

The Impact of Games on Individual Thinking and Social Atmosphere Building--A Case Study of Massive Multiplayer Online Games (MMOG)

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Abstract: Multiplayer Online Games (MMOGs) have taken off because this genre can influence players' thinking and behavior, especially those who participate most. Nevertheless, current studies do not account for their double effect very well. This study investigates the mental and social impact of MMOGs on their capacity for strategic thinking, problem-solving, and sociality while also dealing with risks such as addiction and interpersonal conflicts. These conclusions suggest that the MMOGs develop cognitive ability through collaboration and flexibility and social bonds through cooperation and commonality of purpose. Thus, it could also be another way of socializing. Nevertheless, the addictive nature of such games has ill effects, such as overplaying, social marginalization, and behavior disputes. From these results, this paper recommends several suggestions for game design optimization: fair reward mechanisms, inclusive norms, and added aspects to reduce the chances of addiction. These proposals seek to maximize the positive side of MMOGs while considering their challenges.

Keywords: Massive Multiplayer Online Games, Social Interaction, Emotional Awareness

1. Introduction

Since the beginning of this century, with the rapid development of digital technology, video games have become an essential part of contemporary social culture. Among them, Massive Multiplayer Online Role-Playing Games (MMORPGs) such as World of Warcraft and MMOGs of the same type such as Foxhole, Helldivers™ 2, etc., have attracted widespread attention from game consumers to academia for their high interactivity and collaboration, as well as their role as an alternative means of socializing and in shaping users' thinking and social behavior.

Steinkuehler and Holt & Kleiber emphasized the importance of teamwork and collaborative problem-solving gameplay in these multiplayer online games as a unique medium [1,2]. In addition, its effectiveness as an emerging form of entertainment and social interaction has also been confirmed by Gallup et al. and its potential to reduce social anxiety [3]. In addition, Wagner also looks at the role of video games in world construction and meaning-making and outlines their processes concerning religion [4]. This paper discusses how god games (such as Civilization) and first-person shooter games create algorithmic hierarchy and ethical certainty, offering a formalized arena for moral and ideological research.

While the potential benefits of MMORPGs in enhancing social skills and reducing anxiety are promising, their limitations, such as the risk of addiction and adverse effects on specific individuals, require closer examination. For example, Gallup et al., in their research, have also mentioned the limitations of this form of entertainment. The current understanding of how games affect real-world social dynamics is still limited and conflicting [3,5]. Holt & Kleiber also mentioned the addiction risk of games and the negative impact on people with low self-esteem, which is of reference value in discussing the potential problems of games in the social atmosphere [2]. This highlights the importance of investigating such games' positive impacts and limitations to provide nuanced understandings. The results of this study will inform game developers, educators, and policymakers to optimize MMOG design for cognitive and social benefits while addressing their risks.

This study aims to analyze the cognitive impact of MMOGs, focusing on how their game mechanics foster strategic thinking and problem-solving skills; this study also investigates the effects of MMOGs on social dynamics, including their role in facilitating virtual relationships and teamwork; identifies potential risks, such as addiction and social isolation, and suggests strategies to mitigate these challenges; provides recommendations for designing MMOGs to enhance their positive impact on players' cognitive and social development.

Based on the above, this study will examine the MMOGs genre with these three factors: The affection of MMOGs to player's cognitive development, The affection for the social behavior that these MMOG game genres to both the virtual and real world, and discuss the potential negative consequences of MMOGs, such as addiction and emotional dependence.

2. Characteristics and Mechanisms of MMOG

2.1. Basic Definition and Classification

Massively Multiplayer Online Games (MMOGs) are digital, persistent, and highly interactive virtual worlds where many players participate simultaneously via the internet. These games often integrate narrative elements, multiplayer collaboration, and open-ended gameplay. MMOGs span various genres, such as role-playing, strategy, and first/third-person shooter games, offering players immersive environments to interact with others and the game's mechanics.

2.2. Game Mechanics

Most MMOGs are designed around collaboration, which involves players working together to achieve common goals, leveraging mechanics such as guild systems, role specialization, and shared objectives to encourage teamwork. On this basis, many designs, such as immersive characters, guild organizations, and in-game communication, all serve this purpose. For example, in Foxhole, players can freely join one of two factions – Warden or Colonial – and fight each other for an average of 20 days. Both camps have their own unique vehicle and weapon systems, and the division of the player base into these two camps also makes competitive play and cooperation within the same camp crucial – because in Foxhole, the production of all resources, transportation, and performance on the battlefield is indeed determined by the players. This kind of collaboration is the epitome of real-world teamwork. Players can develop transferable skills, including strategic planning and effective communication, which can improve their professional and personal lives [1,2].

This emphasis on collaboration is not limited to strategic planning but extends to fostering interdependence among players. In games like World of Warcraft, for instance, players participate in raids where success depends on the distinct roles of each team member—tanks absorbing damage, healers maintaining health, and damage dealers executing attacks [6,7]. However, this type of division also has its drawbacks: when some players cannot fulfill their roles or display undesirable behavior, such as scrambling for resources or maliciously team-killing, the high degree of interdependence can

lead to frustration. Moreover, this division of camps naturally creates division and antagonism between groups in the gamer community, which in turn is responsible for some of the inappropriate remarks and hostility between the gamer communities, as well as the resulting Internet violence [7,8].

3. The Impact of MMOGs on Users' Cognitive Construction

3.1. Impact on Individuals

3.1.1. Promoting Strategic Thinking and Problem-Solving Skills

In a game that requires the participation of many players, most situations have several players having to collaborate to make live decisions in a noisy and mutable environment [1,2]. Major orders in *Helldivers™ 2* represent just such a form of player involvement. These significant orders are generally divided into two parts: the objective of the mission assigned by the corresponding person in charge of the game company (for example, capturing or defending a planet or the total number of enemies killed by players on the entire server), and the specific method of execution chosen by the players. Since these goals are usually very complicated, players have a variety of options for implementation [9]. For the task of capturing a planet, in addition to playing directly on the planet, players can also choose to capture it by capturing an adjacent planet and destroying the supply line to the target planet.

Furthermore, *Helldivers™ 2* emphasizes problem-solving by placing players in unpredictable situations where conditions can change suddenly, such as enemy reinforcements, terrain obstacles, or resource shortages. Players must quickly adapt, collaborate with teammates, and prioritize tasks under pressure. This mirrors real-world problem-solving scenarios, where individuals must think critically and work collectively to address multi-faceted challenges [10].

3.1.2. Strengthening Collaboration and Communication Skills

The structured interdependence teaches players the value of teamwork and mutual reliance. Games like *World of Warcraft*, raids, and dungeons exemplify how collaboration is implemented. Players assume distinct roles, such as tanks to absorb damage, healers to restore health, and damage dealers to eliminate enemies. Each role is essential, and success depends on the seamless coordination and communication among team members [7,10]. As Williams & Kirschner observe in *World of Warcraft* raids, the coordination of specialized roles highlights the high level of communication and teamwork needed to succeed [8].

Moreover, MMOGs provide robust communication tools that enable players to strategize and socialize effectively [9,11]. Real-time voice chat, text-based communication, and in-game signaling systems foster an environment where players can plan, execute, and adapt their strategies. Such virtual environments help players overcome traditional social barriers using accessible communication tools, fostering mutual understanding [3]. This capability allows players from different cultures and backgrounds to connect and collaborate, enhancing their communication skills in a global context.

3.1.3. Personalized Thinking and Creativity

MMOGs offer players a unique opportunity to be who they are and develop different ways of solving challenges. One of those things is character customization, which enables players to personalize avatars, skills, and equipment according to their tastes [11]. As Moon et al. observe, MMORPGs let players customize characters to match their dreams, making them feel personal and unique [7]. This individualized design not only adds to the experience but also forces players to play in new ways.

Additionally, MMOGs have often open-ended modes of play that encourage solving problems creatively. Games such as Minecraft and Second Life let people create their worlds, solve their puzzles, and pursue non-linear avenues of achievement [11,12]. Such immersion mechanisms are valuable mechanics that encourage players to explore the world in the game and discover creative solutions to problems [9,11]. In the same way, Foxhole offers various methods of completing objectives, ranging from front-line action to indirect measures such as destroying enemy supply lines, reflecting the open-mindedness and creativity that is encouraged in games.

3.2. Impact on Collectives

3.2.1. Promoting Social Interaction and Relationship Building

MMOGs are highly engaging tools for socializing and making connections. Guilds, factions, and team-based games involve people working toward common goals, and relationships can stretch far beyond the screen. Final Fantasy XIV, for instance, features guild structures that encourage cooperation, making friends, and feeling part of a group. Furthermore, MMOGs transcend existing boundaries because they bring together players with different cultural and linguistic backgrounds, and virtual worlds let players overcome social barriers with accessible messaging tools, encouraging cooperation and building camaraderie [3]. However, abusive interactions (e.g., bullying or social exclusion) could negate these advantages, as a result, the game developers need strong moderation mechanisms to maintain respectful interactions.

Beyond fostering personal connections, through the enthusiasm and motivation of the player community, game companies can also create public welfare activities and events. For example, in a major order for Helldivers™ 2, players were faced with the problem of unlocking a stratagem and rescuing the children in the children's hospital on a certain planet. However, after the players chose the latter, the former CEO of the game donated to Save the Children to commemorate the players' generosity. This is also reflected in the fact that MMOs can also be used as an alternative social solution and tool in some cases. Therefore, in the current situation where people's communication has decreased, this type of game breaks the boundaries of communication in space and time, providing new forms of communication and enhancing relationships.

3.2.2. Awareness of Rules and Transmission of Values in Games

MMOGs teach players the importance of following structured rules and embodying values such as teamwork and fairness. Game systems reward cooperative behavior while penalizing actions like griefing, and fostering accountability. In League of Legends, honor systems promote teamwork and sportsmanship, reinforcing positive player interactions. Beyond this, games transmit cultural and moral values through their narratives and mechanics. Previous research discusses how games like Left Behind embed ideological messages, shaping players' perceptions of justice and competition [4,7,9,10]. These systems demonstrate how MMOGs act as microcosms for societal norms, encouraging ethical behavior and community-mindedness.

3.2.3. Possible Social Problems Brought about by Games

While MMOGs offer immense potential for fostering positive social interactions, they are not without their share of challenges and risks. These social problems, if left unaddressed, can undermine the otherwise beneficial aspects of gaming and negatively impact players and their communities.

The immersive nature of MMOGs, combined with persistent worlds and reward-based progression systems, can lead to over-engagement or gaming addiction. Players may feel compelled to spend excessive amounts of time in these virtual environments to keep up with in-game progress or maintain

their status in competitive rankings. Previous research has warned of significant addiction risks particularly for vulnerable populations, emphasizing that individuals with low self-esteem or pre-existing mental health challenges are especially susceptible [2,6]. In extreme cases, this can result in neglect of real-world responsibilities, such as work, education, or personal relationships, leading to long-term consequences for a player's mental and physical well-being.

The other major concern is the abuse in MMOGs, such as harassment, bullying, and exclusion. Although the anonymity of online gaming can spur dialogue, it can also fuel aggressive or disruptive play. Infectious interactions not only make games a hostile environment, but they also discourage positive socialization and even put players off the game. Competitive games, such as League of Legends and Overwatch, have, for instance, been widely criticized for the number of abusive interactions between players. Several developers have attempted to counter this by adding reporting mechanisms and honor-based rewards to encourage polite behavior, but these do not always cut the mustard.

Excessive gaming also invites escapism, when people seek refuge in virtual spaces to distract themselves from actual situations or obligations. This may help at first, but in the long run, escapism can cause social withdrawal and isolation. Games provide a haven for players who are sometimes unable to participate effectively in social interactions in the real world [5]. This problem is especially worrisome for younger players who may find it hard to combine the social aspect of their online game time with the real-life practice of forming interpersonal relationships.

Some MMOGs also unwittingly foster unhealthy stereotypes or exclusionary narratives. Games that represent particular genders, races, or cultures, for example, in stereotyped or negative ways can create bias among players. Games often build ideological and cultural biases into the narrative, informing how players think in potentially harmful ways [4]. Furthermore, in group-based games, lower-level players can be excluded or discriminated against, further creating fractures in gaming communities [11,12].

4. Suggestions and Optimization Strategies

4.1. Game Design Level

Game developers should implement mechanisms that promote balanced gaming, such as daily limits or rest reminders. Reward systems can be changed from time-based progression to skill-based achievements, thereby reducing the risk of addiction. Games such as World of Warcraft have introduced daily and weekly tasks that limit rewards, allowing players to maintain their progress without excessive game time. A counterexample is a war bond system in Helldivers™ 2, where players need to spend extra money to buy virtual currency (or spend more time in the game) to unlock the corresponding war bond and purchase the armor, stratagem, weapons, etc. in the war bond through another kind of resource with a cap. Objectively speaking, this strategy does help the game gain more daily active users and revenue, but the passive prolonged gameplay it brings also brings more psychological burdens to players, which is also worth considering. How to balance the time and energy players should devote to games is a trade-off that they need to weigh against the pros and cons that designers need to weigh.

In terms of cooperation, cooperative play is enhanced by designing tasks that require different roles and skills. This includes mechanisms that reward teamwork and team success, such as guild achievements and shared rewards. This has been proven effective through the success of the World of Warcraft and Final Fantasy series.

4.2. Education and Social Applications

Gallup et al. highlight how games encourage emotional awareness and cooperative behavior in a virtual environment [5]. As a result, MMOGs can teach empathy, conflict resolution, and leadership skills through interactive scenarios and role-playing. In collaborative gameplay, conflicts often arise over resources, strategies, or roles, requiring players to mediate disputes and find equitable solutions [4]. For instance, in *World of Warcraft*, raid groups must resolve disagreements over loot distribution through negotiation and compromise. These interactions teach players valuable conflict resolution skills, which are transferable to workplace and personal settings. Similarly, leadership opportunities in MMOGs, such as managing guilds or organizing team events, help players develop communication, delegation, and adaptability—key traits for real-world leaders.

4.3. Policy and Regulation

Addiction and overplay are among the direst MMOG issues [2]. Resilient worlds and incentive-based progression mechanisms encourage players to focus on play rather than on the real world. Adopt policies restricting how many hours players, especially children, can spend on MMOGs each day or week. South Korea's "Shutdown Law" bans kids under 16 from engaging in online games until late at night and has proved to be a useful tool in curbing over-use. Although the law has been confirmed to be repealed in 2021, it provides a viable way to address the problem of youth game addiction: it does not infringe on the rights or freedoms of young players by banning them from playing video games, but rather through regulation and restriction.

In addition, anonymity and competition in MMOGs can sometimes encourage harmful behavior, including harassment, bullying, and exclusionary practices [3]. It is necessary to require developers to integrate robust reporting and review systems to address bad behavior, as well as to introduce clear and enforceable penalties for players who engage in harassment, including strategies such as temporary or permanent bans.

Lastly, the regulators would need to ensure that game companies secure player data by enforcing robust data protection standards. GDPR has become a precedent for the EU in regard to protecting user data, and it may well be appropriate to implement similar regulations for the ever-present data collection concerns in MMOGs.

5. Conclusion

MMOGs have become game changers that offer the chance to experience a novel form of cognitive learning and social engagement. Through real-time group play dynamics, these games instill strategic thinking, problem-solving, and cultural communication skills. Their team environments are also designed to encourage collaboration and dependency and train players with skills transferable to practical applications.

Nevertheless, there are downsides to the benefits of MMOGs. Risk of addiction, interpersonal tensions, and exclusionary attitudes underscore the importance of game design and strong moderation. Development should also consider engaging the players' interests, adding functions that encourage healthy gaming and communities. MMOGs have their potential as a source of learning and socialization that can be leveraged by policymakers and educators who need to keep MMOGs ethically accountable and safe for gamers.

MMOGs will keep on changing, so an in-depth understanding of their dual nature as possibilities and threats is vital. If the gaming industry can find new ways of doing things and build collaboration among players, it has the potential to harness MMOGs for their full potential as an engine of cognitive and social change.

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