Abstract

This study employed a Uses and Gratifications (U&G) theoretical framework (MAIN model) to investigate the effects of virtual items in free-to-play (F2P) games on players' satisfaction. Additionally, this study tried to investigate extra satisfaction that players get in the process of consuming virtual items. A mixed-method survey in China with a sample size of 265 participants was utilized to test the research questions. The findings of the study revealed significant variations in satisfaction related to personalization and sociality level between free players and paying players, and the degree was positively correlated with the in-game spending level. In addition, one satisfaction not included in prior research on video games—superiority—was found through qualitative data analysis.

Keywords: Virtual items, free-to-play, purchase, Uses and gratifications (U&G)

Carrying forward Uses and Grat 2.0: A study of new gratifications for F2P games based on *APEX Legends*

by

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Chapter1: Introduction

The rapid growth of the video game market and culture has become an important part of current popular culture, and games' operation and profitability models are constantly changing and evolving. "Free-to-play"(F2P) video games have become the dominant model in the market in recent years, the free-to-play game market generated an estimated 101.5 billion U.S. dollars worldwide in 2021 by selling virtual items and extra in-game services (Clement, 2022). The pay-to-play model, also called the "premium game" model, means that players have to pay money before they can enjoy game content (a traditional model of gaming since at least the 1970s). By contrast, F2P games guarantee that players can experience game content free of charge, and not forced to pay real money. However, in many seemingly F2P games, content such as loot boxes, skins, and accessories, providing cosmetic differentiation for players—and often times, this content requires players to pay a premium to access.

Although there have been free and "shareware" versions of games for much of the medium's history, F2P models first appeared around the 2000s with the subsequent emergence of browser and casual games. Yet, the design and marketing objectives of F2P games changed dramatically since the 2010s (Bycer, 2023) . For example, Battle Pass is a mechanism where players can continue to play the game by paying a small amount of money and can continue to get rewards. In 2013, Valve Corporation introduced the Battle Pass for *Dota2*, a massive online battle arena (MOBA) that would raise part of the money for the game's international tournament (Joseph, 2021). Nowadays, the battle pass has been regarded as an indispensable and important part of F2P games, not only reminding players of the updated content of the game and motivating

the audience to play, but also an important profit sector for game companies.

Non-functional items

Prior literature has explicitly explored the antecedents of purchase behaviors in free-to-play games (Wang, et al., 2022; Hamari, 2015; Marder et al., 2019). Functional items have a clear reason for consumption: pay-to-win, but with the current market development, game fairness has become a major feature to attract players. Game developers have centered their interests on non-functional items. Considering the difference between the two types of items, it is necessary to discuss and study non-functional items separately. As decorative virtual items, they can only change the appearance of characters and weapons and thus they do not affect the player's in-game performance. Yet, they continue to attract players to spend real money to buy them. Some scholars have already studied the motivation of buying these items (Joseph, 2021; Jarrett, 2021; Hamari & Keronen, 2017; Lassila, 2022), but what satisfaction do players gain after obtaining the items? Does it change the original perception of the game, how does such behavior drive peer consumption, and is the formation of subcultural groups influenced by this process? This is the direction of concern in this study.

APEX Legends

APEX legends (subsequently referred to as *APEX*) is a battle royale type game released in 2019. It is a big budget, high fidelity, multiplayer and squad-based first-person shooter (FPS) set in the 'Titanfall' universe, an IP owned by *Electronic Arts* and associated with two prior games developed by Respawn: the science fiction FPS' *Titanfall (2014)* and *Titanfall 2 (2016)*. As a very popular F2P game in recent years, the mobile version has been released in 2022, supporting both console and smartphone platforms, and has become the most popular game on the Steam

game platform in 2023. The various paid elements of F2P games described above are included in this game, with the constantly updated virtual goods and the random loot box being the company's main revenues. For example, a unique heirloom (a special weapon for each selectable heroes) is added to the game, attracting players to pay for lotteries. In the context of high-tech background battles, all weapons in the map are randomly generated. Moreover, players can choose personalized skins for characters and weapons in the lobby before gameplay, but as cosmetic-only content, these skins do not change the performance of the characters and weapons at all.

APEX is currently one of the most popular F2P games with a peak of 600,000 concurrent players online (Clement, 2023). *APEX* offers various control options, allowing players to operate the game using a computer mouse, keyboard, or the game console. Furthermore, the game incorporates an in-built squad voice function, enabling real-time communication between players using external voice equipment, such as headsets and microphones. Unlike being limited by the friend function, *APEX* allows anyone randomly assigned to the same squad through the system to communicate in real-time. Unlike some games that enable players to trade their virtual items through a secondary market, *APEX* does not have such a function. As a result, players are limited to selling their accounts with their personal collection of items if they wish to transfer ownership. And it is available on PC, PlayStation, Xbox, Switch, and smartphone platforms simultaneously. Therefore, this study will explore existing and potentially new gratifications F2P games have inspired in the audience based on *APEX* and its player base.

Media affordances and MAIN model

In the field of communication and technology research, there exists a degree of ambiguity and inconsistency in defining affordances. While scholars have proposed criteria which include factors such as non-object or feature, non-outcome, and non-binary, the precise understanding of affordances remains an ongoing discourse (Evans et al., 2016). This work primarily builds upon the work of Sundar (2009), who proposed four affordances of new media (modality, agency, interactivity, and navigability) that comprise the MAIN model, along with numerous gratifications from these affordances (see Sundar & Limperos, 2013). Notably, the assessment criteria for affordances do not constitute the main focus of discussion in this research.

From the perspective of this study, the current video game market is still pushing forward, whether it is the technology, platform, or even the means to attract players' consumption are constantly changing, for example, the previously very famous *Pokémon Go (2016)* relies on Augmented Reality (AR) technology, which allows digital information and images to be displayed onto physical environment (Hayes, 2023), being presented on users' smartphones to achieve new ways of playing. According to Sundar's point of view, different platforms and media have different affordances, bringing different feelings to players and generating different gratifications. For example, from the perspective of agency-based gratification in the MAIN model, i.e., part of the massively multiplayer online games' player generate satisfaction from the game provider and the corresponding subcultural group (Molyneux et al., 2015). The other two dimensions of interactivity and navigability also correspond to the interface experience, game servers, and the multi-level nature of the media content, which will be explained in detail in the literature review. According to the current state of research, most of the studies focusing on U&G theory and video games are still based on user-orientation measures, analyzing players'

motivation and corresponding gratifications from social and psychological levels.

The MAIN model focuses on the technology and platform level and uses four affordances to analyze the new satisfaction generated through using emerging technologies. In the decades since the emergence of video games, with the development of technology, new forms, new ways of playing and new consumption patterns have been introduced, and players' satisfaction has changed, which we need to analyze from different perspectives. Therefore, using MAIN model to analyze the satisfaction of F2P players after obtaining non-functional items can have more reference value for the subsequent understanding of free-to-play game and player groups.

This study will examine how players who have consumed virtual items and free players perceive the game differently and whether the satisfaction gained is different from the open-ended survey, analyzed from the perspective of technology and game platform. What is the new satisfaction of players who have consumed in-game, and the correlation with the amount of consumption.

Conclusion

This chapter has explained the study's purpose, rationale, and significance. Chapter 2 will introduce previous studies of free-to-play games, uses and gratifications theory, and based on the literature review, the research questions will be posted. The third chapter will present the methodology of this thesis, which includes the study procedure, sample, measures, the role of the researcher, and data analysis.

Chapter 2: Literature Review

This chapter will provide an overall review of the important elements covered in this study, including how free-to-play video games(F2P) work, Uses and Gratifications, and U&G 2.0, the MAIN model. Based on a review of existing theories and studies, the research questions for this thesis will be proposed.

Free-to-Play Video Games and in-game consumption

Free-to-play (F2P) has become an increasingly popular model for the video games industry. These games guarantee that players can play most of the game content without spending money. However, they also contain some virtual items that can be purchased with real money. F2P games have become the game model with the highest proportion of revenue in the current game industry (accounting for 76% of the total in 2017) ("Games industry generated $108.4 billion in revenues in 2017", 2022). Therefore, the income model of F2P games has received a lot of attention from scholars. For example, Joseph (2021) analyzed battle passes in F2Ps, arguing that they can be seen as a new form of capital accumulation. Jarrett (2021) argued that such systems can be seen as hybrid economic models in which players and operators mutually influence each other and permeate the entire gaming industry. A meta-analysis of players' consumption of virtual modalities shows that users' motivation to consume virtual goods is related to their own attitudes and distinguishes the difference between users' consumption in the virtual world and games. Enjoyment and platform loyalty are recognized as having a more significant impact on users' motivation to make purchases within the virtual world compared to within games (Hamari & Keronen, 2017).

In addition, the 'gamblification' of play is another important element. For example, the

loot box contains a bunch of virtual items in the game, and it can be obtained by playing the game or actively purchasing. After opening it, players can obtain virtual items of different qualities randomly (for example, orange is legendary, purple is epic, blue is rare, and white is common). *League of Legends (2009)*, a world-famous free MOBA game, originally marked the price of accessories or skins in the mall, and players could buy them directly. However, with the emergence of the loot box mode, some virtual items cannot be obtained through direct purchase, especially some extremely rare items. So, if players want to get certain items, they have to buy more loot boxes to increase the possibility of getting rare items, but this possibility is completely random. As a result, "gambling" behavior appears in the game, such as *Counter-Strike: Global Offensive (2012)*, and *APEX Legends (2019)*. Although it is a F2P game, players can spend unlimited money to draw loot boxes, and such models have formed a mature secondary market.

The F2P model emerged for profit, some game industry practitioners believe that the F2P model is a business model full of development prospects, but players may be dissatisfied (Alha et al., 2014). In addition, some scholars subdivide the props in F2P games into two categories: functional and non-functional (Marder et al., 2019). The "pay-to-win" mode and functional items in the original F2P game were more popular, but it was criticized by players, this is since players believe that this breaks the fairness of the game and makes it difficult for new players to integrate into the original game environment. Subsequent non-functional and decorative items have gradually become the main virtual items consumed by players. The behavior of real money consumption by players in F2P games has gradually become the focus of scholars. This includes a specific analysis of the player's consumption psychology, consumption motivation (Wang, Luo & Li, 2022; Hamari, 2015), and how the functionality of the game's virtual items will affect the player (Marder et al., 2019). Some research results show that players' consumption behavior is

regulated by factors such as enjoyment, social connection, and the attractiveness of virtual platforms (Hamari & Keronen, 2017; Lassila, 2022).

The basic information about *APEX* has been mentioned in Chapter 1, as a free-to-play game players can download the game through the client and play immediately, while all items can be bought in real money in the store will not affect the fairness of the game, only change the appearance of the avatar and guns. Regarding the operation model of *APEX*, the main benefit is gained by players topping up real money in exchange for a relative amount of *APEX* Coin. For example in the game store, players can spend between $10 to $99 to purchase in-game credits—for $99, players can get 11,500 *APEX* coins (as of this writing). Legendary skins costs 2,500 *APEX* coins (about $21 each), and loot boxes sell for 100 *APEX* coins (about $0.80 each, all as of this writing). The game content is updated regularly according to the season, and each season lasts 70-80 days on average. The style, colors, and interface within the game will be changed according to the theme of each season update, and there will be additional opening animations and short films for the introduction. Each season's battle pass will also be changed and new bonus content will be offered to attract players to recharge.

In addition, unlike other games with fixed content in the store, *APEX* regularly launches limited-time themed events to match special holidays (Christmas, Halloween, Valentine's Day, etc.) to sell special items, which can only be purchased during the event and never appear in the store again afterward. Such a marketing model also stimulates players' desire to spend to a certain extent, but the frequency of similar events launched by *APEX* has been increasing in the past two years, which has also been criticized by the player community. With such a marketing model, *APEX* has made more than 2 billion dollars in profits by May 2022 (Barker, 2022). As the basis for this study, all the items in *APEX* are non-functional items, but there are still a large

number of players who buy them and each one buys them based on their personal preference. In such a case, each player's personal interface is different, while the more in-game items a player purchases, the more personalized they can be, so does each person's perception of the game also have such a correlation?

This study will analyze the satisfaction generated by *APEX* players based on the MAIN model which divides the medium into four different affordances and corresponds to multiple potential satisfactions. Considering that non-functional items only affect the degree of personalization of *APEX* players and match solely the agency level in the model, players may differ only for the satisfaction contained in the agency, with homogeneity in the remaining affordances.

Uses and Gratifications Theory

Overview of Uses and Gratifications Theory

The use and satisfaction theory states that the audience members and their needs, actively selects media to satisfy their own particular needs after media exposure is able to be satisfied. Thus, audiences are thought to be motivated by the need to gain satisfaction again when they continue to choose the medium. Scholars conducting preliminary studies of the theory have generally concluded that the audience occupies an active position in the media-person relationship and that the need to choose media is influenced by social and psychological dimensions. (McQuail et al., 1972)

Uses and Gratifications Theory in video games

In recent years, video games have grown rapidly, with new platforms and formats being introduced, Yee concluded that the three main variables of achievement, social, and immersion provide players with the motivation to play, where immersion is similar to the psychological factors mentioned above (Yee, 2006; Sherry et al., 2006). From the perspective of U&G theory, in addition to the existing socio-psychological factors, variables related to game content are also found as players' motivation to play. This also reflects that the interactivity of video games (human-computer interaction, human-human interaction) is one of the important factors to attract players.

The motivation of video game players remains a topic of interest among scholars. Scholars have employed qualitative research methods to analyze data and establish a measurement scale consisting of six dimensions: arousal, challenge, competition, diversion, fantasy, and social interaction. This scale was then utilized to predict players' playing time in combination with the framework of Uses and Gratifications (U&G) theory (Sherry et al., 2012). The measurement dimensions primarily focus on game content and social-psychological factors, and the associated satisfaction is derived from players' subjective experiences and perceptions.

Yee (2006) conducted a comprehensive categorization of play motivations, employing a more systematic approach. The motivations were grouped into three main components: achievement, social, and immersion. These components encompassed a total of 10 items. Notably, there was no correlation between the three components, which means that players may be driven by multiple motivations concurrently. As subsequent research was conducted, the previous categorization, based on the results of a study with over 450,000 players, was recalibrated and refined as a more sophisticated model with 12 motivations, 6 pairs, and 3

clusters. Significantly, these motivations were found to exhibit correlations with the players' individual personality traits (Yee, 2020)

Furthermore, additional findings are presented, including the examination of player age and gender as independent variables, which warrant further investigation regarding their impact on play motivation and satisfaction. Moreover, it is acknowledged that there may be contradictions among players' motivations, as these motivations cannot coexist simultaneously to enhance players' satisfaction with the game and may even have adverse effects. Additionally, the specificity of the Chinese player population is suggested, highlighting distinctions compared to American players. Chinese players are characterized as more competitive and homogeneous, with play motivation being less influenced by age and gender (Yee, 2021). This underscores the importance of studying and analyzing differences among gamers in different regions, including their motivations to play and the corresponding levels of satisfaction.

As mentioned above, the older player population in video games cannot be ignored and need to be given more attention. Scholars have used interviews to understand the motivations of older people to play video games, and the results show that players use games to satisfy different needs after perceiving need satisfaction, and the range of such motivations is very broad but has a strong connection with players' own psychosocial backgrounds (De Schutter & Malliet, 2014).

Uses and Grats 2.0 and MAIN model

As mentioned above, there are many studies that follow the traditional U&G theory to analyze which social and psychological gratifications are generated by audiences for different media platforms currently. Previously, Rubin (2009) divided the gratification generated by media

exposure into two categories: process-gratification and content-gratification, with the former describing the satisfaction and even other feelings that audiences get when they choose a particular medium and interact with it. The latter describes a sense of satisfaction that comes from the audience's pre-possession of satisfaction, a need that is satisfied when specific content is received through the medium. As the current media environment continues to emerge with new media, which also brings greater interactivity, new media are also given newer functionalities, which change both process and content gratifications (Sundar & Limperos, 2013).

Lichtenstein and Rosenfeld (1983) conducted a study revealing that there is no discernible variance in the perceived special gratifications among different medium. Moreover, it was found that the same unique satisfactions can be attained across diverse media usages. Additionally, each medium demonstrates imagery that is inherently associated with its functional characteristics, irrespective of individual utilization patterns and attitudes. As a result, there are nuances in audience responses to different media. In the context of the proliferation of interactive media, users are interacting with media in ever innovative ways, and more satisfaction derived from the technology of media interaction needs to be measured. Sundar and Limperos (2013) proposed that the portability and immediacy of new media as new sources of satisfaction for users reflect some hitherto unfulfilled latent needs, and the realization can be driven by new technological mediums. They argue that new media contain different affordances to inspire users to generate satisfaction. Based on the MAIN model proposed by Sundar (2009), there are four classes of technological affordances in digital media: modality, agency, interactivity, and navigability. The model proposes that these affordances provide cues to media users that can elicit cognitive heuristics (mental shortcuts) about characteristics of the content that they

consume. Based on this, Sundar and Limperos (2013) propose the possibility that the affordances of new media will lead users to expect certain gratifications and therefore shape their new satisfaction in using these media.

Modality Level

The modality of media refers to the form in which a medium presents its content so that the audience can receive and decode it through various physical perceptions. This is the fundamental component of the medium, in the form of photography, video, text, sound. Each technology brings with it a set of affordances or capabilities that can shape the nature of content in a given medium (Sundar, 2008). Different media are presented in a fixed modality, and users use different perceptions to access the information and therefore create different perceptions. As technology continues to innovate, media can combine multiple formats to attract the attention of audiences. For example, in the web 1.0 era, the Internet was designed for better information discovery and was considered "read-only", with pop-ups and web animations on the Internet could attract the audience's attention, but also generate dissatisfaction with it simultaneously (Diao & Sundar, 2004; Terra, 2023). Even in the current web 3.0 context, audiences are given the ability to create and share information, and this information can be searched through use of "big data" matching. Such forms are still relevant in web pages, and dynamic changes in static pages are one of the means to attract users and illustrate important information. However, frequent pop-ups may also lead to desensitization of the audience. In the original MAIN model, there are four possible items suggested by Sundar and Limperos (2013), which contain realism (e.g., unique, distinctive), coolness (e.g., stylish), novelty (e.g., new, innovative, unusual), and being there (e.g., like real life), based on four variables to measure whether the technical form of new media

is sufficiently engaging to users. In addition, one study provides a refined analysis of coolness, combining the results of three independent surveys to provide a clear definition of 'coolness', while not being influenced by different cultural backgrounds. Also, coolness can be used as a relatively short phase to initially engage the audience, after which users may lose interest (Sundar et al., 2014).

Applying the MAIN model to the video game industry, *Pokémon Go* has become popular in the global market in recent years, based on augmented reality (AR) technology, which enables players to capture different Pokémon in realistic environments using their smartphones. Studies has shown that players play Pokémon Go to fulfill their curiosity, and motivation to play includes coolness and novelty. This satisfaction comes from the motion sensors in mobile devices as well as the augmented reality and GPS to ensure that reality and the virtual world are linked, and the player's physical activity in the real world can affect the actions of the avatar, while the data can also record the player's action trajectory in real life as well as the amount of movement. These forms of presentation break the barrier between the game and the real world and allow former players to fulfill a childhood wish: to get a Pokémon in the real world. (Vaterlaus et al., 2018; Malik et al., 2019). In addition, another part of the gratifications of the players is generated from social and psychological aspects (including social interaction, enjoyment, coolness). Another study analyzed the players of this game based on a composite framework and showed that the players generated new gratifications while playing the AR game and corresponded to the novelty item.

Moreover, regarding the in-game consumption behavior, the researchers found that the players' consumption motivations were influenced by the in-game graphics rather than the players' subjective feelings (Rauschnabel et al., 2017). As a reference, this study addresses the

in-game consumption behavior of F2P players as well as the technical level of satisfaction. From the modality dimension analysis, *APEX* reveals a uniform game content experience for all players. The game content itself remains unchanged, encompassing elements such as the game background, images, art style, and music, which are predetermined by the game publisher. These unchangeable factors serve as prerequisites to attract players and ensure initial engagement.

Agency Level

In the original MAIN model, the agency was defined as the ability of users to take the initiative in selecting information, so that each user would acquire and produce different information, which can be understood as a kind of individualization. This not only can shape the personalized content of each user, but also can produce commonality in personalization. Also, due to the presence of professional gatekeepers, some content may be received by only some users, which leads to the creation of sub-cultural communities (Sundar & Limperos, 2013). This includes several variables such as agency-enhancement, community building, bandwagon, flirting, and ownness to measure whether users' satisfaction is agency-based.

Analyzed from the perspective of video games, the agency level gives additional functions to video games: (a) making players the source of producing game content, both individually and collectively, e.g., *Super Mario Maker1\2*, *Minecraft*, etc., where players produce game content for themselves and all players to play. Game makers provide more room for players to recreate and ensure that all resources of game content can be called, and players create personalized content through their own filtering, including making new maps, new characters, and new game modes. For instance, the MOBA game mode (*DOTA, League of Legends*) originated from a player-made map in *Warcraft III: The Frozen Throne*. This content can be

uploaded to the server for sharing, so that each player can get more game content, and in this process, a new player community is formed.

(b) The option to receive different content from game manufacturers and servers. Based on the analysis of *APEX* Legends, which is the focus of this study, additional legends of the game need to be earned by playing the game continuously. Different legends have different skins, and the store is regularly updated with new content to attract players to purchase. The main interface of *APEX* contains five items: play, legends, loadout, battle pass, and store. Three of these contain purchasable content, and more traffic also means more possibilities for purchase (Joseph, 2021). In addition to this, the heirloom mechanism requires players to spend a certain amount of money or obtain it for free through an extremely low probability. However, these items are non-functional items, which players obtain only as decoration, changing the appearance of the character or weapon, and do not affect the fairness of the game at all. Therefore, the player's in-game spending behavior can be understood as a two-way gate-keeping —— the game company or server controls how much information the player should receive about the game in the first place, and then the audience can choose whether to get more information by spending real money. This also ensures that the content of each player's account is completely different, and therefore each audience has different gratifications due to their agency level.

In this study concerning *APEX* Legends, all paid content is non-functional items, so will these virtual contents change the player's perception towards the agency of the game? Do players with rare items have a sense of group affiliation as a result? Does such behavior affect or drive free players' consumption? At present, the revenue of F2P games far exceeds that of paid games. The attractiveness of such decorative items to players and the extent to which different players perceive the agency of game are the main directions of this study.

Interactivity Level

Interactivity in the MAIN model refers to the ability of users to change and interact with media content in real-time and receive immediate feedback. The original items include interaction, activity, responsiveness, and dynamic control to measure the interactivity of emergency digital media. These items were designed to be more based on the interactive aspect of web pages, such as the previous web 2.0 context where information on the Internet was available to users during interaction with consumers (Sundar & Limperos, 2013). But as new technologies and forms are now being used in media, the interactivity of media is more similar to the modality level, as the basic presentation of the medium is used to attract users. Studies focusing on virtual fashion social platforms have shown that augmented reality technologies are the basis for ensuring that users are attracted to them, and that based on these technologies, audiences are able to dress their avatars and experience fashion in the virtual world (Park & Chun, 2023).

Video live streaming has also followed the development of the gaming market to a more mature stage, where viewers are now able to interact with the hosts in multiple ways than before when they could only watch live streams. Some studies have shown that some users can gain intangible rewards from watching others play games, which may motivate continued viewing (Kim & Kim, 2022). Analyzed from the video game itself, interactivity is its most basic function, and it is the audience's ability to actively interact with the characters that makes video games different from other media. Rathnayake & Winter (2018) did not retain dynamic control when they continued the MAIN model for social media research. The reason is that there is a certain lag in feedback among social media, for example, relevant tweets often take hours or even days to get feedback from other users in the community, and it is also difficult for users to control the

scope and effect of communication during this process, etc.

However, dynamic control should be considered as an important variable to measure players' satisfaction in video game studies. This is because the real-time judgment and control of the player can influence the outcome of the game, whether it is a single-player game or an online multiplayer game. Based on *APEX* and the technical aspects of this study, real-time feedback in online games often depends on the quality of signal transmission from the game platform and servers. Efficient feedback and freedom of control over avatars are fundamental and necessary for players, but lag and low interaction can lead to players quitting a game once and for all. From the perspective of in-game consumption, how much players spend does not affect the interactivity and real-time feedback of the game itself either. In addition to this, Sundar (2013) criticizes that media having too much interactivity may reduce the satisfaction of users.

Navigability Level

Within the MAIN model, the concept of navigability captures the user's intuition and process of using media, playing a significant role in shaping user satisfaction. Navigability refers to the ease and effectiveness with which individuals can navigate through the media interface. The initially proposed items include browsing and play, with the browsing dimension focusing on the user's overall experience of the medium, such as access to information, personalized content, visual experience, efficiency of use, etc. The play dimension is used to measure whether the audience is more entertained during use. In response to the current new media being as diverse as it is, scholars have refined the satisfaction provided at that level to the internal elements of web pages such as in-app UI interfaces, payment prompts, and product displays, exploring whether these details affect users' motivation to consume as well as their satisfaction of

use (Sundar & Limperos, 2013; Rathnayake & Winter, 2018; Park & Lee, 2011).

Analyzed from a video game perspective, the findings show that players' motivation and satisfaction to consume virtual items within the game derive from the influence of the game content itself such as image, aesthetics, interactivity, and service use, while players' own enjoyment has less influence on purchase motivation (Marder et al., 2019; Hamari & Keronen, 2017; Rauschnabel et al., 2017). This also suggests that the interface of the game itself and the form of promotion have a greater influence on players' consumption behavior, which is one of the directions that this study focuses on.

In the case of *APEX* Legends, for example, the game's interface, scenarios, style, and color palette are changed regularly based on a different theme each season (70-80 days on average), and each season features a new opening animation and short film, regular rotation of merchandise in the store, and themed events (including Chinese New Year, Valentine's Day, Christmas, etc.) that are launched every 20 days basically. This content allows players to browse and preview specific items at any time when they stop playing. So each player needs to receive additional information from the moment they launch the game to a 60-player real-time match, and most of the information is designed to attract players for in-game consumption. The above content is the information provided by the game manufacturer, and players may be in passive reception during this process. Besides, the badges, accessories, and achievement mechanisms of the characters can actively engage players and encourage them to explore further. These elements serve as incentives for players to actively browse and participate in the game. It is important to note that while the player's progress in the game may unlock related achievements, the overall information system within the game remains constant.

Current study: Influence of non-functional F2P on Agency

Video games are inherently interactive, and some players are satisfied in the process of playing. Whether it is the "pay-to-win" or "free-to-play" model, there are additional contents that players can get by paying for them, and from this perspective, video games can provide two different kinds of satisfaction to the audience. Based on the discussion above, non-functional items in F2P games can only satisfy the player's need to personalize and change the appearance of a character or weapon. Based on the preceding discussion, it is evident that non-functional items in free-to-play (F2P) games primarily cater to players' desire for personalization and the ability to modify the appearance of their characters or weapons. The four affordances defined within the MAIN model—modality, interactivity, and navigability—remain constant and unaffected by player actions in the specific context of this study, which focuses on *APEX* Legends, a F2P game. However, the acquisition of non-functional items introduces the potential for altering the player's perception of agency.

At the personal level, non-functional items enhance player personalization, offering a wider range of choices and personalized services as the player's in-game consumption level increases, allowing them to express their individuality and preferences. There is also a deeper sense of identification with the game itself.

In addition, from the collective level analysis, including community building and bandwagon, players who have rare items and have spent a certain amount of money in the game will be more likely to have common topics and form a 'payer player' group in their own player community. The personalized behavior of each player that we mentioned above also allows them to present this content to other players. In addition, there may be free players who are influenced by bandwagon and are motivated by the fact that players around them are spending money and

getting items in the game. In such a process, the effectiveness of the agency of game is increasing. Numerous factors contribute to players identifying themselves as part of a gaming community, including time invested in the game, in-game achievements, and peer influence. However, from the perspective of this study, it is plausible that the level of in-game spending is also a factor influencing players' perception of their identity within the gaming community.

In summary, this study will investigate whether players perceive the agency of the game differently after spending real money to obtain non-functional items in free-to-play games based on the MAIN model, and what new satisfaction is generated through this process. Based on this, the research question of this study has been proposed:

RQ1: In free-to-play games, how does the payer player's perception of the agency of the game differ from that of the free player?

In addition, it is important to recognize that while this study primarily focused on the influence of in-game consumption on the perception of agency, it does not imply that players do not derive satisfaction from other affordances. It is crucial to recognize that players may experience satisfaction from multiple dimensions within the gaming experience. Moreover, considering the diverse nature of satisfaction, the original statement pool of the MAIN model included 54 items to measure users' potential satisfaction. And subsequent studies have continuously updated and expanded the model by incorporating new items to ensure its relevance and gain deeper understanding of the audiences' experiences (Rathnayake & Winter, 2018; Kim & Kim, 2022). Although not the central focus of this study, it is important to acknowledge that human satisfaction is complex and dynamic, influenced by various factors within the medium. Therefore, research in this field should adopt a broader perspective to explore additional potential gratifications that can enhance our understanding of player experiences and perceptions

Based on this, RQ 2 has been proposed:

RQ2: Are new gratifications generated by consuming non-functional virtual items?

Conclusion

This chapter reviews the development of the free-to-play game industry, both uses and gratifications theory, and U&G 2.0 as continued development. It explored the theoretical development process and current prominent studies in this context and inspired new investigation directions. These new directions, as well as dominant theoretical concepts, provide the rationale for this study's hypotheses and research questions. The next chapter will describe the methodology of the current study.

Chapter 3: Methodology

This chapter provides a general overview of the survey process and methodology, explains variables identified and summarized in previous research, and various details of the survey process. This study employs mixed-method research to investigate players' attitudes. The study uses close-ended survey to propose questions based on the MAIN model to analyze players' perceptions and attitudes toward *APEX*. In addition, open-ended questions are combined to explore whether different gratifications are generated between free and paying players and whether they perceive more new gratifications generated through in-game consumption. In addition to that, about the particularity of the sample. This study takes mainland Chinese *APEX* players as the target, but currently the game operator Electronic Arts (EA) does not have corresponding servers in mainland China, only Hong Kong servers built. Therefore, mainland players who want to play *APEX* need to pay extra money for vpn to play. This means that *APEX* has no localization services or advertising and other related promotional channels for mainland China. However, the current Chinese gamer communication platform BlackBox shows that the number of *APEX* Chinese players is more than 8 million (BlackBox, 2023). Therefore, the Chinese mainland players have certain peculiarities, but also a large group of players, to understand the views of some of them can also provide a certain reference value for the subsequent research of the F2P player group.

Procedure

This study will use a mixed-method survey to answer the proposed research questions. Before the survey started, all participants will be asked to read the consent form and check if they meet the criteria for this study. After completing the consent process, participants will be

asked to complete an online survey in Chinese language, with questions about perceptions of modality, agency, interactivity, and navigability of popular free-to-play video game (*APEX Legends*). Specifically, our study solicited Chinese-speaking video game players from the internet, asking them to discuss their most recent *APEX* experiences and in-game consumption. The scale was translated to Chinese and backtranslated to English for accuracy. The survey will last about 15 minutes. Survey questionnaires are presented in Appendix A (Original English version of MAIN) and B (Chinese version of MAIN, actually given to participants). At the end of the survey, participants will be directed to wjx.com to receive payment. All participants will be compensated with $3.75 (¥20).

Sampling and Recruitment

A total of 200 participants were recruited by sharing the questionnaire link on social media platforms WeChat and BlackBox. WeChat is currently the most used social media in China, there are some professional video game player communities, and the researcher asked for permission and then share the questionnaire. BlackBox is one of the more popular gamer applications in China, where players can get the news about video games and also communicate with other players. There are more than 8 million Chinese *APEX* players on BlackBox, and BlackBox forums have no community moderators. The researcher posted the Recruitment statement only on the *APEX* Legends community forums.

Participants who (a) speak Chinese, (b) are eighteen years old or older and (c) have played *APEX* Legends before. In addition, participants that meet the following criteria will be excluded: Participants who (a) do not speak Chinese, (b) are under 18 years old, and (c) have never played *APEX* Legends. Because the research attempted to measure the perception of *APEX*

Legends players toward the MAIN model (Sundar and Limperos, 2013), it is essential for the participants to have some experience about playing *APEX* Legends.

The survey was hosted by Wenjuanxing (wjx.com), a professional survey company in China, and this firm will also handle participant payments on our behalf.

Measurement

***APEX* Legends Experience**

Players' *APEX* gaming experience was measured by the total hours they spent in *APEX* and which platforms they play separately. Respondents answered two questions related to gaming experience: "How many hours have you been playing this game? ", and "Which platforms are you playing *APEX* Legends? ".

In-game consumption experience

Players were asked to answer the follow-up question by answering "Have you ever spent real money in the Chinese Yuan on *APEX* Legends?". If "yes," they were further prompted to disclose the amount of money they had spent, the reasons for doing so, and the number of hours they had played prior to making the purchase. These consumption-related questions were included in the survey: "If so, how much money have you spent till now?", "How many hours did you play before you spent real money in *APEX* Legends?", and "What motivated you for your first in-game consumption?" Conversely, if participants answered negatively, they would bypass the forementioned questions and proceed to the subsequent section.

MAIN Scale

The MAIN scale was utilized to assess the potential gratifications derived from new media based on the four affordances. To develop the suggested scale, the initial pool of items consisted of 57 items, 16 subscales and 4 affordances proposed by Sundar and Limperos (2013). These items did not explicitly target new technologies or media. Subsequently, in order to capture the potential gratifications specific to social media, the original 57 items were modified to align with the social media context. Additionally, 15 original items were added, resulting in a scale comprising 72 statements (Rathnayake & Winter, 2018). For the purpose of this study, a total of 12 items were selected from the original item pool, with three items chosen to measure each of the four affordances within the context of video games, particularly focusing on *APEX* Legends. It is essential to acknowledge that the data for the three items under each level were combined during the analysis of individual affordances in this study. The participants responded on a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree), resulting in a minimum score of 3 and a maximum score of 21 for each affordances response score. The neutral score for the three items was 12. The results (Table 1) demonstrate that the mean scores for participants' perceptions of the four affordances ranged from 16 to 18. The average ratings of 16 to 18 suggest that the participants held a slightly favorable view of the game's overall aspects, highlighting a generally positive reception among players.

Modality

The items chosen for modality include statements related to realism ($M = 4.46$, $SD = 1.87$), coolness ($M = 6.11$, $SD = 1.1$), and immersion ($M = 5.79$, $SD = 1.38$), such as "When I play *APEX* Legends, I feel like I am actually in the game world." (Cronbach's $\alpha = 0.62$)

Agency

For agency, the selected items from the initial pool focus on community building ($M =$ 6.18, $SD = 1.1$), bandwagon effect ($M = 5.37$, $SD = 1.57$), and ownership ($M = 5.84$, $SD = 1.28$), such as "I feel I am part of the *APEX* community." (Cronbach's $\alpha = 0.72$)

Interactivity

Interaction ($M = 5.89$, $SD = 1.19$), activity ($M = 6.35$, $SD = 0.9$), and control ($M = 5.54$, $SD = 1.4$) are chosen from the interactivity items pool and represented by statements like "I feel I am totally in charge while playing *APEX* Legends." (Cronbach's $\alpha = 0.66$)

Navigability

For navigability, browsing ($M = 6.07$, $SD = 1.15$), scaffolding ($M = 6.16$, $SD = 1$), and navigation aids ($M = 5.14$, $SD = 1.52$) are reflected in items such as "Visual information and tips in *APEX* Legends help me play the game better." (Cronbach's $\alpha = 0.64$)

All statements (see Appendix A) use seven-point Likert scales ranging from "Strongly Disagree " to "Strongly Agree. All the items were translated into Chinese (see Appendix B) by the researcher, a native speaker, and presented randomly in the questionnaire.

Open-ended questions for potential new gratifications

In the literature review process, previous social surveys related to the MAIN model have

mainly used the quantitative method, closed-ended questions to perceive the different attitudes of participants toward the technological aspects of emerging media. The advantage of open-ended surveys is that they allow participants to articulate a response, not their underlying attitude (Geer, 1988). This study focuses on how the perception of agency of the game differs between paying players and free players. There is an element of personalization, as each player's attitude is different, and using this method we can better understand the correlation between player's in-game consumption and perception of the game's agency. The original items pool consisted of close-ended questions, which may limit players' ability to express their opinions and to find any new gratifications through this process. In addition, each survey took less time to complete, allowing more participants to be recruited and more data to be collected, which is more efficient than interviews.

For the open-ended questions, the raw data were categorized by the questionnaire company's system into four affordances to be tested: modality, agency, interactivity, and navigability. Subsequently, the researcher further classified the data into two groups: players and free players. Each group encompassed responses related to four affordances, resulting in a total of eight data groups imported into Nvivo data analysis software. All the original responses were in Chinese, and the researcher (fluent and native in Chinese) coded and analyzed them in Chinese.

First, a coding table was constructed using the potential satisfaction factors outlined in the MAIN model as coding topics. For instance, under the agency level, three codes—ownness, bandwagon, and community building—were included. Similarly, the rest of the affordances were coded and organized accordingly. This coding sheet aided in organizing two groups of participants' responses into coherent folders within the Nvivo software, ensuring homogenous

responses were presented uniformly. Following the coding process described above, the researcher reevaluated the data. As RQ2 was designed to focus on potential alternative gratifications, responses not aligning with the MAIN statements were subjected to *in vivo* coding., a qualitative research coding method, i.e., the participant's responses were directly organized into a new coded file using the participant-generated words as codes (Saldaña, 2021).

Demographics

This study included demographic data from participants (n=243, or 91.7%) for reference purposes only and did not consider the relevant data as a variable. However, it provides valuable insights into the general trends observed within the gaming industry. A majority of participants self-identified as male (n=152, or 62.55%), primarily falling within the age range of 18-25 (n=218, or 89.71%). In addition, the researcher coded the monthly income of participants, revealing that a majority (n=143, or 58.85%) reported an income lower than 7000 RMB (approximately $1000).

IRB and Data Analysis

This study was approved by the Institutional Review Board (IRB#23-094) on April 7th, 2023. Before formal data collection, the investigators backtranslated the content of the questionnaire to ensure the accuracy of the questions in English and Chinese and to ensure the reliability of the data. After data collection is accomplished, close-ended questions will be analyzed using SPSS to check the correlation between individual items.

 For open-ended questions, the investigator will aggregate and code the questions through Nvivo, focusing on how participants describe their satisfaction from the game and in-game

consumptions.

Role of the Researcher

As a video game player, the two main online games I've played are both free-to-play games (League of Legends: 3000 hours, spending about $1000/ *APEX*: 1300 hours, spending about $500), and after comparing the spending patterns of other video games (about $50 per game) I find that F2P games are the ones that attract players to spend the most money. At the same time, after spending a lot of money and time, I felt that my attitude towards the game changed, as if the game was forcing me to play because I had spent a lot of money and it would be a pity to stop, and I also felt a state of paying for the video game company while consuming energy. Most previous studies have examined consumer psychology from a consumer perspective, and from a digital labor perspective, players are either spontaneously or passively providing benefits to video games (myself included).

Chapter 4: Result

Data Cleaning

There was one question at the beginning of the instrument to ensure participants were

adults, Chinese, and *APEX* players. Unqualified participants could not continue the survey, and

their data was automatically removed by wjx.com.

A total number of 309 valid respondents who are 18 years old or above and had played

APEX participated in this study and received the incentive. To ensure the data quality, 30

participants who finished the survey in less than 100 seconds were dropped from the analysis.

The average time for respondents to finish the survey is 285.82 seconds (SD=248.22, ranging

from 100 seconds to 1150 seconds). In addition, 14 respondents answered the open-ended

questions with meaningless Chinese characters. Therefore, the researcher excluded these 14

questionnaires. A final sample size of 265 was used in the following data analysis.

Descriptive Data

Among the 265 respondents, 224 individuals reported spending real money in the game,

while 41 participants stated that they had never spent real money in the game. Paying players had

an average spending range of 200-400 RMB, equivalent to approximately \$30-\$60 (SD=1.57).

Furthermore, a majority of players (n=122, or 54.46%) chose to make their first in-game

purchases after playing for more than 100 hours (Table 1).

A one-way multivariate analysis of variance (MANOVA) (Table 2) was conducted to test

the research question that there would be differences between agency levels and the other three

affordances among two player groups. A statistically significant MANOVA effect was obtained,

Wilks' Λ (4, 260) = .926, p < .001, η^2=.07. Then a one-way between-groups analysis of variance

(ANOVA) (Table 3) was conducted to explore if there is a statistically significant difference between two player groups in their potential gratifications to *APEX*. There was a significant deference of agency between two player groups at the p<.001 level for the three conditions, $F(1, 263) = 11.1$, $p = 0.001$, $\eta^2=.04$. The data findings reveal a significant association between paying players and higher levels of satisfaction regarding the agency aspect of the game. In addition, the result also showed that there were both statistically significant difference between two groups' feeling of interactivity at the p<.05 level, $F(1,263)=10.1$, $p=.002$, $\eta^2=.04$, and modality at p<.05 level, $F(1, 263)=4.68$, $p=.032$, $\eta^2=.02$.

Regression Analysis

      After conducting an MANOVA test, which revealed that paying players exhibited a higher level of agency perception compared to free players, the researcher proceeded to analyze the relationship between the level of spending (ranging from $0 to more than $100) and four affordances using continuous data—here, rather than comparing "none" and "some" spending, the self-reported level of spending was used as the single dependent variable for analysis, noting that our cross-sectional data allows for testing associations but not causal ordering. A two-stage hierarchical multiple regression was performed. Agency was entered at stage one of the regressions as the independent variable to test. Modality, interactivity, and navigability were additionally entered at stage two as the MAIN model as separate independent variables. The hierarchical multiple regression revealed that at stage one, agency does contribute significantly to the regression model ($F(1) = 263$, $p < .01$) and accounted for 6.3% of the variation in the level of spending. Introducing modality, interactivity and navigability explained an additional 3.2% of the variation in the level of spending. The change in R^2 was significant ($F(4) = 260$, $p < .001$).

Agency (β= .28, p = .001) was positively associated with level of spending. Interactivity (β = .21, p < .05) was positively associated with level of spending. Navigability (β = -.16, p < .05) was negatively associated with level of spending. However, modality (β = -.1, p > .05) was not significant in this model. Therefore, according to RQ1, it can be concluded that agency exhibits a significant distinction from the other three affordances. Additionally, interactivity also demonstrates a certain degree of predictability in relation to the level of in-game consumption (Table 4).

After completing the ANOVA and hierarchical linear regression analysis, the level of interactivity was considered to be different than expected, researcher investigated the relationship between agency scale and interactivity scale by using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a positively correlation between the two scales, (r = .63, n = 265, p <.0005). This indicates that there is considerable overlap in the constructs measured by the two scales, resulting in relatively close responses from participants in these two sections.

Qualitative Analysis

For the open-ended questions related to RQ2: "Do new gratifications are generated by consuming non-functional virtual items?", the participants' responses were divided into paying players and free players for analysis. Paying players need to answer an additional question about the motivation for consumption: "What motivated you for your first time in-game consumption?" The data revealed four main motivations (n=224) among the participants who have in-game consumption experience. These motivations included "skins" (n=69 or 30.8%), "Battle pass"

(n=61 or 27.2%), "Heirloom" (n=53 or 23.7%), and "Gambling" (n=41 or 18.3%).

The responses from both groups of participants were coded and analyzed using structural coding, descriptive coding, and elective coding to categorize the four affordances and their corresponding experiences. The findings indicated a high level of consistency with the potential gratifications assessed by the MAIN scale. Specifically, the results demonstrated a greater homogeneity in the responses related to modality and navigability, and players tended to evaluate the game itself based on these aspects. (See in Table 5)

Beyond the MAIN model

During the analysis of the responses related to agency, the researcher identified a new aspect of satisfaction called "Superiority" based on the answers provided by the participants (See in Table 6). This is a new satisfaction that did not appear in the original statements pool. Among the paying players, 12 responses (5.3%) mentioned this aspect, while two responses (4.8%) from the free players also indicated a sense of superiority. The term "superiority" was consistently present in all of these responses, which addresses the RQ2 related to the acquisition of non-functional items and another gratification, superiority. Across all responses regarding "superiority," participants explicitly mentioned the term in three responses, including "I feel a sense of superiority when I spend money to purchase skins." "Seeing what I have that others don't, a sense of superiority arises spontaneously. "" Seeing what I have that others don't, a sense of superiority arises spontaneously."" A sense of superiority naturally arises in such superiority naturally arises in such circumstances." Since the original data of this study were in Chinese, they were coded and translated into English (see Table 7).

The researcher, as a native Chinese speaker, re-analyzed and coded some answers that did not explicitly mention "superiority" and extracted some answers in which the meaning also pointed to this satisfaction. For example: "感觉别人看自己会放心或崇拜，自己看着好看", "在游戏中让我觉得我比其他玩家都要帅气拉风"，"如果我有别人没有的那肯定很爽"，corresponding to the English language, respectively: "It feels good when others look at me with trust or admiration, and I feel good looking at myself too." "In the game, it makes me feel like I'm the coolest and most stylish player compared to others." "It's definitely satisfying to have something that others don't." It is worth mentioning that one of the responses "这才是真实的人" corresponds to English "This is the real deal." The literal meaning of the Chinese answer is that this is the real need of human beings, and the derived meaning points to the fact that players' behavior of consuming non-functional items is to satisfy some special needs and make them look "different", therefore the researcher coded this response as the gratification of "superiority".

In addition, the number of Chinese words used in the responses of both groups of participants was relatively similar. On average, the responses of the paying players contained approximately 1-2 words more than those of the free players (see Table 8). Whereas this is only a relative figure, and the content of the responses is less affected by the number of words.

Chapter 5: Discussion

In accordance with the MAIN model introduced by Sundar and Limperos (2013), the present study employed an affordances-driven measure and aimed to examine the perceptual distinctions between two groups of players (paying and free) in free-to-play video games (based on *APEX* Legends). Since the non-functional items obtained by player's in-game consumptions exclusively serve decorative purposes, enriching the players' personalization experience in terms of appearance, without impacting their actual in-game performance. In the proposed model, agency comprises several sub-scales including community-building, bandwagon, and ownness, which are presumably influenced by players' spending levels. Conversely, the remaining three affordances are primarily controlled by game developers. Thus, this study sought to explore two key aspects: (a) the potential variations in the perception of agency compared to the other three affordances among the two player groups, and (b) whether the process of in-game consumption leads to new satisfaction beyond the MAIN model. The subsequent section presents an analysis of the findings and discusses their implications for the relationship between players and the game market.

Theoretical Implications

Quantitative Findings

As expected, the findings of this study indicate that players' in-game spending levels are correlated with perceptions of increased agency. This positive relationship—replicated in both categorical and continuous analysis of data (i.e., found when comparing players and non-players, and when considering their levels of self-reported spending) signifies that players perceive their spending behavior as a means to enhance their status in the community and autonomy in the game. Within the context of video games, *APEX* is classified as a free-to-play (F2P) game and belongs to the category of massively multiplayer online games (MMOs). These games provide players with real-time gameplay experiences through online connectivity, allowing them to interact socially within a virtual environment that bridges the gap between the game world and reality (Baldwin-phillippi et al., 2014). When analyzing from this perspective, the social interactions perceived by players, whether virtual or real, are likely influenced by their individual attitudes and perceptions towards the player community they belong (Molyneux et al., 2015). This study's unique contribution lies in its examination of the connection between players' in-game consumption behavior and their perception of game agency.

On further inspection of the scale for this study, the agency dimension in the MAIN model primarily focuses on social aspects, and the findings of this study differ from those observed in research that focuses on technology-oriented mediums. These mediums often exhibit variations in modality, interactivity, and navigability (Vaterlaus et al., 2018; Rauschnabel et al., 2017; Rathnayake & Winter, 2018; Sundar et al., 2014). However, the participants in this study

demonstrated a high level of homogeneity in their perceptions of these three aspects, with relatively positive results indicating a favorable attitude towards *APEX* itself. In the context of mobile games, these elements need to be appealing enough to entice players to download and experience the game (Merikivi et al., 2017). However, in the whole realm of gaming, regardless of the platform, incorporating these elements is always essential to attract players. In the case of free-to-play (F2P) games, the label "free" holds inherent appeal for attracting players. The absence of an initial cost to participate makes it easier for players to try out the game. However, this also means that players have the freedom to quit without any financial loss. Therefore, maintaining player loyalty becomes crucial for sustainable development in the market. Regular updates comprising new levels, features, or events ensure that the game remains fresh and exciting, motivating players to stay involved. Moreover, the availability of personalized props and customization options that players can acquire or purchase further strengthens their connection to the game and fosters a sense of ownership.

These elements, combined with the "free" nature of F2P games, serve as important tools for attracting and retaining players. By continuously gaining compelling content and rewarding experiences, players perceive high level of agency but are cultivated loyalty by the game developers.

Qualitative Findings

For F2P games and virtual items

This study also sought to explore the potential for novel gratifications to be associated with F2P video games via open-ended analysis. Indeed, qualitative analyses related to agency coding revealed an additional dimension of satisfaction—namely, "superiority"—that extends beyond the scope of the original model. The feeling of superiority arises from the perception of being more powerful than others within the community. This finding suggests that the respondents in this study sought satisfaction within a built community, rather than "community building". This indicates that players experience a heightened sense of satisfaction that goes beyond what is measured in the current model. Specifically, within the context of "community building," players may develop more intricate and nuanced gratifications associated with a mature community. And these feelings are derived from gaining non-functional items.

The definition of non-functional items in this study is derived directly from the game itself. Functionality is attributed to items that can directly impact a player's character abilities and performance, whereas non-functional items are characterized as purely aesthetic and decorative in game. When exploring the impact of functional items, previous research has highlighted their ability to blur the boundaries between the real and virtual worlds, as well as the influence of a player's offline status on their in-game state (Alha, Koskinen, Paavilainen, & Hamari, 2014; Marder et al., 2019). The findings of this study reveal that the collection of non-functional items within the game has a significant impact on players' real-life psychology, specifically resulting in a sense of superiority. Several responses from the participants supported this notion, citing sources of satisfaction such as "It feels good when others look at me with trust or admiration," "spending money to purchase skins," and "having something that others don't." These responses

indicate that players are influenced by their own spending behavior and the perceptions of other players within their gaming community. While the exact degree of influence remains unclear based solely on the study's results, it is evident that the attitudes of other group members impact players' sense of satisfaction to some extent. Furthermore, it is essential to recognize that players may self-perceive that other players hold positive emotions towards them due to their collection of non-functional items, which results in a sense of fulfillment. Therefore, the process of generating relevant satisfaction appears to be more closely tied to an individual player's perceptions rather than the involvement of other players in the group. Regarding the interpretation and coding of the response "That's a real deal," the original Chinese response, "this is the real need of human beings," was explained earlier and categorized under the coding of "superiority" by the researcher. The researcher interpreted this as a process of spending money and getting non-functional items to satisfy their initial needs. Therefore, the payer player gets an additional experience out of the game compared to the free player, which is the reason that this response was coded as "superiority".

However, it is important to highlight that this response is not limited to a single specific satisfaction but represents a generalization of players' pursuit of satisfaction through non-functional items. It encompasses various potential satisfactions outlined in the MAIN model as well. In conjunction with self-determination theory, real-life well-being may be more difficult to achieve than in-game well-being, and achievements that are relatively within reach in games can serve some of the player's initial emotional purposes (Ryan et al., 2006).

Although the definition of non-functional items is typically limited to their impact nothing on gameplay, it is important to note that they can still generate social satisfaction. Therefore, it can be argued that non-functional items possess a social-functional aspect. The

sense of superiority is also defined as "social distinction" and "visual authority" to explain the

motivation of players to buy non-functional virtual items (Homburg et al., 2009; Park & Lee.

2011; Marder et al., 2019). This highlights the significance of the social dimension in player

satisfaction and its impact on player behavior and loyalty.

Analyzed from the perspective of the overall gaming industry, the emotional experience

derived by players from games is intricately linked to the evolution of the gaming market.

Research has demonstrated that commercial entities actively commodify the vested interest in

game culture, striving to sell it back from players as the most coveted form of capital. In the

early stages, game developers predominantly held knowledge and authority, carefully controlling

their distribution to target players (Consalvo, 2007). Indeed, during the past era dominated by

single-player games, player satisfaction was often generated from breaking the rules and

engaging in cheating within the game. This behavior granted players a sense of empowerment

and, in some cases, elevated their status within the player community, which contributed to their

social satisfaction. However, the dynamics of the game market, especially in the realm of F2P

games, have evolved significantly since then. In the current gaming landscape, Game developers

control cheating with great effort and ensure that the majority of players can engage in fair

gameplay experiences. As a result, players in the contemporary game market enjoy more gaming

experiences from skill development, competition, collaboration, and achieving in-game

milestones within the established rules and mechanics.

However, the vested interests and information are still held by game developers who keep

shaping prevailing characteristics of the gaming industry. Game developers have the authority to

transform their knowledge and information into an extensive array of virtual items (functional

and non-functional). These items are intentionally priced or made exceptionally rare, offering

players an alternative avenue for satisfaction and contributing to a continuous revenue stream for developers. Cheating is seen as an undesirable means while giving players a very different kind of satisfaction. As the gaming environment has gradually eliminated this form of behavior, players explore other alternative ways to satisfy their needs within the game. These alternative ways often revolve around standing out from other players or fostering stronger bonds within the player community. Consequently, non-functional items have gained significance with social meaning, allowing players to differentiate themselves from others.

Limitations and Future Research Directions

Despite the significant findings obtained in this study, several limitations should be acknowledged. Firstly, the study's scope was limited to one F2P battle royale game (*APEX* Legends), which may restrict the universal affordance of the findings to other games. Future research should encompass a broader range of F2P games across different genres to ensure the applicability of the findings to a wider gaming context. Then the sample size of the participants in the study was relatively small, and all of them were from mainland China, which did not ensure the diversity of the sample. While this provides a better understanding of the overall gaming habits of Chinese players, the data may vary for players in different regions (Yee, 2020). Furthermore, it is worth noting that the sample size of players who spent no money in this study was limited, accounting for only 16.6% of the total sample, but the views of this group are particularly important. Given the focus of F2P games on the "free" aspect, future studies should involve more free players to express their viewpoints.

Second, the MAIN model utilized in this study, the selection of items for the four scales were based on a pool of 57 original statements, with only 12 items being chosen for testing in

this study. Consequently, the scope of the tests conducted in this study may not have been extensive enough to measure potential gratifications in original model. Furthermore, the reliability of the scales, as indicated by Cronbach's alpha coefficients ranging from 0.62 to 0.72, was not sufficiently high. And the correlation results revealed some degree of overlap among the four affordances, indicating that the detection of potential satisfaction was not isolated enough. Besides, the qualitative study found satisfaction beyond the MAIN model, which suggests that more statements can be added to the item pool to explore the potential satisfaction across different media platforms. In future studies, it is recommended to use a more complete MAIN model to examine players' initial perceptions and attitudes. Additionally, it is advised to incorporate a secondary structured test that specifically targets and measures the distinctive satisfaction aspects associated with different media platforms. The inclusion of such tests allows for a more comprehensive assessment of the specific factors and dimensions that contribute to satisfaction within a particular medium.

In the end, this study employed open-ended questions to discover potential satisfaction in the respondents beyond the MAIN model. However, only one question was designated for each affordance, and there was no opportunity to ask follow-up questions to the respondents. This limited approach may have overlooked certain nuances and depth in players' experiences and feelings. Therefore, some more sophisticated qualitative research should be considered for future studies to explore players' subjective feelings in greater detail.

Conclusion

This study utilized the MAIN model, based on the Uses and Gratifications Theory, to investigate the relationship between in-game consumption and player satisfaction in the context

of a free-to-play game, *APEX* Legends. The findings of the study revealed a significant positive

association between players' in-game consumption level and their perception of agency.

Additionally, players derived social satisfaction, called superiority, from the consumption of non-

functional items. The feelings of satisfaction not only serve as a motivation for players to engage

in in-game consumption but also act as a driving force for them to sustain and continue their

loyalty to the games. These findings provide additional perspectives for subsequent studies

exploring the role of non-functional virtual items and their impact on the free-to-play (F2P) game

market.

Tables

Table 1

Correlations Table (n=265)

	M	*SD*	α	1	2	3	4	5
1.Level of spending	2.73	1.57		1				
2.Modality	16.36	3.23	.62	.09	1			
3.Agency	17.39	3.17	.72	.25	.57	1		
4.Interactivity	17.68	2.72	.66	.23	.51	.63	1	
5.Navigability	17.37	2.8	.64	.08	.42	.6	.61	1

Table 2

MANOVA test for MAIN model (n=265)

	Value	F (4, 260)	p
Wilks 'Lambda	.926	5.23	.000

Table 3

ANOVA test for free and payer players (n=265)

Measure	Free Players		Payer Players		$F(1,263)$	η^2
	M	SD	M	SD		
Modality	15.37	3.58	16.54	3.14	4.68*	.02
Agency	15.9	3.65	17.67	3.01	11.1***	.04
Interactivity	16.46	3.12	17.91	2.59	10.08**	.04
Navigability	17.22	2.95	17.41	2.78	.15	.00

***p < .001, **p < .01, *p < .05.

Table 4

Hierarchical Multiple Regression Analysis of MAIN model and spending level (n=265)

Independent Variable	Step 1			Step 2		
	B	*SE B*	*β*	*B*	*SE B*	*β*
Agency	.12	.03	.25***	.14	.04	.28***
Modality	-	-	-	-.05	.04	-.1
Interactivity	-	-	-	.12	.05	.21*
Navigability	-	-	-	-.1	.04	-.18*
R^2	-	1.52***	-	-	1.5***	-
R^2 change					.03	
F for change in R^2		17.64***			3.11***	

***p < .001, **p < .01, *p < .05.

Table 5

Examples of MAIN Dimensional Responses from Players

Modality

Realism   "For me, satisfied all my pursuit of shooting sense."

"The game content is very rich, and the presentation is interesting and vivid."

"The impact and feedback from the gameplay are incredibly strong, allowing for a highly realistic and immersive experience on the battlefield." (Free player)

Coolness   "Meet all my fantasies of battle royale games."

"The content is very science fiction, compared to other games' richer content."

"The game features a unique and innovative theme, with diverse and well-developed characters." (Free player)

Being there   "The high time-to-kill (TTK) nature of the battle royale game enhances player immersion and engagement."

"The immersion and experiential quality are exceptionally high, providing a sense of being fully present and engaged." (Free player)

"The visual experience is profoundly immersive, captivating the senses and delivering a heightened sense of engagement." (Free player)

Agency

Community Building	"Being able to collaborate with teammates, utilizing skills to assist them, gives me a sense of being an integral part of the team."
	"Being able to play with like-minded online friends is a fantastic experience."
	"Playing with friends is always a great time." (Free player)
Bandwagon	"Different skins allow for better differentiation between me and other players."
	"Others praise my avatar's skins."
	"I currently don't plan on spending money, but I find other players' personal interfaces very cool." (Free player)
Ownness	"I feel a strong sense of personal ownership, enhancing my satisfaction with the game."
	"Satisfies my personalization preferences."
	"I can create my own unique character." (Free player)

Interactivity

Interaction	"When I control a character and hear their voice lines, combined with their unique abilities and background story, I feel a strong sense of immersion and connection. It's as if I become one with the character, joining them in the battle."
	"The character I control becomes an extension of myself."
	"When I'm in control of the character, it's as if I merge with them, becoming one entity." (Free player)
Activity	"In the world of legends, it feels as if I am in perfect harmony, transcending boundaries. I am the legendary figure, the embodiment of greatness, I am

Pathfinder!"

"My character speaks to me, keeping me company and making me feel connected even when playing this game solo." (Free player)

Dynamic Control	"The various responsive controls and precise movements make me feel like a skilled player."
	"Having a sense of control and feeling in command."
	"It's not just about controlling the character, but rather a sense of becoming one with them. It's as if I am a part of their journey, fighting alongside them."

Navigability

Browsing	"The information interface is easy to navigate, and the game interface is user-friendly, making it easy to get started."
	"The interface is straightforward and not overly complicated, with a clean and organized interface."
	"The UI design is sleek and minimalistic, allowing easy navigation of the in-game store and legends selection. It doesn't have overly complex sidebars or excessive clutter, providing a smooth and comfortable user experience."
Scaffolding	"Convenient features and effective guidance enhance the overall user experience."
	"The UI of *APEX* is convenient and allows me to quickly find the content I'm looking for." (Free player)
Navigation Aids	"The UI of *APEX* stands out compared to other games as it is relatively simple and intuitive. Even beginners can easily understand the purpose of different elements. The information prompts are helpful for browsing, and

the game interface provides clear instructions for controls."

"*APEX*'s UI design is impressive, providing a quick and convenient

experience from the moment I started playing." (Free player)

Table 6

Examples of gratifications of superiority

Superiority	"I feel a sense of superiority when I spend money to purchase skins."
	"It feels good when others look at me with trust or admiration, and I feel good looking at myself too."
	"In the game, it makes me feel like I'm the coolest and most stylish player compared to others."
	"It's definitely satisfying to have something that others don't."
	"A sense of superiority naturally arises in such circumstances."
	"I can be easily recognized by others at a glance through my skin."
	"It's a great feeling to fulfill my own sense of vanity and decorate my favorite character with a flag cover that represents them. It adds a visually pleasing touch that I truly enjoy."
	"This is the real deal."
	"Achievements and badges are pretty rare, fulfilling that sense of vanity, along with unique rank symbols, skins, and cool exhaust trails."
	"Seeing what I have that others don't, a sense of superiority arises spontaneously." (Free player)
	"Displaying the player's skills, performance, and achievements provides a strong sense of accomplishment and fulfillment." (Free player)

Table 7

Examples of gratifications of superiority (in Chinese)

优越感	"看见我有而别人没有，一种油然而生的优越感"
	"展示玩家的实力和成绩还有成就，很有获得感"
	"成就与徽章比较稀有，满足虚荣心 以及独特段位标志 皮肤 尾气"
	"花钱购买皮肤我获得了优越感"
	"传奇动态动作帅气逼人，个性徽章完美展示个人魅力，追踪器也非常棒地展示了个人实力"
	"这才是真实的人"
	"感觉别人看自己会放心或崇拜，自己看着好看"
	"在游戏中让我觉得我比其他玩家都要帅气拉风"
	"如果我有别人没有的那肯定很爽"
	"自然而然产生优越感"
	"可以让别人一眼就认出是我"
	"满足了自己的虚荣感以及装饰了自己喜欢的角色的旗帜封面 让我感觉赏心悦目"
	"历经千辛万苦拿下第一成为捍卫者时的成就感与自豪感还有满足感"

Table 8

Average Chinese characters in open-end questions

	Payer players	Free players
Modality	13	12
Agency	12	9
Interactivity	11	9
Navigability	10	8

Appendix A

Survey Questionnaire (Original English Version)

Survey Instructions:

Thanks for participating in our survey! Please read all instructions and questions carefully and answer them appropriately.

Part 1: Tell us about your last *APEX* Legends gaming experience

To get started, we'll ask you a few questions about your most recent *APEX* Legends experience. For the rest of the survey, we'll be asking you questions about this last experience, so you'll want to think back to these answers as you progress through the study.

1.   How many hours have you been playing this game?

0-50 hours / 50-100 hours / 100-150 hours / More than 150 hours

2.   Have you ever spent real money in the Chinese Yuan on *APEX* Legends?

Yes / No

3.   If so, how much money have you spent till now?

Less than ¥200 / ¥200- ¥400/¥400-¥600/ More than ¥600

4. Which platforms are you playing *APEX* Legends?

PC/ PlayStation/ Xbox/Nintendo Switch

5. How many hours did you play before you spent real money in *APEX* Legends?

6. What motivated you for your first time in-game consumption?

Part 2: Modality

In this section, please talk about your feeling toward the content in *APEX* Legends. Please indicate the degree to which you agree or disagree with the statements below (1 = strongly disagree, 7 = strongly agree).

1. The game graphics in *APEX* Legends are very close to reality. **(Realism)**

2. *APEX* Legends is unique compared to other video games. **(Coolness)**

3. When I play *APEX* Legends, I feel like I am actually in the game world. **(Being there)**

Please answer the next open-ended question in 3-5 sentences.

4. Please describe any gratifications you receive through the game content of *APEX* Legends.

Part 3: Agency

In this section, all questions is about yourself and your role realized in *APEX* Legends. Please indicate the degree to which you agree or disagree with the statements below (1 = strongly disagree, 7 = strongly agree).

5. I feel I am part of the *APEX* community. **(Community Building)**

6. Reviewing other players' personal collections before buying items helps me integrate into *APEX* Legends. **(Bandwagon)**

7. *APEX* Legends allows me to customize my personal items so that I can make it my own. **(Ownness)**

Please answer the next open-ended question in 3-5 sentences.

8. Please describe the gratifications you receive after customizing your characters or weapons in *APEX* Legends.

Part 4: Interactivity

The third section is about the real-time feedback that *APEX* Legends brings to you. Please indicate the degree to which you agree or disagree with the statements below (1 = strongly disagree, 7 = strongly agree).

9. During gameplay, I can do lots of interesting things with my own avatar. **(Interaction)**

10. During gameplay, *APEX* Legends requires me to make many decisions quickly. **(Activity)**

11. I feel I am totally in charge while playing *APEX* Legends. **(Dynamic Control)**

Please answer the next open-ended question in 3-5 sentences.

12. Please describe the gratifications you receive when playing your character in *APEX* Legends.

Part 5: Navigability

The last section is about your feeling toward the in-game interface of *APEX* Legends and entertainment. Please indicate the degree to which you agree or disagree with the statements below (1 = strongly disagree, 7 = strongly agree).

13. *APEX* Legends makes it easy for me to browse personal collections, store, and other menus. **(Browsing)**

14. Visual information and tips in *APEX* Legends help me play the game better. **(Scaffolding)**

15. The browsing system in *APEX* Legends is similar to other video games. **(Navigation Aids)**

Please answer the next open-ended question in 3-5 sentences.

16. Please describe the gratifications you receive when browsing information in playing *APEX* Legends.

Appendix B

调查问卷 (Chinese Version)

问卷提示:

请仔细阅读问卷中的所有提示和问题并回答**最符合**您的答案。

第一部分：请告诉我们关于您最近 *APEX* Legends 的游戏经历。

非常感谢您能够参与我们的调查！在开始正式问题之前，我们需要您回答一些关于您最近

的游戏经历。在问卷的剩余问题中，我们会基于这些经历向您提问。因此随着问卷的进行，

所以您需要回想这些答案。

1. 您玩这款游戏多少小时了？

   0-50 小时 / 50-100 小时 / 100-150 小时 / 多于 150 小时

2. 您在 *APEX* Legends 中是否消费过人民币？

   是/否

3. 如果是，到目前为止您一共花了大约人民币在这款游戏中？

少于 200 元/ 200-400 元/ 400-600 元/ 超过 600 元

4. 您在哪些平台玩 *APEX* 英雄?

PC/ PlayStation/ Xbox/Nintendo Switch

5. 在您充钱之前，您玩了多久 *APEX* 英雄?

6. 是什么促使您第一次这款游戏中充钱?

第二部分：游戏内容

在本环节您需要回答关于您对 *APEX* Legends **游戏内容**的感受。请表明您同意或不同意以下陈述的程度（1=非常反对，7=非常同意）。

1. *APEX* 英雄中的游戏画面十分接近现实生活。

2. 与其他游戏相比，*APEX* 英雄十分特别。

3. 当我玩 *APEX* 英雄时，我感觉我真的在这个游戏世界。

在完成三个选择题后，您需要回答有关 *APEX* 英雄的游戏内容开放式问题，3-5 句话即可。

4. 请描述您对 *APEX* Legends 的游戏内容和呈现形式产生的任何满足感。

第三部分：游戏个性化

本环节需要回答关于您的**个人化以及个人意志**在 *APEX* Legends 游戏中的体现。请表明您同意或不同意以下陈述的程度（1=非常反对，7=非常同意）。在回答完三道选择题后，需要您探讨有关游戏个性化的开放式问题，3-5 句话即可。

5. 我认为我是 *APEX* 玩家群体的一员。

6. 购买游戏物品前，查看其他玩家的个人收藏和主页能帮助我更好的融入 *APEX* Legends。

7. 我能够在 *APEX* Legends 中定制我的个人页面、道具、皮肤等，这些内容只属于我自己。

在完成三个选择题后，您需要回答有关 *APEX* 英雄的游戏内容开放式问题，3-5 句话即

可。

8. 请谈谈您在 *APEX* 英雄中个性化角色和武器后，产生了哪些满足感。

第四部分：游戏互动性

接下来的问题是关于您对 *APEX* Legends 提供的实时反馈有何感受。请表明您同意或不同意以下陈述的程度（1=非常反对，7=非常同意）。

9. 在玩游戏时，我和我的角色可以有很多有意思的互动。

10. 在玩游戏时，*APEX* 英雄需要我做很多快速的决定

11. 在玩 *APEX* 英雄时，我感觉我完全掌握了一切。

在回答完三道选择题后，需要您探讨有关游戏操控性的开放式问题，3-5 句话即可。

12. 请您描述您在 *APEX* 英雄中控制角色时，产生了哪些满足感。

第五部分：游戏浏览

接下来的问题是关于您对 *APEX* 英雄的游戏界面有何感受。请表明您同意或不同意以下陈述的程度（1=非常反对，7=非常同意）。

13. 我能在 *APEX* 英雄中随意浏览个人物品、商店以及其他内容。

14. *APEX* 英雄中的很多视觉信息和提示让我更好的游玩这款游戏。

15. *APEX* 英雄的浏览系统与其他游戏十分相似。

请您回答开放式答案的问题（3-5 句话即可）。

16. 请描述您在 *APEX* Legends 中浏览信息以及操控游戏界面时，产生了哪些满足感或感受。

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Vita

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<u>**Education**</u>

Syracuse University   August, 2023

Master of Media Study   Syracuse, NY

China University of Geosciences(Wuhan)   June, 2020

Bachelor of Broadcasting and Television   Wuhan, China

Skills and Language

• Software: Adobe Premiere, Adobe Audition, SPSS, HTML, Nvivo

• English: IELTS:7 (R8, L6.5, S6.5, W6.5) GRE: 322 (V153+Q169+AW3)

Internship Experience

Beijing Kuaishou (Kwai) Technology Co., Ltd.   Mar.2021-Jun.2021

Algorithmic Video Editor Intern   Beijing, China

• Responsible for the production and launch of popular short videos on overseas (Portuguese and English markets) platforms, with an average video playback volume of **5,000 times**, one of which is a hot video with a playback volume of **1.2 million**+, the account gained **20,000+ followers**

• Produce a variety of popular video clip templates for **AI algorithm learning**, which can automatically generate video templates

Beijing Youth Daily   Jul.2020-Feb.2021

New Media Operation   Beijing, China

• Responsible for the daily operation of the official WeChat and Weibo accounts of the Changyang Town People's Government, with **more than 100 original News releases**, **10,000+ WeChat account fans**, **10,000+ likes for a single article**, and **400,000+ Weibo fans**

• Edited and published the community edition of Beijing Youth Daily, and published **more than 50 original press releases**

Beijing Huanying Times Cultural Media Co., Ltd.   Jul.2019-Oct.2019

Video Editor Intern   Beijing, China

• Responsible for *The Snow Queen: Mirrorlands* trailer editing, and *The Perilous* tidbits

editing.

• Editing and releasing video content related to the release of the movie, fan activities, tidbits,

etc. on social media.

Project Experience

Spiral of Silence in K-Pop Communities on social media (Research Paper) (co-author)

• 1st of Syracuse University Catherine L. Covert Award

• Using quantitative research (Semi-structure interviews) to analyze K-pop culture and audience

Magic Sphagnum (Feature films)

• Responsible for film editing and post-dubbing

• Won the first prize in the Ninth "Shi You Cup" Chinese College TV Awards

Commercial of Durex (Advertisement)

• Responsible for creative, shooting, editing

• Won Hubei province third prize