

# Addiction in Players or Massively Multiplayer Online Games? Investigation of Online Game Players' Excessive Gaming Experience

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## Abstract

With the popularity of online games, the overuse of these games has raised concerns. The literature has mainly conceptualized players' psychosocial characteristics as risk factors for game addiction. However, many studies have confirmed that game structural characteristics play a more important role in players' experience. Similarly, this research investigates how interactive affordances of World of Warcraft motivate players to play the game excessively. We have used two qualitative methods of Think-aloud protocol and in-depth interviews with World of Warcraft players. We recruited 35 World of Warcraft players from Singapore Nanyang Technological University in May 2021. Twenty of them participated in the in-depth interview and 15 of them participated in Think-aloud protocol sessions. We found that strong social ties in persistent groups encourage excessive gaming and causes sleep deficits, bad eating habit and ignoring real-life duties. Intra-group competition for outperformance encourages excessive gaming because players receive powerful items if they spend more time on gaming. Rewards and contingent tasks that are designed in games to encourage playing the game with time encourage players to play the game excessively. Finally, after explaining about gaps in knowledge, we discuss how our findings contribute to the literature. Implications for future research and insights to game addicts are provided.

**Keywords:** game addiction, interactive affordances, massively multiplayer online games, online game players' excessive gaming experience.

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## Introduction

Massively Multiplayer Online Game (MMOG) is a genre of video games that allow players to participate in real-time interaction over the Internet with other players. MMOGs include different gameplay genres such as role-playing, strategy, and first-person shooting. MMOGs have specific characteristics such as persistence, physicality, and social interaction (Snodgrass et al., 2019). Persistence occurs on two levels in MMOGs: world persistence (permanence of the virtual world so that the game world is online and accessible to players at any time) and avatar persistence (permanence in the status of characters between play sessions). It is predicted that worldwide revenue for online games delivered via the PC or digital game console will grow from \$33 billion in 2020 to nearly \$42 billion in 2023 (DFCIntelligence, 2021). The digital game market in the region of Asia-Pacific excluding Japan (APEJ), is expected to increase from US\$11.2 billion in 2020 to US\$30.3 billion in 2023 (Budmar, 2020). With such popularity of MMOGs, the overuse of these games has raised concerns.

Research on game addiction has explored three main areas: antecedents in etiology and risk factors, pathological characteristics of game addiction and ramifications in terms of harmful effects of game addiction on players' real life (Kuss & Griffiths, 2019). The literature has mainly focused on players' internal factors such as personality traits or gaming motivations as risk factors that result in game addiction (Hussain & Griffiths, 2019a; Hellman et al., 2013). This approach fails to elaborate on why people are inclined to play specific types of games such as MMOGs excessively. A lot of studies have confirmed that structural game characteristics play even a more important role in players' positive and negative experiences than their psychosocial characteristics (King et al., 2021a; Westwood & Griffiths, 2020). Pathological aspects of game addiction such as salience, mood modification, tolerance, withdrawal, conflict, and relapse are assessed mainly by symptoms associated with substance addictions (Griffiths & Davies, 2005; Young, 2019). If we measure game addiction based on substance addiction criteria, less than 10% of players suffer from game addiction. Novrialdy, Nirwana and Ahmad (2019) have confirmed the significance of including adverse effects of game addiction on players' real life. In this research, we have focused on two main areas of game addiction: game structural characteristics as etiological factors that influence excessive gaming and adverse effects of game addiction on players' real life.

### **Literature Review: Users' psychosocial well-being as predictors of addiction**

The literature on game addiction has mainly explored risk factors of game addiction as a subset of problematic internet use (PIU). As

Caplan, Williams and Yee (2019) have summarized PIU is measured by criteria related to psychosocial well-being such as loneliness, depression, anxiety, aggression, introversion and social skill deficits. Similarly, game addiction research has explored how users' psychosocial characteristics are associated with game addiction. The literature found that personality traits such as social loneliness, introversion (Caplan et al., 2019; Lemmens et al., 2011), competence in real life and virtual space of games (Jeong & Kim, 2011; Lemmens et al., 2011), aggression and hostile behaviors (Caplan et al., 2019; Mehroof & Griffiths, 2020), boredom inclination (Chiu et al., 2014) and neuroticism (Peters & Malesky, 2018) are highly associated with game addiction. The approach that conceptualizes players' internal factors as antecedents of game addiction fails to explain why players of MMOGs show more addictive behavior than players of other types of games because it conceptualizes psychosocial characteristics as antecedent of game addiction that can be the reason to use any kind of media excessively (Ng & Wiemer-Hastings, 2019; Stetina et al., 2021). In other words, research findings with this approach are not unique to online game addiction because people with such personality characteristics are potential addicts of all media, not just online games (Kuss & Griffiths, 2019). To address this limitation and contribute to literature findings, we explore how structural characteristics of MMOGs influence excessive gaming.

In addition to personality traits, the literature has conceptualized gaming motivations as risk factors associated with addictive behavior (Hussain & Griffiths, 2019b; King & Delfabbro, 2019). Wan and Chiou (2019) found that online game addicts play video games for emotional coping, escaping from real-life problems, fulfilling the need for achievement, excitement, social interaction, and power. This approach that conceptualizes players' motivations as antecedents of game addiction fails to explain why players of MMOGs show more addictive behavior than players of other types of video games. To address this limitation and contribute to the literature, we have explored how structural characteristics of MMOGs influence excessive gaming.

Game researchers have distinguished between intrinsic motivations that are related to enjoyment from the task itself and extrinsic motivations that are related to rewards and punishments in doing a task (King & Delfabbro, 2019; Wan & Chiou, 2019). The literature found that extrinsic motivations such as in-game rewards that are expected influence intrinsic motivations (Wan & Chiou, 2019).

## **Literature Review: Structural game characteristics and players' experience**

A lot of studies have asserted that structural characteristics of a medium play a more influential role in shaping users' positive and negative experiences than users' psychological or socio-economic status (Chumbley & Griffiths, 2019; King et al., 2021b; King et al., 2021; Westwood & Griffiths, 2010). Wood et al. (2019) found that the experience of time loss in the games is more dependent on particular characteristics of video games than players' psychosocial characteristics. Chumbley and Griffiths (2019) demonstrated that in-game reinforcement characteristics highly influence players' excitement and frustration. Hsu, Wen and Wu (2019) confirmed that different design features of video games provide users with different gaming experiences and it is essential to explore how the game features influence players' experience. The approach that explores the role of structural characteristics of video games in users' experience helps to understand why players are more inclined to play certain types of video games excessively (Ng & Wiemer-Hastings, 2019; Stetina et al., 2021).

### **Theoretical framework**

Media researchers assert that users' experiences are mainly influenced by their interaction with media features and social interaction with other users through media channels (Hoffman & Novak, 2016; Stromer-Galley, 2019). Similarly, this research distinguishes between player-to-player and player-to-game interactivity to investigate how interactive features influence excessive gaming.

Interactivity is probably the most distinctive "affordance" of digital media (Sundar, 2017). Gibson (1986) proposed the term affordance for the first time to discuss that visual stimuli in the environment suggest how to interact with them. He discussed that people do not primarily perceive formal attributes of objects, but they perceive affordances (action possibilities) that the object affords. For instance, the size and shape of a softball fitting nicely in our hands, suggest that the object is for throwing, and the formation of an armchair implies that it is for sitting (Gibson, 1977).

We have conceptualized "interactive affordances" as the range of actionable properties in MMOGs that allow players to communicate with other players and the game and influence each other. For example, social features such as guilds in World of Warcraft promote community-building and competition among group members. Control features such as speed setting, audio or dialog settings, controller configuration and advanced graphics options allow players to change the game settings

and exert more control over in-game happenings (Weber et al., 2020). The concept of affordance is useful to focus on how players use game features beyond mere perception (Sundar & Bellur, 2019a).

Some Game researchers reject using the term “game addiction” because it is just applicable to substances and simple behaviors such as gambling and it cannot be applied to social and complex spaces like MMOGs (Castronova, 2015; Yee, 2006b). Game researchers have distinguished between excessive gaming and addiction. They have confirmed that the end of continuum is game addiction with symptoms such as salience, mood modification, tolerance, withdrawal, conflict and relapse (Griffiths & Davies, 2005; Young, 2019). Given such lack of consensus over conceptualization of game addiction, we have used the term “excessive gaming” in our interview questions to imply playing the game for a long time than what players initially wanted to spend on gaming. Toker and Baturay’ (2016) confirmed that it is more insightful to explore how excessive gaming influences players’ real life. They found that excessive gaming has negative effects on players’ physical and mental health, academic achievement and social relationships with friends and family members. We have followed Toker and Baturay (2016) and investigated how excessive gaming influences players’ real life.

### **Research Method**

We have used two qualitative research methods for data collection: think-aloud protocol (TAP) and semi-structured in-depth interviews with players of WoW. We chose WoW players as our case study because it is the most popular MMOG with more than 15 million subscribers and its features are so attractive to players that they might play the game excessively. TAP has been extensively used in recent years to study cognitive processes such as problem-solving, human-computer interaction and new media effects on users (Krahmer & Ummelen, 2019). In TAP, respondents must continuously verbalize their thoughts and feelings while they are performing a task. In TAP, researchers record all verbalizations, write them down in a verbal report and analyze them based on their research questions. We applied concurrent TA (CTA) protocol, in which we asked participants to verbalize their feelings and thoughts at the time of playing the game. In CTA protocol, participants verbalize their feeling and thoughts simultaneously while they are interacting with the test product (Baauw & Markopoulous, 2019). We applied this method of TA because it helps us to develop a better understanding of what participants are thinking and feeling

at the time of using game features. The weakness of CTA in research about entertainment products is the disruption that researchers cause in players' attention to gameplay (Mandryk et al., 2016). To reduce disruption to players' attention to gameplay, we asked participants to continually verbalize their feelings and thoughts when they are using game features at the beginning of TAP sessions. Therefore, we avoided raising questions in the middle of gameplay because questions distract players' concentration on gameplay. One of advantages of TAP is that participants do not have to recall their thought processes long after completing a task (Baauw & Markopoulous, 2019). In addition, TAP reduces bias and inaccuracies common to players' self-reports because players verbalize their current thoughts and feelings at the time of playing (Desurvire & El-Nasr, 2013). This advantage is helpful in our research to focus on players' subjective experiences as a result of actual use of game features.

For ethical issues, we submitted our research proposal to Institutional Review Board (IRB) of Singapore Nanyang Technological University. Because this research is about game players' experiences, we filled out Social and Behavioral Research Form, in which we explained how we collect data, how we protect participants' real identity, how participants can withdraw from the study at any time that they feel uncomfortable, how we can assure participants about ethical issues of our research by providing them with IRB contact number and our research ID. We committed that we destroy data after writing data findings. We also committed that the information gathered from our research will be used just for academic purposes such as writing articles and conference papers. We conducted this study in May 2021 at Singapore Nanyang Technological University. This time was the beginning of second semester and students were not busy with school assignments and they could participate in our research conveniently.

### *Sampling*

We have used two sampling methods for data collection: convenient and snowball samplings. We sent an invitation letter via email to students at Singapore Nanyang Technological University. We chose students at the first sampling approach because previous studies have found that students are hard-core players of online games so that some of them even play excessively (Chang et al., 2016). We recruited players who had been playing World of Warcraft on Blizzard official servers for more than one year at the time of our research and more than 60 hours per week on average. In the invitation letter, we requested students to write



how long they play WoW per week on average, what kind of effects playing the game had on their real-life duties, school performance and social interaction with their family members and real-life friends. More than 60 students replied to us that they can participate in our research, but only 25 of them were qualified for our research purposes. Through snowball sampling, we recruited more players from initial participants' friends and guildmates. Finally, we recruited 35 players, 20 of them participated in the interview and 15 of them participated in TAP. We conducted interviews and TAP in English language because it is the official language of Singapore.

### *Participants*

Participants were young adults between the age of 19 to 29, with a mean age of 24.5. They played WoW 18 hours per week on average, and they had six years of gaming experience on average. They mainly were undergraduate students and several graduate students were in our sample as well. Fifteen participants were women, five of them were married or in the relationship, and two of them had children. They were all part of different guilds. Some of them were active core members of the guild they were in.

### *Procedure*

We invited participants to a usability room individually. They filled out an informed consent form and were briefed on the study at the beginning of TAP and interview sessions. We showed them the approval form of Institutional Review Board of Singapore Nanyang Technological University to inform them about ethical issues of our research. The investigator tried to make a rapport with participants by chatting about his own experience of playing MMOGs, specifically WoW. Then, we requested participants to log into their WoW account on our computer and play one of joint activities such as raids, dungeons or battlegrounds for one hour and a half to two hours. To decrease disturbance to players' concentration on gameplay, we asked participants to express what they like or dislike about various game features that they are using at the beginning of the TA session. When participants fell silent, we encouraged them to verbalize what they liked/disliked about game features that they were using.

After a short break, we asked participants to participate in semi-structured face-to-face interviews. The purpose of interview was to obtain more detailed responses about how interactive affordances influence players' experiences. The interview protocol was developed

based on our theoretical concepts, literature findings about game characteristics that affect players' experience (Ducheneaut et al., 2019; Nardi & Harris, 2019; Weber et al., 2020; Yee, 2006a), symptoms of online game addiction (Griffiths, 2005; Griffiths, & Davies, 2005; Young, 2019) and author's gaming experiences. The initial questions were about main interactive affordances that players mostly use. Then we asked participants how player-to-game and player-to-player interactive affordances influence their experiences with questions such as How rewards like a rare mount influence your gaming experience? and How playing with guild members in comparison with PUGs influences your gaming experience?". We also asked participants whether they have played the game for a long time than what they initially wanted to spend on gaming. Participants had enough space to talk about how interactive affordances influence their gaming experience because our research method was the semi-structured in-depth interview. Interview sessions continued one hour to two hours and TAP continued two hours to three hours. Our data collection was conducted over two months from May 2021 to July 2021. We gave participants 45 US\$ as a gift of gratitude. We have used pseudonyms instead of participants' real names to keep their real identity unknown.

### *Analysis*

In think-aloud sessions, participants' voice was tape-recorded and the gameplay screen was video-taped by the usability testing software of Morae. Interview sessions were audio-recorded. Data were transcribed verbatim and analyzed by NVivo 12, the software of qualitative data analysis. Before coding the interview and TAP data, we read through each transcript to have a general idea of participants' experiences. Qualitative data analysis consists of two phases: open coding that is the study of fragments of data and focused coding that is the selection of the most prominent initial codes and testing them against extensive data (Marshall & Rossman, 2019). For open coding, we analyzed each interview line-by-line. The initial codes were mainly developed based on how interactive affordances influence players' experiences and if players have played the game excessively what are negative effects of excessive gaming on their real life. Then, we started focused coding to synthesize and explain significant segments of data. In focused coding, we tried to find the most frequent and significant initial codes to develop the most salient categories of how interactive affordances influence players' experiences, whether interactive affordances impelled players to spend much more time on gaming than what they initially wanted



to spend on gaming, if they have played the game excessively what are negative effects of excessive gaming on their real life. Based on constant comparative analysis of categories from TA protocol and interview findings, we looked for negative or unique cases until the data were saturated (Berg, 2019; Strauss, 2017).

## Results

Many participants mentioned that they enjoy customization features such as key-bindings and macros in WoW because these features provide them with a sense of mastery over their avatars and in-game events. However, participants did not mention any association between customization features and excessive gaming. We found that “persistent groups” compared to “pick-up groups” (PUGs) and “competition with teammates” are main social affordances that motivate players to play the game excessively. “rewards and punishments” and “contingent tasks” are player-to-game interactive affordances that encourage players to play the game excessively.

### *Persistent Groups*

Most joint activities such as dungeons, raids and different player versus player (PvP) battles revolve around pick-up groups or persistent groups in World of Warcraft. We explored how social interactions influence players’ experience by analyzing the nature of relationships in these two groups.

The persistent group that is known as guilds in MMOGs is an in-game community of players who regularly get together to complete challenging activities such as raiding or rated battles. Players prefer to join guilds that their real-life friends are their members. Some participants mentioned that they changed the game server or their factions to play the game with their real-life friends. Players also develop social ties by making friends from friends of friends or meeting up with in-game friends over dinner or coffee.

Players interact with their guild members by chatting about topics related to the game, real-life events or personal issues through in-game chat channels or VoIP devices such as Ventrilo and Mumbai. Players’ relationship with their guild members is generous and friendly. If guild members need an item, teammates are pretty eager to give their items to their guild members or help their guild members to find/buy items that they need. They also trust each other so much that they share contact information, game account information and real-life information such as home address and work address. This strong bond of the relationship increases accountability and commitment to the group and sometimes

obliges players to spend more time on gaming than what they initially wanted to spend on gaming. For example, George, who is a postgraduate student and plays 10 hours per week due to real-life duties such as school work and job requirements described that despite the necessity to do real-life duties, he was compelled to join the guild for the raid sessions because he is a tank and he has a key role in raiding and if he does not join his guild it disturbs his teammates. Similarly, Stella, a 23-year-old female player who plays about 20 hours per week, explained how relationship with her guild members influences her game experience:

*“I feel heavily responsible for being online even if I have to do other things because I’m a healer, and we have not set a date for raiding. So, anytime that the majority of my teammates are online, there’ll be a WhatsApp message. It means that everybody should go online now and my attendance is mostly 95%. Normally, I would drop everything to raid with my guild members”.*

In addition to pressure to be online at a specific time, guild members sometimes have to continue playing the game for a long time even though they need to leave the game to do real-life duties. Some participants mentioned that they avoided joining their family for dinner because they were in the middle of raiding. For example, Emily, a 21-year-old female player who plays about 25 hours per week mentioned that she mostly avoid eating dinner with her family in weekends because raiding schedule and the time of family dinner are at the same time. Karl, a 22-year-old male player who plays 30 hours per week, indicated that he refused to accompany his sick mother to the hospital because he was in a raiding session. Several participants mentioned that they left the raid group due to heavy pressure to play the game more than what they initially wanted to spend on gaming.

Playing raids with guildmates sometimes causes sleep deficits as a result of different geographical locations and time zones. Daniel, who plays more than 5 hours per day on each gaming session and mostly plays with his guildmates in the American server of Kilrogg, described how he had to get up early:

*“Pressure to get up early happens all the time. Because they are in the States, we start early on the weekend. They’ll get my friend, who is always up, to call me. I have to drink a lot of coffee.”*

As a result of time difference, some participants mentioned that they have to postpone dinner or have it on their computer desk. Elizabeth mentioned that she would bring a lot of food to the computer desk and eat her dinner during the raid. Olivia, who has eight main characters in WoW and plays more than 40 hours per week, described how raiding influences her eating habits:

*“My friends come back at say 3 p.m. to their time but my time is 11 p.m. Due to the difference in the game time, sometimes I either have to skip dinner or at least postpone it until the raid finishes”.*

### *Competition*

MMOGs afford a competitive environment by encouraging players to engage in intra-group and inter-group competitions. Players have to work hard to get gears with high item levels to be qualified for raiding. Even in a raid, players who underperform may be dismissed from playing with the group. Benjamin, a 25-year-old male player who spends more than 40 hours per week on gaming, explained how competition among guild members to outperform influences his gaming experience:

*“If we wipe on a boss, the first thing we do is that we check the meter to see who did the least amount of damage, and then we will replace those people”.*

Christopher, who is a guild master and raid leader, explained that players' performance is evaluated chiefly in persistent groups:

*“Most of my guildmates have recount that shows the statistics about how much damage per second (DPS) anybody did on a boss, or how much healing players did. We mostly compete to be a top player”.*

When players kill bosses in raids items drop, and if several players need that item, the guild leader gives it to players with higher dragon kill points (DKPs). Competition for DKPs creates a more efficient environment in MMOGs. However, if players want to achieve higher DKPs than their teammates and to obtain powerful items they have to play the game with their guild members regularly. For example, Sophia, a 23-years-old female player who has changed her guild several times

because she was dissatisfied with loot distribution, explained that she is more satisfied with DKPs system because it guarantees that her hard work is paid. When we asked her how DKPs influences her game experience, she replied:

*“Sometimes, I have to play much more than my teammates to collect more points for better loots. In a situation of raiding with ten members, several players want the same gear. For every boss that we kill, we are given like 1000 points. The guild master will check who has the highest points and gives the item to the player who has highest point. So, it means that if I don’t join them regularly I can’t collect more points and I won’t get good gears as well. To collect more points, I have to play the game for a very long time.”*

Two types of inter-group competitions are battlegrounds (BGs) and arena battles. BGs are big groups of random players and they do not require players to actively contribute to the team performance. Hence, they do not encourage excessive gaming. Arena battles are intensive fights between two teams of 3, 4 or 5 players in death-match style. Therefore, it requires a high commitment to the group, high attention to the game and high cooperation with teammates. Players cannot easily reject their teammate’s requests to be online at a specific time or continue playing the game for a long time because players in these groups are real-life friends or close guildmates. Lucas, who is not a core member of a guild but he plays mostly with his real-life friends in PvP battles, mentioned that he wanted to stop arena battles and sleep, but Alex, his classmate and friend, asked him to continue playing and he could not reject his friend’s request and he played for a long time.

### *Rewards*

There are many rewards in WoW, but the rewards that encourage players to play the game excessively include: items, points, rare mounts and titles and event-based rewards. Items include armor and weapon that players obtain from killing non-player entities, “unlocking chests” or “transactions with vendors”. Items encourage players to spend a long time on gaming by motivating them to achieve new and more powerful items. Jin, a 21-year-old male player with seven years of MMOG playing experience on average, described WoW compared to other MMOGs as an item-oriented game that involves players in the cycle of item-power. He explained how rewards influence his game experience:

*“When the usefulness of my items diminishes over the time, I have to continue playing the game excessively to obtain new items and remain powerful.”*

Most of the participants admitted that when they obtain potent items, they feel gratified that their excessive gaming is paid off, and it encourages them to play the game excessively.

World of Warcraft provides expected rewards such as points for both player versus environment (PvE) and player versus player (PvP) battles. Participants described points as compulsive work that they have to achieve them to progress in the game. These points have a weekly maximum level and when players want to achieve them in a gaming session, they have to play the game excessively. Daniel described how points motivated him to play the game excessively overnight without enjoying the game:

*“When I want to have a maximum level for all my reputation points quickly, I had to go into battlegrounds and just spend time inside them. It turns to damn boring. Maybe you play one or two battlegrounds, and you enjoy them. But when you reach the fifth or sixth battlegrounds, you will just start to walk around. I made the game screen smaller and started watching a video on another window just to collect points in a day”.*

The achievement system is also another point-based expected reward that encourages some players to complete many different, sometimes easy or grinding tasks from older expansion packs of the game. Charles described how the achievement system encouraged him to play the game excessively:

*“It encourages you to play excessively. You’d want to do something repeatedly for achievement points. Achievement points essentially mean nothing, but you still have to spend a lot of time to accumulate them and show off.”*

WoW incorporates rare mounts and titles to expected rewards to make the reward system more attractive. Players feel very gratified when they achieve rare gifts because they can stand out as special character and show off their hard work and power with special items. To obtain such rewards, players have to play the game excessively. Jonathan,

a 23 old male player with four characters in WoW at maximum level, described how he had to play the game for a long time every week to achieve a rare mount:

*“I played really for a long time to obtain a rare mount. I had to do a five men dungeon of level 70 on my own as a level of 85. It was one of the dungeons that I could play only once a week. So, you have a tiny chance of achieving this rare mount because it drops only once a week. In this case, I played week and week after week. After a few months, it dropped”.*

WoW offers a series of festivities that center around holidays and special events in real life such as New Year, Lunar Festival and Valentine’s Day. In addition to the new unique decorations in the game, there are specific rewards for event-based quests. Some of the participants mentioned that on such occasions, they played the game excessively to achieve as many points as possible. For example, Isabella, a 22-year-old female player who spends about 20 hours per week on gaming, described why in Chinese New Year she continued playing the game instead of joining her friends for a party:

*“I played the game excessively to collect more points. I traveled around the various places in the game to collect more new items and trade them in for unique items. I played the game excessively because I had to keep checking to see where the new items were”.*

### *Contingent affordances*

In human-computer interaction, contingency refers to the threaded exchange of messages between sender and receiver in the process of communication (Sundar & Bellur, 2019b). Contingency in games refers to patterns of rewards distribution (Cowley et al., 2019). The research found that rewards highly influence intrinsic motivation only if players expect to achieve them quickly after performing in-game tasks (Wan & Chiou, 2017). We have defined contingent affordances as actionable properties that encourage players to regularly log into the game and complete sequential tasks for rewards. Main contingent tasks in MMOGs include leveling up characters, obtaining experience points to progress in the game and improving gears level by level to achieve gears for high-level characters. Some participants mentioned that leveling up avatars compels them to play the game excessively because it motivated them



to achieve high levels for their avatars quickly. For example, Raphael, a 22-year-old male player who has four characters at the maximum level in WoW, explained why he played the game excessively:

*“I overplayed the game when I was trying to level up a new character quickly. I set the goal to reach level 85 in seven days. I overestimated myself. I could gain about ten levels in a day by overplaying, but I realized I couldn’t do more than that. I just kept on playing”.*

Another form of contingent affordance is daily and weekly quests and dungeons. Players are encouraged to join such regular activities over time because they offer better rewards. Some of the participants mentioned that they logged into the game every day as a duty to make sure that they do not miss rewards from daily and weekly tasks. Participants indicated that if they miss regular rewards, they feel frustrated. Anthony, an undergraduate student who plays 20 hours per week, mentioned how daily tasks compelled him to play the game overnight:

*“Sometimes, because the dailies reset at midnight, and I know that I’m not able to play the game the next day, I do the dailies just before midnight. Even though I’m supposed to sleep, I stay up to do dailies of the next day because I can’t do it tomorrow. In this case, I’ll wait until midnight and then I will do the dailies”.*

## **Conclusion**

Game addiction is mainly characterized by symptoms traditionally associated with substance-related addictions such as salience, mood modification, tolerance, withdrawal, conflict, and relapse (Griffiths & Davies, 2005; Young, 2019). If we assess online game addiction based on these severe symptoms, very few players suffer from game addiction. Griffiths (2005) suggested that game addiction should be characterized by the extent to which excessive gaming influences players’ real life negatively. Similarly, we investigated how game structural characteristics as risk factors influence excessive gaming and what ramifications are in terms of negative effects of excessive gaming on players’ real-life. We elaborated on how structural game characteristics influence players’ experiences. Consequently, these findings contribute to the literature that has conceptualized players’ characteristics and gaming motivation as risk factors that result in game addiction. We found that strong

social tie in persistent groups is one of motivating factor for players to be online at a specific time and continue playing the game for a long time despite the necessity for leaving the game. Research has confirmed that guild members spend much more time on gaming than players who do not belong to a community. They have conceptualized this effect as “social pressure” to overplay (Ducheneaut et al., 2019; Seay et al., 2014). Ng and Wiemer-Hastings (2005) found that social aspects of MMOGs motivate some players to become hardcore players and show behavioral patterns of addiction. Hsu, Wen and Wu (2019) also found that players who have a sense of high belonging to in-game groups and feel the obligation to play with their group members have a high probability of game addiction. The persistent group affords actionable properties such as a casual conversation about real-life or game-related issues, extending social relationships from the virtual space of the game to real-life relationships and scheduled joint activities. These actionable properties compel players to continue playing the game with their in-game groups even if they have to do real-life duties. This accountability and commitment to in-game groups are primary reasons for the inclination to play the game excessively. Our participants reported negative effects such as lack of enough sleep, bad eating habit, ignoring real life duties, especially school work and withdrawal from social life as a result of playing the game excessively with their guilds.

Competition, defined as desire for challenge and competition with other users, is the primary motivation for playing MMOGs. Similar to Like Hsu, Wen and Wu (2019), we found that competition as a social affordance highly motivates players to play the game excessively. We found that weak social ties and the low level of cooperation with unknown players in PUGs are the primary reasons that playing PvP battles with random players does not entice players to play the game excessively. However, other forms of competition such as intra-group competition for outperformance, powerful items, more Dragon Kill Points (DKPs), and inter-group completion in small groups of arenas compel players to play the game excessively. DKPs motivate excessive gaming by guaranteeing that players who more frequently join raids will achieve loots before non-active members of the guild. Deep social ties among real-life friends or close guild mates manifest best in arena battles. We found that this type of social relationship compels players to play the game excessively because players do not want to disturb their group members by rejecting their requests to continue playing the game. Ducheneaut et al. (2019) described the reward structure of World of Warcraft as a “virtual Skinner box” that reinforces players’ commitment

along the way by smoothly increasing rewards and difficulty. Items and points encourage WoW players to play the game excessively in the cycle of reward-power. For example, in this case, players try to collect more points to buy powerful items. The usefulness of avatar's equipment diminishes when players go to the top levels of the game, and this compels players to play the game excessively. Rare mounts and titles that are incorporated as surprising gifts to expected rewards compel players to play the game excessively if they want to stand out as unique characters. This research is among few studies that have discussed how contingent affordances influence excessive gaming. Previous research has only pointed to contingency as patterns of reward distribution and has not elaborated on how it affects players' game experience (Cowley et al., 2019; Wan & Chiou, 2019). We were inspired by HCI literature (Sundar & Bellur, 2019a; Sundar et al., 2019) and investigated how threaded tasks compel players to play the game excessively. Leveling up is a contingent affordance that requires players to complete many tasks quickly to progress in the game by playing the game excessively. Ducheneaut et al. (2019) found that leveling influences playing time highly because in some stages, players have to play the game excessively to progress in the game quickly. Players consider maximum level as a new and attractive world that they should achieve as soon as possible. This feature encourages excessive gaming while leveling up an avatar. Daily and weekly tasks are also other contingent affordances that are designed to encourage players to log into the game regularly to achieve better rewards. If players cannot log into the game regularly they have to stay up overnight to complete the tasks of tomorrow. As this research is qualitative, it cannot provide causal validation for the relationships among interactive game affordances and players' experiences. Our research purpose was not to validate a hypothesis, but rather it was an attempt to build theory by applying an open-ended approach to explore MMOG players' experiences in the actual space of video games. However, our findings provide a platform to be tested or expanded by future research. Future research can measure the correlation between players' use of advanced game affordances such as raiding and excessive gaming and also the correlation between such affordances and negative effects of video games on players' real life.

#### *Implications for excessive gaming prevention*

Similar to the studies that have provided therapeutic suggestions to game addicts based on gaming motivations as risk factors of addiction (King & Delfabbro, 2019), our findings can provide implications to people

who play MMOGs excessively. Better awareness about structural game characteristics that cause excessive gaming and have negative effects on players' real-life enables game addicts to manage their gaming habits and spend less time on gaming. When players know that commitment to persistent groups compel them to play excessively, they can share their concerns about real-life duties with their teammates from the beginning of joint activities or they can play group activities with PUGs or real-life friends because such a relationship is more helpful to spend less time on gaming. Also, if guilds set a specific time and date for raiding, it helps players to have a regular and more enjoyable gaming experience because we found that raiding with guilds that do not have specific dates and times for raiding compels players to play the game excessively. Feeling remorseful for excessive gaming and its negative effects on players' real-life motivates players to avoid playing the game excessively. Players should consider contingent tasks, especially leveling up the character as a part of gameplay to avoid the temptation to achieve it quickly.

There is not any consensus in the literature about risk factors that influence game addiction. While some researchers have conceptualized players' internal characteristics such as personality traits and gaming motivations as risk factors that cause game addiction, some other researchers affirmed that game structural characteristics have more effects on players' gaming experience. A limited number of studies have explored how game structural characteristics affect players' gaming experience. Our findings contribute to these studies give that we have elaborated on how structural characteristics of video games influence players' gaming experience.

### **Ethical considerations**

The author has completely considered ethical issues, including informed consent, plagiarism, data fabrication, misconduct, and/or falsification, double publication and/or redundancy, submission, etc.

### **Data availability**

The dataset generated and analyzed during the current study is available from the corresponding author on reasonable request.

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