The Player-Centered User Experience of Multiplayer Online Games

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ABSTRACT

The following research and analysis depicts the significance that player-centered user experience (UX) design has within multiplayer online games (MOGs). MOGs, like any interactive system, can suffer or benefit solely because of certain design decisions or negligence, to be further detailed, that affects their player's experiences. It is widely acknowledged that the process of designing MOGs cannot be done without considering how elements of it will affect prospective players' interactions with it. This research is done to detail the heavy relationship that player psychology has within MOGs and illustrate the spectrum of success a MOG can have as a direct consequence of such decisions or lack thereof. Research is done through reviewing literature concerning MOG design and synthesizing trends from such sources. Findings support the notion that MOGs depend heavily on well-thought-out player-centered user experiences. The results of this project imply the necessity of certain player-centered UX elements, enumerated later, to be constantly considered properly when constructing extensively interactive systems such as MOGs.

1. INTRODUCTION

With online gaming becoming a mainstream focus in the game development industry nowadays, many new multiplayer online games (MOGs) seek to boast the latest viral multiplayer online gaming experience. There are MOGs that accomplish such a goal, and there are ones that fail to do so. Additionally, such MOGs may find themselves having short life spans or low player interest due to reasons such as failing to adhere to player expectations or not following the latest trends in modern gaming. This project goes into how game designers, in particular those of multiplayer online games (MOGs), can benefit the interactivity and success of their MOGs by gathering player feedback, adhering to motivations and expectations of players, and immersing players.

2. BACKGROUND

Examples of popular MOGs include League of Legends, Fortnite, Counter-Strike: Global Offensive, World of Warcraft, Valorant, Overwatch, and Call of Duty. MOGs differ from traditional offline games in that players are able to team up with or go against other players through the use of the internet.

This project is primarily informed by the following courses: CS 3205 (HCI in Software Development) and CS 4730 (Computer Game Design) at the University of Virginia.

3. RELATED WORK

With the modern sphere of MOG gaming ever-evolving, substantial review of MOG UX literature is rather sparse. However, there are numerous other reviews of gaming UX literature and work. These range from designing games for specific demographics like the elderly [6], to designing different kinds of games like educational ones [4], to designing games based on popular trends [5]. Such work in this research area incorporates a high-level of user-centered (player-centered) design and perspective, which this project aspires to accomplish as well.

4. REVIEWED ARTICLES

The various articles reviewed within this research can be classified among three categories:

1. Exploring interactivity through player feedback
2. Player expectations and motivations
3. Player immersion

Through reviewing literature, it became evident that the above categories are all highly influential factors of designing successful MOG player experiences. The reviewed articles share a trend in designing based on player necessities. Thus, it became apparent that player feedback is a factor that must be considered. Likewise, knowing what motivates players to play and what they seek within a game is vital. Additionally, the concept of immersing players is especially prevalent in the MOG genre, as MOGs involve repeatedly playing in matches and performing tasks within an online world. Such categories can be employed by MOG designers in order to best understand the minds of MOG players and provide a beneficially-tailored player experience.

For the following subsections, the title of each section corresponds to the title of the article and the applicable category (i.e. *title* (category number)). Certain articles may fall under multiple categories.

4.1 The effect of user experience in online games on word of mouth: A pleasure-arousal-dominance (PAD) model perspective (1, 2, 3)

The primary focus of this article is the pleasure-arousal-dominance (PAD) model. Such a model is utilized to capture numerous emotional states of players of MOGs. Pleasure can range from extreme pain or unhappiness to extreme happiness or ecstasy. Arousal is determined by degrees of excitement, alertness, and stimulation. Dominance is the extent to which one feels they can control events rather than be controlled by events [1].

These parts of PAD are all variables of a player's types of experiences within a MOG. Functional experiences, those in which players are able to accomplish utilitarian tasks, have been shown to positively affect all aspects of PAD. These can range from role playing, quest fulfillment, rewards, or even viewing and listening to game video and audio. Likewise, hedonic experiences, those in which players have fun and excitement, also positively affect all aspects of PAD. Lastly, social experiences, where players interact with other players in the community, have the ability to influence all aspects of PAD either positively or negatively, depending on the nature of the socialization. Such experiences also have a stronger impact on less seasoned players, as they are more susceptible to high levels of PAD when they have not had much of an impression of a MOG [1].

When players have favorable impressions of a MOG, this results in continuous play. MOGs can succeed in this by establishing a feedback loop where players have goals, whether specified by the MOG or by the player's subconscious, and the ability to accomplish such goals. It is important to note that such goals and accomplishments are enhanced by novelty, challenges, and rewards, enhancing the desirability of a player to jump back into the game continuously to achieve aspects of PAD [1].

When players experience favorable PAD, this leads them to share their experiences by word-of-mouth [1]. Whether this be to their friends in person or online via social media, word-of-mouth enhances the desirability of prospective players to begin playing a game. When potential players hear or read about the game, they raise their expectations and consequently go out to seek fulfillment. Players may also feel compelled to begin playing due to fear of missing out. Players do not want to be left behind when their peers are all having fun without them. This social aspect is not to be understated within MOGs, as humans subconsciously crave social interaction and MOGs supply extensive player-to-player interaction. Ultimately, it is vital for MOG designers to ensure that they capitalize on word-of-mouth by factoring in player impressions, as it retains players through the value of positive experiences and community.

4.2 Interactivity in massively multiplayer online games: a concept explication (1, 2)

This article details approaches in exploring how users (players) interact with new media forms (such as MOGs). Interactivity can be mediated by the technology, communication, and players of the MOG [2]. The technology is what allows the game to succeed in efficiently letting the player perform their tasks and accomplish their goals. This could be something as simple as low latency for enhanced responsiveness. Consequently, the player-perception would be favorable, as players desire synchronization within games.

The communication a game provides is also vital to MOGs and assisting player-perception. Because MOGs involve high levels of interaction between players, players desire the ability to communicate within the setting of a MOG. This can be through guiding the player through the game at their desired pace, allowing players to communicate with other players, or allowing players to customize the representation of themselves in the MOG. Players perceive this as them actually being within the world the MOG portrays, increasing the level of interactivity experienced through expressivity and autonomy [2].

Overall, MOG interactivity comes down to two categories of interactions. Player-to-player involves how players can use the game's mechanics to interact with or against one another. Game-to-player involves how the player perceives the structural characteristics of the game. This can be sound, graphics, win/loss features, a progression system, control options, or just about anything that appeals to a player's senses [2]. Based on these two categories, MOGs should aim to allow the player to express themselves freely among other players and appeal to the senses of players for an immersive experience. Should players face roadblocks such as not being able to express themselves or a lack of immediacy in sensory feedback, they will be frustrated and the MOG would be deemed unsuccessful in promoting desirable interactivity.

4.3 Online Gaming Addiction: The Role of Sensation Seeking, Self-Control, Neuroticism, Aggression, State Anxiety, and Trait Anxiety (3)

Because MOGs are based upon competition and interaction with other players instead of progressing to the end of a story, they must have elements that encourage the player to replay the game and hop into a match or the online world. When these elements succeed, players are virtually immersed and perhaps addicted. Although this may not be

the healthiest reality for a player, this is when MOGs succeed the most, as they are able to retain and enforce dedication among their players.

Neuroticism is a trait that many immersed, or perhaps addicted, players have, as they have an anxiety causing them to worry about unfulfillment [3]. This translates into players needing to know what happens next, which in the case of playing MOGs is going back into the game. Dedicated players seek these sensations to ease their anxieties that the MOG has induced in them.

A MOG can capitalize upon this subconscious nature of its players by implementing reward mechanisms. Such mechanisms could be something like in-game items or rank progression. If such rewards are not obtained yet by the player, a sense of emptiness is exhibited by the player [3]. Perhaps it is exploitative of a MOG to work upon player psychology in this way, but it cannot be understated the impact that such feedback loops can play in continuous enticement of players.

Additionally, MOGs can provide players with an alternate world for them to take refuge in. Whether it be escaping from real-world responsibilities or boredom, MOGs can let players take on a new set of aspirations [3]. This is especially successful by MOGs when the world and goals set by the game are strong enough to take maximum player-attention away from the real world. Similarly, MOGs can be a playground where players can do things they would otherwise not be able to in the real world [3]. When such capabilities are enticing enough, immersion is achieved.

4.4 Assessing the User Experience of Video Games: Relationships Between Three Scales (1)
Since player experiences are rather compounded qualitative entities, surveying a MOG's players' thoughts and deducing information through scales is an effective way to measure the player-centered success a MOG has.

The study in this article surveyed over 100 players of popular MOGs (Fortnite, PUBG, League of Legends, Overwatch, Hearthstone, and FIFA) and asked them to rate their thoughts (on a scale of 1 to 7) on aspects of that MOG's UX and game design. The scales utilized by this study were ENJOY (compiling the aspects pleasure, relatedness, competence, challenge/improvement, and engagement), GUESS-24 (compiling the aspects usability/playability, narratives, play engrossment, enjoyment, creative freedom, audio aesthetics, personal gratification, social connectivity, and visual aesthetics), and UEQ-S (compiling the aspects pragmatic quality and hedonic quality) [7]. When such aspects were compiled into scales, significant correlations were found between certain aspects. For example, pleasure, hedonic quality, and challenge were all significantly correlated with each other. LIkewise, engrossment and narrative were correlated with each other. On the other hand, non-significant correlations can be found as well. In this article's study's case, pragmatic quality, engagement, and usability all were not significantly correlated with each other [7].

MOG designers can perform surveys which can be converted to scales to deduce what aspects of games are rather intertwined. This can potentially allow them to work towards targeting the improvement of multiple aspects of their game by manually improving a single one. Nonetheless, designers can obtain a quantification of how player-centered experiences are formulated by parts of their game's implications.

4.5 Matchmaking in multi-player on-line games: studying user traces to improve the user experience (2)
Perhaps the most popular MOG in existence, League of Legends, is used in this article's study to enumerate expectations of MOG players. The study utilized open-source game server data to deduce conclusions about player behavior.

Above all, players desire integrity of the game, encouraging developers to implement schemes to eliminate malicious player behaviors such as cheating. The game server data used in the study displayed players quickly quitting when realizing they are facing a cheater or malicious player (i.e. someone using malicious tactics) [8]. Additionally, players seek efficient and transparent matchmaking. In other words, players want to be put in games quickly but also know why they are matched up against particular players (by some metric of skill or rank). For instance, players seek to play others of the same skill level instead of beating up on novice players or drastically losing to expert ones. In the case of League of Legends, players are especially frustrated when it comes to this because Riot Games (the developer of League of Legends) utilizes undisclosed ranking calculations [8]. Lastly, players desire a quantifiable goal or threshold to fulfill in order to feel accomplishment when progressing through a MOG. Along with clear steps to reach such a goal, a leveling system is best employed for this [8].

The study done here is rather remarkable because the game server log data analyzed is uncommonly distributed by game companies. The authors of this article also recognize that data from other games would offer much more insight into player behavior.

4.6 Psychological Motives and Online Games Addiction: A Test of Flow Theory and Humanistic Needs Theory for Taiwanese Adolescents (3)

With the advancement of internet technology, video game players have been exposed to so many more virtual goals than completing a story or fitting blocks together in Tetris. Particularly, MOGs allow players to overcome challenges they would not face elsewhere and promote personal achievement.

Feedback is a large factor in MOGs because players seek continuous scoring, promotion, response, and achievement. These factors of self-satisfaction upgrade a player's self-esteem, encouraging them to continue playing the MOG. When players get hooked enough by a MOG, they are compelled to search for ways to achieve their goals and desires. This is when players are driven by accomplishing certain things and will stop at nothing to do so. Their objective could be some rendition of rank, hierarchy, reward, or exclusivity [9].

The MOG must make the objective desirable enough so that a player would feel dissatisfaction without completing such an objective. This comes from a balance of skill and challenge [9]. How adept a player is should not exceed the amount of challenge presented by a task, for the task would become trivial and meaningless to do. On the other hand, if the challenge is way too high for a player's skill, it may be too discouraging for a player to attempt. Theoretically, achieving the balance of player skill with game challenge enables the highest desirability of a player to succeed and seek fulfillment through the MOG.

5. CONCLUSIONS

Taking a player-centered approach to designing MOGs requires thinking from the standpoint of player desires. Because of the high level of interactivity that MOG players have with such games, their potential thoughts and actions should always be accounted for by designers. This can be done by employing surveys [1, 2, 7]. Surveys can be used to gather feedback of players on their feelings about numerous parts and qualities of a game. In turn, designers can use scales to determine where to target their improvements and how such improvements cascade to the player psychology and other aspects of the game.

Positive player psychology is indeed one of those most supportive factors of a MOG, as players are what keep these games alive. The game should be able to make significant enough appeal to the player so that it encourages them to seek benefit from it. The game itself should allow players to have fun, feel dominance, and progress to higher levels for a sense of achievement. In the context of the social aspect of games, players need an avenue to express themselves and interact with other players to really appreciate the multiplayer and world elements of MOGs [1, 2, 8].

Because of the nature of MOGs nowadays, it is up to the developers to capitalize on positive word-of-mouth and virality their game may get. When players experience intense levels of pleasure, arousal, and dominance, they feel the need to share their thoughts to others [1]. Depending on the MOG, these thoughts may vary, but one thing is certain. MOG developers must take into account what leads to viral word-of-mouth of such games because it is an easy indication of what MOGs are doing correctly to appeal to players. Although this may lead to games copying one another, it encourages piecing together the beneficial parts of popular games for the betterment of player-experience. Additionally, the virality of modern MOGs indicates that these are arguably equally as much of a social media system as well as being online games. Developers should not understate the importance of allowing players to interact with other players and the world, as it is a large motivation of players to dive into these games [1, 3, 9].

Another major trend among this research is the concept of player progression through feedback within MOGs. The power of a feedback loop where players have goals, achievements, and a motivation to achieve allows MOGs to have replayability. MOGs need to consistently motivate players with these elements in order to encourage players to re-enter their online worlds. Essentially, MOG developers and designers must recognize that their game does not exist in a vacuum. Instead, they must account for the nature of human players to seek personal achievement rather than exclusively gaming recreation [1, 3, 9].

6. FUTURE WORK

If more time was available to further research this area, different MOG games could be delved into deeper. This would allow for more information and specific cases of how certain MOGs succeed or fail. Real-life factors of what leads to successful or unsuccessful MOGs would be extracted from such cases.

Additionally, a study could be conducted to further verify the trends in player-centered MOG design derived from this research to exemplify these findings. Due to time constraints and scope of the current project, reaching out to a significant enough number of people for meaningful input was deemed infeasible.

7. ACKNOWLEDGMENTS

REFERENCES

[1] Minxue Huang, Rizwan Ali, and Junyun Liao. 2017. The effect of user experience in online games on word of mouth: A pleasure-arousal-dominance (PAD) model perspective. Comput. Hum. Behav. 75, C (October 2017), 329–338. DOI:https://doi.org/10.1016/j.chb.2017.05.015

[2] Meghdad Mehrabi and Vivian Hsueh-Hua Chen. 2010. Interactivity in massively multiplayer online games: a concept explication. In Proceedings of the 7th International Conference on Advances in Computer Entertainment Technology (ACE '10). Association for Computing Machinery, New York, NY, USA, 87–90. DOI:https://doi.org/10.1145/1971630.1971656

[3] Mehwash Mehroof and Mark D. Griffiths. 2010. Online Gaming Addiction: The Role of Sensation Seeking, Self-Control, Neuroticism, Aggression, State Anxiety, and Trait Anxiety. Cyberpsychology, Behavior, and Social Networking 13, 3 (June 2010), 313–316. DOI:http://dx.doi.org/10.1089/cyber.2009.0229

[4] Vanisri Nagalingam and Roslina Ibrahim. 2015. User Experience of Educational Games: A Review of the Elements. Procedia Computer Science 72 (December 2015), 423–433. DOI:http://dx.doi.org/10.1016/j.procs.2015.12.123

[5] A.G. Persada. 2019. User experience on games development trends. Journal of Physics: Conference Series 1341 (November 2019). DOI:http://dx.doi.org/10.1088/1742-6596/1341/4/042010

[6] Antonio Rienzo and Claudio Cubillos. 2020. Playability and Player Experience in Digital Games for Elderly: A Systematic Literature Review. Sensors 20, 14 (July 2020), 39–58. DOI:http://dx.doi.org/10.3390/s20143958

[7] William J. Shelstad, Barbara S. Chaparro, and Joseph R. Keebler. 2019. Assessing the User Experience of Video Games: Relationships Between Three Scales. Proceedings of the Human Factors and Ergonomics Society Annual Meeting 63, 1 (November 2019), 1488–1492. DOI:http://dx.doi.org/10.1177/1071181319631300

[8] Maxime Véron, Olivier Marin, and Sébastien Monnet. 2014. Matchmaking in multi-player on-line games: studying user traces to improve the user experience. In Proceedings of Network and Operating System Support on Digital Audio and Video Workshop (NOSSDAV '14). Association for Computing Machinery, New York, NY, USA, 7–12. DOI:https://doi.org/10.1145/2578260.2578265

[9] Chin-Sheng Wan and Wen-Bin Chiou. 2006. Psychological Motives and Online Games Addiction: A Test of Flow Theory and Humanistic Needs Theory for Taiwanese Adolescents. CyberPsychology & Behavior 9, 3 (June 2006), 317–324. DOI:http://dx.doi.org/10.1089/cpb.2006.9.317