

Why People Play Massively Multiplayer Online Games?

L. Suárez, C. F. W. Thio, and S. Singh

Abstract—The current study investigated whether the problematic use of massively multiplayer online games (MMO) was associated with a particular attachment style. Moreover, we explored the possible motivations underlying MMO gaming, and the interdependence between motivations and attachment styles. The results showed that gamers with anxious and avoidant attachment styles suffered from problems associated with MMO gaming more than gamers with a secure attachment style. Also, we found that all gamers played to immerse themselves into a fantastic world regardless of their attachment style.

Index Terms—Massively multiplayer online games, attachment style, problematic online gaming.

I. INTRODUCTION

MMO games are online games that create a persistent world populated by millions of players with its own story and virtual economy that evolves in real time [1]. A persistent world is a world that exists regardless of whether the players are playing the online game or not. The changes made by the players are recorded permanently up to some extent [2]. For example, a player who obtained a car in the game can bound the car to his or her account. This car can be used every time he or she plays the game. However, the car might be destroyed by enemy players while the person is offline and hence he or she loses the car permanently. The virtual economy is an economy that commonly exists in the MMO games and allows the trading of virtual goods in the game. Such goods might or might not have real economic benefits. For instance, players can use gold to buy virtual food for their character in the game, and such gold can be bought with real money [3].

In the game, players are allowed to create and manipulate a virtual character by getting it to perform various tasks known as quests. The game also allows players to join in a small community in conjunction with the virtual characters created by other players, which is known as guilds. For example, in a MMO game known as the World of Warcraft, players can do various tasks such as tailoring, jewel crafting, cooking, blacksmithing, or forming parties with other players to kill monsters. The characters will in turn gain more skills over time depending on the tasks performed by the players. MMO games are also highly interactive and allow players to communicate with other players through sending messages and voice messaging [4].

It can be said that MMO games provide a fantasy world that bonds millions of people together.

Among different types of online games, MMO games are a popular online activity among gamers. In 2007, there were an estimated amount of 217 million people around the world playing MMO games with the numbers incrementing by 17 percent each year [5], and there can be up to 2,000 players on a game server at a time [6]. MMO gamers spend an average of 23 hours a week, and 41% of them report being addicted to gaming [7].

Due to the increasing number of online players, psychologists have showed interest in studying the consequences of gaming, and the consequences derived from playing different types of online and computer games. For instance, Smyth [8] invited gamers to play computer games for one month, and compared the consequences of playing MMO games with the consequences of playing other computer games such as arcade, console, and solo play on the computer. The results showed that MMO gamers reported worse overall health, worse sleep quality, and more interference with real-life socialization and academic work. Strikingly, the MMO group also reported greater enjoyment in the game, plans to continue playing, and more online friends than the gamers of other computer games. The power of these emotions explains why analysts predict growth of the MMO games market in these coming years [5]. In consequence, we can predict an increment in the number of people affected by the negative outcomes associated with MMO gaming in the future.

Furthermore, problematic MMO gaming has been related to addiction because both involve a recurring behavior that is unhealthy and which is difficult to control [7]. Yee identified that a small subset of MMO players, who played excessively, suffered from withdrawal symptoms such as anxiety, irritability, and anger. Also, this group of gamers played MMO games compulsively, even when they felt frustrated with the game and were not really enjoying it. Other symptoms associated with it were feeling good about themselves only through gaming. Behavioral consequences included academic, health, financial, and relationship problems [7]. Overall, problematic MMO gaming leads to social life impairment and academic deterioration as well as health issues due to lack of sleep and exercise, which might cause a decrease in the body's immune system, and increase the risk of depression, obesity, and irritability [9].

Problematic MMO gaming can also be considered a subtype of problematic internet use. Researchers who have investigated precursors of problematic internet use cite previous psychopathology, maladaptive cognitions, and lack of social support [10]-[11]. Given the fact that MMO gaming is a type of internet use, problematic MMO gaming should share those precursors too.

In addition to psychopathology, maladaptive cognitions, and lack of social support, we hypothesized that attachment

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style could also be a distal cause of problematic use of MMO games. There are three adult attachment styles: secure, anxious, and avoidant [12]. People with secure attachment styles will experience little to no discomfort with being close to other people. They are comfortable in relying on others and letting others rely on them. They seldom worry about people leaving them or people being too close to them. In contrast, people with anxious attachment style often feel that others are uncomfortable with being emotionally close to them. They often worry that other people may not love them or will eventually leave them. They often think about being as close as possible to others, and this act may draw others away from them. Lastly, people with avoidant attachment style would often experience discomfort when other people are being too close to them. They often feel uncomfortable to trust and rely on others. They become nervous when the closeness with others exceeds what they are actually comfortable with.

To the extent of our knowledge, no study has focused on attachment style and problematic use of MMO games. However, previous research have found that people with anxious attachment style and people with avoidant attachment style were at significantly higher risk of having internet- addiction problems, as compared to people with secure attachment style [13]. Moreover, Lin, Wang, and Wu found that anxious attachment style and higher amount of time spent on online communication significantly predicted internet addiction, but they could not find a direct link between avoidant and secure attachment styles and internet addition [14]. Based on these previous findings, we hypothesized that MMO gamers with anxious attachment style (and probably those with avoidant attachment style) would score higher on problematic online gaming than players with secure attachment style.

A behavior is maintained because of its reinforcing consequences. What maintains and motivates MMO gaming? Yee [7] identified three motivational factors. The first motivational factor is achievement. An achiever is a player who likes competition and power, and aspires to gain status in the game, as this is highly rewarding. He or she would learn the mechanics of the game thoughtfully in order to maximize performance. The second motivational factor is social. The social gamer enjoys performing tasks that involve teamwork, and is more likely to spend time establishing long-term relationships with others as well as help other online gamers. Also, many players would disclose themselves to strangers due to the anonymity provided by internet. Players may obtain close relationships and fulfill attachment needs. The third motivational factor is immersion. Gamers whose motivation is immersion tend to engage in role playing, explore the story behind the game, enjoy decorating their online avatar, invest time and resources on their characters, and use online gaming as a form of escapism to avoid real-life problems and real social interactions. Immersion has been identified as the main motivational factor predicting problematic internet use [7].

In the current study, we hypothesized that people with different attachment styles would play for different reasons in order to fulfill their attachment needs. For instance, gamers with an anxious attachment style would engage in MMO gaming in order to interact with others. MMO games provide

a platform wherein gamers with anxious attachment style can form multiple friendships, and compensate their necessity of being needed. The powers of their avatars might be beneficial for the guild and, in consequence, gamers with anxious attachment styles can obtain close relationships by helping other players to achieve their goals in the game. In particular, we predicted that participants with an anxious attachment style would be motivated to play MMO games to gain online friends (social motivation) rather than for achievement or immersion reasons. Also, participants with anxious attachment style would show more interest in socializing than participants with secure and avoidant attachment styles.

We also predicted that people with avoidant attachment style would play significantly more for immersion than for social or achievement purposes. The reason is that people with avoidant attachment style do not seek, but avoid close relationships and, in consequence, they might also experience rejection and probably low self-esteem. As a result, they may be attracted to fantasy and immersion. In addition, avoidant participants would show more immersion motivation than participants with secure and anxious attachment styles.

Finally, and regarding participants with a secure attachment style, we did not have a particular prediction. However, analyses were performed to explore their main motivations when playing MMO games.

II. METHOD

A. Participants

Participants were recruited from James Cook University and game forums.

The game forums we focused on were League of Legend Asia, Rusty heart, Dragonica, Dragon nest, and World of Warcraft.

The initial sample contained 368 participants, and all of them reported being MMO gamers.

MMO gamers participated for course credit or for taking part in a five S\$20-voucher lucky draw.

TABLE I: TIME SPENT PLAYING MMO GAMES

Time spent playing	Percentage
Hours per week	
5 or less	23.0
6 to 10	20.2
11 to 15	11.5
16 to 20	13.9
21 to 25	9.1
26 to 30	5.6
More than 30	16.7
Years played	
1 or less	8.3
1 to 2	9.9
3 to 4	21.8
5 to 6	19.4
7 to 8	19
9 to 10	11.9
More than 11	9.5

From the 368 participants in the original database, we eliminated participants who duplicated internet protocol addresses; fail to complete questionnaires, and participants that did not fulfill the requirement of being age 18 and above.

Also, participants who could not be classified into a particular attachment style were eliminated from the database.

The final database comprised 252 participants.

The final database was formed by 189 male participants and 63 female participants. Participants' age ranged from 18 to 51 years old ($M = 21.86$, $SD = 4.73$). Table I shows the time played on MMO games per week and the number of years the participants had been playing.

B. Materials

Demographic questionnaire: It was used to obtain information about the participants' age, gender, country of residence, amount of time spent playing MMO games per week, and number of years playing MMO games.

The Adult Attachment Scale (AAS): This scale was developed by Collins and Read [15] and was used to measure attachment styles. AAS consists of 18 items, rated on a 5-point Likert scale, ranging from 1 (not all characteristic) to 5 (very characteristic). This study followed Collins and Read's procedure of categorizing attachment styles.

The Problematic Online Gaming Use Scale: This scale was an adaptation of the Generalized Problematic Internet Use Scale 2, which was developed by Caplan [16]. This scale is made up of 15 items that refer to problematic internet use. For the purposes of this study, the 15 items were reworded to refer to online gaming. For example, "I have used *the internet* to make myself feel better when I've felt upset" was changed in this study to "I have used *online gaming* to make myself feel better when I've felt upset". The items gauge aspects such as: preference for online social interaction (rather than face-to-face communication), use of online games for mood regulation, compulsive use of online games, cognitive preoccupation with online games, and negative outcomes due to online gaming. Participants rated the items on an 8-point Likert scale, ranging from 1 (definitely disagree) to 8 (definitely agree). The overall scores from the 15 items were summed up to create a total score, which could range from 15 to 120. In the scale, the higher the score, the more problematic use of online games.

Massively Multiplayer Online Motivations Inventory (MMI): This inventory was developed by Williams, Yee, and Caplan [17] and was used to capture the motivational factors associated with MMO gaming. It comprises 10 MMI items. These are related to achievement, social interaction, and immersion motivation. Participants rated the items on a 5-point Likert scale, ranging from 1 (completely disagree) to 5 (completely agree). Each participant scored in each of the three motivational factors of achievement, social interaction, and immersion.

C. Procedure

Data was collected in the form of online survey. The survey link was hosted in a James Cook University website and five game forums. Participants who clicked on the survey link were directed to the information page, followed by the informed- consent page. At the informed consent page, participants were to give their consent by ticking off the "yes" option, for both the agreement to complete four questionnaires and the acknowledgement that they were 18

years old or older. Participants who ticked off the "no" option were thanked, and the study ended immediately. Those who consented to participate completed four questionnaires about demographics, the AAS (attachment style), the problematic online gaming use scale, and the MMI (motivation factors of MMO gaming).

The completion of the four questionnaires took 30 minutes approximately.

As a form of incentive, five 20 Singapore dollars vouchers were used as lucky draw prizes. Winners were randomly selected and prizes, in the form of voucher code, were sent to the participant's email at the end of the study. Students from James Cook University were allowed to choose between credit points or participation in the lucky draw prize.

III. RESULTS

Attachment style classification revealed an uneven number of participants pertaining to each of the attachment styles. Table II shows the number of participants for each attachment style.

TABLE II: PARTICIPANTS IN EACH ATTACHMENT STYLE

Attachment style	Participants	Percentage
Secure	157	62.3%
Anxious	38	15.1%
Avoidant	57	22.6%

The percentages of MMO gamers pertaining to each of the attachment styles was very close to those obtain in Hazan and Shaver's study on attachment style [11], indicating that gamers' attachment style followed the pattern found in the population.

The research hypotheses were tested with several analyses of variance (ANOVA). Even though ANOVA is robust regarding unbalanced groups [18], it is recommended to have groups of similar size (i.e., similar number of participants in each attachment style). We decided to test the hypotheses with all the participants first. Then, to ensure that the results were reliable, we analysed the data using balanced groups (i.e., similar number of participants in each attachment style condition). In order to create balanced groups, we randomly extracted ten samples made of 114 participants (i.e., ten different samples made of 38 secure, 38 anxious, and 38 avoidant participants each). Note that 38 participants was the maximum number of participants with anxious attachment style, and that number guided the possible number of participants per attachment style we could draw. We conducted the same analyses that we conducted with the whole sample for each of the ten random samples. The analyses with the ten subsamples yielded similar results to the results obtained with the whole unbalanced sample. Therefore, we report only the results of the full sample.

The alpha levels used were set to 0.05. The research hypotheses were tested employing orthogonal comparisons, which ensure that each comparison is independent from each other.

A. Attachment Styles and Problematic MMO Gaming

Table III shows the mean scores for problematic online gaming use.

TABLE III: PARTICIPANTS FOR EACH ATTACHMENT STYLE AND MEAN SCORES (+SDS) IN THE PROBLEMATIC ONLINE GAMING USE SCALE

Attachment style	Participant s	Problematic Online Gaming Score
Secure	157	50.12 (19.61)
Anxious	38	65.45 (17.93)
Avoidant	57	58.51 (20.19)

We hypothesized that MMO gamers with anxious (and probably avoidant) attachment style would score higher on problematic online gaming use than MMO gamers with secure attachment styles.

Note that the maximum score that a participant could score was 120.

A one-way between-subjects ANOVA was conducted to explore attachment-styles differences on problematic online gaming.

The omnibus ANOVA showed significant differences between the different attachment style groups, $F(2, 249) = 11.24, p < 0.001$. The first orthogonal planned comparison showed that problematic online gaming scores of people with secure attachment style were significantly lower than the average score for anxious and avoidant participants, $p < 0.001$. The second orthogonal planned comparison revealed that people with anxious attachment style scored higher than participants with avoidant attachment style, although the difference was marginally significant, $p = 0.09$. The results confirmed that gamers with anxious and avoidant attachment styles scored higher on problematic online gaming than secure gamers. These findings suggest that attachment styles are pre-existing characteristics of MMO gamers that are associated with social, cognitive, and emotional online gaming problems.

B. Attachment Styles and Motivations

The second research question referred to the relationship between attachment style and motivation.

Table IV shows the mean scores for each motivation and each attachment style.

TABLE IV: PARTICIPANTS FOR EACH ATTACHMENT STYLE AND MEAN MOTIVATION (+SDS) IN THE MASSIVELY MULTIPLAYER ONLINE MOTIVATIONS INVENTORY

Attachment style	Achievement	Social	Immersion
Secure	11.32 (2.64)	11.06 (2.55)	13.97 (3.30)
Anxious	12.05 (2.65)	11.29 (2.38)	15.66 (3.40)
Avoidant	12.09 (2.08)	10.16 (2.58)	14.19 (3.41)

A 3 x 3 mixed ANOVA was conducted. Attachment style (secure, anxious, and avoidant) was the between-subjects measure while motivational factor (achievement, social, and immersion) was the within-subjects measure.

The omnibus 3 x 3 ANOVA showed a marginal main effect of attachment style, $F(2, 249) = 2.60, p = 0.08$. The main effect of motivation reached significance, $F(2, 498) = 136.48, p < 0.001$. These were qualified by an interaction, $F(4, 498) = 4.40, p = 0.002$, indicating differences between groups and motivations.

One of the critical hypotheses predicted that participants with anxious attachment style would play in order to

socialize (i.e., social motivation) rather than for achievement or immersion reasons. Simple main effects performed on anxious attachment style showed differences between motivations, $F(2, 74) = 50.65, p < 0.001$. Orthogonal planned comparisons showed that social motivation was the lowest, and marginally different from achievement, $p = 0.07$. Also, immersion was significantly higher than the average score of the other two motivations (achievement and social), $p < 0.001$. We suggested that people with anxious attachment style sought relationships and were more interested in the social aspect of the game. However, the results suggest that anxious MMO gamers play to immerse themselves in a virtual world and escape from reality.

Moreover, we predicted that participants with anxious attachment style would show more interest in socializing than participants with secure and avoidant attachment styles. Simple main effects on attachment styles showed differences between groups, $F(2, 249) = 3.17, p = 0.04$. The first orthogonal comparison compared the secure attachment style group with the avoidant group. The results showed that the avoidant group was the lowest regarding social motivation, $p = 0.02$. The critical orthogonal planned comparison showed that anxious participants did not score higher than the average of the other two groups (secure and avoidant), $p = 0.14$, suggesting that the level of social motivation for the anxious attachment group was similar to the other two groups.

We also predicted that people with avoidant attachment style would play significantly more for immersion than for social or achievement purposes. Simple main effects of avoidant attachment style on the three motivational factors showed significant differences between motivations, $F(2, 112) = 45.33, p < 0.001$. The first orthogonal comparison contrasted achievement motivation versus social motivation. The results indicated that social motivation was the lowest for these individuals, $p < 0.001$. The critical orthogonal planned comparison that tested our hypothesis showed that avoidant participants played mainly for immersion than for the other two motivational factors (social and achievement), $p < 0.001$. The hypothesis was confirmed.

Furthermore, we predicted that avoidant participants would play more for immersion than participants secure and anxious attachment styles. Simple main effects comparing the three attachment styles on immersion showed differences between groups, $F(2, 249) = 3.84, p = 0.02$. The first orthogonal contrast compared people with secure attachment style versus people with anxious attachment style. The results indicated that anxious people played for immersion more than secure people, $p = 0.006$. However, the critical orthogonal planned comparison comparing avoidant participants to the other two groups showed that avoidant participants did not score higher in immersion than the average score of the other two groups, $p = 0.25$. Overall, the results indicated that all the gamers played for immersion equally.

Finally, we explored the motivations driving MMO players with secure attachment styles. We did not have a specific hypothesis for this group. Motivations differed, $F(2, 312) = 78.26, p < 0.001$. Orthogonal comparisons showed that immersion was the more important reason to play in

comparison to achievement, $p < 0.001$, and social motivation, $p < 0.001$.

IV. DISCUSSION

With regard to attachment styles, the results indicated that MMO gamers follow the same trend than previous studies have shown [12]. This suggests that MMO gamers are not necessarily playing online in order to avoid face-to-face interaction or close contact, for example. Otherwise, we would have found more gamers pertaining to the avoidant attachment style. In the same way, MMO gamers seem not to pertain to an anxious attachment style group exclusively. Otherwise, more people would have formed part of this attachment style group. That is, most of our participants had a secure attachment style, as in the normal population.

Interestingly, 104 out of 252 participants scored higher than 60 in the problematic online gaming scale. This means that 41.3% participants are more likely to experience problematic usage of the MMO as compared to the rest of the participants ($N = 148$). This is in consonance with previous findings that postulated that 41% of MMO gamers report addiction to the game they are currently playing [7].

The first hypothesis we drew stated that people with anxious attachment style, and probably those with avoidant attachment style, would score higher in problematic online gaming use than people with secure attachment style. The hypothesis was based on previous findings that associated anxious and avoidant attachment styles with problematic internet use and addictions. The results showed that MMO gamers with anxious attachment and avoidant attachment styles had higher scores in problematic online gaming as compared to participants with secure attachment style. These findings concur with Davis model of generalised problematic internet use [10], which cite preexisting personal characteristics (e.g., psychopathology) that can influence the acquisition of MMO gaming problems prior to the exposure to the MMO environment. Thus, the results of the current study indicate that attachment style may also be considered a precursor for problematic MMO gaming.

According to Collins and Read [15], people with anxious attachment style often worry that they might not be loved and they often over commit themselves in a relationship. Consequently, we predicted that gamers with anxious attachment style would play to socialize. The findings revealed that MMO gamers with anxious attachment tended to be more motivated by immersion as compared to social motivation or achievement motivation, with no specific preference for social motivation or achievement motivation. So, it may be that MMO gamers with anxious attachment have not the same commitment for online relationship than they have for real relationships.

In fact, when we compared all attachment style groups we found that all of them played mostly for immersion. Yee mentioned that people who played for immersion liked to enact the role of their virtual character [1]. For example, they might be playing as the role of a villain instead of their normal self. They often used the MMO game to escape from the stress and problems in life. Maybe this is the underlying reason to play MMO games. That is, they need to live a

fantasy.

The results also showed that social motivation was the lowest motivation from all three motivational factors, and for all the attachment style groups. However, the data trend showed that the anxious attachment group scored slightly higher than the other two groups on social motivation, and the avoidant group played the less for social reasons, as expected.

In the case of MMO gamers with avoidant attachment style, the results showed that they were motivated to play first for immersion, followed by achievement motivation, and social motivation was the least motivating factor. They were the least motivated to play for social reasons implying that they did not play games in order to form new relationships, or maintain the existing online relationship that they have with other MMO gamers.

Regarding the gamers with secure attachment style, we found that their motivations were like the other two attachment style groups: Immersion. However, the fact that they scored lower in the problematic online gaming scale than the anxious and avoidants suggest that “living” in a virtual world is not affecting their daily lives. As mentioned earlier, immersion motivation was found to be a significant predictor of problematic internet use [11]. Although all attachment styles were motivated by immersion, MMO gamers with secure attachment were at a lower risk of acquiring problems, as compared to other attachment styles. This suggests that motivational factors of MMO, by themselves may not be a causal factor. In contrast, attachment style seems to be a factor more appropriate in addressing whether an individual will acquire problematic online gaming use or not.

V. LIMITATIONS AND FUTURE STUDIES

The current study did not control for preexisting pathological conditions or analyzed the current situation of the gamer. These variables seem to influence the occurrence of problematic internet use [10]. As such, we cannot ensure that attachment styles are independent precursors of problematic online gaming. Future studies should collect data regarding possible preexisting conditions that might interact with attachment style and result in more or less problematic online gaming issues.

Moreover, future studies could pay attention on the avatars people choose (e.g., a wizard, a hunter, etc.), attachment styles, and motivations in order to understand better how the need for immersion is associated with needs in real life.

VI. CONCLUSION

This study provides insights on how attachment styles of MMO gamers are associated with problematic MMO gaming and their motivations. The results indicate that the way people approach relationships (i.e., attachment styles) are possible factors that influence the problematic use of MMO games. In particular, having an anxious attachment style is associated with problematic online gaming use. The results also provided evidence that MMO gamers played mainly for

immersion motivation regardless of their attachment styles. Immersion had previously been associated with problematic internet use. However, our secure gamers scored relatively low in problematic online gaming use, suggesting that a secure attachment style protects from pathological gaming, even when playing for immersion reasons.

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