigating 232 players who are passionate about online games, the analysis results show that the higher the flow experience experienced by online game players, the more likely it is to lead to online gaming addiction. Further verification results show that players' activity passion significantly moderates the relationship between flow experience and online game addiction, and players with obsessive passion are more likely to experience online game addiction than players with harmonious passion. Future work will explore the causes of online game addiction from different perspectives.

Keywords: activity passion; COVID-19; flow experience; online game addiction

1. Introduction

The coronavirus disease of 2019 (COVID-19) pandemic has severely disrupted normal activities around the world. Stay-at-home mandates and quarantines have increased the consumption of digital entertainment, especially online gaming [1]. Nonetheless, while online gaming can indeed enrich people's lives [2], it can also trigger addiction as players continue to participate [3–5]. Past research has often indicated that players' gaming skills, ability factors [6], social interaction [7], and specialization [8] will affect the outcome of continued participation, but these factors do not explain why individuals with the same high passion for the online game have different recreational outcomes (e.g., advance or addiction) [8] Adolescents during COVID-19 pandemic have a high risk for their emotional control [9,10]. This issue is worth studying.

Csikszentmihalyi defines flow experience as "a subjective state that people report when they are completely involved in something to the point of forgetting time, fatigue, and everything else but the activity itself" [11]. It is an important variable used to measure the scale of the balance of challenges and skills (ability) in specialized activities that are chosen by an individual. In recent years, scholars have argued that problematic internet use may be related to flow experience, especially in online gaming [4]. For example, through the flow experience, online game players can immerse themselves in the game for great pleasure, and in the process of experiencing flow, the player's sense of time is

distorted [12]. This means that players may lose sight of the real world because of their desire to immerse themselves in the flow experience [13]. However, this intrinsic pleasure generated by the flow experience is likely to lead to unhealthy repetition of participation activities by players [14]. Some scholars have directly stated that there is a positive correlation between flow experience and problematic internet use behavior (such as online games) [4,15,16]. Csikszentmihalyi [11] goes a step further and argues that the flow experience itself has inherently addictive properties.

However, few studies in the literature have explored the relationship between flow experience and online gaming addiction. Chou and Ting [4] found that online gamers' desire to relive flow experience leads to repetitive behaviors among online gamers and that this repetitive engagement behavior can lead to addictive tendencies. Subsequently, Wu et al. [8] confirmed that flow experience is the antecedent to online gaming addiction. Results of the above studies can be used as evidence that flow experience will lead to addiction. However, Wan and Chiou [6] argue that flow experience does not significantly affect the addictive tendencies of online gamers and suggests that further research is needed to understand the relationship between flow experience and online gaming addiction. The reason for this is that not all players who have experienced flow will experience online game addiction, and not all online gamer addicts will inevitably experience flow when playing online games.

This divergent argument may be explained by applying a dualistic model of passion proposed by Vallerand et al. [17]. Vallerand et al. [17] argued that there are two types of activity passion: harmonious passion and obsessive passion. An important difference between these two types of activity passion is whether the activity can be internalized as an individual identity. Harmonious passion stems from the activity of self-determined internalization, and this pattern of autonomous internalization produces an intrinsic motivation that leads individuals to participate strongly in activities of free will. Obsessive passion, by contrast, results from activities that are internalized in non-self-determined behavior, and causes individuals to engage in activities due to the influence or control of certain contingencies, including the feeling of intrapersonal and/or interpersonal pressure. Because individuals with harmonious passion participate in activities that they can control, individuals will have a higher positive effect when participating in the activities. Conversely, individuals with obsessive passion who are forced to engage in an activity due to internal and external pressures will have higher negative effects when participating [17].

Due to the lack of stronger evidence, the interaction between flow experience and online gaming addiction cannot be clarified [18]. Analysis of past research on online game participation [4,6,8] shows that these studies only emphasize whether flow experiences (the goal pursued by continued participation) will lead to gaming addiction behaviors, while ignoring the intrinsic motivation for continued participation. There are still significant gaps in the study of the relationship between flow experience and online game addiction; for example, the current literature cannot explain why individuals who are also highly passionate about online games and actively engage in continued participation in online games will, or will not, experience online game addiction. To address this gap, some scholars have agreed that self-determination theory may first be able to be applied to understand the motivation of players to participate in online games, and then discussed the consequences of flow experience [19]. Based on this, this study started from the dualistic model of passion derived from self-determination theory [17], tried to explore the intrinsic motivation of players to participate in online games, and verified whether the difference in motivation affects the essential difference in the continued participation behavior of players after they have a flow experience; that is, continued participation behavior is the pursuit of skills and further progress, but it may also be just an addictive behavior. Therefore, the research objectives of this study were: first, examine the relationship between flow experience and online game addiction; second, test the role played by the activity passion in the relationship between flow experience and online game addiction.

2. Literature Review and Hypotheses Derivation

2.1. Online Game Addiction

Based on Weinstein and Lejoyeux's [20] definition of Internet addiction, online gaming addiction refers to the phenomenon in which players are strongly dependent on online games and overuse or irresistibly, compulsively, and repeatedly participate in online games over a considerable period of time, resulting in impaired physical, psychological, and social functioning of individuals [8]. Basically, online game addicts go through six core processes, namely, salience, mood modification, tolerances, withdrawal symptoms, conflict, and relapse [21]. Many studies have consistently shown that online game addiction has a negative impact on an individual's psychology or behavior [22–24]. However, the concept of online game addiction is also often criticized for its lack of means to recognize how players are addicted to games [25]. In response to this, some studies believe that the phenomenon of excessive addiction to online games is a way to adjust to potential psychological problems such as depression and anxiety [26]. Mental health associated with the high risk of online game players during COVID-19 is a public emergency and, therefore, must be a concerning issue [9,10]. However, whether the process of continuous participation in online games is inherently a problematic activity is still a topic to be explored. Excessive addiction to online gaming can be a symptom rather than a cause of the problem [27].

2.2. The Relationship between Flow Experience and Online Game Addiction

In recent years, flow experience has become an important topic in positive psychology [28]. Past research has shown that individuals often experience flow during the activities they participate in, whether in the leisure or non-leisure domain, and the consequences are usually positive [29,30]. However, Csikszentmihalyi [31], the father of flow experience theory, also explained the possibility that flow experience can lead to negative consequences. Keller and Bless [32] also argue that flow experience is not necessarily associated with positive outcomes, as flow experiences can also be addictive (e.g., gambling and online gaming). Nakamura and Csikszentmihalyi [33] also emphasized that when individuals participate in activities they are passionate about, they will even seek opportunities to experience flow in any way that destroys themselves, their work, or their culture. Even flow itself has addictive properties [11].

Because online game designers are adept at creating a game environment with a flow experience, players can easily experience flow in each game stage through mechanisms such as overcoming levels, accumulating points, instant feedback, and goal achievement [34]. Through the flow experience, players will be immersed in the game and obtain a strong sense of pleasure. In addition, because the challenges of the game levels can be matched with the player's skills, the player's sense of time is distorted, and the players do not even notice the loss of time [12]. These phenomena, for some online game players, may mean that they can be completely addicted to the world of online games by constantly searching for similar experiences, and can escape the unpleasantness they encounter in the real world [13], and can even lead to addictive behaviors [4]. Recently, Wu et al. [8] confirmed that the flow experience is an antecedent of online game addiction. Obviously, if online gamers continue to desire to experience flow, the flow experience may be less positive in the long run [35]. Based on this, this study proposes the following hypothesis:

Hypothesis 1 (H1). *Flow experience has a positive and significant effect on online game addiction.*

2.3. Activity Passion

According to Vallerand et al. [17], activity passion is an individual's strong tendency to invest time and energy in an activity that the individual likes, makes the individual feel

meaningful and valuable, and can be integrated into the concept of individual self-identity. In addition, the role of activity passion has a dualistic nature; that is, activity passion may lead to positive psychological consequences, such as increased happiness, and negative psychological consequences, such as gambling addiction [36,37]. This dualistic trait was first discovered by Vallerand et al. [17], thus leading to the proposal of a dualistic passion model [37].

The dualistic passion model suggests that there are two types of activity passion: harmonious passion and obsessive passion. The main difference between these two types of passion is how activities are internalized into individual self-identity. Harmonious passion emphasizes activities that participate in free will, and internalize processes with a sense of autonomy and balance with other areas of life. Conversely, obsessive passion is maladaptive behavior that drives individuals to engage in uncontrollable activities, and thus to engage more rigidly and uncontrollably in the activities they are passionate about [37]. In previous academic research, many scholars have also adopted the dualistic passion model to understand the consequences of participation in activities in various life situations, including leisure [38–42], work [43–45], education [46,47], gambling [48,49], shopping addiction [50,51], and Internet addiction [52].

2.4. The Moderating Effect of Activity Passion

Vallerand [37] mentioned that passionate individuals regard activities as part of their self-identity. However, participation in these activities can sometimes also evolve into addictive behaviors. For example, Andreassen and Pallesen [53] argued that the type of passion determines how individuals use online communities, resulting in positive (normal use) and negative (addictive use) consequences [54]. In the field of online game research, Wang and Chu [55] found that obsessive passion was positively related to online game addiction, while harmonious passion was not related to online game addiction. Wang, Khoo, Liu, and Divaharan [56] also found that harmonious passion positively affects online gaming behavior and self-regulation, while obsessive passion is positively related to external regulation patterns and spending more time on games. In addition, Lafrenière, Vallerand, Donahue, and Lavigne [57] found that while playing online games, both harmonious and obsessive passion had a positive impact on time commitment, but the obsessive passion was associated with negative psychological consequences and related to problematic gaming behavior. Przybylski, Weinstein, Ryan, and Rigby [58] also believe that harmonious passion is proportional to basic psychological needs satisfaction (perceived autonomy, perceived competence, and perceived relatedness), higher post-game psychological state, game fun, mental health, and life satisfaction. Obsessive passion was associated with post-game tension, more time invested, and more frequent engagement, and was negatively associated with basic psychological needs satisfaction.

From the above description, it is not difficult to understand that both the harmonious and obsessive passion players will participate enthusiastically in online games; however, there will be significant differences in the way they are enthusiastically engaged and the consequences of their participation [59]. More recently, Mills et al. [60] highlighted that although a high passion for gaming is significantly associated with online game addiction, players with an obsessive passion for gaming may experience more severe online game addiction. Therefore, the mechanisms that lead to online game addiction may differ between harmonious and obsessive passion players [60]. However, the interaction between flow experiences and online game addiction has not yet been definitively clarified [18], and previous research has not been able to explain why players who are also highly passionate about online games are eager to relive the flow experience, which leads to positive (healthy leisure engagement) or negative (game addiction) consequences. Based on this, this study argues that the type of gamers' passion will moderate the direct effect of the flow experience on online game addiction. That is, compared to harmonious passionate players, for obsessive passionate players, the consequences of experiencing flow are more

likely to lead to online game addiction. Therefore, this study proposes the following hypothesis:

Hypothesis 2 (H2). *The types of online gamers' passion can significantly moderate the direct effect of the flow experience on online game addiction. In addition, the strength of the relationship of obsessive passionate players will be greater than that of harmonious passionate players; that is, compared to harmonious passionate players, obsessive passionate players are more likely to develop online game addiction in the process of eagerness to relive the flow experience.*

3. Methodology and Instruments

3.1. Conceptual Framework

Through the sorting, analysis, inference, and establishment of hypotheses in the relevant literature, this study leads to the conclusion that flow experience will positively and directly affect online game addiction, and online gamers' passion will significantly moderate the relationship between flow experience and online game addiction. The relationships between these variables to form the conceptual framework of this study are summarized in Figure 1.
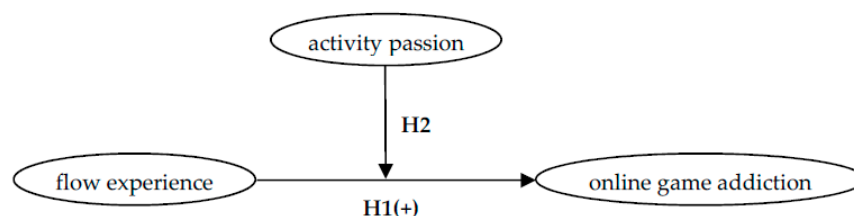

Figure 1. Conceptual framework.

3.2. Measurement of Constructs

The conceptual framework proposed in this study includes three main constructs, namely, flow experience, online game addiction, and activity passion. The measurement of each construct is detailed as follows and the items in the questionnaire are listed in Appendix A.

3.2.1. Flow Experience

In this study, Choi and Kim's [5] definition of flow experience is referred to, and the operational definition of flow experience is a state in which the players feel that they can fully master the activities and feel a pleasant, happy state. The measurement of flow experience mainly refers to the flow experience scale established by Wu et al. [8], with appropriate modifications according to online game characteristics to ensure that the scale's content met the meaning of the online game. In the measurement of flow experience, there were six question items. The measurement scale was based on Likert's seven-point scale, ranging from "strongly disagree" (one point) to "strongly agree" (seven points), for evaluation.

3.2.2. Online Game Addiction

Following Charlton and Danforth [61], in this study, the operational definition of online game addiction was defined as a phenomenon in which a player is strongly dependent on an online game and overuses or irresistibly, compulsively, and repeatedly participates in the online game over a considerable period, resulting in impaired physical, psychological, and social functioning of individuals. The core criteria of these addiction phenomena include conflict, withdrawal symptoms, relapse, and behavioral salience. For the measurement of online game addiction, the items were taken from the questions used

in Charlton and Danforth [61] to measure online game addiction. The online game addiction construct included four sub-constructs, namely, personal conflict (four question items), withdrawal symptoms (three question items), relapse (three question items), and behavioral salience (three question items), with a total of 13 question items. The measurement scale was based on Likert's seven-point scale, ranging from "strongly disagree" (one point) to "strongly agree" (seven points), for evaluation.

3.2.3. Activity Passion

This study integrated the research of Vallerand et al. [17] and Vallerand and Houlfort [62], and operational definition of activity passion is that players are interested in an online game that they like and that makes them feel meaningful and valuable. The online game can be integrated into the concept of player self-identity, and the player has a strong tendency to invest time and energy in online games. Referring to the dualistic passion model [17], in terms of measurement, the activity passion includes two sub-constructs, namely, harmonious passion (seven question items) and obsessive passion (seven question items). The measurement scale was based on Likert's seven-point scale, ranging from "strongly disagree" (one point) to "strongly agree" (seven points), for evaluation. After the data collection was completed, the researcher calculated scores for each sub-construct so that the type of passion of a player could be distinguished.

3.3. Sample and Data Collection

This study focused on the players who participate in "online role-playing games" in Taiwan as the main research subjects. Therefore, the subjects must have experience in participating in this type of online game. To avoid bias in the answers of players who had not participated in this type of online game, the subjects were informed of this restriction before filling in the questionnaire; a filter question was also set up at the end of the questionnaire in which the player was asked to fill in the name of the online game they were playing. In addition, to consider whether the subjects had sufficient ability to answer the relevant questions, subjects under the age of 18 were not included in the valid sample. To cover players of all levels of qualifications, this study used the top two game discussion sites in Taiwan (Bahamut Video Game Information Station and Game Base) as the sampling base. These two websites include discussion areas for various online games, and include all kinds of players, such as game novice, slightly experienced, and veteran; thus, the research object is very suitable for the topic of this research.

After the development of the first draft of the questionnaire was completed, a pretest was conducted on 60 players of the "online role-playing game", and then the items with poor discrimination and low correlation with the total score of the scale were deleted through item analysis. Then, the wording of the items of the questionnaire was revised to improve the quality of the questionnaire, and lastly, the questionnaire was officially distributed.

Although the requirements for the number of samples vary from scholar to scholar, for the sake of rigor and conservativeness, this study adopted the suggestion of Kerlinger and Lee [63] (the number of samples should be at least 10 times the number of questions). Therefore, in the case of an estimated effective recovery rate of 80%, the estimated number of valid questionnaires was 330. Furthermore, the consideration of waste questionnaires was taken into account, so at least 412 questionnaires needed to be issued. This study used an online questionnaire to collect data, and the implementation time was from March 2021 to August 2021, during the COVID-19 pandemic.

After the questionnaire was collected, a total of 314 valid questionnaires were obtained. This study also used three auxiliary items: the respondents' preference for online games, the importance of online games to respondents, and the time respondents spent on online games [17], to determine whether respondents had a passion for online games. Therefore, after deducting unpassionate respondents from the valid questionnaires, the actual number of samples used to verify the model was 232.

4. Research Results

4.1. Descriptive Statistical Analysis

Among the valid samples, males (76.7%) were more numerous than females (23.3%); the majority were married (78.9%); players aged 18–30 (69.8%) accounted for the highest proportion; among the educational attainment, university (53.9%) accounted for the majority, followed by high school (35.8%); in terms of seniority participating in online games, 86.2% of players had more than 2 years of experience; of these players, 94.4% played online games for more than 6 h per week.

4.2. Reliability and Validity Analysis

In the measurement model, confirmatory factor analysis (CFA) was used to test the internal consistency, indicator reliability, convergent validity, and discriminant validity of each construct. The CFA results showed that Cronbach's α of flow experience, online game addiction, harmonious passion, and obsessive passion were 0.939, 0.876, 0.925, and 0.963, respectively; all were greater than 0.7. The composite reliability (CR) of each construct ranged from 0.918 to 0.970 (as shown in Table 1), which were all greater than 0.7. Therefore, the indicators of each construct showed internal consistency [64].

Secondly, the standardized factor loadings of the 33 indicators of the three main constructs were all between 0.812 and 0.925, which were all greater than 0.7, and the t-value of the standardized factor loadings was also greater than 1.96 (i.e., significant). Therefore, each indicator also had indicator reliability [65].

Furthermore, the average variance extracted (AVE) of each construct or sub-construct ranged from 0.691 to 0.838 (as shown in Table 1), which were all higher than the AVE threshold of 0.50 suggested by Bagozzi and Yi [66]. Therefore, it was shown that the measurement of each construct in the study had convergent validity.

Finally, in terms of discriminant validity, this study followed the criteria of Hair et al. [67]. The analysis results are shown in Table 1. The square root of the AVE of each construct or sub-construct was between 0.831 and 0.922, which was greater than the correlation coefficient between the various construct. Accordingly, each construct met the requirements of the Fornell–Larcker index [67]. Therefore, there was discriminant validity among the constructs. Overall, the internal (reliability) and external (validity) quality of each construct were relatively good, and it was suitable in the next step of structural model analysis (path analysis) to verify the causal relationship between the constructs.

**Table 1.** Correlation coefficient matrix of each construct.

Construct	CR	AVE	Correlation Coefficient						
			FE	PC	WS	RL	BS	HP	OP
FE	0.952	0.767	**0.876**						
PC	0.918	0.792	0.213	**0.890**					
WS	0.936	0.830	0.291	0.387	**0.911**				
RL	0.939	0.838	0.155	0.259	0.294	**0.915**			
BS	0.945	0.851	0.264	0.446	0.299	0.147	**0.922**		
HP	0.940	0.691	0.281	0.542	0.688	0.580	0.469	**0.831**	
OP	0.970	0.820	−0.159	−0.319	−0.419	−0.372	−0.332	−0.582	**0.906**

Note: FE = Flow experience; PC = Personal conflict; WS = Withdrawal symptoms; RL = Relapse; BS = Behavioral salience; HP = Harmonious passion; OP = Obsessive passion. The diagonal bold values are the square roots of AVE.

4.3. The Relationship between Flow Experience and Online Game Addiction

The results of structural model analysis (path analysis) in this study show that the error variance of each parameter is positive, the estimated values of each path coefficient are all significant, and the standard errors are not too large. Therefore, there is no violation

of the estimation problem, and the estimates representing all parameters are reasonable. The path coefficient of flow experience to online game addiction is 0.332, and the t-value is 4.797 (significant), as shown in Figure 2. Therefore, H1 is supported, indicating that the higher the flow experience experienced by online game players, the more likely it is to lead to online game addiction.
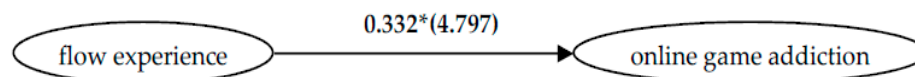
Note: The number in () is the t value, * means that it is significant when α=0.05

Figure 2. The relationship between flow experience and online game addiction.

4.4. Verification of Moderating Effects of Activity Passion

A moderating effect is an effect of a variable that affects the direction or strength of the relationship between an independent variable and a dependent variable. This study used a multi-group analysis technique (MGA) in SmartPLS to verify whether activity passion moderates the influence of the flow experience on online gaming addiction. Since activity passion has dual characteristics, the analysis was based on the theoretical basis of the dualistic passion model, and the passionate players were divided into harmonious passionate players (163) and obsessive passionate players (69). The results of MGA are shown in Table 2 and Figure 3. It can be seen that the path coefficient of "flow experience→online game addiction" of harmonious passionate players (0.227 *) is smaller than that of obsessive passionate players (0.536 *), and the difference is also significant (H2 is supported). Thus, it can be concluded that players' activity passion does significantly moderate the relationship between flow experience and online game addiction, and obsessive passionate players are more likely to experience game addiction than harmonious passionate players.
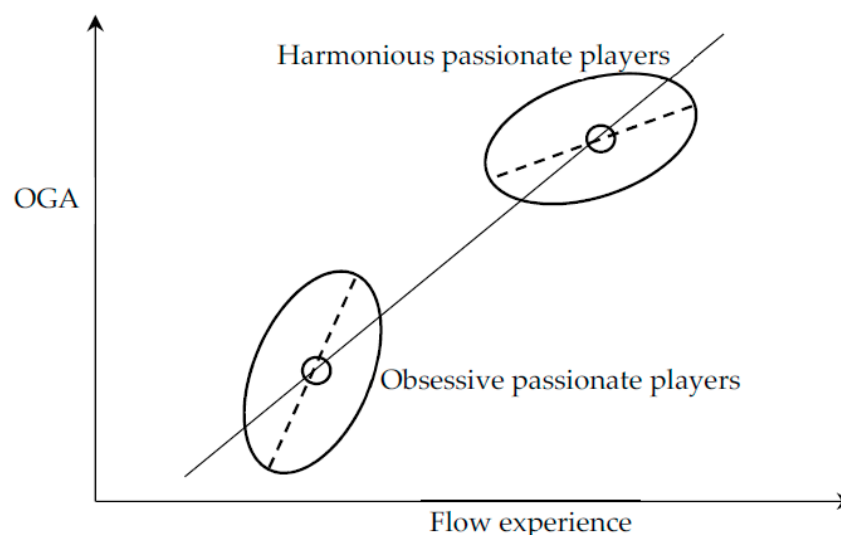

Figure 3. Simple slope analysis of moderating effect.

Table 2. The results of the multi-group analysis technique (MGA) (Welch–Satterthwait Test).

Group	Path	Path Coefficient	t-Value
Harmonious passionate players	FE→OGA	0.227 *	3.039
Obsessive passionate players	FE→OGA	0.536 *	5.670
HP-OP (difference)	FE→OGA	−0.309 *	2.575

Note: FE = Flow experience; OGA = Online game addiction; HP = Harmonious passion; OP = Obsessive passion. * = significant at the 0.05 level (two-tailed).

5. Conclusions and Suggestions

In addition to focusing on examining the relationship between flow experience and online game addiction, the purpose of this study was to further explore the moderating role of activity passion in the relationship between flow experience and online game addiction. This can clarify the reasons for the phenomenon of game addiction among online game players. Based on the analysis results obtained in the study, the following comprehensive conclusions are made:

5.1. Conclusions and Discussions

5.1.1. The Relationship between Flow Experience and Online Game Addiction

Based on previous literature, this study constructed a relationship model between flow experience and online game addiction through theoretical derivation. Empirical results show that the flow experience does lead to online game addiction. Although previous literature has often shown that when an individual experiences flow during activities, the consequences are usually positive [29,30], Csikszentmihalyi [31], the father of flow theory, suggested that flow experience can also lead to negative consequences. Based on empirical evidence, this study confirmed the argument of Csikszentmihalyi [31], and the results of this study were also consistent with those of Chou and Ting [4], and Wu et al. [8].

During the COVID-19 pandemic, online games may have enriched people's lives [1]. Research evidence also suggests that high engagement in gaming is not necessarily problematic and, for most individuals, gaming appears to be adaptive [68] and may reduce loneliness [69]. However, it is important to understand that a significant increase in gaming participation may not always be beneficial and may pose a risk to certain groups (e.g., underage players being controlled by the online game) [70]. In particular, when the individual is eager to relive the thrill of the flow experience, excessive participation in the game is likely to occur. The negative effects of excessive participation in gaming, resulting in addiction, can be harmful to mental health, sleep patterns, or physical health [71]. For addicted gamers, it may be difficult to readjust to a new life even though the COVID-19 crisis has passed [1]. The high risk of mental health of online game players must be a concern for the online game players and their relevant environment [9,10].

5.1.2. The Moderating Effect of Activity Passion

Although scholars such as Chou and Ting [4] and Wu et al. [8] also agree that the experience of flow leads to the phenomenon of online game addiction among players, these scholars do not explain whether all players who experienced flow were more likely to experience an addiction to online gaming. Therefore, according to the essential differences (such as motivation) of players participating in online games, it may be possible to clarify the process of online game addiction for players who have experienced flow. Based on this, this study divided passion players into two groups, namely, harmonious passionate players and obsessive passionate players, according to the internalized state of their activities, and then explored the differences in effect strength of "flow experience→ online game addiction" between these two groups.

The empirical results show that the path coefficient (the slope in Figure 3) of "flow experience→online game addiction" of harmonious passionate players is smaller than that of obsessive passionate players, and the difference is also significant; thus, it can be concluded that players' activity passion significantly moderates the relationship between "flow experience→online game addiction", and obsessive passionate players are more likely to experience online game addiction than harmonious passionate players. The harmonious passionate players emphasize free will participation in the game, can integrate the game in a positive way as part of self-identify, and have the characteristics of autonomous participation. This participation can be balanced with activities in other areas of life, and players are not controlled by the game. Therefore, online game addiction is less likely to occur. This view is similar to that of Deleuze et al. [72]. Obsessive passionate players are prone to maladaptive behaviors, which will drive individuals to engage in uncontrollable activities, so they are more rigid and compelled to participate in their favorite activities [37]; therefore, they are more prone to gaming addiction. This view is also supported by Mills et al. [60].

During the COVID-19 pandemic, online gaming provided a platform where unique identities can be created. For example, in role-playing games, players are free to choose their gender, race, background, and appearance. In turn, some gamers develop deep attachments to their game characters [26]. However, a minority, of individuals may experience physical, emotional, and self-identity disorders [73]. Although gaming provides an opportunity to escape from current reality, individuals are advised to find meaning and identity in everyday events, rather than being controlled by gaming, to avoid addiction. The COVID-19 crisis has given many people plenty of time to reflect on their lifestyles and motivations for engaging in various activities. Therefore, it is strongly suggested that to maintain psychological well-being and overall health, when individuals participate in activities, they should focus on autonomous participation, ensure they are able to balance their activities with other areas of life and not be controlled by their activities, and internalize activities into their self-identity; that is, try to participate in the activities in a harmonious passionate way.

5.2. Limitations and Recommendations for Future Research

This study used a questionnaire survey to collect data. The relevant research limitations and future research suggestions are listed as follows:

1. This study used a convenience sampling method to conduct a questionnaire survey; thus, the sample structure may not reflect the population characteristics, and the generalization of the research results may be insufficient. Constrained by the data collection channels, 13.8% of the interviewed players had only one year of online game experience, which may be insufficient in terms of the flow experience. It is suggested that future research should investigate more experienced players to deepen the analysis of the issue. In addition, it is suggested that this conceptual framework can also be used for verification in different leisure activities to examine its applicability across activities.

2. Research on online game addiction is still in its infancy, and relevant empirical research is still quite scarce [1,2,4–10,13–16,18–27,35,51–54,57,58,60,61,69–73]. In the future, researchers may learn from the conceptual framework and research process used in this study to explore the causes of online game addiction from different perspectives.

3. There are triggers in online games for which it is important to identify the advantages (advance) produced by challenges, time, and skills (ability), e.g., professional players, and disadvantages (addiction) having a high risk, especially for adolescents and young children, who are controlled by their parents, school, or friends, or have a lack of social relationships, real world experience, or reality. The time distortion or exces-

sive time spent in online games may cause psychological problems and impact physical health. Achieving a flow experience in the balanced channel between high and low challenges and skills (ability) and having a harmonious passion are great means of avoiding addictive behavior (obsessive passion) [11,12,17]. Therefore, mental health service providers should provide better resources and information about the risks and harms associated with addictive behavior.

Appendix A

Table A1. Questionnaire items in measurement scales.

Construct	Code	Measurement Item
Flow experience	FE1	Playing online games is fun.
	FE2	I really enjoy the pleasure of playing online games.
	FE3	I am easily distracted while playing online games.
	FE4	When I play online games, I get curious.
	FE5	I feel comfortable with the online games I play.
	FE6	When I'm playing an online game, I give my full attention.
Flow experience	FE1	Playing online games is fun.
	FE2	I really enjoy the pleasure of playing online games.
	FE3	I am easily distracted while playing online games.
	FE4	When I play online games, I get curious.
	FE5	I feel comfortable with the online games I play.
Personal conflict	PC1	I think I'm addicted to online games.
	PC2	I have tried to reduce the amount of time I spend playing online games, but I have failed.
	PC3	I get anxious when I'm not playing online games.
	PC4	Sometimes I get into conflict with my family over playing online games for a long time.
Withdrawal symptoms	WS1	I would ignore other important things in pursuit of the fun of online games.
	WS2	Playing online games sometimes interferes with my normal work.
	WS3	I sometimes get late for online games.
Relapse	RL1	I often don't get enough sleep because of online games.
	RL2	I also forget to eat because of playing online games.
	RL3	I often feel that spending more money on online games than I can afford.
Behavioral salience	BS1	My social life is also sometimes affected by playing online games.
	BS2	When playing online games, I often feel empowered and seem to be in control.
	BS3	I use online games to avoid social activities.
	HP1	Playing online allows me to have a more fulfilling and diverse experience.

Harmonious passion	HP2	I can face up to the events that can happen in online games, pleasant or unpleasant.
	HP3	I love activities like online games that have a unique style.
	HP4	Playing online games does not affect my daily life.
	HP5	Playing online games is a passion for me, and I can control that passion.
	HP6	Playing online games can give me an unforgettable experience.
	HP7	I am very passionate about playing online games.
Obsessive passion	OP1	I can't live without online games.
	OP2	There is a force that drives me to play online games.
	OP3	It's hard to imagine what my life would be like when I couldn't play online games.
	OP4	My mood is affected by online games.
	OP5	If I refrain from playing online games, I get anxious.
	OP6	I seem to be obsessed with online games.
	OP7	I get fluctuated by whether I can play online games or not.

References

1. King, D.L.; Delfabbro, P.H.; Billieux, J.; Potenza, M.N. Problematic online gaming and the COVID-19 pandemic. *J. Behav. Addict.* **2020**, *9*, 184–186.
2. Granic, I.; Lobel, A.; Engels, R.C. The benefits of playing video games. *Am. Psychol.* **2014**, *69*, 66–78.
3. Bryan, H. Recreation specialization revisited. *J. Leis. Res.* **2000**, *32*, 18–21.
4. Chou, T.J.; Ting, C.C. The role of flow experience in cyber–game addiction. *Cyberpsychol. Behav.* **2003**, *6*, 663–675.
5. Choi, D.; Kim, J. Why people continue to play online games: In search of critical design factors to increase customer loyalty to online contents. *Cyberpsychol. Behav.* **2004**, *7*, 11–24.
6. Wan, C.S.; Chiou, W.B. Psychological motives and online games addiction: A test of flow theory and humanistic needs theory for Taiwanese adolescents. *Cyberpsychol. Behav.* **2006**, *9*, 317–324.
7. Lo, S.K.; Wang, C.C.; Fang, W.C. Physical Interpersonal Relationships & Social Anxiety among Online Game Players. *Cyberpsychol. Behav.* **2005**, *8*, 15–20.
8. Wu, E.T.C.; Scott, D.; Yang, C.C. Advanced or addicted? Exploring the relationship of recreation specialization to flow experiences and online game addiction. *Leis. Sci.* **2013**, *35*, 203–217.
9. Han, Ts.; Cho, H.; Sung, D.; Park, M-H. A systematic review of the impact of COVID-19 on the game addiction of children and adolescents. *Front. Psychiatry* **2022**, *13*, 976601. https://doi.org/10.3389/fpsyt.2022.976601.
10. Huang, Y., Zhao, N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: A web-based cross-sectional survey. *Psychiatry Res.* **2020**, *288*, 112954. https://doi.org/10.1016/j.psychres.2020.112954.
11. Csikszentmihalyi, M. *Flow: The Classic Work on How to Achieve Happiness*; Rider; London, UK, 2002.
12. Csikszentmihalyi, M. *Flow: The Psychology of Optimal Experience*; Harper–Perennial, New York, NY, USA, 1990.
13. Sweetser, P.; Wyeth, P. Game Flow: A model for evaluating player enjoyment in games. *ACM Comput. Entertain.* **2005**, *3*, 1–24.
14. Rau, P.P.; Peng, S.Y.; Yang, C.C. Time distortion for expert and novice online game players. *Cyberpsychol. Behav.* **2006**, *9*, 396–403.
15. Kim, H.K.; Davis, K.E. Toward a comprehensive theory of problematic internet use: Evaluating the role of self–esteem, anxiety, flow, and the self–rated importance of internet activities. *Comput. Hum. Behav.* **2009**, *25*, 490–500.
16. Thatcher, A.; Wretschko, G.; Fridjhon, P. Online flow experiences, problematic internet use and internet procrastination. *Comput. Hum. Behav.* **2008**, *24*, 2236–2254.
17. Vallerand, R.J.; Blanchard, C.M.; Mageau, G.A.; Koestner, R.; Ratelle, C.; Léonard, M.; Gagné, M. Les passions de l'ame: On obsessive and harmonious passion. *J. Pers. Soc. Psychol.* **2003**, *85*, 756–767.
18. Andrade, J.M.; Pontes, H.M. A brief update on videogame play and flow experience: From addiction to healthy gaming. *Ment. Health Addict. Res.* **2017**, *2*, 1–3.
19. Manchiraju, S.; Sadachar, A. Passion and self–determination: Exploring social networking site addiction using a dualistic framework. *Soc. Netw.* **2018**, *7*, 126–136.
20. Weinstein, A.; Lejoyeux, M. Internet addiction or excessive Internet use. *Am. J. Drug. Alcohol. Abuse* **2010**, *36*, 277–283.
21. Griffiths, M. Does Internet and computer "addiction" exists? Some case study evidence. *Cyberpsychol. Behav.* **2000**, *3*, 211–218.
22. Batthyany, D.; Müller, K.W.; Benker, F.; Woelfling, K. Computer game playing: Clinical characteristics of dependence and abuse among adolescents. *Wien. Klin. Wochenschr.* **2008**, *121*, 502–509.
23. Peng, W.; Liu, M. Online gaming dependency: A preliminary study in China. *Cyberpsychol. Behav. Soc. Netw.* **2010**, *13*, 329–333.
24. Brunborg, G.S.; Mentzoni, R.A.; Frøyland, L.R. Is video gaming, or video game addiction, associated with depression, academic achievement, heavy episodic drinking, or conduct problems? *J. Behav. Addict.* **2014**, *3*, 27–32.
25. Stern, S.E. Addiction to technologies: A social psychological perspective of Internet addiction. *Cyberpsychol. Behav.* **1999**, *2*, 419–424.

26. King, D.L.; Delfabbro, P.H.; Griffiths, M.D. Recent innovations in video game addiction research and theory. *Glob. Media J.* **2010**, *4*, 1–13.

27. Wood, R.T.A. Problems with the concept of video game "addiction": Some case study examples. *Int. J. Ment. Health Addict.* **2008**, *6*, 169–178.

28. Seligman, M.E.P.; Csikszentmihalyi, M. Positive psychology: An introduction. *Am. Psychol.* **2000**, *55*, 5–14.

29. Kasa, M.; Hassan, Z. Antecedent and Consequences of Flow: Lessons for Developing Human Resources. *Procedia Soc. Behav. Sci.* **2013**, *97*, 209–213.

30. Debus, M.E.; Sonnentag, S.; Deutsch, W.; Nussbeck, F.W. Making Flow Happen: The Effects of Being Recovered on Work–Related Flow Between and Within Days. *J. Appl. Psychol.* **2014**, *99*, 713–722.

31. Csikszentmihalyi, M. *Flow the Psychology of Optimal Experience: Steps towards Enhancing the Quality of Life*; HarperCollins: New York, NY, USA, 1991.

32. Keller, J.; Bless, H. Flow and regulatory compatibility: An experimental approach to the flow model of intrinsic motivation. *Pers. Soc. Psychol. Bull.* **2008**, *34*, 196–209.

33. Nakamura, J.; Csíkszentmihályi, M. The concept of flow. In *Handbook of Positive Psychology*; Snyder, C.R., Lopez, S.J., Eds.; Oxford University Press: Cambridge, MA, USA, 2005.

34. Chen, J. Flow in games (and everything else). *Commun. ACM* **2007**, *50*, 31–34.

35. Yang, S.; Lu, Y.; Wang, B.; Zhao, L. The benefits and dangers of flow experience in high school students' Internet usage: The role of parental support. *Comput. Hum. Behav.* **2014**, *41*, 504–513.

36. Vallerand, R.J. On Passion for Life Activities: The Dualistic Model of Passion. *Adv. Exp. Soc. Psychol.* **2010**, *42*, 97–193.

37. Vallerand, R.J. *The Psychology of Passion: A Dualistic Model*; Oxford University Press: New York, NY, USA, 2015.

38. Stenseng, F. The Two Faces of Leisure Activity Engagement: Harmonious and Obsessive Passion in Relation to Intrapersonal Conflict and Life Domain Outcomes. *Leis. Sci.* **2008**, *30*, 465–481.

39. Stenseng, F.; Phelps, J. Leisure and life satisfaction: The role of passion and life domain outcomes. *World Leis. J.* **2013**, *55*, 320–332.

40. Ahn, J. Role of harmonious and obsessive passions for autonomy, competence, and relatedness support with integrated resort experiences. *Curr. Issues Tour.* **2020**, *23*, 756–769.

41. Curran, T.; Appleton, P.R.; Hill, A.P.; Hall, H.K. The mediating role of psychological need satisfaction in relationships between types of passion for sport and athlete burnout. *J. Sports Sci.* **2013**, *31*, 597–606.

42. St–Louis, A.; Verner–Filion, J.; Bergeron, C.; Vallerand, R.J. Passion and mindfulness: Accessing adaptive self–processes. *J. Posit. Psychol.* **2018**, *13*, 155–164.

43. Carpentier, J.; Mageau. G.; Vallerand, R. Ruminations and flow: Why do people with a more harmonious passion experience higher well–being? *J. Happiness Stud.* **2012**, *13*, 501–518.

44. Donahue, E.; Forest, J.; Vallerand, F.; Lemyre, P.; Crevier–Braud, L.; Bergeron, E. Passion for work and emotional exhaustion: The mediating role of rumination and recovery. *Appl. Psychol. Health Well-Being* **2012**, *4*, 341–368.

45. Forest, J.; Mageau, G.; Crevier–Braud, L.; Bergeron, E.; Dubreuil, P.; Lavigne, G. Harmonious passion as an explanation of the relation between signature strengths' use and well–being at work: Test of an intervention program. *Hum. Relat.* **2012**, *65*, 1233–1252.

46. Moè, A. Harmonious Passion and Its Relationship with Teacher Well–Being. *Teach. Teach. Educ.* **2016**, *59*, 431–437.

47. Fin, L.S; Ishak, Z. Educational Beliefs and Passion among Preservice Teachers: A Comparative Statistical Analysis. *Educ. Rev.* **2018**, *2*, 281–288.

48. MacKillop, J.; Anderson, E.J.; Castelda, B.A.; Mattson, R.E.; Donovick, P.J. Divergent Validity of Measures of Cognitive Distortions, Impulsivity, and Time Perspective in Pathological Gambling. *J. Gambl. Stud.* **2006**, *22*, 339–354.

49. Morvannou, A.; Dufour, M.; Monson, E.; Roy, É. Passion for gambling: A scoping review. *Int. Gambl. Stud.* **2018**, *18*, 460–476.

50. Wang, C.C.; Yang, H.W. Passion for Online Shopping: The Influence of Personality and Compulsive Buying. *Soc. Behav. Pers.* **2008**, *36*, 693–706.

51. Keskin, A.D.; Gunuc, S. Testing Models Regarding Online Shopping Addiction. *Addicta Turk. J. Addict.* **2017**, *4*, 221–242.

52. Burnay, J.; Billieux, J.; Blairy, S.; Larøi, F. Which psychological factors influence Internet addiction? Evidence through an integrative model. *Comput. Hum. Behav.* **2015**, *43*, 28–34.

53. Andreassen, C.S.; Pallesen, S. Social Network Site Addiction-An Overview. *Curr. Pharm. Des.* **2014**, *20*, 4053–4061.

54. Wang, J.L.; Jackson, L.A.; Gaskin, J.; Wang, H.Z. The Effects of Social Networking Site (SNS) Use on College Students' Friendship and Well-Being. *Comput. Hum. Behav.* **2014**, *37*, 229–236.

55. Wang, C.C.; Chu, Y.S. Harmonious passion and obsessive passion in playing online games. *Soc. Behav. Personal.* **2007**, *35*, 997–1006.

56. Wang, J.C.K.; Khoo, A.; Liu, W.C.; Divaharan, S. Passion and intrinsic motivation in digital gaming. *Cyberpsychol. Behav.* **2008**, *11*, 39–45.

57. Lafrenière, M.A.K.; Vallerand, R.J.; Donahue, E.G.; Lavigne, G.L. On the costs and benefits of gaming: The role of passion. *Cyberpsychol. Behav.* **2009**, *12*, 285–289.

58. Przybylski, A.K.; Weinstein, N.; Ryan, R.M.; Rigby, C.S. Having to versus wanting to play: Background and consequences of harmonious versus obsessive engagement in videogames. *Cyberpsychol. Behav.* **2009**, *12*, 485–492.

59. Curran, T.; Hill, A.P.; Appleton, P.R.; Vallerand, R.J.; Standage, M. The psychology of passion: A meta–analytical review of a decade of research on intrapersonal outcomes. *Motiv. Emot.* **2015**, *39*, 631–655.

60. Mills, D.J.; Li, W.; Marchica, L. Negative Affect, Life Satisfaction, and Internet Gaming Disorder: Exploring the Mediating Effect of Coping and the Moderating Effect of Passion. *World J. Soc. Sci. Res.* **2019**, *6*, 45–66.

61. Charlton, J.P.; Danforth, I.D.W. Distinguishing addiction and high engagement in the context of online game playing. *Comput. Hum. Behav.* **2007**, *23*, 1531–1548.

62. Vallerand, R.J.; Houlfort, N. Passion at Work: Toward a New Conceptualization; In *Social Issues in Management: Volume 3. Emerging Perspectives of Values in Organizations*; Skarlicki, D., Gilliland, S., Steiner, D., Eds.; Information Age Publishing: Greenwich, CT, USA, 2003; pp. 175–204.

63. Kerlinger, F.N.; Lee, H.B. *Foundations of Behavioral Research*; Harcourt College Publishers, Fort Worth, TX, USA, 2000.

64. Gefen, D.; Straub, D.; Boudreau, M.C. Structural Equation Modeling Technique and regression: Guidelines for Research Practices. *Commun. AIS* **2000**, *7*, 1–78.

65. Hulland, J. Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strateg. Manag. J.* **1999**, *20*, 195–204.

66. Bagozzi, R.P.; Yi, Y. On the evaluation of structure equations models. *J. Acad. Mark. Sci.* **1988**, *16*, 76–94.

67. Hair, J.F.; Hult, G.T.M.; Ringle, C.; Sarstedt, M. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*; Sage: Thousand Oaks, CA, USA, 2014.

68. Billieux, J.; Flayelle, M.; Rumpf, H.J.; Stein, D.J. High involvement versus pathological involvement in video games: A crucial distinction for ensuring the validity and utility of gaming disorder. *Curr. Addict. Rep.* **2019**, *6*, 323–330.

69. Carras, M.C.; Van Rooij, A.J.; Van de Mheen, D.; Musci, R.; Xue, Q.L.; Mendelson, T. Video gaming in a hyper connected world: A cross-sectional study of heavy gaming, problematic gaming symptoms, and online socializing in adolescents. *Comput. Hum. Behav.* **2017**, *68*, 472–479.

70. King, D.; Koster, E.; Billieux, J. Study what makes games addictive. *Nature* **2019**, *573*, 346–346.

71. Saunders, J.B.; Hao, W.; Long, J.; King, D.L.; Mann, K.; Fauth-Buhler, M. Gaming disorder: Its delineation as an important condition for diagnosis, management, and prevention. *J. Behav. Addict.* **2017**, *6*, 271–279.

72. Deleuze, J.; Long, J.; Liu, T.Q.; Maurage, P.; Billieux, J. Passion or addiction? Correlates of healthy versus problematic use of videogames in a sample of French–speaking regular players. *Addict. Behav.* **2018**, *82*, 114–121.

73. Stavropoulos, V.; Dumble, E.; Cokorilo, S.; Griffiths, M.D.; Pontes, H.M. The physical, emotional, and identity user-avatar association with disordered gaming: A pilot study. *Int. J. Ment. Health Addict.* **2019**, *30*, 1–13.