



Massively Multiplayer Online Game in-game persuasive features and influence

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Abstract

This bachelor's thesis investigates the in-game persuasive mechanisms and their effects in Massively Multiplayer Online (MMO) games. The gaming industry has grown to massive proportions in recent years and the MMO game genre along with it. The topic is very relevant with persuasive and coercive game mechanics being ever more prevalent nowadays, especially related to monetization. This thesis attempts to answer how MMO games persuade the player and what effects the persuasion has on the player. In other words, which kind of persuasive methods are utilized by the game environment to affect the player and what potential consequences this might have on the person playing.

The background section discusses the Persuasive Systems Design (PSD) model, as well as the thin line between persuasion and coercion. The definition of an MMO game and some of its history is also examined. The research was conducted in the form of a literature review and material from 2003 to 2020 was used. The main material was obtained from scientific online journals and books.

This thesis investigates the game mechanics by attempting to categorize them into the PSD model principles which are primary task support, dialogue support, credibility support and social support, while separately including the ones that did not fit into this model. The most prevalent category found was social support. Games are never neutral as they always affect the user somehow. This intended or unintended influence can be investigated through the game environment. It can be highly positive, but deceptive or coercive game mechanics are nowadays commonly used and contribute to problematic usage. The topic of this research contains a lot of ethical questions, and it is important to pay attention to how games implement and use their methods of influence. Western laws are still behind regarding this issue, and games avoid legality issues related to, for example, in-game virtual gambling. The discussion is conducted by looking at the potential effects of gaming from the perspective of issues, ethics and solutions. This research can be used as a general overview of the topic and while not contributing new information to the field, it can work as a basis for future work. A look at potential future avenues is provided.

Keywords

game mechanics, gaming, MMOG, persuasion, PSD

Supervisor

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Abbreviations

F2P	Free-to-Play
MMO	Massively Multiplayer Online
MMOE	Massively Multiplayer Online Exergame
MMOG	Massively Multiplayer Online Game
MMORPG	Massively Multiplayer Online Role-Playing game
MTX	Microtransaction
P2P	Pay-to-Play
PSD	Persuasive Systems Design

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1. Introduction

This literature review will be focusing on the effects and methods of persuasion in the Massively Multiplayer Online Games, MMOG or "MMO game" for short, game genre. Games have a huge market and millions of users. They reach a lot of people while also being able to have big impact on the players life (Klemm & Pieters, 2017). This topic is very important because it is relevant for a big portion of the population, as according to The Entertainment Software Association (2019), 65% of American adults are gamers. This leaves a lot of responsibility in the game developers' hands with how they persuade their customers and for what reasons. This literature review focuses mostly on studies done on the MMO subgenre Massively Multiplayer Online Role-playing Game (MMORPG), but also includes research and background on other MMO games. Extensive research has been done about the different aspects of persuasion and especially monetization in these games. Problematic usage is one of the main related topics.

My research questions are:

RQ1: How do MMO games persuade the player?

RQ2: What effects does the persuasion have on the player?

Although games have been a sensation for multiple decades now, there is still a lot to discuss and explore in the way games persuade players. This is especially true when real life money is on the line. Persuasion is not black and white (Perloff, 2017), for example, a mobile MMORPG can motivate the user to move (Meschtscherjakov, Trösterer, Lupp & Tscheligi, 2017), while another game tries to get as much money out of the user as possible (King & Delfabbro, 2018). Although gaming and different forms of payment models have been around for a long time, there are a lot of gaps in customer protection and laws regarding these virtual environments (King & Delfabbro, 2018). According to King and Delfabbro (2018) games avoid gambling laws and gambling age restrictions by disconnecting the rewards from real life money, in other words giving virtual rewards. They also found that many games also employ virtual currencies to avoid other legal issues related to monetary use. Many gamers develop unhealthy habits such as playing unhealthy amounts. Playing MMO games can be taxing, as shown by Yee (2006b) it can even feel like a second job. Problematic usage is an issue, as seen in Yee's research (2006b), the average time spent playing per week was around 23 hours. 8% of players spent 40 or more hours playing and around 61% had played for over 10 hours without breaks.

The goal of this literature review is to understand the current state of persuasion goals in MMORPG games as well as discuss the potential issues and ethics related to this topic. This review explores the different game mechanisms and their effects to the user as well as ethical questions that arise with different forms of influence. The research articles referenced in this literature review contain a lot of different theoretical frameworks and lenses, which is why this paper will categorize different features into the persuasive systems design (PSD) model where possible. Virtual worlds enable many different methods of persuasion, such as audio-visual or social. Because of this, this literature review is very general in scope, including research based on different platforms and from different times of the MMO genre, around the years 1998-2020.

In the first section of this paper the background relating to this research will be discussed, such as what persuasion means, what the PSD model is and what makes an MMO game an MMO game. The second section contains the method used to search for literature and the method with which certain papers were discarded and kept. In the third section the different findings from the literature that was reviewed will be discussed through the PSD model where possible. The issues and solutions found will also be discussed. Persuasion and game mechanics are both extremely complex concepts and as mentioned earlier, it will be crucial to understand these concepts and how they work together. Since games hold so much power, it is important they are used for ethical reasons.

2. Background

This chapter will discuss the background of this research. First the PSD model and persuasion will be explained. After that an explanation and a bit of background about MMO games will be given.

2.1 Persuasive systems and the Persuasive Systems Design model

According to Oinas-Kukkonen and Harjumaa (2009), attitudinal theories had not been previously aimed directly at persuasive software technologies before. Therefore, they propose the Persuasive Systems Design (PSD) model, which contains three persuasion contexts, which are the intent, the event and the strategy. The intent means the change type and the persuader, the event on the other hand means the use, the user and the technology contexts and lastly the strategy means the route and the message. However, in this paper I will only be focusing on the other part of the PSD model, the persuasion principles. The persuasion principles are a way to analyse different persuasive features. The persuasion principles Oinas-Kukkonen and Harjumaa (2009) suggest are split into four categories, primary task support, dialogue support, system credibility support and social support, as can be seen in Figure 1. Primary task support consists of reduction, tunneling, tailoring, personalization, self-monitoring, simulation and rehearsal. Dialogue support contains praise, rewards, reminders, suggestion, similarity, liking and social role. System credibility support includes trustworthiness, expertise, surface credibility, real-world feel, authority, third party endorsements and verifiability. Finally, social support has social learning, social comparison, normative influence, social facilitation, cooperation, competition and recognition as its principles.

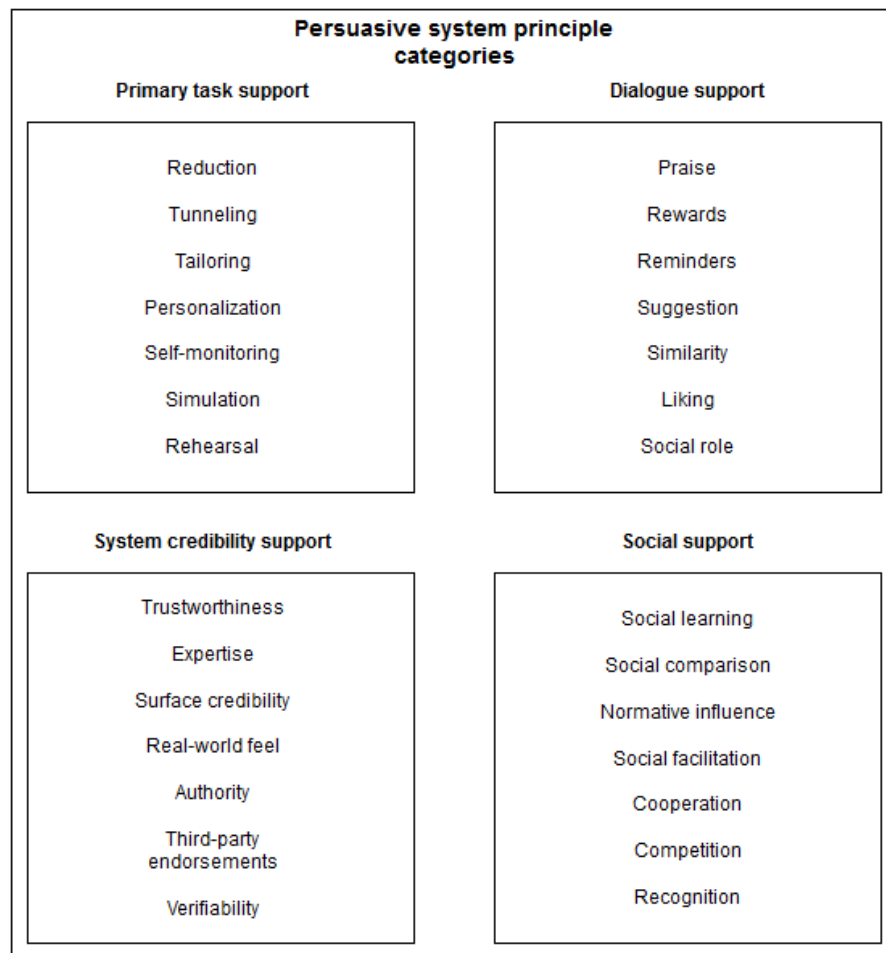


Figure 1. Persuasive system principle categories (Adapted from Oinas-Kukkonen & Harjumaa, 2009).

Oinas-Kukkonen and Harjumaa (2008) define that attempting to change or influence the way others act, feel or think is persuasion. They note that coercion is another form of attempted influence. Although persuasion and coercion are not strictly the same thing, rather overlapping concepts, it is difficult to objectively define what is coercion or persuasion (Perloff, 2017). Coercion implies a force or power that causes the influence (Oinas-Kukkonen & Harjumaa, 2008; Perloff, 2017) yet while games do not have real physical power over the player, the games having virtual social settings (Silva Neto, De Carvalho, Paraguaçu & Lopes, 2011) or addictions formed towards them (Sirola, Savela, Savolainen, Kaakinen & Oksanen, 2020) could create a power dynamic. In addition to coercion there is another related concept known as deception (Fogg, 2003). Fogg (2003) exemplifies deception to misleading website ads with false promise and coercion to software installers that come bundled with extra software that is unwanted. Due to the different ways of influence, this literature review discusses unethical influencing methods of games in their own chapters, as they are not applicable into the PSD model conceptualized by Oinas-Kukkonen and Harjumaa (2009).

Persuasive interaction possibilities are created by the internet, as it allows easily reaching the user (Oinas-Kukkonen & Harjumaa, 2008). They argue that for persuasion to be successful, the persuadee must comprehend the arguments and pay attention to them.

Seven postulates are suggested by Oinas-Kukkonen and Harjumaa (2009) for persuasive systems. The most relevant of these postulates for this paper are as follows: “Information technology is never neutral”, “Direct and indirect routes are key persuasion strategies”, “Persuasion through persuasive systems should always be open” and “Persuasive systems should aim at unobtrusiveness” (Oinas-Kukkonen & Harjumaa, 2009, pp. 487-488). According to Legner, Eghtebas and Klinker (2019), when games try to persuade the user, the persuasion is done through in-game elements.

2.2 What is a Massively Multiplayer Online Game

According to Dickey (2007) MMORPG is an environment where collaboration, strategy, planning, socialization and communication happens between players. It is an environment where thousands of players can exist at the same time (Dickey, 2007). Similarly, Klemm and Pieters (2017) characterize it as a virtual world where a large number of players can use their characters to interact. As the term MMOG, Massively Multiplayer Online Game, suggests, the social aspect of these games is extremely important in driving the player (Yee, 2006b; Silva Neto et al., 2011; Murimi, Ellis, Turnage, Vick & Crosby, 2017; Chang et al., 2008; Dickey, 2007). These social aspects and high player volumes make MMO games an important persuasive tool, as they can reach a big audience and affect the players in many different ways that will be discussed later in this paper.

According to Yee’s research (2006b), the average age of MMORPG players was around 26. MMO games are fit for everyone since according to Yee (2006b), people of a wide age range play MMORPG games, from teenagers to retirees. According to him, despite the big variance in player age and background, they often work together towards common goals in these games. These games have been popular for a long time, as in Yee’s research conducted in 2006 it was found that in the past 7 days of players’ lives 27% of players had the most positive experience while inside a game and 33% the most negative experience in the real world (Yee, 2006b). Both of these experiences tended to relate to social interactions within the game, responses to open ended questions also often included social interactions. The main aspects of MMORPG games relate to their social and narrative aspects (Dickey, 2007), which are also important factors that appeal to the players.

MMO games can exist on many different platforms, such as mobile devices, computers and consoles. What sets apart normal games from MMO games is the number of players and often world persistence (Yee, 2006b). According to Murimi et al. (2017), the world keeps moving in MMO games even if the player is not online, which differs from offline games. MMO games often require massive infrastructure and specialized technology behind the scenes, unlike normal games, because they have to support massive infrastructure like the players’ ability to create social networks and to maintain the whole game environment as persistent (Murimi et al., 2017). The other clear difference between MMO and other game genres is the player volume. Even if massive infrastructure is used, only MMO games support these player volumes in a single instance. The main models for monetizing these games are free-to-play (F2P) where the game is free or pay-to-play (P2P) which means the game costs up-front or has a subscription system (Stanev, 2020). MMO games can also be used as interactive learning environments (Dickey, 2007).

3. Research method

The literature used in this literature review was searched from Google Scholar, Web of Science and Scopus. At first any papers relating to the themes of gaming and persuasion were searched for. Social and multiplayer gaming related themes were searched for with search terms such as “MMORPG persuasion”, “MMO motivation”, “Game persuasion”, “MMO persuasion”, “Game monetization”, “MMO monetization” and “MMORPG monetization”. Keywords revolving around gaming, persuasion, motivation and monetization were used. After finding some literature, keyword ideas were taken from them and new searches with terms such as “Exergame” were executed. The literature was first filtered by their title, abstract and keywords by estimating if they fit the topic. The search keywords such as “MMO” did not need to be included in the title, the abstract or the keywords if the topic seemed fitting. The recurring references between these sources were also added as potential source candidates and filtered accordingly. All the literature selected is in English, other languages were discarded. The literature that was not published in any conference or by any publisher were discarded. When starting to analyse the contents of the literature, everything that did not end up fitting the topic of this literature review was removed. As long as the literature could be fitted into the topic of persuasion, games, monetization, game mechanics or other forms of influence, it was kept. Some of the literature used in this paper was found outside of these searches. The literature found on MMO games dates between 2006 and 2020. The final papers had many relevant results, although the gaming industry has evolved fast, and the age is visible from the general themes. 23 references were used in total. Appendix A. contains an overview of the research.

4. Results

This chapter will discuss findings mainly related to the PSD principles. A single persuasive method can fit into many categories. The persuasive methods used often combine a lot of different persuasion techniques and principles and as such, features mentioned in one section of this chapter are not excluded from the other sections and can be mentioned multiple times. For example, Meschtscherjakov et al. mention that role-playing games have set goals that when reached, advance the game (2017). This could be placed into the personalization principle, as it gives guidance through goals, but the player can still choose what they want to do and how. A single persuasive mechanism such as achievements (Yee, 2006b) can fit into many categories. Achievements can, for example, bring social recognition, create competition, require cooperation and give rewards when obtained, which shows that many persuasion methods can be used together. The main persuasive principles discussed in this paper are shortly explained in Table 1. There are chapters for issues and solutions that contain results not applicable to the PSD model.

Table 1. The persuasive principles (Adapted from Oinas-Kukkonen & Harjumaa, 2009).

Primary Task Support	
Reduction	Reduce complex behaviour into simple tasks to lessen effort required to do a task.
Personalization	Personalized content or services.
Self-monitoring	System provides a way to track personal status or performance.
Dialogue Support	
Praise	Feedback in some form to raise motivation.
Rewards	A virtual reward for performing a task.
Reminders	Reminds the user of a task.
Similarity	System gives the feeling of similarity by imitating the user in some way.
Liking	Appeal by look and feel.
Social role	System has a social role.
System Credibility Support	
Trustworthiness	System gives unbiased and factual information.
Expertise	Show competence and expertise in the system.
Third-party endorsements	System has third-party endorsements for credibility.

Verifiability	System should offer means to verify given information.
Social Support	
Social comparison	Means to compare performance.
Normative influence	Influence by social norms.
Cooperation	Possibility for co-operation between users.
Competition	Possibility to compete between users.
Recognition	Public recognition from other users.

4.1 Primary task support

Murimi et al. (2017) found that instant individualized feedback helps the user to continue desired behaviour. Giving players the right balance of choices or control is important, as it gives motivation when the process is not too simple or too complicated (Dickey, 2007). When Dickey (2007) researched the causes of intrinsic motivation in MMORPG games, he found that character development and the emotional connection formed to that character are important. The previous methods fit the personalization principle. Dickey (2007) also found that improvement in a given task alone motivated doing the activity, while Klemm and Pieters (2017) had an idea where statistics about playtime would give the player information about possible issues, which is persuasion by self-monitoring.



Image 1. The World of Warcraft achievement menu in-game.

Yee (2006b) writes that achievements get more time consuming and more difficult with progression and most advancements also require interaction with other users. Many MMORPG games have an achievement system, for example, World of Warcraft (Image 1). These achievements can be used to reduce gameplay in a similar way as quests.

4.2 Dialogue support

Reward systems are very common in games, as can be seen from the different research conducted by Wang and Sun (2011), Klemm and Pieters (2017), Sanders, Dowland and Furnell (2010) as well as Yee (2006b). Reward systems give motivation and can ease disappointment (Wang & Sun, 2011), and Klemm and Pieters (2017) found that reward mechanisms may affect how long the player keeps playing. Virtual goods might even be sold for real-life currency by the game developers (Yee, 2006b), which can be seen as rewards for money usage. Interestingly, while improving the game itself and its content is a way to keep players playing, it is also possible to limit progression pace and create manipulative reward mechanisms instead (Klemm & Pieters, 2017). Reward systems might also make the player feel unable to leave the gaming activity, even if the player is not enjoying it (Wang & Sun, 2011).

Sanders et al. (2010) note that rewards tend to get slower and slower to obtain as the game progresses. Yee (2006a) identified advancements as a motivational element, and according to Dickey (2007), achievements are an important part of motivation in MMORPG games. Advancements and achievements also work as rewards themselves. Preferences, motivations as well as cultural and social contexts affect a player's experiences with reward systems (Wang & Sun, 2011). Due the social aspects, the social role principle can be found.

Wang and Sun (2011) discovered rewards are used for advancement. They identified four important reward characteristics, which are effect on gameplay, social value, sustainability and the difficulty of obtaining the reward. Klemm and Pieters (2017) suggests motivating the player in clever ways could also help problematic usage, giving rewards such as buffs by being offline or getting weaker for being online too much. Although many games use audio-visually appealing methods (King & Delfabbro, 2018), they were not specifically pointed out in many studies. Meschtscherjakov et al. (2017) however mentioned that Pokémon GO uses visual methods of persuasion, which fit the liking principle. Character creation (Yee, 2006b) can also relate to similarity as the character created can be a representation of the user. Murimi et al. (2017) findings about individualized feedback can fit the praise principle.

4.3 Credibility support

According to Murimi et al. (2017), players tend to assume the computer or game as fair and intelligent, in other words credible. They argue that the true persuasive intent might be boosted or hindered depending on if the user views the game as positive or negative, regardless of the persuasive intent's goals. Chang et al. (2008) also find reputation important. The opinions of others is taken in high regard and is a big influence to whether the player keeps playing or not, which makes third-party endorsements influential. Games can also give third-party endorsements to other products in the form of ads. Lewis and Porter (2010) found that the sense of realism or immersion can be broken by ads but if done right, they can also allow for high advertising awareness. They found that ads with

simple but eye-catching designs that fit well into the in-game world got the most awareness and best results.

Stanev (2020) notes that cosmetic items, permanent or temporary, are usually sold by reputable developers, which can increase trustworthiness. On the other hand, according to Stanev (2020), less ethical developers use random reward awarding systems such as loot boxes that create a loop of the player requiring to buy more and more boxes to get a rare item, which could lower trustworthiness. Verifiability is also important. It can be found in the form of higher transparency on the game mechanics, for example, drop rates or average quest lengths, which could be shared (Klemm & Pieters, 2017).

Stanev (2020) proposes a monetization model that is named “donate-after-playing”, it means that the player can choose how much money he wants to give to the developers after or during playing while the whole game is free. This model would only work if the game can prove its credibility and especially expertise to be worth of donations.

4.4 Social support

One of the motivational factors Yee (2006a) identified was relationships, and he mentions that important relationships and interactions are formed between users. Social relationships based on trust and their characters actions are also a big part of motivation (Dickey, 2007). Silva Neto et al. (2011) based their research on the reciprocity principle, which is social persuasion based on the fact that actions either raise or reduce the players social reputation. According to them reciprocity means the feeling of having to return a favour if you are given one. Some examples where reciprocity can happen are when some other player gives helpful tips, advice, aid in hunting, discounts or loyalty (Silva Neto et al., 2011). Silva Neto et al. (2011) note that the player also understands the potential consequences of their actions. An interesting idea Klemm and Pieters (2017) thought of was using social persuasion to reduce play by giving guild leaders a chart of their guilds player’s playtimes if the player agreed to it. The previously mentioned concepts could be seen as normative influence.

According to Murimi et al. (2017) Scrabble can make a person appear smarter, persuading them to improve. Similarly, in MMORPG games gaining gear, achievements, status and success give motivation through social comparison or competition. Wang and Sun (2011) discovered four main ways the rewards are used, two of which are cooperation/competition and sociality. They also mentioned that social contexts can make the player feel unable to leave the game, which can relate to cooperation or even competition. Leaving a game for a long time can mean reputation is lost which incentivizes the player to stay (Chang et al., 2008). In other words, recognition is lost.

4.5 Other findings

As expected in a massively multiplayer online environment, social aspects play a very important role in persuasion. For example, in the research of Murimi et al. from 2017 social, was key when attempting to get the message across. They also found that too intense persuasion attempts might actually undermine the persuasion process, due to decision fatigue. Yet games tend to use a lot of persuasive measures, for example, Meschtscherjakov et al. (2017) found nine main persuasive elements from Pokémon Go. It is important the persuasion fits in with the game and that the methods work together.

Pokémon GO also uses visual methods of persuasion, which were effective in making the players move a bit more especially when combined with the egg hatching mechanic requiring real life movement (Meschtscherjakov et al., 2017). It is also important to remember that not all games can use the same types of persuasion, for example, Meschtscherjakov et al. (2017) had an interesting finding where levelling had the lowest persuasive effect of the aforementioned Pokémon GO features unlike in many other games. They found timed events to be important.

“Players use their communication skills as artifice to make other players voluntarily change their attitudes, beliefs or behaviours, thus, avoiding coercion” (Silva Neto et al., 2011, pp. 37) is an interesting statement related to persuasion, meaning that interaction in of itself is persuasion. Murimi et al. (2017) had three main elements in their persuasive game framework, cultural norms, incentive, and expenditure trade-off as well as the element of surprise. These are closely related to the principles of the PSD model. Johnston’s and Whitehead’s (2011) Massively Multiplayer Online Exergame (MMOE) framework is not far off either, with ideas such as feedback, credit, recognition, challenge and flow, tailoring, customization, connectivity, novelty, friendship and social facilitation, competition, and privacy.

4.6 Issues with predatory influence and persuasion

As mentioned by Yee (2006b) players tend to spend unhealthy amounts of time gaming. Game mechanics that attempt to increase the time spent playing can be a big issue. Not only are games potentially taking a lot of time out of the gamer’s life, current age digital games have so many gambling-like mechanisms that the distinction between gambling and gaming has been blurred (Sirola et al., 2020). These kinds of mechanisms are made to get as much money out of the player as possible with unfair means and nefarious goals, often relying on feeding addiction or other problematic habits.

Some games have explicit persuasion intentions, for example, when aimed at health or energy conservation (Murimi et al., 2017). It is however also possible that a game will attempt to use different methods of coercing or deceiving the player into spending money as its only main goal, which is an issue. King and Delfabbro (2018) talk about loot boxes and compare them to scratch lotteries and slot machines as they are random and require no skill. They use the term “predatory monetization” for monetization models that encourage repeated spending, attempt to hide the true cost until the player is too committed, manipulate outcomes and try to reinforce purchasing instead of skill. These models can also use information inequalities to attempt to maximize and exploit spending based on the players game preferences, spending habits and available funds. Rewards can be related to gambling mechanics in gaming (Sirola et al., 2020). In fact, games that heavily rely on paid random reward mechanics have their own game genre called gacha games (Koeder & Tanaka, 2018). According to them western countries are behind in gaming related gambling laws. They mention that gacha would not count as gambling in Germany, UK or Belgium. King and Delfabbro (2018) also bring up the fact that virtual currencies are often used to hide the true costs of in-game purchases. For example, \$1 real money can equal to 25 “gems” in the game.

Sirola et al. (2020) found that in gambling communities the community often reduces addiction by warning the player and seeing wins as individual, thus reducing unhealthy habits. According to their study, gaming communities are the opposite especially in the case of MMORPGs. Since in gaming the community the player’s guild or a party can also

benefit from a player's money spending, it is praised. Sirola et al. (2020) even note that since excessive spending can bring success, it can be seen as important, which in turn means the community does not help problematic users at the cost of worse performance. Chang et al. (2008) found that collectiveness enhances loyalty and cohesiveness, which could also drive harmful behaviour if based on money spending. Persuasion is often used for monetization and playtime in games, as keeping the player playing and spending money for a long time is important due to the high costs of making the game (Klemm & Pieters, 2017).

Badly used persuasive mechanisms may cause negative experiences, for example, as discussed by Lewis and Porter (2010), seamless integration is key when advertising in-game. Their study also indicated that out of place ads seem considerably more annoying and obtrusive for the player. The study found that badly placed ads raised the general negativity towards them being placed into games at all. Interestingly their research results also implicate that avid gamers find ads more annoying in general than non-avid gamers. Murimi et al. (2017) associate in-game advertisements to persuasive distractions, the player can be persuaded to play the game and learn about the brand at the same time.

4.7 Solutions

As seen in the earlier chapter, there are a lot of potential issues that come with different ways to influence players. This chapter will discuss the potential solutions to these issues that were found from the literature. The topics of ethics, monetization practices, game features and laws will be visited.

The ethical and socially responsible principles found by King and Delfabbro (2018) and Klemm and Pieters (2017) were split into five categories, which are transparency, exposure, fairness, game mechanics and design as well as limitations and self-control. Transparency includes the following from King and Delfabbro (2018): All transactions should display their real-world money value, display all real odds of random rewards, purchasable item descriptions should be clear and factual, informing about MTX in more blunt terms, for example, by saying that the game allows for unlimited spending, statements about spending should be given, access to past spending information. Klemm and Pieters (2017) also found that making the player more aware of their potential addiction can help. King and Delfabbro (2018) suggested marketplaces for loot boxes should be out of the way and currency purchases could be moved out of the game. Most of the questionable persuasive features were somehow related to rewards, so having better ethics related to rewarding real world money purchases is important.

Fairness includes “MTX should not provide any competitive advantages”, “reward chances from boxes should not be based on information about the player”, “refunds should be possible”, “MTX system change announcements” and “tips for healthy behaviours”. Game mechanics and design includes fixed ratio rewards, more linear progression and set interval rewarding for more ethical design which were suggested by Klemm and Pieters (2017). King and Delfabbro (2018) suggested the ability to manage certain tasks so they only happen when the player is offline, loot box rewards should be available through normal play and items, or other rewards should stay permanently after purchase. Additionally, limited time offers, duplicate rewards and audio-visual persuasion could be removed or limited from loot box mechanics. In fact, recently laws regarding virtual monetization are progressing. In 2018 Dutch Gaming Authority issued

legal action against loot box mechanics (Gaming Authority, 2018), which means that in the future predatory influence will most likely lessen.

Limitations and self-control include the possibility to set a spending limit even if using in-game currency, purchases requiring at least two steps instead of instant purchases, having cooldowns for money spending or the player being able to decide when they cannot spend money in the game. Additionally, games with MTX should be age restricted, self-exclusion and limiting should be available and problematic use warnings should be displayed. The aforementioned principles are all proposed by King and Delfabbro (2018). Klemm and Pieters (2017) also suggested warning thresholds the player could set for themselves, for example, by warning about money or time spent in-game. Sirola et al. (2020) conclude that virtual communities play a big role in gaming problems, it is important to understand these mechanisms for problem prevention.

Stanev (2020) argues that donations could be used as a monetization method with the F2P model, instead of subscriptions, upfront payments (P2P) or MTX as this would give the user the most value. He notes that many of these payment schemes can be combined. For example, mobile games tend to lean towards free-to-play models with their simplicity, aiming to target a large audience, but then the revenue is often generated through in-game purchases for virtual items. He argues that the donate-after-playing model could be given serious consideration by small game makers, as their data from the game “Dwarf Fortress” supports it.

Although as found in issues, out of place persuasive measures tend to be less effective, well-placed persuasion can catch the attention of the player effectively, as Lewis and Porter (2010) found related to ads. For example, educational games should state the message at the start and at the end of the game for best recallability (Murimi et al., 2017). It is important that persuasive measures are used correctly.

5. Discussion

As discussed in the background section, it is difficult to objectively differentiate persuasive methods from, for example, coercive methods. This brings challenges to the discussion of this research. To make the analysis even more difficult, a single persuasive in-game feature can fit multiple different persuasive principles.

Persuasive principles were found from all the persuasive categories. They were analysed from game mechanics to persuasive principles, which means that all of these game features have potential to influence the user. One game feature can combine many persuasive principles or methods of influence. These methods of forming motivation can be used for both good and bad and games hold a lot of persuasive power. Motivations and the importance of certain persuasive methods differ from player to player. For example, Meschtscherjakov et al. (2017) write that Pokémon GO is supposed to make moving entertaining, but not directly be an exergame. They found that the most persuasive feature was the ability to fill the pokédex and catch new Pokémon while only 12.73% of users play Pokémon GO for the exercise it promotes. So, while Pokémon GO is not an exergame and a minority of the players play it for the exercise, it has a big positive impact and a strong ability to motivate players to move. In other words, the reason a game affects its users is not necessarily consistent and the results may vary. While it could be said that all influence through game mechanics has some resulting change in the user, these effects do not have to be ethically right or wrong. Features like achievements can be mostly neutral, especially if they come naturally with the gameplay. Issues arise if features like this are used as an attempt to, for example, increase unhealthy habits by artificially forcing the player to stay online.

It might be difficult to control a game's influence on the player. While the developer can decide how the game mechanics work and how the game looks, it cannot realistically decide how users influence each other. As discussed before, social persuasion has a lot of influence on the user in the case of MMO games. Chang et al. (2008) note that with online anonymity, anyone can get into groups they would normally not be able to, due being able to provide any information they desire. They continue that opinions are formed based on skill, not gender or age. This can bring uncertainty in social interactions and their effects. It is possible that someone is role-playing as someone else in the game, while others try to be themselves. In the MMO genre it is essential that the system facilitates social interaction and with player-to-player interaction persuasive experiences differ for each user. The fact that the community might incentivize unhealthy behaviours as implied by Sirola et al. (2020) in gaming is all the more worrying due to this and should be studied in the future.

The other important persuasive features that are not necessarily social aspects, but that could be used in unethical ways are reduction, self-monitoring, reminders, verifiability and liking. For example, reduction is used when splitting tasks like quests into parts, but this can also be a way to obscure the time required to complete a task. On the other hand, if the company knows about the importance of self-monitoring for self-control and better habits, it can be purposefully omitted or limited. Games can use reminders to keep reminding players about microtransaction (MTX) features, which works especially well with time limited events to create a sense of urgency. As mentioned by Klemm and Pieters (2017) verifiability and transparency are very important, yet it could be possible that a company provides incomplete data about rates, for example, only giving it for certain

features, making themselves seem more trustworthy while hiding some information. Many games tend to use beautiful visuals and appealing sounds for gambling mechanisms, which is misusing the liking principle.

Although so far the issues have been discussed, it is important to realize that persuasive features are inherently supposed to have positive influence as long as all the correct measures are followed. The PSD model does not define the result one should get by using it and simply defines that what follows is persuasion and not coercion or deception. Although a game needs to have active players to have value and purpose, it does not mean that just playing a game is unhealthy. When done in moderation games can be healthy hobbies that help moderate the stress everyday life and in the best-case scenario, they can have lasting positive influence on the player. For example, Yee (2006a) found that games can be used to relax and escape from real-life stress.

Literature researching the ethical game development principles found in this paper in practice was not found at this time, which might mean that it is worth considering if they are realistically possible. Some of them would not realistically fit in games or they would obstruct the gameplay. For example, limiting purchasing without the player's consent, as proposed by King and Delfabbro (2018), could mean that players feel left out of content when they do not have time to play it. It would create disparities between people who use their spending limit on different products.

It is important that users learn about the different ways of persuasion and other influence in games. This would raise awareness about predatory practices and potentially help with problematic usage. If a big portion of the community had awareness about these things, it could be possible that the community could also affect the direction of games more by showing their opinion clearly. On the other hand, companies should also consider more ethical ways during development where possible instead of aiming for profits by unethical means. Even if the laws regarding unethical game mechanics are currently missing, companies could act by their own volition to improve the industry and to benefit the society.

The gaming industry is ever evolving and along with it the MMO game genre. The main difference that could be drawn from this paper's sources as time has passed between the different research is that games tend to use predatory monetization a lot more than before. Recent studies such as the ones conducted by Sirola et al. (2020), Koeder and Tanaka (2018), King and Delfabbro (2020) as well as Stanev (2020) clearly show a trend relating to topics such as predatory monetization, loot boxes and gambling-like mechanisms. On the contrary slightly older studies such as the ones conducted by Wang and Sun (2011) and Silva Neto et al. (2011) mainly focus on social constructs and their effects. The even older studies conducted by Yee (2006a) and Dickey (2007) focus on the motivations why someone might play a game. This is not to say that these studies do not all contain similar topics in the end, but there is a clear shift in the main focus of these studies from slightly different gaming eras. There are also unchanging topics such as the clear spotlight on social aspects and certain long established MMO features that tend to stay the consistent between studies.

It can be said that the most relevant postulates (Oinas-Kukkonen & Harjumaa, 2009) mentioned in the background section are clearly visible. Everything affects the user or player somehow, hence information technology is never neutral. Games can use both direct and indirect methods of persuasion and as these are the main ways of game

persuasion, they are key. On the ethical side all of the found research that analysed ethical influence agreed that persuasion should be open and also unobtrusive.

6. Conclusion

A systematic literature review would be useful for future research, instead of a hybrid solution like presented in this paper. I believe that the findings in this research are relevant and that the research questions were answered. For RQ1, “How do MMO games persuade the player?”, the main answers are through social aspects and for playtime and monetization through in-game mechanics. These two answers can be more closely analysed and fitted into all of the PSD models persuasive principle categories. Gamers also have intrinsic motivations to be persuaded to play a game, which also often relates to the social aspects. As for RQ2, “What effects does the persuasion have on the player?”, the persuasion can cause issues, especially in money usage or health habits (Yee, 2006b; Sirola et al., 2020). On the other hand, games can also increase healthy habits (Meschtscherjakov et al., 2017) and give social support to lonely individuals. Games and especially MMO games are extremely complex, but important tools in persuading people. These virtual social environments follow very similar constructs as the real world, for example, Silva Neto et al. (2011) found that human societies respect the reciprocity principle and expect others to return the favour or suffer negative consequences, which is also true in the virtual world according to their findings. Due to the popularity of the MMO games it is important to keep researching them in the future.

As could be expected from online games, social persuasion and dialogue support were the most common themes between the found literature. The importance of social interaction cannot be understated when discussing the MMO genre. Social persuasive principles have a lot of persuasive influence, yet the gaming community tends to incentivize problematic money usage (Sirola et al., 2020). An important aspect in online games is the option of online anonymity as Chang et al. (2008) found. On the other hand, the base mechanics of these games revolve around different reward related systems.

There are some limitations and weaknesses in this literature review. It was not a systematic literature review which means that the literature was not searched for or researched as extensively as it could have been. Another issue is that the PSD model focuses on persuasion instead of negative forms of influence. There were few papers that directly correlated persuasion or other forms of influence to in-game mechanics, which means there might be a lack of previous research for this exact topic. The research questions are quite broad and while this paper gives general insight into the issue at hand, more specific insight could also be gained about the scope of this literature review.

The ethics of game mechanics is still a grey area. Work is being done to improve the situation, but for now most games abuse mechanics to milk money out of their players. A lot of games revolve around some sort of consistent money-making system, for example, a subscription model or MTX. These are often also combined and MTX can include competitive advantages which fuels the issue further, as the research conducted by Sirola et al. (2020) showed. A lot of responsibility lies in the hands of the gaming company for how they want to persuade the user and what kind of effects they want to have on the user. It is basically fully up to the game developers how they want to treat their players and what they want to achieve with their game. While MTX and other features are not necessarily bad and persuasive features can be used for good or kept mostly ethically neutral, as of right now very little lies in the way of nefarious goals and unethical practices. However as seen in this paper, research that analysed the issues has been conducted and it offered possible solutions to keep the systems fair and ethical. As this

literature review included no research where the feasibility of these more ethical solutions was measured, it should be researched in the future.

This research can be used as a general overview of the topic and while not contributing new information to the field, it can work as a basis for future work. There could be multiple future avenues to research in this area of research. A standalone framework that fully combines the good and the bad of game mechanics as well as how they can be used to influence the player could be developed for analysing games. Other existing frameworks could also be combined with the PSD model to better support research of this topic. It is a possibility to research this same topic in the future due to the laws beginning to change around the moment of this research.

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Appendix A. Overview of research

Source	Purpose of the study	Research methods	Theoretical background	Findings	Implications	Future research
Chang, K., T., Koh, A., T., Low, B., Y., Onghanseng, D., J., S., Tanoto, K., Thuong, T., S., T. (2008)	What factors affect game loyalty	Literature review, survey, structural models and data analysis	Social identity theory, theory of reasoned action	Reputation, cohesion, emotions important for loyalty	Better understanding of gamers for companies. Ability to develop better game designs.	Test the underlying characteristics of loyalty
Dickey, M. D. (2006)	Analyse what information MMORPG games can give for interactive learning and game-based learning	Literature review, analysing game elements	Previous studies on intrinsic motivation	Intrinsic motivation is fostered by choice, control, collaboration, challenge and achievements	MMORPG game design may provide a model for interactive learning environments	Continue to explore and annex game design to support learning
Johnston, H., & Whitehead, A. (2011)	Present a framework that combines persuasive technology and MMO games	Empirical study	-	Framework works, but needs refinement	Feedback is an important strategy for training	Implement and test the framework in an MMOE, refine the system, study long term effects
King, D. L., & Delfabbro, P. H. (2018)	Explore social responsibility measures for monetized games	Literature review	-	Blueprint for ethical game monetization	Gambling frameworks could be adapted to online gaming	Further research about monetization ethics
Klemm, C., & Pieters, W. (2017)	Offer better game design solutions and analyse how game mechanics cause problem usage	Literature review, ethical analysis	Technological mediation, choice architecture, behavioural game design	Problematic usage can be affected by game mechanics	Better game design	-
Koeder, M., & Tanaka, E. (2017)	Conceptualize “Gacha”, analyse differences between western and Japanese game regulations	Observe mobile games, examine regional regulations, literature review	-	The west is behind in gambling regulatory laws and consumer protection	West could follow Japanese regulations	Analyse the effects of Gacha, look at regulation impacts on game revenue, study consumer protection
Legner, L., Eghtebas, C., & Klinker, G. (2019)	Analyse mobile games’ persuasive	Test mobile games	Behavioural economics, behavioural psychology	Base game mechanics connected to	Accessibility to persuasive mechanisms	Explore user attitudes towards persuasive mechanisms,

	mechanism for user retention			psychological theory	for future games	investigate why players enjoy games, study the effects of persuasive mechanism on singular users
Lewis, B., & Porter, L. (2010)	Investigate player perceptions of advertising	Survey, literature review	Schema theory	Congruent advertising increases awareness and positive response, while incongruent lessens both	Fitting advertisement increases success	Study and compare advertisement effects between different media
Meschtscherjakov, A., Trösterer, S., Lupp, A., & Tscheligi, M. (2017)	Investigate if Pokémon GO persuades to move more and with which game elements	Survey, literature review	-	Pokémon GO persuades users to move	-	Investigate long-term persuasive effects of Pokémon GO
Murimi, R., Ellis, V., Turnage, N., Vick, H., Crosby, G. (2017)	Understand game design through psychological theories	Analyse different games	Behavioural theories	The way persuasion is incorporated matters	Persuasion must be balanced carefully	Investigate if game popularity is increasing due to their persuasion. Investigate if incorporating games into scientific research increases research quality. Investigate if persuasion in game-like environments is more efficient
Oinas-Kukkonen, H., & Harjumaa, M. (2008)	Apply theories from social psychology to build a framework for information system-based persuasion	Previous research	Attitude change theories	Issues related to persuasiveness of information systems	Basis for enhancing and designing systems	Improve conceptual framework and experiment
Oinas-Kukkonen, H., & Harjumaa, M. (2009)	Discuss the development and evaluation of persuasive systems and describe these as software	Analysing other research, previous empirical work and conceptual analysis	Previous literature on persuasive technology	The PSD framework	Persuasion principles for software qualities	Research the framework's applicability in real-life situations

	functionality and content					
Sanders B., G., Downland, P., S., Furnell, S., M. (2010)	Investigate MMORPG addiction	Survey, case study	Theory of hyper-personal interaction, theory of 'attachment style'	Results support theories. MMORPG games give some players a feeling of purpose and meaning, but addiction is an increasing issue	Theory of increased vulnerability	-
Silva Neto, H. C., De Carvalho, L. F. B. S., Paraguaçu, F., & Lopes, R. V. V. (2011)	Build a decision-making model	Petri Net	Game theory, theory of persuasion	The theory of persuasion can be applied into decision making to change interaction	Decision making model	Further research of topic
Sirola, A., Savela, N., Savolainen, I., Kaakinen, M., & Oksanen, A. (2020)	Summarise existing research on online gambling and monetary gaming	Systematic literature review	-	Quantitative information about the topic's literature and summary of the contents	-	-
Stanev, E. (2020)	Categorize and summarize monetization business models and analyse their advantages and disadvantages	-	-	Smaller game developers will need to move to more user-friendly monetization methods	Basis for selecting monetization models	-
Wang, H., Sun, C. (2011)	Overview of how positive experiences are created by game reward systems and classify reward characteristics and rewards	-	Flow theory, self-determination theory	Reward systems motivate in many ways, they can have lasting effects even in real life	How game reward systems motivate and provide experiences. Reward system design considerations	-
Yee, N. (2006a)	Provide an empirical model of player motivation using factor analysis	Questionnaire, data analysis	-	Found three main motivational components: achievement, social and immersion.	Empirical model for future quantitative research basis	-
Yee, N. (2006b)	Discuss motivation,	Survey, quantitative	-	Virtual environments	MMORPGs can be used	-

	skill transfer, role exploration, relationship formation and problematic usage in MMORPGs	and qualitative data analysis, literature review		affect relationship formation, motivations and can cause problematic usage. The line between play and work is blurred in MMORPGs	for social science research	
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