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The effect of culture on paying and playing free-to-play mobile games: A comparative study between China and the USA

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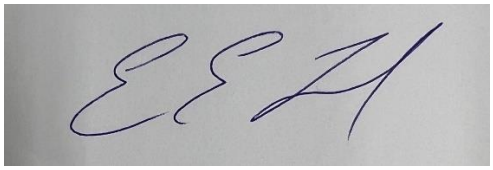
I hereby declare that this dissertation is my original work and that it has been written by me in its entirety.
I have duly acknowledged all sources of information that have been used in this dissertation.

This dissertation has also not been submitted for any degree in any university previously.



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Erik Eugene Ford
24 June 2024

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Abstract

In this dissertation, the effect of culture on consumers' desire to pay for and play free-to-play (F2P) mobile games was examined. Culture can be defined as the "collective programming of the mind that distinguishes the members of one group of categories of people from others" (Hofstede, 2011). The study compared consumers in China and the United States who completed an online survey. Cultural scientists such as Hall and Hofstede defined these two countries as the two largest gaming markets in the world with very different cultures. The research method included a questionnaire. The sample size was 201 people in China and 209 people in the US, sampling users between the ages of 20 and 30, with an approximate 50/50 gender split. The first part of the survey focused on their cultural attitudes, while the second part focused on their mobile gaming payments and playing habits.

Our results showed statistically significant differences as to the motivations and spending habits of consumers in the two markets on F2P mobile games. Of note was the moderating effect of collectivism on the Chinese market. We found strong moderating effects regarding the motivation of gamers and their purchase intent with regards to skin/cosmetic items. We found that other indices like masculinity, uncertainty avoidance, and power distance had an effect, but not always in the way we initially hypothesized or as the cross-cultural literature would make us believe.

We aimed to identify unique characteristics of each market that can help gaming professionals in both the development and publishing aspects of the business be more successful in these markets. This study has both theoretical and practical implications. In addition, we identified areas for additional academic studies. Currently, there is extensive study on the reasons behind human engagement in many forms of play. However, the specific area

of literature that concentrates on interactive software is still developing. The field of cultural literature is equally substantial. This paper explores the intersection of such existing studies and offers practical insights for American organizations aiming to achieve success in China, and vice versa.

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Last but not least, thank you to Trang Pham for the immense support with my statistics. I learned more from you in four months than I have in multiple statistics classes. “Breathe” and “No One Dies” are my new life mottos.

Dedication

First and foremost, I want to dedicate this to my wife, Sharon. You have been with me through three “part-time” postgraduate degrees and never complained. Thank you for making the sacrifices you do so that the girls and I can pursue our dreams.

To my firstborn Faith, thank you for teaching me that perseverance and greatness go hand in hand. Never start taking yourself too seriously.

To Keira, aka triplet number 2, you are the kindest person I have ever met. Thank you for reminding me to be a better person every day.

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To my older sister, Leslie, thank you for never letting the family fail. You have always been the head of the family and have done an amazing job.

To my younger sisters, Laurie and Danika, thank you for keeping me grounded with love and multiple doses of brutal sarcasm.

To my father, Gary, you were the OG of lifelong learning. Unfortunately, you are not here to see this outcome.

To my mother, Audrey, I hope you are finally at peace with Dad. We miss you.

To my dear friend Professor Dave Danjczek, even though we agreed on almost nothing, somehow our friendship lasted over 30 years. Rest in peace.

Introduction

Cultural issues were an evolving area of discussion in both the classroom and the boardroom, even before Geert Hofstede's work in the early 1980s. They have been used to explain differences across diverse industries and ways of thinking and interacting in our daily lives, including our work relations and creativity. Our interest in video games comes from my 25 years of experience working for Western companies in Asia. When discussing why a game has succeeded or failed greatly in one part of the world but not another, the default excuse is often “it’s cultural.” The significance of culture, particularly in relation to cultural products like games, is well acknowledged. However, there is uncertainty about the specific aspects of culture that are important. In this context, the concept of culture typically confines itself to the characteristics of a particular product, such as its artwork or narrative, and individuals frequently base their decisions on past successes, forming a default guideline. These discussions have rarely ventured into the psychographic qualities of a culture, such as Hall’s high- and low-context cultures or Hofstede’s cultural dimensions. Although we do not want to imply that elements such as art and story are not important for the success of a video game, we believe that the intellectual parts of culture are equally relevant in today's market for such products. Understanding factors such as collectivism, masculinity, uncertainty avoidance, and power distance are becoming more important as differentiated markets such as China are now the world’s second largest market for video games behind the US. Our study's value lies in unpacking and examining these nuances.

Our paper focuses on comparing the cultural aspects of not only playing but also paying for products that are defined as “free-to-play (F2P),” defined earlier as any game playable on a mobile phone or tablet that does not charge the user an upfront cost or subscription to play. Notably, our study reveals that gamers do not exhibit identical behavior to the larger societies they are a part of, as indicated by the Hofstede indices.

The global video game business has grown considerably in the past two decades, exceeding traditional entertainment sectors such as movies and music. This growth has sparked significant interest in the field of strategy and management research. Research agency Newzoo estimated the value of the video game industry at US$180 billion in 2021 (Newzoo, 2021). In this context, the term "video game" encompasses earnings from console games such as Sony PlayStation, Microsoft Xbox, and Nintendo Switch, as well as PC games and mobile games accessible on Apple iOS and Google Android devices. It does not include revenue from advertising, related events such as e-sports, or sales of hardware to play such products. In 2021, video games continued their ongoing trend of surpassing all other kinds of entertainment in terms of their magnitude and extent. IDG, a competing research firm, estimated gaming to be worth $247 billion in 2021 versus the second largest entertainment format, linear TV, which was approximately $170 billion (IDG, 2022). We chose to study the mobile gaming market because of its tremendous growth, especially in Asia. Asia accounts for nearly half of all global game revenue, regardless of the estimate source (Appendix Figure 1). The composition of revenue in Asia is very different from the rest of the world. Asia is

a mobile-first market, with a consumer's mobile phone being their preferred source for consuming content, gaming, and other things. This is evident, with $58.6 billion of Asia's $87.4 billion in revenue being generated on mobile phones versus only $34.6 billion in the rest of the world (Newzoo, 2021). Beyond the market size, we also know that there are distinct cultural differences between the East and West.

Ever-evolving business models, particularly the F2P model, have fueled the exceptional growth in mobile games. Any game playable on a mobile phone or tablet that does not charge the user an upfront fee or subscription to play is defined as F2P. Players initially download the game from a digital storefront like Apple's App Store or Google's Play Store, which then generates revenue through in-game transactions or ad viewing. Mobile games, with their convenience, portability, and lower cost compared to online or console games, have gained recognition as a prominent entertainment choice (Cheung et al., 2021). These factors, in conjunction with increasingly powerful devices, propel the growth of mobile gaming not only in Asia but also across the globe. The chart below illustrates the rapid growth of mobile gaming since 2017.

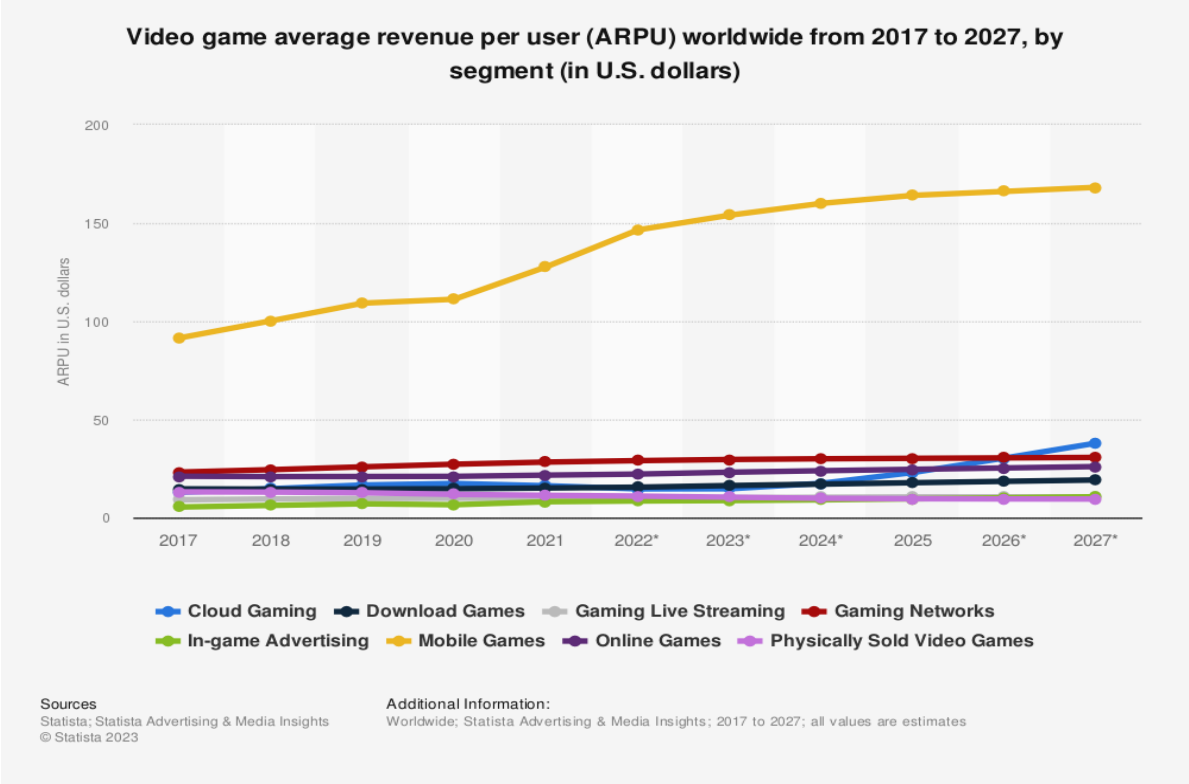


Figure 1. Global video game average revenue per user.

The US and China are the two largest individual gaming marketplaces globally. The predicted overall market size for the US in 2021 was 47.6 billion, while China's market size was projected to be $49.3 billion in the same year (refer to Appendix Figure 2). This study investigates the mobile gaming market of these two giants, accounting for 36% and 69%, respectively. We specifically focused on the F2P segment within each mobile market, which accounts for over 98% of the total market. We extensively drew upon the cultural literature of Hofstede and other researchers to examine the influence of culture on the preferences and behaviors of gamers in the US and China. Specifically, we investigated how culture impacts their choices of games, playing styles, and motivations to make in-game purchases in the context of F2P mobile games.

Table 1. Summary of hypotheses findings.

Table 1 Summary of Hypothesis Findings

Hypothesis Number	Hypothesis	Findings
1	Chinese gamers are more likely than American gamers to play the same game as their friends.	Supported
1a	A higher level of Collectivism increases the likelihood that Chinese gamers will play the same game as their friends compared to American gamers.	Supported
2	Chinese gamers are less likely than American gamers to spend on cosmetic items/skins.	Not Supported
2a	A lower level of Individualism increases the likelihood that Chinese gamers are less likely than American gamers to spend on cosmetic items/skins.	Not Supported
3	Chinese gamers are more inclined to play games to compete than American gamers.	Not Supported
3a	A higher level of Masculinity increases the likelihood that Chinese gamers will play games to compete compared to American gamers.	Not supported
4	Chinese gamers are more likely than American gamers to spend on items to give them a competitive advantage.	Supported
4a	A higher level of Masculinity increases the likelihood that Chinese gamers will spend to gain a competive advantage compared to American gamers.	Inconclusive
5	Chinese gamers are more likely than American gamers to spend on probability-based items.	Not Supported
5a	A lower level of Uncertainity Avoidance increases the likelihood that Chinese gamers will spend on probability-based items compared to American gamers.	Inconclusive
6	Chinese gamers are going to be more accepting of losing to players who spend more in-game than American gamers.	Supported
6a	A higher Power Distance score increases the likelihood that Chinese gamers will be more accepting of losing to players who spend more than them compared to American gamers.	Inconclusive

In our results section, we discuss possible reasons for this, including the effect of highly different regulations in the two markets. This paper is structured as follows. Section 1 covers the business model aspects of the industry. Section 2 is a literature review related to both play and culture. Section 3 covers theory and hypothesis development. Section 4 presents the results. Section 5 focuses on discussion, limitations, and suggestions for future research.

Business Models in Video Games

To fully comprehend the business models in video gaming, it is critical to understand the industry's economics. The models have evolved substantially over time, driven primarily by the advancement and expansion of the internet. The F2P model originated in Asia on PC but has proliferated on mobile, which itself accounts for over half of global gaming revenue. Consumers can “try before they buy” as the F2P model removes the initial barriers to entry for a game. Developers also benefit from the model, as they may release a product before it is 100%

complete and iterate the game over time based on live feedback from users. Table 2 is a summary of the various models. For our study, we focused on F2P and microtransactions/pay-to-win (P2W).

Table 2. Business models and characteristics.

	Models				
	Buy-to-Play (B2P)	**Play-to-Pay (P2P)**	**Free-to-Play (F2P)**	**Microtransactions /Pay-to-Win (P2W)**	**Games as a Service (GaaS)**
Characteristics	Pre-internet	Internet and digitization	Games are downloaded over the internet for free	Games are downloaded over the internet or at retail (for free or paid)	Confluence of all models
	Games sold through physical retail	Games are downloaded over the internet or purchased at retail	Monetization through advertising or additional content	Characterized by aggressive microtransactions that must be purchased to advance	Provide more "service" with the goal of extracting more value from gamers (ARPU)
	Primarily consoles and some PCs	After an initial fee, a subscription is required to keep playing	Common on PCs and mobiles	Usually affiliated with F2P mobile games, but not always	Can be mobiles, PCs, or consoles
		Primarily on PCs			

Business Model: Free-to-Play

A third business model, and the second to arrive with the internet, is known as the F2P model. This model, which originated in the PC massive multiplayer online (MMO) market, gained popularity in Korea in the late 1990s before emerging as the dominant model for mobile games. In 2023, there were over 700,000 games available for download through the iOS and Google Play Stores (Edvice Team, 2023). This model removes pricing as an initial barrier to entry. "The idea behind this model is that users can first get to know the basic game free of charge, which means that a relatively large (registered) customer base could then be targeted with regards to the purchase of additional offers" (Massarczyk, 2019). Advertisers, or more commonly, the sales of additional levels, characters, or even costumes, monetize F2P games. The sale of these additional items falls under the large heading called microtransactions. Microtransactions refer to the purchase of virtual items or virtual currency using real-world money. These transactions could vary from as little as US$ .99 to US $99. Mobile gaming is highly dependent upon this form of funding, with up 98% of the US$ 93.2 billion (Appendix Figure 1) coming in the form of microtransactions (also at times referred to as in-game transactions). It is said that the small nature of these transactions makes it easier to lose track of the total amount spent on an individual game. Stories of consumers racking up bills in thousands of dollars are not uncommon. These gamers are referred to as VIPs or whales. On the opposite spectrum, game developers and publishers estimate that only 1%–5% of people playing turn into paying customers

(Massarczyk, 2019). This is in contrast to the increasing development costs of games.

Business Models: Microtransactions and the "Pay-to-Win" Model

In-game transactions do not occur only in F2P games. Increasingly expensive PC and console games have taken to adding additional content with varying degrees of success. *Star Wars Battlefront II* brought the practice of including microtransactions in paid games to the forefront and garnered an inordinate amount of negative attention in the process. In October 2017, EA opened up *SWBF2* to beta testing by consumers. The game set in the Star Wars universe allowed consumers to play as their favorite characters, such as Luke or Darth Vader, but not immediately after paying $60 to $80 for the game. Consumers could only receive one of these "hero" characters if they grinded away for up to 48 hours or magically received one via a "loot box or loot crate." In Asia, including these selling mechanisms in a game is referred to as "gacha" mechanics in reference to the Japanese surprise toys you can buy in vending machines. These boxes are items that are purchased and contain random content that may or may not help you in a game. In the case of *SWBF2*, "Players were furious that the game let people pay real money for access to enhancements and major characters that would otherwise take dozens of hours to unlock by playing the game" (Gilbert, 2018). One player even estimated that it took 4528 hours to complete the game or $2,100 dollars (Saed, 2017). In defense of the publisher EA, they quickly reversed course and

eliminated all microtransactions and loot boxes while they rebalanced the game. Unfortunately, the accusations of the product being a “P2W” game were already established. Along with the damage to the reputations of both EA and Star Wars, governments began investigating whether loot boxes should be considered a form of gambling.

Literature Review

We attempted to establish a connection between culture and attitudes towards playing, and ultimately, how this influences consumers' attitudes towards payment. Given the separate treatment of play and culture, we conducted a review of play-related literature before delving into culture-related literature. Our first section focuses on play literature, as we want to understand the full range of player motivations to play in general and games in particular. We believe that these motivations may vary depending on culture, which is why we included these questions in our survey. Examining these motivations within the framework of the F2P model eliminates the initial cost barrier, thereby providing a more lucid understanding of what drives a consumer in a specific country to engage in gaming. From a practitioner perspective, i.e., the developers and publishers of F2P mobile games, motivating gamers to play is step one of the process. The second step is to offer gamers reasons to pay for some things to offset the increasingly large development costs.

In the second part of our literature review, we have discussed classic cultural literature such as Hall and Hofstede to understand how cultures, in an academic sense, may differ. This is a critical piece of our study, as we believe that culture is a factor, but that context is important when applying it scientifically. This is especially important as most of the established cultural literature has been written from a Western perspective.

Literature Review-Play: Loot Boxes

Over 98% of the F2P mobile game market is monetized using a model known as GaaS or "Games as a Service" (see Appendix Business Model). Much of the literature to date concerning GaaS focuses on a very narrow aspect of it in the form of loot boxes. The literature takes issue with two aspects of loot boxes: the opaqueness of the purchase and the resemblance of the purchases to aspects of gambling. Concerning the opaqueness, the transparency of the contents, and the probability of the outcomes, these have led to various regulatory investigations (Chen et al., 2019). The gaming literature goes even further, drawing comparisons between loot boxes and gambling and exploring the potential for loot boxes to encourage adolescents to gamble.

- Drummond and Sauer argued that loot boxes share several striking similarities to gambling (Drummond & Sauer, 2018). Players can purchase loot boxes with real money and receive rewards of varying value based on chance. If a player purchases X number of boxes × times, their chances of receiving an item of

value increase. Given the random nature of the boxes, it is not clear how many times one needs to purchase a box to receive the desired item. However, it is important to establish exactly what the definition of gambling is.

- According to well-known gambling expert Mark Griffiths, gambling activities share the following characteristics (Drummond & Sauer, 2018):
    - The exchange of money or valuable goods
    - An unknown future event determines the exchange
    - The chance of at least one party determining the outcome
    - Nonparticipation can avoid incurring losses
    - Winners gain at the expense of losers
    - The rewards must be convertible into cash or cash equivalents

With regards to loot boxes, it is often that final point that game makers rally behind. Beyond the game's utility, the loot boxes' items have no real monetary value, nor can they be exchanged for real money. Loot boxes are psychologically similar to gambling because the prizes are undetermined and what is won can be of much less value than the price paid to obtain them (Emmond & Griffiths, 2020). Additionally, the most common determinant of whether a child becomes a problem gambler is whether the parents gambled.

If some games utilize elements of gambling, why is that a problem? The French scholar Caillois in seminal work *Man, Play and Games* claimed that “play is distinctive because it leads to no increase in economic productivity but instead simply expends and redistributes resources as when poker players pass their money to one another” (Henricks, 2011). In simpler terms, he stated that people in general

love to take risks. This fundamental aspect of many games informs the study of risk and attitudes towards money in contemporary gaming environments. While we have delved deeper into the game definition by Caillois later in the paper, it is important to note that he did not believe that games of chance (aleon) would have significant appeal to children.

Literature Review-Play: Pay-to-Win Gaming

Not all academic studies have focused exclusively on loot boxes and gambling. Steinmetz et al. (2021) wrote about the similarities between gambling and P2W gaming. In their paper, P2W games offer the possibility to spend money on content items or events that help a player actually advance in the game, not for mere cosmetic reasons (Steinmetz et al., 2021). With this definition, a loot box may or may not qualify as a P2W mechanism. The paper's claim that P2W games, whether considered gambling or not, intensify competition and monetize individuals' competitiveness is noteworthy.

The literature on P2W is limited compared to the research on loot boxes and the potential link to gambling. One research group in Poland attempted to identify the prevalence of P2W gamers and games in their country (Lelonek-Kulata et al., 2021). They found that 1.7% of Polish adults played P2W games and 20% of people

paid for them. Interestingly, men were more likely to play, but women were more likely to pay.

Literature Review-Play: Theoretical Analysis

Starting with the first question, what is play? Stuart Brown, an author and researcher, elaborated on the psychological components of play, claiming that all play contains seven features (Brown, 2009):

Apparently purposeless (done for its own sake)

Voluntary

Inherent attraction

Freedom from time

Diminished self-consciousness

Improvisational potential

Continuation desire

The author explained that play activities do not have any survival values. For example, they do not help get food or water, nor is it forced upon anyone. Inherent attraction is defined as something that is fun or makes you feel good. When we are fully engaged in play, we lose our sense of time and acquire a form of freedom in the process. Achieving this level of engagement is likely important for game companies to extract value from consumers. This acquired freedom is closely linked to a diminished sense of consciousness as our focus shifts from our appearance to the game itself. At times, we could even become a different version

of ourselves. When we are fully in the moment, we may even achieve a "flow" state.

Developing loyalty to a game is important, as it is considered a key driver of purchase intent in mobile games (Cheung et al., 2021). Motivation theory is defined as the study of what drives a person to work towards a particular goal or outcome. Under this theory, motivation can be intrinsic or extrinsic. An individual is considered intrinsically motivated if they conduct an activity for no obvious return other than interest in the activity itself. Conversely, an extrinsically motivated individual participates in an activity because of external rewards. In Cheung's research within the realm of mobile games, he chose to look at extrinsic benefits (connection quality, competitive pricing, and virtual rewards) and intrinsic benefits of perceived playfulness as they drive loyalty and in-game purchase intention.

Literature Review-Play: Traditional Entertainment Theory

The motivation to play video games has some basis in traditional entertainment theory. The mood management theory considers individuals as "hedonically motivated to place themselves in situations in which they amplify pleasure while ameliorating pain" (Vorderer & Bryant, 2009). One of the fundamental beliefs of the mood management theory is that in order to regulate our mood, physical arousal is needed. Overly stimulated or bored individuals may seek entertainment to reduce their arousal or stimulate their interest. However, this

theory was developed with TV or movies in mind. Video games are a distinct sort of entertainment due to their tendency to be highly stimulating and immersive.

Another traditional form of entertainment theory, affective disposition theory, does not apply neatly to video games. In essence, the theory states that consumers are happy when good things happen to good people and bad things happen to bad people. However, in the context of video games, the hypothesis mentioned (Vorderer & Bryant, 2009) becomes less significant due to the games' unscripted nature and the level of control players have over the characters. However, this may have a small effect on how people view competition and equity between players who buy benefits and those who don't.

Some studies on why we play games base their findings on gratification theory, which Greenberg developed for TV in 1974. Using focus groups and structural interviews like Greenberg, Sherry and Lucas (2004) detailed six reasons why people play video games.

Competition: to the best player of the game

Challenge: to push oneself to beat the game or get to the next highest level

Social interaction: to play as a social experience with friends

Diversion: to pass time or alleviate boredom

Fantasy: to things you cannot do in real life, such as driving racing cars or flying planes

Arousal: to play because the game is exciting

Literature Review-Play: Video Game Literature

Regarding video games, the primary literature that governs motives to play is authored by British scholar Richard Bartle. His research emerged at the dawn of the internet age, credited with shaping psychological studies on "why people play in social online environments." Bartle is credited as a co-creator of the game MUD1—the original multiuser dungeon (MUD). MUD is a multiplayer, real-time text-based game that combines elements of other types of games, such as RPGs, action games, etc. (Bartle, 2016). More importantly, MUD is the precursor to what is known today as MMO games. These are virtual worlds where a player interacts with other players online and may play against or with these players to accomplish numerous goals or tasks. Players typically play these games on PCs, but they are also available on consoles and, to a lesser extent, mobile phones. Many of these games have millions of players all interacting simultaneously. *World of Warcraft* from Blizzard Entertainment and *Grand Theft Auto* from Rockstar Games are two of the world's most famous MMOs.

Bartle's work on MUD1 allowed him to observe and interact with players in his dungeon. In an effort to improve his MUD, he asked high-level players about their demands, which resulted in a discussion of several hundred posts. With those posts in hand, he created what is generally referred to as Bartle's player types, which he also compared to a pack of cards (Bartle, 2022):

- Achievers prioritize the accumulation of points and advancement through levels as their primary objectives, such as diamonds in a deck of cards.

- Explorers (spades) enjoy wandering around in a game and discovering every nook and cranny in the world.
- Socializers (hearts) are interested in people and their perspectives. The game itself is less important than the people playing it.
- Killers (clubs) enjoy imposing themselves on other players, with the primary goal of winning at all costs.

Despite the establishment of these classifications in the early 1990s based on a single product, the depth of MUD1 has maintained Bartle's credibility to this day. A criticism is that Bartle's research lacked empirical data. Academic Nick Yee addressed this issue by conducting research across 30,000 players in multiple MMORPGs, including *EverQuest*, *Dark Age of Camelot*, *Ultima Online*, and *Star Wars Galaxies* (Yee, 2006). A five-factor model of user motivation was identified: achievement, relationship, manipulation, immersion, and escapism. The last two points were not covered by Bartle. Male players were more likely to be driven by achievement and manipulation. Conversely, women were significantly more likely to be driven by the relationship factor.

In a subsequent piece of research, Yee sought to build upon his initial five-factor model and test whether gamers could be motivated by multiple factors at once. A key assumption of Bartle is the belief that one factor suppressed another; for example, achievers could not be explorers, and vice versa. Using a factor analytical approach, Yee created an empirically grounded player motivation model with three key factors and multiple subcomponents.

Table 3. Yee's Motivational Model (Yee, 2006).

Achievement	Social	Immersion
Advancement Progress, Power, Accumulation, Status	**Socializing** Casual Chat, Helping Others, Making Friends	**Discovery** Exploration, Lore, Finding Hidden Things
Mechanics Numbers, Optimization, Templating, Analysis	**Relationship** Personal, Self-Disclosure, Find and Give Support	**Role-Playing** Story Line, Character History, Roles, Fantasy
Competition Challenging Others, Provocation, Domination	**Teamwork** Collaboration, Groups, Group Achievements	**Customization** Appearances, Accessories, Style, Color Schemes
		Escapism Relax, Escape from RL, Avoid RL Problems

A key finding of Yee's work is that a gamer could be motivated by multiple factors simultaneously, unlike Bartle.

Literature Review-Play: Emergence as an Early Cultural Lens

MMORPGs have been the subject of much research regarding gaming communities and why certain behaviors are prevalent. Kow used *World of Warcraft* as an early comparative study between Chinese and US gamers. Specifically, Kow compared the modding communities between the two countries. Modding refers to the "end-user modification of commercial hardware and software" (Kow & Nardi, 2010). Its practice dates to at least 1961, when *Spacewar!* was first developed by a group of MIT students.

In 2009, *World of Warcraft* became available for playing in both China and the US, with China having more than double the number of players. However, Kow noted that the US had roughly 58 known mods vs. 12 from China. Despite the game being nearly identical in both countries, with Blizzard operating it in the US and The 9, a Chinese partner, operating it in China, what factors could account for the difference in mods? Did the factors pertain to culture, history, or economics?

The answers to his questions included a little of all three. With the support of the developers, access to Blizzard allowed the US modding community to grow more quickly. This, in turn, allowed gamers to take more calculated risks. It also allowed the community to develop a high sense of trust within itself. In contrast, Chinese gamers received little to no support from Blizzard or The 9. As a result, the mods in China tended to be incremental improvements through trial and error. In addition, the Chinese community developed a more hierarchical structure, similar to teacher and student, as opposed to equal peers. While Kow and Nardi did not look into the motivations for play, their observations are one of the most critical comparative studies on gaming culture.

Due to their integration into society, games reflect its values and culture (Salen & Zimmerman, 2003). Games have an ideological dimension; they are a context through which society passes on its values. Salen and Zimmerman stated that all games reflect the rhetoric of the cultural context in which they are designed or played. It does not matter if the game is historical (such as chess) or contemporary (such as video games).

To the naked eye, a relationship between Balinese cockfighting and video games may not be apparent; however, Clifford Geertz's work on this unique topic has many parallels. In 1958, anthropologist Clifford Geertz and his wife moved to Bali to study the cultural phenomenon of rooster fighting. It is a sport that has been around for thousands of years and is illegal. Despite this fact, the sport remains incredibly popular in Bali even today. In his paper, Geertz argued that the cocks are metaphorical representatives of their owners. "In the cockfight, man and beast,

good and evil, ego and id, the creative power of loosened animality fuse in a bloody drama of hatred, cruelty, violence, and death. It is little wonder that when, as is the invariable rule, the owner of the winning cock takes the carcass of the loser—often torn limb from limb by its enraged owner—home to eat, he does so with a mixture of social embarrassment, moral satisfaction, aesthetic disgust, and cannibal joy" (Geertz, 1972). Essentially, Geertz classified the fights into two types: deep and shallow. Deep fights are usual for the wealthier members of society. As per their name, shallow fights are among the more common members of society and are largely undertaken as a form of status. Bets are made on behalf of their cocks as a gesture of support for the owner. The comparison to gaming in this context is: to what extent is the playing of games and the spending of money on games a reflection of the gamer himself? Like the rooster in the cockfight, is the avatar of the gamer a reflection of the actual gamer?

Status is important for participants in both cockfighting and video games. “Status strivings lead people to engage in a range of goal-oriented behaviors aimed at attaining and maintaining high status in their groups” (Cheng et al., 2014). The desire for status can be considered a double-edged sword. On the one hand, desire for status can motivate one to promote group welfare to show they care and think about others. Conversely, there are behaviors that can be considered antisocial to make one seem better in the eyes of the group than their skill level indicates. This could be considered a form of self-promotion.

Up until this point, we have talked very little about games of chance and how they fit into the play literature. French intellectual Roger Caillois was one of

the first to address this issue as a matter of response to University of Leyden professor J. Huizinga. Huizinga defined play as “summing up the formal characteristics of play, we might call it a free activity standing quite consciously outside ‘ordinary’ life as not being ‘not serious,’ but at the same time absorbing the player intensely and utterly.” Huizinga’s definition is often referred to as the “magic circle.” It is an activity that has no material interest and yields no profit (Caillois, 1958). Caillois (1958) set out six core characteristics of play and four categories of games. The six core characteristics are as follows:

1. It is free or not obligatory.
2. It is separate from the routine of life, occupying its own time and space.
3. It is uncertain, so the results of play cannot be predetermined, and the player's initiative is involved.
4. It is unproductive in that it creates no wealth and ends as it begins economically speaking.
5. It is governed by rules that suspend ordinary laws and behaviors and that must be followed by players.
6. It involves imagined realities that may be set against "real life."

Caillois described four categories of games:

- Agon, or competition. It's a form of play in which a specific set of skills is put to the test among players (strength, intelligence, and memory). The winner is the one who proves to have mastery of said skills through the game. For example, if a quiz game is a competition of intelligence, the

winner proves that they are more intelligent than the other players (e.g., in chess).

- Alea, or chance, is the opposite of Agon. Caillois described Alea as "the resignation of will, an abandonment to destiny." If Agon uses the skills of players to determine a victor, Alea leaves that to luck, and an external agent decides who the victor is (e.g., playing a slot machine).
- Mimicry, mimesis, or role-playing. Caillois defined it as "when the individual plays to believe, to make himself or others believe that he is different from himself" (e.g., playing an online role-playing game).
- Ilinx (Greek for "whirlpool"), or vertigo, in the sense of altering perception by experiencing a strong emotion (panic, fear, and ecstasy); the stronger the emotion is, the stronger the sense of excitement and fun becomes (e.g., taking hallucinogens, riding roller coasters, or having children spin until they fall down).

Caillois, unlike some other "play experts," was open to the idea of categorizing games across different categories. For example, a game could be both Agon and mimicry.

Literature Review-Play: Digital Goods

Belk (2013) stated that “knowingly or unknowingly, intentionally or unintentionally, we regard our possessions as parts of ourselves.” The major

categories of our extended self are the body, internal processes, ideas, and experiences, as well as those persons, places, and things to which one feels attached. Of the categories, the last three are most clearly considered extended. Belk raised the question of whether a virtual item, be it a book photo or a song, is as integral to our extended self as its material counterpart. He concluded that consumers are almost but not quite as attached to digital goods, especially if the consumer was not "born digital."

By way of comparison, Lehdonvirta (2009) argued that digital goods are very real to their owners and that on the internet, it is material goods that are not real (Belk, 2013). In a separate paper, the author specifically looked at what virtual item attributes drive purchase decisions and categorized them into functional, hedonic, and social.

Table 4. Lehdonvirta's attributes (Lehdonvirta 2009).

Functional attributes	Performance
	Functionality
Hedonic attributes	Visual appearance and sounds
	Background fiction
	Provenance
	Customisability
	Cultural references
	Branding
Social attributes	Rarity

The study assessed 14 different online platforms, ranging from Facebook to *Habbo Hotel* and even games such as *Kart Rider* and *World of Warcraft*.

Furthermore, he observed that purchased virtual goods fall into one of two categories: functional or decorative, as per the above. The author also noted that Korean gamers in products such as *Kart Rider* seemed more comfortable purchasing items that would give them an advantage or boost in the game than did Finnish gamers in *Snow Wars* or American gamers in *Ultima Online*.

As noted by Diablo Immortal gamer jtisallbusiness, P2W has its drawbacks. Research indicates that buying advantages through P2W mechanisms may lower a player's status in the eyes of his fellow gamers. Using social psychological theories, Evers et al. (2015) studied whether gamers who used microtransactions to gain an advantage were considered less skilled than those who did not. At the societal level, people compare themselves to others to see how they are faring in life. When one is doing "better," they feel good. When one is doing less well, they feel bad. With this theory in mind, Evers et al. compared players across three different games: *World of Tanks*, *Maple Story,* and *Diablo 3*. The findings indicated that players who engaged in P2W practices not only received less respect but also encountered reduced cooperation from other players. In addition, fellow players hoped they would fail.

Literature Review-Culture

Whilst we have established that there are numerous reasons why people play, our primary interest is in how culture affects how people play. This section

examines how cultural factors may affect the why or the how of play. As stated in the introduction, traditional cultural studies have not been significantly researched against the backdrop of video games. We will focus on Hofstede, Hall and the world value system to establish baselines for our research.

Literature Review-Culture: Hofstede

When discussing cultural differences, we should begin with Hofstede's six dimensions of national cultures: power distance, uncertainty avoidance, individualism/collectivism, masculinity/femininity, long/short term orientation, and indulgence/restraint (Hofstede, 2011). Notably, Hofstede differentiated between culture and values at the individual level. Culture is the "collective programming of the mind that distinguishes the members of one group or category of people from others."

Hofstede established the six dimensions as follows:

- Power distance is related to the different solutions to the basic problem of human inequality. It refers to the degree to which less powerful members of organizations and institutions acknowledge and anticipate an unequal distribution of power. An example could be societies in which parents treat children as equals versus those in which children are taught obedience.
- Uncertainty avoidance is a society's tolerance for ambiguity, or to what extent a culture feels comfortable or uncomfortable in unstructured situations. In countries with high uncertainty avoidance, people may say,

"Take each day as it comes." At the opposite end of the spectrum is high certainty avoidance, where members try to remove the uncertainty of life at all costs.

- Individualism vs. collectivism is what it sounds like. Countries that highly value individualism expect people to take care of themselves, and this ability determines one's success. In collectivist societies, people are immediately born into groups or clans that protect them in exchange for loyalty.
- Masculinity vs. femininity refers not to gender but rather to the distribution of values between genders. In a highly feminine society, there is little emotional and social role differentiation between the sexes. In contrast, in a masculine society, these roles are more clearly defined.
- Long-term vs. short-term orientation is the dimension in which members of a culture focus on perseverance and the future rather than immediate gratification.
- Indulgence vs. restraint is complementary to long-term versus short-term orientation. Indulgence in this case can be the extent to which a society values the idea of "fun." The other end of the spectrum is restraint, in which a society controls the satisfaction of needs and regulates them through strict social norms.

Hofstede's six dimensions are the basis for multiple additional studies. One of the largest and most renowned research projects to build upon his work is the global leadership and organizational behavior effectiveness (GLOBE) program.

GLOBE has nine dimensions, six of which are common with Hofstede. The nine dimensions of GLOBE are as follows (House et al., 2022):

- Uncertainty avoidance is defined as the extent to which members of an organization or society strive to avoid uncertainty by relying on social norms, rituals, and bureaucratic practices to alleviate the unpredictability of future events.
- Power distance is the degree to which members of an organization or society expect and agree that power should be unequally shared.
- Collectivism 1: Societal collectivism reflects the extent to which organizational and societal institutional practices encourage and reward collective resource and action distribution.
- Collectivism 2: In-group collectivism reflects the degree to which individuals express pride, loyalty, and cohesiveness in their organizations or families.
- Gender egalitarianism is the extent to which an organization or society minimizes gender role differences and gender discrimination.
- Assertiveness is the degree to which individuals in organizations or societies are assertive, confrontational, and aggressive in social relationships.
- Future orientation refers to the extent to which organizations or societies encourage and reward group members for performance improvement and excellence.

- Humane orientation is the degree to which individuals in organizations or societies encourage and reward individuals for being fair, altruistic, friendly, generous, caring, and kind to others.

GLOBE is an ongoing study aimed at tying cultural differences to leadership styles within a country or group of countries. While not directly pertinent to our research, it is conceivable that the supplementary cultural factors may influence the payment methods and gaming practices in several cultures.

Literature Review-Culture: The World Value System

Though not literature, the World Values System is another ongoing research project, founded in 1981, that studies changing values and their impact on social life. The study is conducted across almost 100 countries, covering 90% of the world's population, with the goal of "helping scientists and policymakers understand the changes in values, beliefs, and motivations of people worldwide (World Values Survey, 2023). Ronald Inglehart and Christian Welzel, political scientists, believe that two major dimensions of cultural variation could largely divide the world.

1) Traditional vs. secular rational values
2) Survival vs. self-expression values

As the name implies, traditional values tend to focus more on religion, family, including parent-child ties, and deference to authorities. Traditional values heavily criticize ideas such as divorce, suicide, and abortion. At the other end of the

spectrum are secular values, which tend to lean more on logical thoughts and rationalism. The other dimensions are survival vs. self-expression. Cultures ranking highly on the survival scale tend to emphasize both economic and physical security. In addition, they may look down on other cultures as inferior. Self-expression cultures, for example, believe strongly in environmental preservation and individual rights, as seen by gay and lesbian causes.

Literature Review-Culture: Hall

Hofstede is, of course, not the only socialist to look at comparative cultures. Anthropologist and nonverbal communications expert Edward Hall looked at the concept of high vs. low context to describe differences in culture. In a high-context (HC) culture, people are deeply involved with each other. In turn, these intimate relationships shape a social hierarchy structure, fostering self-control in individual inner feelings and widespread dissemination of information through simple yet profound messages (Kim et al., 1998). As the name suggests, a low-context (LC) culture is one in which people are very individualistic and slightly alienated, with relatively little involvement with others.

Hall identified six aspects of high- vs. low-context cultures. Social orientation is the degree to which social bonds exist between people in society. High-context cultures expect conformity and group orientation. They draw a line between insiders and outsiders, as exhibited by the need for connections in business. In low-context cultures, people tend to have weaker bonds and may pull

away if things are not going well. Business is more merit-based. According to Hall's model, China is a high-context culture, and America is a low-context culture. We found this to be similar to Hofstede's collectivism and individualism constructs.

Hall's concept of commitment is predicated on the idea that, due to high levels of involvement between people, a person's word is their bond. As a result of this sense of commitment, people may be hesitant or cautious to begin something new, particularly in fields or relationships that are not well known. In contrast to Hofstede's perspective on China, he asserts that the Chinese society is highly at ease in situations that lack clarity, mostly because of their perceived assurance of social security through strong interpersonal connections. Americans exhibit a lesser sense of obligation compared to the Chinese, leading them to be more inclined to take risks. This contradicts Hofstede's observations.

The issue of responsibility relates to both social orientation and commitment. People in a HC system are personally responsible for the actions of those below them. In contrast, a LC culture distributes responsibility among many, potentially leading to the identification of scapegoats at the lowest echelons of society. LC context cultures are also prone to resisting self-examination.

According to Hall, "Man, like other animals, is situationally aggressive, but unlike other species, he handles and channels his aggression in many different ways depending upon his cultures and how it structures and integrates aggression" (Kim et al., 1998). In HC cultures, people may try to avoid direct confrontation or speak in a roundabout manner to "give face" or show respect to other members of their culture. People in HC cultures are aware that their words have consequences. LC

cultures, like those in the US, often prefer a more direct and formal style of conflict resolution.

Communication is the fifth dimension. In HC cultures such as China, most communication relies more on the physical context or is internalized in the person. One can fully understand a message only when it is in the appropriate context. This style is believed to be more efficient as all members of a society are on the same page. However, it may also lead to frequent miscommunications as it is less explicit. The foundation of LC cultures lies in explicit communications. The selection of words, the structure of sentences, and the use of grammar all have a significant impact on communication, whether it is verbal or written.

Dealing with new situations is the final paradigm for Hall. Many LC cultures have established a complex legal and financial system to eliminate any uncertainty within their society. Westerners familiar with these systems know how to use them to navigate new situations. Individuals from HC cultures may find such complex systems daunting. HC people, on the other hand, prefer, as one would surmise, to tackle new situations with their older, more established systems.

Theory

Our theory is that cultural factors are one significant aspect that partly explains the differences in gaming and social playing behavior. Notably, culture is

a diverse spectrum to explain content preferences; hence, we focused on preferences between the world's two largest gaming markets, China and the US, and the case of F2P mobile games. In this dissertation, some commonly accepted cultural biases, such as art style, stories, etc., were ignored. Game developers are well aware of these cultural biases, but they tend to pay less attention to the culturally reflected collectivist behaviors, even as these preferences and styles proliferate. This study identified specific cultural differences to see if there is any effect on paying for and playing F2P mobile games.

To test our theory, we tested six hypotheses and sub-hypotheses each. Our sub-hypotheses were tested using moderators from Hofstede's research. Specifically, we evaluated collectivism, masculinity, uncertainty avoidance, and power distance, which are Hofstede's original four indices. We chose these as they are the most developed and applicable for our research.

Hypothesis 1: Chinese gamers are more likely than American gamers to play the same game as their friends

We already know that online game culture reflects certain aspects of society. Video games, on the other hand, are also a form of cultural text encoded with ideological positions (Chen, 2013). We also know that different cultures exhibit distinct perspectives and gaming is an example of that. In the offline intellectual world, Go with its boards, comprised of 19 × 19 spaces, is the most popular game in the East. This contrasts with the Western equivalent of chess,

which has boards of 8 × 8 spaces (Nisbett et al., 2001). Additionally, MMORPGs such as *World of Warcraft* are very successful in the Chinese market due in part to the community aspects of the game and the fact that Chinese and American modders interact with it differently (Kow & Nardi, 2010).

The research of two market research firms, Niko, based in California, and Newzoo, based in Amsterdam, contributed to the development of our initial hypothesis. Both firms specialize in game-related research that is widely used by the video game industry across all domains. In their latest report on the China mobile industry, Niko reported that 24.1% of Chinese gamers cited playing with friends as an important factor when choosing a new game to play (Niko Partners, 2023). Notably, Niko focuses only on Asia, with a specialization in China, while Newzoo conducts global research. Newzoo, a competing firm, also stated that playing with friends is among the top five motivations to play games. In contrast, Americans do not list this factor as a motivation for other industry observers.

A review of the top ten mobile games in China showed a strong preference for products with the multiplayer option (see Appendix). *Honor of Kings* (*HOK*), the top-grossing product, allows a team of five to play against another team of five. These teams are often formed by groups of friends. Other products, such as *Fantasy Westward Journey* and *Romance of the 3 Kingdoms*, allow players to form clans, many of which are with friends, to complete missions and side quests.

There is much literature on how people play differently within the same culture, from Bartle to Yee to Caillois. Based on the observed patterns in the industry and taking into account the cultural differences in thinking and playing,

our initial hypothesis suggests that the collective nature of Chinese virtual gaming may reflect the already observed differences in the real world (Hofstede).

Hypothesis 1a: A higher level of collectivism increases the likelihood that Chinese gamers play the same game as their friends compared to American gamers

We believe collectivism, as defined by Hofstede, is a strong moderator for playing with friends, especially across cultures such as those represented by China and the US. People in collectivistic societies such as China are born into strong, cohesive groups, such as extended families. Over time, individuals may also include classmates, colleagues, and friends as members of their in-group. In nations characterized by individualism, such as the US, interpersonal connections are not strong and individuals are expected to prioritize their own well-being and that of their immediate family (Hofstede, 2011).

Hypothesis 2: Chinese gamers are less likely than American gamers to spend on cosmetic items/skins

Firms heavily monetize their business models by selling virtual items in a F2P mobile environment, such as cosmetics or skins. Other items include battle passes or monthly subscriptions that unlock additional content, special power-ups or consumables, unique weapons, etc. These items may possess one of three

attributes: functional, hedonic, or social (Lehdonvirta, 2009). All items tend to be essential to the overall game's economy and, therefore, to the success of the game. The success of a virtual world not only relies on attracting initial acceptance of players, but more importantly, it also needs to retain existing players and stimulate players' virtual world activities within the realm of Huizinga's "magic circle" (Caillois, 1958). Virtual item purchase behavior of players in a virtual world means that the virtual world engagement of sustained players is active (Guo & Barnes, 2012). Concerning cosmetic items specifically, gamers are likely to view them as extensions of themselves. "Knowingly or unknowingly, intentionally or unintentionally, we regard our possessions (digital) as part of ourselves" (Belk, 2013). Similarly, cosmetic items/skins may be viewed as fashion items associated with status. Georg Simmel, the German sociologist and philosopher, wrote about fashion. "The elite initiates a fashion, and when the mass imitates it in an effort to obliterate the external distinctions of class, abandons it for a newer mode—a process that quickens with the increase of wealth" (Simmel, 1957).

After reviewing the Niko report, cosmetic items and skins are the top items to purchase in game, narrowly surpassing consumables. However, the US has a strong appetite for these virtual items. According to Newzoo, 43% of US gamers use skins, though it does not specify if these are for mobiles, PCs, or consoles (Newzoo, 2020). The report does specifically mention *Call of Duty* and *Roblox* as products that drive heavy skin and cosmetic item usage. Both games are available on multiple platforms and rank among the top ten F2P mobile games in the US.

We believe that the trend from consoles and PCs has extended to F2P mobile games.

Hypothesis 2a: A lower level of individualism increases the likelihood that Chinese gamers are less likely than American gamers to spend on cosmetic items/skins

Despite knowing that gamers in both countries enjoy purchasing and using skins, our general theory suggests that any observed cultural differences reflected in the hypothesis could be primarily driven by US individualism compared to Chinese collectivism (Hofstede, 2011). US gamers would be slightly more inclined towards such content, given the individualistic nature of society. Furthermore, American gamers would be more inclined to customize their characters to be a stronger reflection of who they identify as in the offline world.

Hypothesis 3: Chinese gamers are more inclined than American gamers to play games to compete

We know from the literature that gamers have various motivations to play games. Bartle's player types include achievers, explorers, socializers, and killers. Killers are defined as gamers who enjoy imposing themselves on other players with the primary goal of winning at all costs (Bartle, 2022). Game designer Marc Leblanc's taxonomy of gaming pleasures would classify competing as a form of

"challenge," or another word for struggle (Costikyan, 2002). Lucas and Sherry (2004) built their reasons for play upon gratification theory, according to which competition, defined as being the best player in a game, is one of the reasons to play.

China is considered the world's largest mobile e-sports market (Niko Partners, 2019). E-sports is defined as "competitive tournaments of video games, especially amongst professional gamers" (Lu, 2016). The Chinese government treats e-sports development in the same manner as professional sports development, dating back to document #93 issued by the State Council of China in 2018 (Yang et al., 2021). Though we acknowledge that, like most sports, most gamers will not become professionals, the Chinese government's acknowledgement that e-sports are considered the same as traditional sports proves the industry's health. The 2023 Asian Games in China further reinforced this point by featuring seven e-sports titles, including *Peacekeeper Elite* on mobile (Hamer, 2023).

Hypothesis 3a: A higher level of masculinity increases the likelihood that Chinese gamers play games to compete compared to American gamers

We felt that masculinity could be a possible moderator here, as China ranked slightly higher on this index than the US. Though Hofstede did not have an explicit measure of competitiveness, Evert Van de Vliert's writing on Hofstede's masculinity/femininity index addresses the issue. In "masculine" countries, male

and female inhabitants are more competitive, assertive, and ambitious; in "feminine" countries, male and female inhabitants are more cooperative, modest, and nurturing (Vliert, 1998). Males are expected to fulfill ego roles, while females are expected to fulfill social roles.

Hypothesis 4: Chinese gamers are more likely than American gamers to spend for a competitive advantage

Our H4 is an extension of H3. As we believe Chinese gamers are more inclined to play games to compete, a logical extension is that they are also more willing to buy these competitive advantages. Unfortunately, much of the literature on P2W gaming suggests links to problem behavior and gambling. However, we could argue that it is not so different from Geertz's work on Balinese cockfighting and the concept of *Deep Play*. In a *Deep Play* environment, the stakes are so high that, from a utilitarian point of view, to compete at all is absurd (Geertz, 1972). Beyond the money that is spent to raise the cocks, losing these fights also causes a "loss of pride, poise, passion, and masculinity" (Geertz, 1972). One could also assume status is lost here. Competitive gamers trying to win in an F2P environment are likely to feel these losses as well.

Adding additional color, Newzoo claims "P2W" style video games are generally not accepted in the West but are not viewed the same way in China (Huang, 2018). These differences are derived from the starting point at which each nation's industry began. In the US, the industry started with the Atari 2600 and the

buy-to-play (B2P) model. In contrast, China largely developed on the PC, where gamers paid for PC games via prepaid cards, internet cafes, or time subscriptions. This approach plays a crucial role in the widespread F2P mobile business that exists today. From a different starting point, we could argue that this model has become part of the Chinese culture.

We believe that many of the gamers in these categories exhibit what Nick Yee would refer to as an achievement component. Players showing these characteristics may fall into three sub-components. Advancement is the desire to gain power, progress rapidly, and accumulate in-game symbols of wealth or status. Mechanics is the interest in analyzing the underlying rules and systems to optimize character performance. Competition is the desire to challenge and compete with others (Yee, 2006).

Hypothesis 4a: A higher level of masculinity increases the likelihood that Chinese gamers spend to gain a competitive advantage compared to American gamers

As with H3, we feel that China's slightly higher score on Hofstede's masculinity index is a good moderator for this hypothesis.

Hypothesis 5: Chinese gamers are more likely than American gamers to spend on probability-based items

Critics of the game industry have tried to draw a parallel between probability-based items, often referred to as “loot boxes,” and gambling. As per the literature review, “loot boxes are psychologically similar to gambling because the prizes are undetermined and what is won can be of much less value than the price paid to obtain them” (Emmond & Griffiths, 2020). In studies of play, such as those demonstrated by Caillois, we know that games of chance (such as gambling in the real world) are a form of play. Given the cultural acceptance of gambling as a form of play in Chinese society, we predict that a similar reflection on their behavior towards probability-based items occurs in the virtual world.

In China, families learn and pass down the activity of gambling from generation to generation. Chinese families often play *Blackjack* or *Mahjong* during Chinese New Year gatherings. Ancient games like *Liubo* and *Hanging Horse*, an early version of Mahjong, are common family games (Chan & Chiu, 2019). We hypothesize that Chinese people do not view probability-based items negatively, but rather view them as a normal part of their "play." To avoid doubt, probability-based items may have multiple purposes, ranging from purely cosmetic to rare to items that help give a competitive advantage. For those seeking a competitive advantage, the alternative may be “grinding,” which is the experience of going through painfully boring or rote gameplay with slow advancement (Taylor, 2009).

Hypothesis 5a: A lower level of uncertainty avoidance increases the likelihood that Chinese gamers spend on probability-based items

As per Hofstede**,** countries with a low score on uncertainty avoidance such as China, are said to be comfortable with ambiguity. The uncertainty inherent in life is accepted, and each day is embraced as it comes. Some of the comfort in uncertainty comes from the support of one's in-group. Notably, this is not the same as risk avoidance.

Hypothesis 6: Chinese gamers are more accepting than American gamers of losing to players who spend more than them in-game

Hypothesis 6 is a corollary hypothesis to H5. According to the social comparison theory, people should only feel frustrated about their own relative position if another person buys an advantage that makes them better off (Evers et al., 2015). In a study of 532 gamers across three games—*World of Tanks*, *Diablo 3*, and *MapleStory*—Evers et al. found that players who acquired in-game benefits through the use of microtransactions were seen as less skilled and respected less.

Bartle made a similar argument that players probably see the use of real money to gain in-game advantages as a form of cheating. He found that "twinks" or "ebayers" are the derogatory terms used to describe people who buy in-game advantages (Bartle, 2024). Lehdonvirta considered buying in-game advantages as a form of cheating (Lehdonvirta, 2008). Furthermore, some gamers could see the purchase of in-game advantages as a violation of Huizinga's magic circle (Salen & Zimmerman, 2003).

Hypothesis 6a: A higher power distance score increases the likelihood that Chinese gamers are more accepting of losing to players who spend more than them than American gamers

We chose power distance as the moderator for this Hypothesis. Power distance is the extent to which less powerful members of organizations, including families, accept that power is distributed equally (Hofstede, 2011). In societies with higher power distance scores, income distribution is very uneven. Power is a fundamental fact of society that is neither good nor evil. People in high power distance countries, such as China, do not necessarily like this level of inequality, but they accept its existence.

Methodology

A survey was conducted over PCs and mobile phones in China and the US using Qualtrics, consisting of 201 Chinese and 209 Americans aged 20–30 years old who acknowledged playing F2P mobile games. The survey was conducted in English for the USA and translated into simplified Chinese for China, but the contents were similar for both countries. Two qualifying questions were asked at the beginning of the survey to determine if the participants were in the correct demographic group. The survey automatically terminated the participant if they answered no to either question. The questions were as follows:

- Are you between 20 and 30 years old?

- In the past 6 months, have you played free-to-play mobile games, defined as any game playable on a mobile phone or tablet that does not charge the user an upfront fee or subscription to play?

Regarding the survey itself, it was comprised of three distinct portions. Part 1 consisted of five questions regarding basic demographic information, including gender, primary education, occupation, region of residence, and annual income. Survey Part 2 asked 24 questions to ascertain whether our sample group exhibited the same cultural traits as Hofstede's research. Yoo, Donthu, and Lenartowicz (Yoo et al., 2011) developed the series of questions for individual use. When combined, the questions created a cultural value scale that captured Hofstede's five cultural dimensions at the individual level (Yoo et al., 2011). We first summarized the means and standard deviation statistics of our sample. After that, we conducted a factor analysis to calculate the factor loadings of each question with the corresponding latent factor to make it easier to compare to Hofstede's dimensions.

The third and final part of the survey consisted of 30 questions regarding gamers' attitudes towards playing and paying for F2P mobile games. In most cases, questions were asked on a 5-point Likert scale. The entire survey took less than 10 minutes to complete, and participants were compensated in line with Qualtrics policies, which include airline miles, food vouchers, etc.

Findings

Table 5. Statistical summary of the analytical sample.

Table 5 - Summary statistics of the analytical sample					
Demographics					
		Country			
		CN	US	Total	p-value
N		201 (49.0%)	209 (51.0%)	410 (100.0%)	
Gender					0.137
Female		100 (49.8%)	105 (50.2%)	205 (50.0%)	
Male		101 (50.2%)	100 (47.8%)	201 (49.0%)	
Other		0 (0.0%)	4 (1.9%)	4 (1.0%)	
Primary Phone OS					<0.001
iOS(Apple)		74 (36.8%)	131 (62.7%)	205 (50.0%)	
Android		126 (62.7%)	77 (36.8%)	203 (49.5%)	
Other		1 (0.5%)	1 (0.5%)	2 (0.5%)	
Primary Occupation					<0.001
Full Time Student		26 (12.9%)	16 (7.7%)	42 (10.2%)	
Full Time Work		158 (78.6%)	107 (51.2%)	265 (64.6%)	
Full Time stay-at-home parent		0 (0.0%)	10 (4.8%)	10 (2.4%)	
Part Time Work		7 (3.5%)	26 (12.4%)	33 (8.0%)	
Student with part-time job		4 (2.0%)	20 (9.6%)	24 (5.9%)	
Unemployed		6 (3.0%)	30 (14.4%)	36 (8.8%)	
Region of Residence					<0.001
Rural		7 (3.5%)	74 (35.4%)	81 (19.8%)	
City		194 (96.5%)	135 (64.6%)	329 (80.2%)	
Annual income from all sources*					<0.001
USA- Less than US$35,000:	China- Less than RMB50,000	18 (9.0%)	81 (38.8%)	99 (24.1%)	
USA- US$35,001 to 70,000	China- RMB 50,001 to 100,000	17 (8.5%)	73 (34.9%)	90 (22.0%)	
USA- US$70,001 to 105,000	China-RMB 100,001 to 150,000	32 (15.9%)	34 (16.3%)	66 (16.1%)	
USA- US$105,001 to 140,000	China- RMB 150,001 to 200,000	34 (16.9%)	14 (6.7%)	48 (11.7%)	
USA- US$140,001 to 175,000	China- RMB 200,001 to 250,000	76 (37.8%)	4 (1.9%)	80 (19.5%)	
USA- Over US$175,000	China- Over 250,000 RMB	24 (11.9%)	3 (1.4%)	27 (6.6%)	
Dependent variables for Hypothesis testing		CN	USA	Total	(p-value)
Playing the same game as friends (Q38)					
very unimportant		7 (3.5%)	65 (31.1%)	72 (17.6%)	
slightly important		20 (10.0%)	53 (25.4%)	73 (17.8%)	
fairly important		65 (32.3%)	18 (8.6%)	83 (20.2%)	
important		39 (19.4%)	46 (22.0%)	85 (20.7%)	
very important		70 (34.8%)	27 (12.9%)	97 (23.7%)	
Ever spent on the cosmetic items/skins		157 (78.1%)	121 (57.9%)	67.80%	<0.001
Playing games to compete		63 (31.3%)	79 (37.8%)	34.60%	0.170
Spending for a competitive advantage		100 (49.8%)	66 (31.6%)	40.50%	<0.001
Spending on probability -based items		29 (14.6%)	39 (19%)	16.50%	0.334
It is not fair when I lose to others who have spent more on the game					
strongly disagree		14 (7.0%)	30 (14.4%)	44 (10.7%)	<0.001
disagree		99 (49.3%)	47 (22.5%)	146 (35.6%)	
neither agree or disagree		25 (12.4%)	66 (31.6%)	91 (22.2%)	
agree		45 (22.4%)	35 (16.7%)	80 (19.5%)	
strongly agree		18 (9.0%)	31 (14.8%)	49 (12.0%)	
I respect players less who have spent money in-game than people who have not					
strongly disagree		8 (4.0%)	30 (14.4%)	38 (9.3%)	<0.001
disagree		19 (9.5%)	37 (17.7%)	56 (13.7%)	
neither agree or disagree		18 (9.0%)	68 (32.5%)	86 (21.0%)	
agree		100 (49.8%)	43 (20.6%)	143 (34.9%)	
strongly agree		56 (27.9%)	31 (14.8%)	87 (21.2%)	

*****US and Chinese income ranges are not direct translations. The GPD per capita of China is US$12,720, compared to the US's $76,329.60 (Bank, 2024). As China's GDP is approximately 1/6 of the US, we divided the US income range by 6 and rounded up to obtain smoother income buckets for survey purposes.

A total of 410 participants, 201 in China and 209 in the US, completed the survey in January 2024. In Table 3, we show the gender splits are almost 50/50 in both countries between people identifying as men or women. Furthermore, 50% of the sample use iOS, and 49.5% use Android to play mobile games. The majority of iOS users are American, whereas the majority of Android users are Chinese. Most of the respondents are full-time employees or full-time students. However, 78.6% of the Chinese respondents are holding a full-time job, compared to 51.2% of the Americans. Among Chinese respondents, 96.5% are urban dwellers, compared to 64.6% of Americans living in cities and 35.4% who live in rural areas. Regarding income distribution, 38.8% of Americans chose the lowest income bracket available, compared to 24.1% of Chinese who chose the same. Our test value in the table shows the degree of statistical differences within the answers of the two countries.

We conducted factor analysis on the questions that belong to corresponding cultural dimensions. Once the above table was generated, the summative value of each cultural dimension was calculated using the factor loadings of each question as weights. The summative values were then rescaled on a scale of 100 to make comparisons to Hofstede's indices easier.

Table 6	Comparison of Survey Results vs. Hofstede			
	Survey		Hofstede	
	China	USA	China	USA
Power distance	35	42	80	40
Uncertainty avoidance	79	76	30	48
Collectivism	75	57	80	9
Masculinity	35	37	66	62

Hofstede measured individualism, the opposite of collectivism. We conducted measurements for collectivism, which is the opposite of individualism. Essentially, a high individualism is a low collectivism, and vice versa.

Table 6 shows that our surveyed respondents scored differently than society at large on power distance, uncertainty avoidance, and masculinity. Note that the differences in these indices are small. Concerning collectivism/individualism, the trends of our group align with Hofstede: the Chinese are more collectivistic, and the Americans are more individualistic.

Findings: Hypotheses

Hypothesis 1: Chinese gamers are more likely than American gamers to play the same game as their friends

Hypothesis 1a: A higher level of collectivism increases the likelihood that Chinese gamers play the same game as their friends compared to American gamers

To test hypothesis 1, we asked respondents to rate how important it is for them to play the same games as their friends (Question 38) on a 5-point Likert scale from very unimportant (rank 1) to very important (rank 5). We also used an ologit model with this response as a dependent variable to test whether the difference between gamers from the two nations is still observed conditional on the collectivism score at the individual level.

Our results show that, in total, 86.5% of Chinese gamers responded that it is either "fairly important," "important," or "very important" to play the same games with their friends, compared to 43.5% of American gamers ($p < 0.001$). Table 7 presents the marginal effects of gamers' importance ranking on playing the same game as friends at the mean value of the collectivism score.

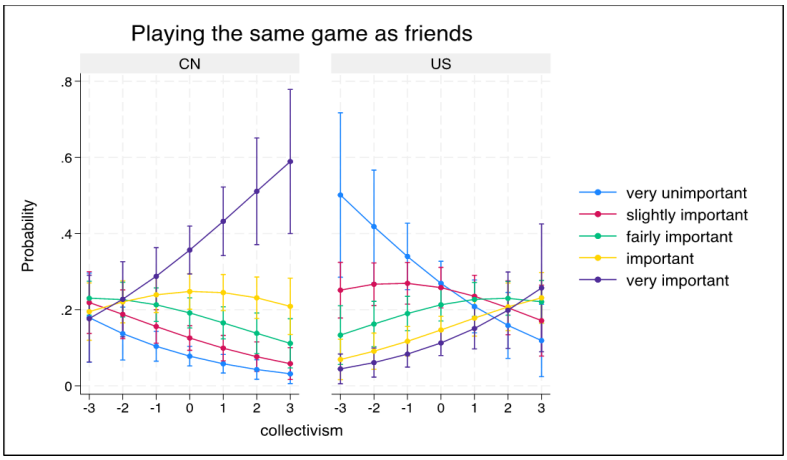
Table 7: Marginal effects at means of the importance of playing with friends in the same games to to Chines and US gamers conditional on collectivism

Likert scales of the importance of playing a same game with friends	Margin
Chinese gamers rated "very unimportant"	0.078***
	(0.013)
Chinese gamers rated "slightly important"	0.126***
	(0.016)
Chinese gamers rated "fairly important"	0.192***
	(0.020)
Chinese gamers rated "important"	0.248***
	(0.024)
Chinese gamers rated "very important"	0.357***
	(0.032)
US gamers rated "very unimportant"	0.269***
	(0.029)
US gamers rated "slightly important"	0.258***
	(0.027)
US gamers rated "fairly important"	0.213***
	(0.022)
US gamers rated "important"	0.147***
	(0.018)
US gamers rated "very important"	0.113***
	(0.017)

We show that for an average gamer with a collectivism score of 0, the likelihood that a Chinese gamer will rate playing the same game as friends as "very

unimportant" is 7.8%, whereas that among American gamers is 26.9%. Conversely, the likelihood that a Chinese gamer will rate playing the same game as friends as "very important" is 35.7%, compared with 11.3% for Americans.

Figure 2 visualizes gamers' behavioral patterns along the collectivism score scales by country.



Overall, as the Collectivism score increases, the probability for Chinese gamers to opt for higher importance brackets increases, whereas that for Americans decreases. The differences between the two nations are the clearest among those who selected "very unimportant" or "very important." Meanwhile, changes are less observable among those who opted for less extreme options, namely "fairly important" and "important."

In conclusion, hypotheses 1 and 1a are both supported. Chinese gamers place more importance on playing with friends in the same games than American gamers. Conditional upon their collectivism scores, we observe an opposite trend in gamers from the two nations.

Hypothesis 2: Chinese gamers are less likely than American gamers to spend on cosmetics/skins

Hypothesis 2a: A lower level of individualism increases the likelihood that Chinese gamers are less likely than American gamers to spend on cosmetic items/skins

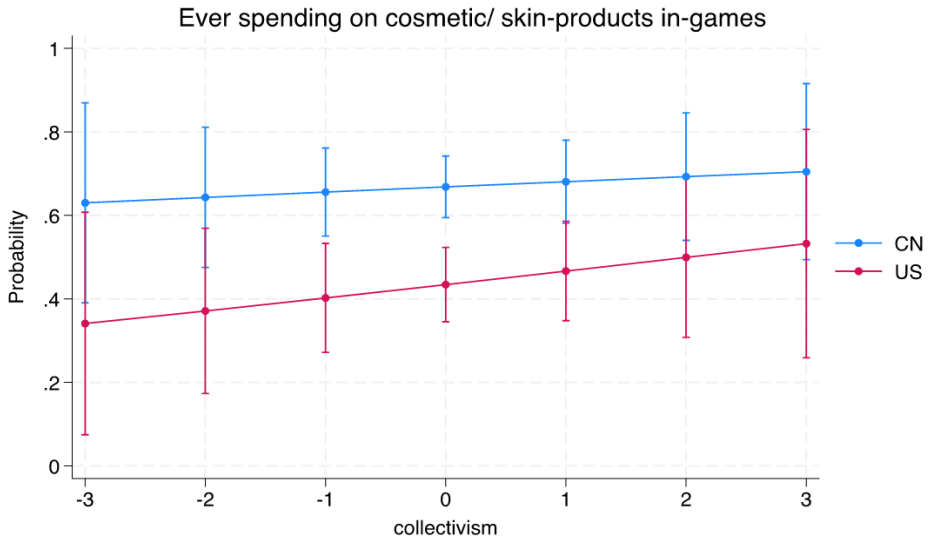
To test hypothesis 2, we asked three questions with regards to the use or purchase of skins. For all three questions, we asked respondents to share their frequency of use or purchase of skins/cosmetic items on a 5-point Likert scale from never (rank 1) to always (rank 5)—i.e., how often one uses free cosmetic products, pays with virtual money, and pays with real currency. We also used an ologit model with the response as a dependent variable to test whether the difference between the gamers from the two countries is still observed conditional on the collectivism/individualism score at the individual level. Our results show that 58.2% of Chinese gamers use free skins often or always vs. 51.2% of Americans. Only 4.5% of Chinese stated they have never paid for games with in-game currency vs. 25.8% of Americans. Concerning our third question, 6.5% of Chinese stated that they have never paid for skins with real currency vs. 30.1% of Americans. Responding to the same question, 32.9% of Chinese gamers chose often or always, compared to 22.5% of Americans. The difference between Chinese and American gamers for all three questions is significant ($p < 0.001$).

Table 8 presents the marginal effects of gamers' purchasing skins/cosmetic items at the mean value of their collectivism score.

Table 8 Marginal effects of Chinese and American gamers to spend on cosmetic/skin products, conditional on collectivism score.

	Margin Ever spend on cosmetic/skin products
Spend on cosmetic/skin products	
Chinese gamers	0.67 ***
	(0.04)
American gamers	0.44 ***
	(0.05)
Observations	278

Furthermore, for an average gamer with a collectivism score of 0, the likelihood that a Chinese gamer spends on cosmetic items is 67%, compared to an American at 44%. Figure 3 presents gamers from both countries' probabilities of spending on cosmetic items given their collectivism score.



Overall, we show that as collectivism increases in both countries, the likelihood of purchasing skins increases. However, this phenomenon is more acute for US gamers as opposed to Chinese gamers. These differences are most

pronounced among Americans who never paid for skins/cosmetic items in-game. Our results do not change qualitatively when we control for income. (Appendix Table 5) In conclusion, we do not find support for H2. Regarding H2a, collectivism is a moderator for purchasing skins, though not in the anticipated direction.

Hypothesis 3: Chinese gamers are more inclined to play games to compete than American gamers

Hypothesis 3a: A higher level of masculinity increases the likelihood that Chinese gamers play games to compete compared to American gamers

To test Hypothesis 3, question 36 asked our respondents to rank their top three motivations to play, ranging from a series of 12 choices. The choices included: play to collect; to advance in a game; to level up; to compete; and to socialize. Furthermore, 31.3% of Chinese chose “compete” as a motivator vs. 37.8% of Americans, with a value of 0.170. Among these, 7% of Chinese and 13.4% of American gamers chose “compete” as their first motivator ($p < 0.05$).

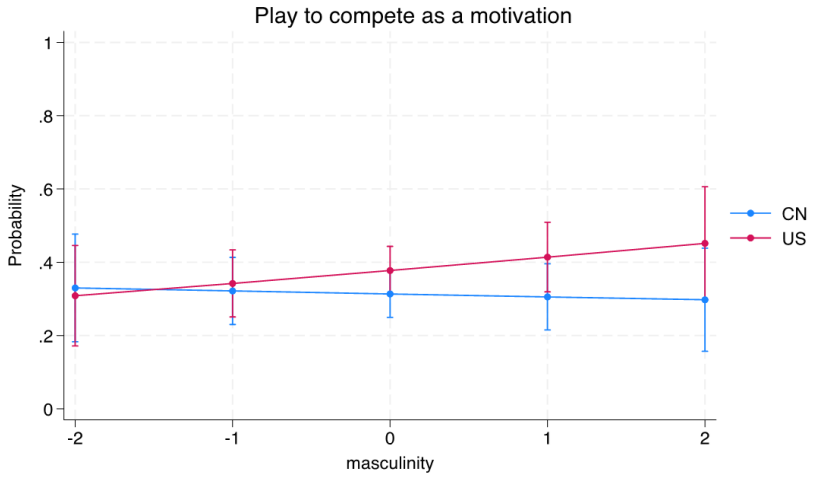
Table 9 shows the marginal effects of Chinese and American gamers playing to compete using a logit model. Column 1 presents the results of the model predicting whether a gamer selected “play to compete” as a motivation (at any rank). Column 2 displays the model's prediction of whether a gamer chose "play to compete" as their primary motivation.

Table 9- Marginal effects at means of Chinese and American gamers to play to compete

	(1)	(2)
VARIABLES	Motivation	First motivation
Play to compete as:	(any ranks)	(first rank)
Chinese gamers	0.31***	0.0692***
	(0.033)	(0.018)
Amercan gamers	0.377***	0.123***
	(0.034)	(0.024)
Observations	410	410

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We show that, at a collectivism score of 0 for an average Chinese gamer, the likelihood of them choosing "competing" as a motivator is 31.3%, compared to 37.7% for an American at the same level. Besides, 6.9% of Chinese chose competing as their first rank, compared to 12.3% of Americans who chose the same. Figure 4 displays gamers' likelihood to compete relative to their masculinity score.



In conclusion, H3 is not supported. Concerning H3a, masculinity is a moderator for US gamers but not for Chinese gamers.

Hypothesis 4: Chinese gamers are more likely than American gamers to spend on items for a competitive advantage

Hypothesis 4a: A higher level of masculinity increases the likelihood that Chinese gamers spend to gain a competitive advantage

To test Hypothesis 4, we asked two questions. The first question was whether "you have spent money in the last 6 months on a free-to-play mobile game." Seventy-eight percent of Chinese said yes, vs. 58% of Americans. We found this to be statistically significant ($p < 0.001$).

Of the 278 overall consumers who responded "yes" to spending in a F2P mobile game, we then asked, "What was your motivation to spend in the game?" Respondents were then given six options and asked to choose all that applied. Choices ranged from "to make gameplay more fun" to "cannot progress" to "gain a competitive advantage," amongst others. Furthermore, 49.8% of Chinese have spent money to give them a competitive advantage, vs. 31.6% of Americans. As with our first question on this topic, we found this to be statistically significant ($p < 0.001$).

To further explore hypothesis 4, we examined the correlation between nationality and in-game spending behavior, specifically in relation to the masculinity score. Table 8 presents the marginal effects of gamers spending to gain an in-game competitive advantage, conditional on their masculinity score.

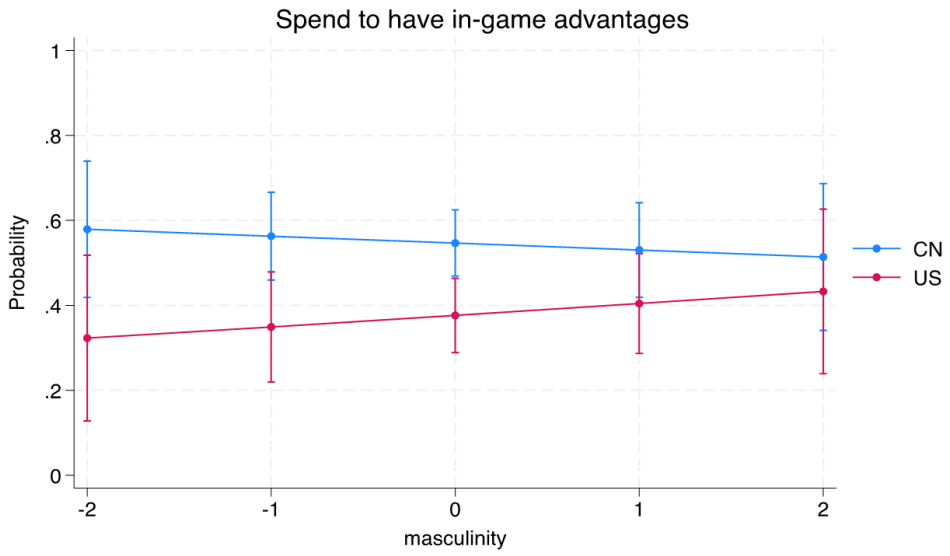
Table 9 - Marginal effects at means of Chinese and American gamers in spending to gain in-game competitive advantage, conditional on their masculinity score

Spend to gain in-game competitive advantage	Margin
Chinese gamers	0.546 ***
	(0.040)
American gamers	0.376 ***
	(0.044)
Observations	278

*Model control for masculinity

Among the 278 affirmative respondents, the likelihood of Chinese gamers with an average masculinity score spending money to gain a competitive advantage is 54.6%, compared to 37.6% for Americans. We found similar results after regulating the income level in our sample.

Figure 5 illustrates the propensity of Chinese and American gamers to spend moderately on masculinity. Americans are more likely to spend as their masculinity increases, while Chinese display the opposite trend. Theoretically, masculinity is a moderator but may not be applicable to our sample group.



In conclusion, we found support for our hypothesis that Chinese gamers are more willing to spend to gain an advantage. It is not evident from our study if masculinity has a moderating effect on spending to gain an advantage.

Hypothesis 5: Chinese gamers are more likely than American gamers to spend on probability-based items

Hypothesis 5a: A lower level of uncertainty avoidance increases the likelihood that Chinese gamers spend on probability-based items compared to American gamers

To test hypothesis 5, we asked two questions directly related to probability-based items along with four additional questions related to the respondent's appetite for risk. Among those who spent money on F2P mobile games in the last 6 months, we asked, "What items did you spend on?" The seven choices were heroes, weapons, cosmetic/skins, probability-based items, consumables, subscriptions, and virtual currency. Moreover, we found that Chinese gamers are less inclined to spend on probability-based items (14.6%) vs. Americans (19%).

Among 410 respondents, we asked them to rate their agreeableness on the statement, "I agree with paying for the chance to get a high-value item in game." On a 5-point Likert scale, the choices ranged from 1 (strongly disagree) to 5 (strongly agree). Additionally, 55.6% of Chinese responded to this question with "agree" or "strongly agree"; 39.1% of Americans answered the same. We found this to be statistically significant, with a p-value of <0.001. The other 4 questions

asked related to risk appetite in general and were taken from a domain-specific risk taking (DOSPERT) scale for adult populations (Blais & Wener, 2006). Table 5 shows statistically significant differences between Chinese and American gamers regarding risk across four questions, with a p-value of <0.001.

Table 9 Paying behaviours

	country			
	CN	US	Total	Test
N	201 (49.0%)	209 (51.0%)	410 (100.0%)	
It is ok to bet a day's income on a horse race or other sporting event.				P-Value
strongly disagree	54 (26.9%)	54 (25.8%)	108 (26.3%)	<0.001
disagree	71 (35.3%)	38 (18.2%)	109 (26.6%)	
neither agree or disagree	17 (8.5%)	69 (33.0%)	86 (21.0%)	
agree	48 (23.9%)	35 (16.7%)	83 (20.2%)	
strongly agree	11 (5.5%)	13 (6.2%)	24 (5.9%)	
You should invest 10% of your annual income in a moderate growth mutual fun				
strongly disagree	6 (3.0%)	18 (8.6%)	24 (5.9%)	<0.001
disagree	13 (6.5%)	16 (7.7%)	29 (7.1%)	
neither agree or disagree	24 (11.9%)	74 (35.4%)	98 (23.9%)	
agree	110 (54.7%)	72 (34.4%)	182 (44.4%)	
strongly agree	48 (23.9%)	29 (13.9%)	77 (18.8%)	
It is ok to bet a day's income on a high stakes poker or card game.				
strongly disagree	74 (36.8%)	57 (27.3%)	131 (32.0%)	<0.001
disagree	75 (37.3%)	45 (21.5%)	120 (29.3%)	
neither agree or disagree	8 (4.0%)	54 (25.8%)	62 (15.1%)	
agree	31 (15.4%)	36 (17.2%)	67 (16.3%)	
strongly agree	13 (6.5%)	17 (8.1%)	30 (7.3%)	
It is ok to invest 5% of your income in a very speculative stock.				
strongly disagree	21 (10.4%)	19 (9.1%)	40 (9.8%)	<0.001
disagree	32 (15.9%)	22 (10.5%)	54 (13.2%)	
neither agree or disagree	28 (13.9%)	70 (33.5%)	98 (23.9%)	
agree	88 (43.8%)	70 (33.5%)	158 (38.5%)	
strongly agree	32 (15.9%)	28 (13.4%)	60 (14.6%)	

Across all four questions, Chinese respondents showed a lower appetite for risk compared to their US counterparts.

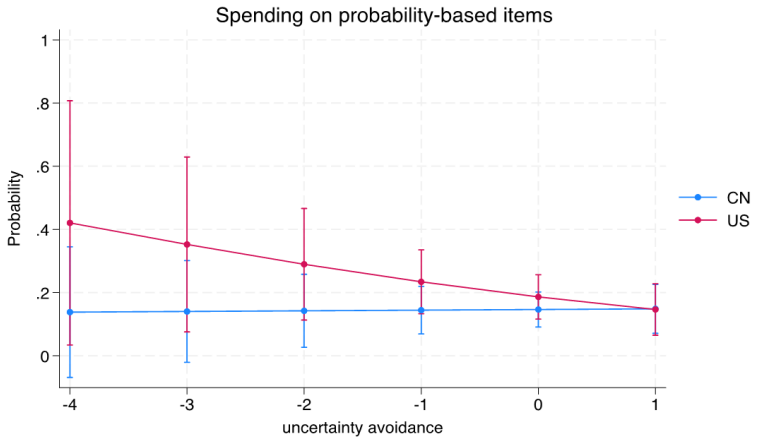
Table 12. Marginal effects at means of Chinese and American gamers in spending on probability-based items, conditional on their uncertainty avoidance score

Spend on probability based items	**Margin**
Chinese gamers	0.146 ***
	(0.028)
American gamers	0.187 ***
	(0.036)
Observations	278

*Model control for uncertaintiy avoidance score

At an average uncertainty avoidance score, Chinese gamers are 14.6% likely to spend on probability-based items compared to Americans, who are 18.7% likely at the same level. We found similar results when controlling for income.

In Figure 6, we demonstrate that the American likelihood of spending on probability-based items decreases as uncertainty avoidance increases. In contrast, as uncertainty avoidance increases for Chinese gamers, their likelihood remains largely consistent.



To conclude, hypothesis 5 is not supported. Concerning 5a, the data are inconclusive in arguing that uncertainty avoidance moderates gamers' spending decisions on probability-based items.

Hypothesis 6: Chinese gamers are more accepting of losing to players who spend more in-game than American gamers

Hypothesis 6a: A higher power distance score increases the likelihood that Chinese gamers are more accepting of losing to players who spend more than them compared to American gamers

To test hypothesis 6, we asked gamers to respond to the following statement: "It is not fair when I lose to others who have spent more on the game than I have" on a 5-point Likert scale with 1 (strongly disagree) and 5 (strongly agree). We found that 34.2% of Americans agree or strongly agree that it is not fair to lose to people who spent more than them, compared to 27.4% of Chinese. On a related question, we asked gamers to respond to the following statement: "I respect players less who have spent money in-game compared to those who did not." We found that 77.7% of Chinese answered "agree" or "strongly agree." Furthermore, 35.4% of Americans responded the same way. Based on these responses, we can conclude that Chinese gamers accept P2W but show less respect to those who choose this path.

In Table 6.2, we show the marginal effect by means of Chinese and American gamers' responses to the two questions. Column 1 predicts the extent to which gamers agree or disagree with the unfairness of losing to a spender, and Column 2 predicts their respect for spenders. At a mean score of 0 on the standardized power distance dimension, more than half of Chinese and American gamers opted for "disagree" (38.5% for Chinese and 33.5% for Americans) or "neither agree nor disagree" (22.3% for Chinese and 23.4% for Americans) with the statement on the unfairness of losing to spenders. With regard to the level of

respect for spenders, Chinese gamers give less respect to those who spend in-game. Meanwhile, the opinions among American gamers are found to be in all ranges.

Table 12- Marginal effects at means of gamers' agreements to other players spending in the games

	Margin	
	It's unfair to lose to someone who spent in-game	Less respect to those who spend in-game
VARIABLES	(1)	(2)
Chinese gamers select "strongly disagree"	0.117***	0.039***
	(0.019)	(0.008)
American gamers select "strongly disagree"	0.088***	0.142***
	(0.015)	(0.022)
Chinese gamers select "disagree"	0.385***	0.072***
	(0.028)	(0.012)
American gamers select "disagree"	0.335***	0.195***
	(0.027)	(0.024)
Chinese gamers select "neither agree nor disagree"	0.223***	0.162***
	(0.021)	(0.019)
American gamers select "neither agree nor disagree"	0.234***	0.267***
	(0.022)	(0.025)
Chinese gamers select "agree"	0.177***	0.413***
	(0.021)	(0.027)
American gamers select "agree"	0.213***	0.295***
	(0.023)	(0.025)
Chinese gamers select "strongly agree"	0.097***	0.314***
	(0.016)	(0.030)
American gamers select "strongly agree"	0.129***	0.102***
	(0.020)	(0.016)
Observations	410	410

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

To conclude, H6 that is Chinese gamers are more accepting of players losing than players who have spent in-game. This estimate does not change qualitatively when income is considered a control. Concerning H6a, we also found support for power distance as a moderator, though it is more pronounced amongst Americans.

Discussion

We found strong support for collectivism as a moderator of behavior in the F2P mobile market, indicating it should be a consideration for executives operating in these markets. Our surveyed respondents were most closely aligned with Hofstede's sample on this dimension, leading us to infer that it is a strong cultural factor that affects both societies. In gaming, uncertainty avoidance, masculinity, and power distance provided less clear moderating effects. In each of these three indices, our sample group demonstrated a trend that differed from Hofstede's. For instance, China scored lower on power distance than the Americans, while the USA scored higher, according to Hofstede. The same trend was noted for masculinity and uncertainty avoidance.

Our discussion will be broken into five parts. First, we will have a quick discussion on the demographic data. Next, there will be an explanation of the differences between our survey gamers based on Hofstede's indices. We will examine the limitations of Hofstede's indices, followed by an analysis of the impact of regulations in the Chinese market. Following the conclusion of those points, we will delve deep into the tested hypotheses.

Discussion: Demographic Data

We started with the question about which iOS consumers use. This question is important because iOS users (Apple) are known to spend more money on games and apps than Android users (Google). This phenomenon is largely explained by the variance in device specs on Android phones versus the more stable and higher-end specs on Apple devices. Our sample groups showed a large variance in phone preference between the countries. Chinese consumers showed a strong preference for Android devices (62.7%), likely driven by the strength of domestic manufacturers such as Oppo, Huawei, etc.

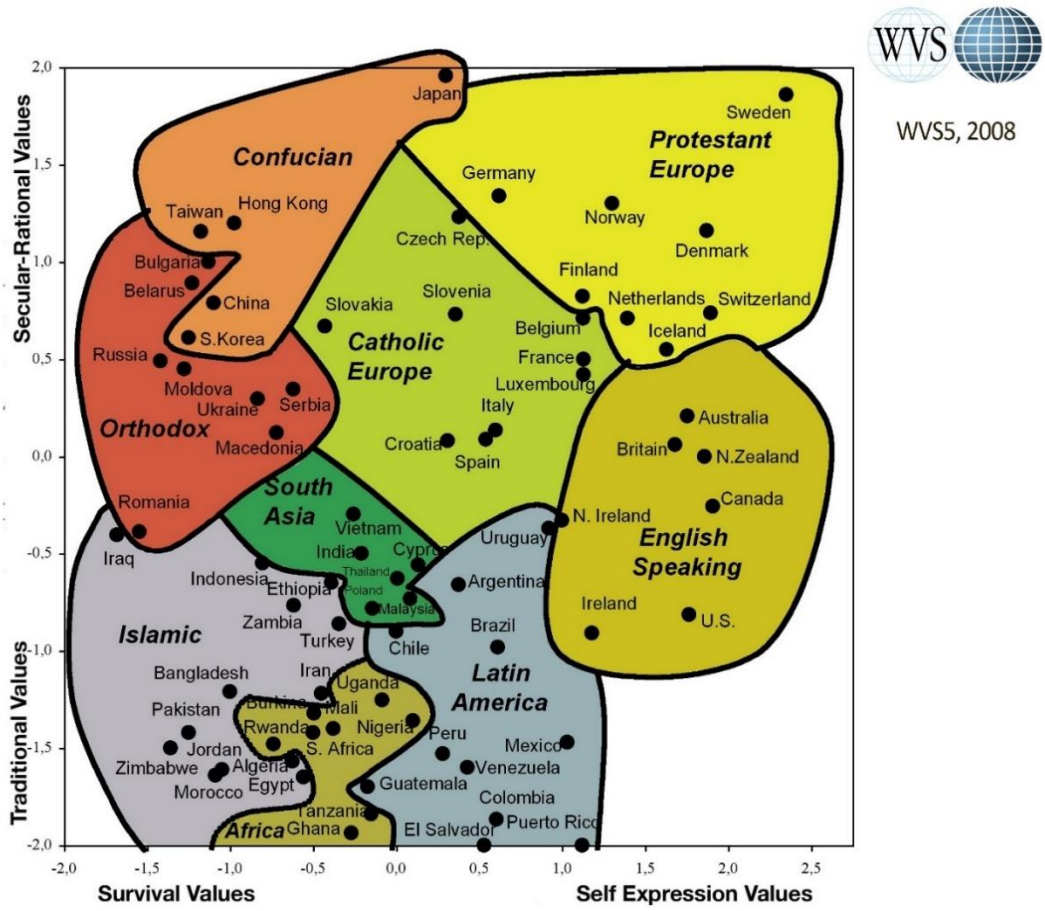
We found statistically significant differences among the survey respondents in terms of occupation. Furthermore, 78.6% of the Chinese reported holding a full-time job, compared to 51.2% of the Americans. This could be partly explained by the fact that 35.4% of Americans live in rural environments. The same could be a potential explanation for why 6.6% of Chinese reported earnings in the highest income bracket (over 250,000 RMB per year) compared to 1.4% of Americans who answered the same.

Surveyed Data vs. Hofstede

Looking at our data (see Table 6) vs. that of Hofstede, differences became obvious immediately. There could be numerous reasons for these differences. In the 1970s, Hofstede conducted his original research across 50 countries, including the US and China, using over 100,000 questionnaires. All of the respondents were IBM employees. Video games were in their infancy at the time of this research. It

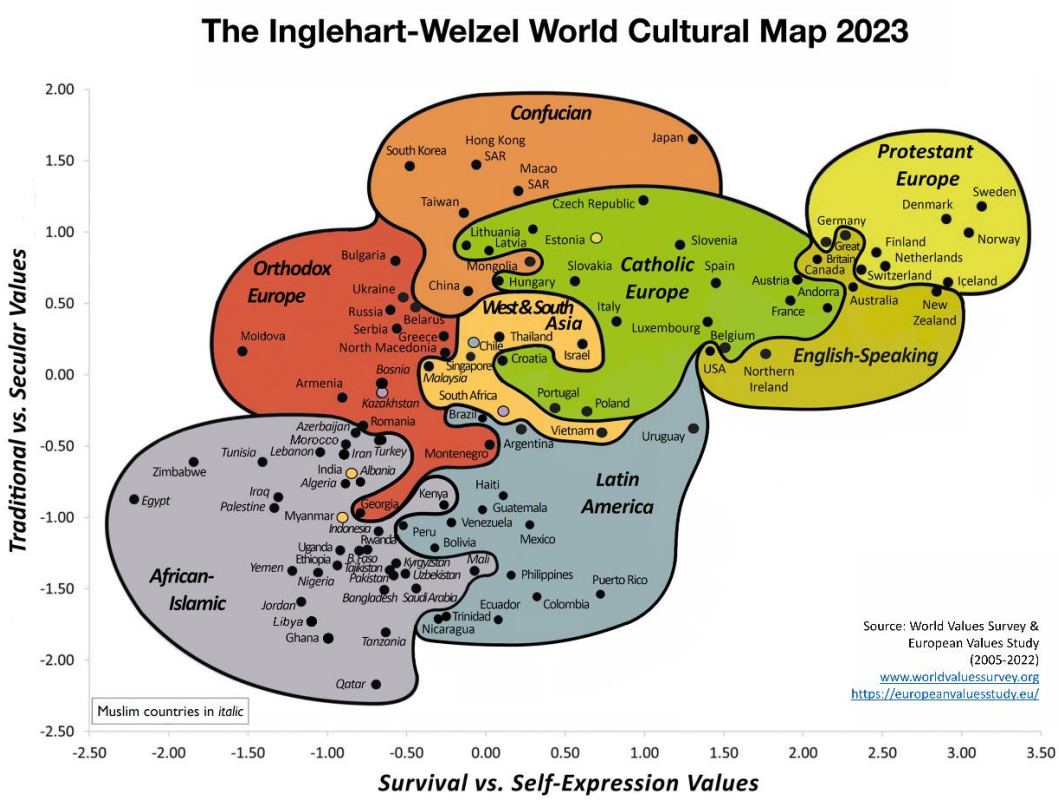
is important to note, however, that subsequent research has largely supported his findings. We limited our survey to 20- to 30-year-old consumers who admitted to playing F2P mobile games. They have a variety of jobs, ranging from unemployed to students to full-time workers, with varying incomes. Our consumers in China live primarily in large cities, whereas our consumers in the US live in a mixture of rural and urban environments.

Other explanations for the significant difference in the data can be found when referencing the WVS. Upon examining the Inglehart–Welzel World Cultural Map, it becomes apparent that China and the US are exhibiting increasingly similar behavior as time progresses.



Inglehart–Welzel Cultural Map (WVS, 2008).

Looking at the map from 2008, China ranked approximately -1 on the survival vs. self-expression axis, compared to the US at approximately 1.8. On the y-axis of traditional versus secular values China ranked .75 vs. the US and nearly -.75. Comparing the map to 2023, the two countries became much closer to each other over a short 15-year period.



China is now at .50 on the traditional versus secular values compared to the US near the 0.0 point. China now occupies a position near the mid-point of 0.0 on the x-axis of survival vs. self-expression values, contrasting with the US, which has experienced a decline in expressiveness over the same period. These moves are not entirely unexpected. According to the WVS website, "in a liberal post-industrial economy, an increasing share of the population has grown up taking survival and freedom of thought for granted, resulting in that self-expression is highly valued" (World Values Survey, 2024). In a different way, as a country's economy grows, it tends to move up and to the right on the map. To confirm this point, China's GDP per capita in 2008 was US$4,711.64 and grew nearly 3-fold by 2021 to US$11,223 (Bank, 2024). In comparison, the US only grew from US$53,345.38 to US$61,829.65 during the same period.

One of the fundamental problems of cultural research is the concept of "ecological fallacy." It is an error to assume that what holds true at the group level also holds true at the individual level (King, 2004). "Hofstede's dimensions of national cultures were constructed at the national level. They were underpinned by variables that correlated across nations, not across individuals or as predictors of individual differences because the variables that define them do not meaningfully correlate across individuals" (Brewer, 2014). Globe warned that "Caveat Emptor: it is unreasonable to expect that the scales will show the same psychometric properties at the individual level of analysis as they did at the aggregate levels" (Brewer, 2014). Hofstede also warned about the same. Brewer and Venaik quoted the statement of Minkov and Hofstede that "Hofstede's dimensions are meaningless as descriptors of individuals." Despite these warnings, Hofstede and Globe have spread as de facto measurements for cultural indices. It is claimed that this acceptance has been driven by "the broader trend toward more positivistic empirical methods in the social sciences."

Brendan McSweeny explained the critiques of both Globe and Hofstede. He wrote, "The ontological status of "national culture," its depiction as bi-polar value "dimensions," the validity of measurements of those dimensions, and the representativeness of samples have been the object of considerable debate" (McSweeney, 2013). McSweeney created a 5-point argument as to the dangers of accepting "value-based" cultural research as plausible. First, even by Hofstede's own admission, there is zero statistical or empirical evidence that national culture (as values) predicts individuals' behaviors. Second, within a country, particularly

larger ones like China and the USA, the sample itself exhibits significant diversity. Next, the idea of “causal complexity” comes into play. “The combinatorial, often complexly combinatorial nature of social causation makes identification of causation (or prediction) highly challenging and usually far beyond the unilevel analysis, even when the latter is well executed” (McSweeney, 2013). Beyond the value definition of national culture as espoused by Hofstede and Globe, there are also psychological, mentalist, textualist, intersubjectivist, and practice-based definitions of national culture. Each of these schools offers different and, at times, opposing definitions of “culture.” According to Sweeney, the fundamental failure of the "value-based" view is that it implicitly supposes that the values of a nation are a coherent whole with no contradictory elements. Referencing Clifford Geertz, he dismissed the coherence view as a “seamless superorganic unit within whose collective embrace the individual simply disappears into a cloud of mystic harmony” (McSweeney, 2013).

Censorship

While China and the USA are the world’s two largest video game markets, they are by no means the same. At its core, the largest difference is the existence of a substantive censorship and approval process in China for the approval of all video game content. Foreign game companies must work with a local publishing/game company to operate or even seek approval to operate a game in China. Often, local Chinese firms will take at least 50% of the revenue in exchange for publishing a game in China. Before a game can be placed on a local Android or iOS store, it must be approved by the National Press and Publication Administration (NPPA).

Games that have been approved receive an ISBN (International Standard Book Number) that allows them to operate in China. Without this number, it is illegal to run a game in China.

The USA also has a censorship system, but it is considered far less arduous for both foreign and US-based companies. Game ratings are issued by the Entertainment Software Review Board (ESRB). The system loosely follows the motion picture system. Game publishers submit their games to the ESRB along with a voluntary declaration of each game's content. After reviewing the voluntary declaration, the ESRB issues a rating that must appear on the game's loading page and on subsequent digital storefronts.

Drawing on lessons from the film industry, which is also heavily regulated in China, the challenging requirements to operate a game in China may shape the type of game consumers will play at multiple levels. Chinese gamers know that Chinese games comply more fully with Chinese regulations and are therefore less likely to be shut down. Chinese game developers must engage in complicit creativity from the outset to secure approval from the NPPA. "Creative compromise or self-censorship often occurs within creative production, so a micro- and meso-level analysis of censorship is crucial" (Fang, 2024). While a Western company may also follow these rules from the start of production, the lack of a guarantee of release makes this a very risky decision. Over time, the consistent application of the censorship apparatus could create a sub-conscious way of playing or paying for games without the consumer even being aware.

Discussion: Hypotheses

"Games reflect the values of the society and culture in which they are played because they are part of the fabric of that society itself" (Salen & Zimmerman, 2003). While the above was originally a statement in reference to the design of games, it could also be used here as a reflection on how gamers play games within a society. China scored highly on collectivism in both Hofstede's original research and in our survey group. Hall classified China as an HC culture. In HC cultures, people are deeply involved with one another. Bonds between people "start with one's friends, colleagues, community, and society in general" (Kim et al., 1998). People in HC societies tend to have a high commitment to complete actions for one another. In this context, we found that these results are not surprising.

Referencing further PC-based literature, Bartle would likely label Chinese F2P mobile gamers as "socializers." The game is a backdrop to meet up and chat with friends. The relationships mean as much as the game itself. Even if players cannot chat with one another, they can follow and support each other's progress. Americans, on the other hand, are more likely to focus on achievement. Socializing for achievers is often a means of finding out what other players know, with the goal of benefiting themselves.

Regarding hypothesis 2, we found that Chinese are more likely to spend on cosmetic items/skins using both in-game currency and real money. Furthermore, Chinese gamers are more inclined to use free skins than Americans. Given the tendency of Americans to stand out or be individuals, we found this to be a logical extension. However, we found the opposite to be true.

In a research regarding the profile images of American and Chinese consumers on social networking sites, Zhao and Jiang (2011) found that Chinese consumers are more likely to customize their profile images using digital effects. Americans are more likely to show photos of themselves in group settings. Self-presentation is "the process by which people convey to others that they are a certain kind of person or possess certain characteristics" (Zhao & Jiang, 2011). It is argued in their paper that culture is one of the major influences on self-presentation. They claimed that collectivists tend to emphasize the effects of their actions on members of their in-groups. A tendency to be interdependent with other in-group members is exhibited. Americans, in comparison, exhibit individualism as a respect for individual entities. Chinese have interdependent self-construal, whereas Americans have independent self-construal. In summary, the definitions of independence and individualism are different between the two countries.

The Proteus Effect, named after the Greek god Proteus, refers to the idea that an individual's behavior conforms to their digital self-representation, independent of how others receive them (Yee & Bailenson, 2007). In the offline world, extreme self-transformation can be expensive or difficult to achieve. However, in an online world such as a gaming environment, self-representation is easy with the use of customizable avatars. Yee and Bailenson (2007) cited the online social world *Second Life* with over 150 different variations that could be made to a character. This number of variations or more is common in F2P mobile games. Behavioral confirmation is "the process whereby the expectations of one person (typically referred to as the perceiver) cause another person (typically

referred to as the target) to behave in ways that confirm the perceiver's expectations (Yee & Bailenson, 2007). Avatars may also alter how a person behaves or plays a game, independent of how others perceive us. This is known as the self-perception theory. Chinese gamers may be more susceptible to either of these theories, for reasons that remain unclear.

Concerning hypothesis 3 that Chinese gamers are more inclined to play games to compete, we considered the top ten F2P mobile game rankings in China. At the top of the list is *HOK*, developed by Timi Studios, a division of Tencent. *HOK* is known as a MOBA or multiplayer online battle arena game. The most famous MOBA is *League of Legends* from RIOT Games. MOBAs are known as fast-paced, competitive team-based games. In comparison, the top-rated game in the US is *Candy Crush* from Kingsoft/Activision. *Candy Crush* and its various iterations are known as match games, where the player is rewarded for matching three or four of a kind in a crowded field. Such match-style games are rarely played directly against another player, unlike MOBAs. We should also point out that among our surveyed Chinese gamers, *HOK* is the most played game. Among Americans, *Candy Crush* is the most popular, though the answers in general varied more than those of the Chinese community.

It is possible that it is not the competitive aspects of HOK that are most appealing to the Chinese. Deep teamwork is necessary to be successful when playing MOBAs. As mentioned, when discussing collectivism in Hypothesis 1, Chinese gamers chose playing with friends as a key motivator to play. It is possible for Chinese gamers to see competing with their friends as a form of socialization as

opposed to competition. There is support for this argument, though it has more to do with collectivism than with masculinity. “Regarding group behaviors of people from collectivist and individualist cultural contexts, in collectivist cultures, individuals favor cooperative behaviors while their individualistic counterparts have a propensity for competitive behaviors” (Yang, 2023).

For the sake of completeness, we tested the above hypothesis that collectivism would be a strong moderator of competitiveness and found a positive correlation to support it (see Appendix). As collectivism increases, the likelihood of a Chinese gamer choosing to play to compete decreases, while the likelihood amongst Americans increases. The differences are especially clear among players with higher-than-average collectivism scores. When choosing "play to compete" as the first motivation, we also observed a similar pattern (see Appendix-Figure 4).

We chose masculinity as a moderator due to its achievement characteristics. Given the affiliation with gender, Hofstede himself renamed this dimension to motivation towards achievement and success to simplify the terminology. According to Hofstede’s website, demonstrating success and being strong and fast are characteristics of highly masculine societies. To recapitulate, under Hofstede’s original work, China was only marginally more masculine than the US. In our sample group, we found that the US respondents are slightly more masculine than Hofstede’s group.

Moving on to Hypothesis 4, in talking with industry practitioners, there is a belief that Americans are less inclined to P2W to play F2P mobile games. The genesis of this theory is that the US industry developed on the back of the B2P model

referenced earlier in our paper. The Asian market started to grow in earnest with PC MMOs in the late 1990s and early 2000s, when access to a game was only obtainable via a PC café or through the purchase of a monthly subscription. Over time, the monthly subscription model gave way to the current norm, the F2P model. The difference in the development paths of China and the US has led to varying attitudes towards such transactions, according to Harding-Rolls, the director and head of games research at IHS Markit. (Huang, 2018)

Social comparison theory is that people should only feel frustrated about their own relative position if another player buys an advantage that actually makes them better off (Evers et al., 2015). This feeling of frustration is likely to be especially pronounced when a person compares himself to a fellow gamer who initially started in the same position. Lehdonvirta argued that there is a difference between hedonistic items that give a player an advantage vs. ornamental items such as skins. Classic play scholars such as Salen and Zimmerman provided the magic circle, as in worlds with clear boundaries known by all players. Any outside influence, regardless of whether it is ornamental or hedonistic, breaks this circle (Salen & Zimmerman, 2003).

Concerning why Chinese are more likely to spend to give themselves a competitive advantage, there is once again support for the collectivistic index being a driver of Chinese gamers attitudes towards what is fair with regards to purchased advantages. In a comparison of US and Chinese price fairness perceptions, it was found that Chinese consumers are more sensitive to the concept of fairness as it related to “face.” Face, in this case, is considered the status earned in a social

network, and a gain or loss of face corresponds to a gain or loss in social status (Bolton et al., 2010). Paying a higher price than a member of your in-group is deemed unfair in China, while in the US it is less of a concern.

As with Hypothesis 3, our surveyed Chinese gamers are marginally less masculine than their US counterparts. Even in Hofstede's original research, the difference between China and the US was minimal on this scale, so this is not a point of concern. What is interesting to note is that Chinese gamers seem less inclined to pay for an advantage as their masculinity increases, while US gamers are more inclined.

It is possible, in the case of the Chinese gamers, that fear of losing out (FoLO) is a factor in driving their motivation to purchase for an advantage. In Singapore, an East Asian country with a similar education system to China, it was found that a FoLO mindset, considered a cultural norm in Singapore, drives the underlying desire to succeed in a college setting (Choi, 2022). Primarily, it is the concept of securing one's share of limited resources. In Singapore, the FoLO mentality exhibited in the classroom is also found in society. Given the similarities in the education systems in China and Singapore, it is possible that this mentality is extended to society as well. In the case of gaming, this mentality could show up in the form of purchasing in-game advantages.

Concerning Hypothesis 5, cultures with lower uncertainty avoidance are said to be comfortable with the uncertainties in life. They are comfortable with ambiguity and chaos. In the case of China, it is said that the comfort of family and "in-group" ties makes people more accepting of the unknown. This is not to be

confused with risk aversion. Risk refers to ‘a state in which the number of possible events exceeds the number of events that will actually occur, and some measure of probability can be attached to them” (Yang et al., 2022). Risk aversion is known to affect consumers’ decision-making behaviors. Consumers with a high level of RA may be more inclined to need more quality cues before making a purchase decision (Yang, 2023).

Uncertainty avoidance is the “threat of feeling threatened by uncertain or unknown situations” (Hofstede, 2011). People with a higher uncertainty avoidance tend to have a lower tolerance for ambiguity. We expected this to be the case for probability-based items, but it was not. A few potential reasons can explain the difference. Within our surveyed respondents, Chinese gamers obtained a higher uncertainty avoidance score compared to their American counterparts. In Hofstede’s original research, China scored 30 on this index, compared to America’s 46. It is important to mention that in our study, both cultures exhibited significant disparities in scores, with the US scoring 79 and China scoring 76. This suggests that the surveyed gamers are displaying the opposite of Hofstede's findings, albeit the differences are not significant. If it is to be believed, then both societies have become increasingly uncomfortable with ambiguity, which could be related to our results.

Looking at our final hypothesis, Evers et al. (2015) studied three PC games: *Maple Story, Diablo 3,* and *World of Tanks* in a Western environment to test their hypotheses that buying an in-game advantage led to negative feelings among players who did not. Their research showed that purchasing ornamental items had

little to no effect on players' perceptions, but purchasing in-game advantages were negatively viewed. The goal of this study was to determine whether people perceived players who purchased these advantages as less skilled than other gamers.

We believed that power distance could be a moderator based on two thoughts. First, in Hofstede's original research, China had a higher power distance score than the US. Countries with higher power distance scores accept that power (or money in this case) is a basic fact of society—neither good nor evil. Hierarchy means existential inequality. In addition, we reviewed Yong Kow Ming's work on *World of Warcraft* modding in China and the US. His findings showed support for a high power distance structure in China within the online PC gaming community. "The best Chinese modders were engaged in nurturing and educating the nascent Chinese modding community. US modders had a stronger sense of equality within the modding community" (Kow & Nardi, 2010). At the time of the paper, the strongest reason given for these trends was the different access given to the modders by the developer of the game, Blizzard. China had little to no access, and the US modders had a direct line of communication. However, a clear power distance structure emerged naturally in China, giving us the belief that a similar structure still exists. During the survey, we discovered that both hypotheses were supported. However, it was observed that the Chinese individuals in our group had a somewhat lower power distance score compared to the Americans.

It's also possible that various parties interpreted this question differently. Just because a gamer spends more in-game does not mean he is buying advantages.

As shown in Hypothesis 2, Chinese gamers enjoy purchasing cosmetic items, which might not lead to an advantage in-game. Furthermore, 67.6% of Chinese agreed or strongly agreed with buying items to level up, vs. only 37.8% of Americans who answered the same.

Limitations

This study assessed the impact of "culture" as defined by Hofstede, Hall, and the WVS on the gaming behavior and payment patterns of gamers in the two major markets, China and the United States, for F2P mobile games. Despite the vast scope of the dissertation, certain limitations, identified early in the research, are present.

First, the lens through which the research was conducted was inherently Western-biased, at multiple levels. Hofstede, a Dutch researcher, performed his studies worldwide but faced criticism for having a predominantly Western perspective, which he had occasionally recognized. The same could be said about both Edward Hall and the WVS.

Surveys are inherently subject to their own challenges. Though we were attempting to collect data on the gamers' behaviors, we realistically collected data on how they think and feel. Survey data is always subject to certain biases, such as recall bias, recency bias, or social-desirability bias, to name a few. Regarding China specifically, considering the ongoing discussions over regulations in the gaming industry, it is worth considering whether this factor may have influenced some of the outcomes. In an effort to mitigate these risks, we conducted a preliminary

survey on a sample of 30 participants prior to conducting the complete survey. We performed the survey fully in both markets only after making adjustments.

We conducted the survey in both English and Mandarin. It should be noted that I do not speak Chinese. To overcome this issue, a fluent speaker in Hong Kong completed the English survey and then translated it into Mandarin. Two native speakers based in Shanghai then checked the survey before conducting it.

Conclusions

We believe the largest takeaway from our study is that, while psychographic cultural aspects may indeed play a factor and be useful when applied to gamers, it is important to understand exactly where the group being studied sits on these dimensions. Our survey respondents scored very differently than the scales reported by Hofstede. In practical terms, if a US game company wants to target 20- to 30-year-old men and women in China, they should first test that group to see where they sit on these dimensions and not rely on Hofstede's data. Chinese companies aiming to develop for the US market should follow the same approach.

Our research focused on the entire market in both the US and China across all F2P mobile games. Regarding the above scenario of building a game to be successful in the US or Chinese market, we would also suggest first conducting more focused research. For example, if a US-based company intends to develop a first-person shooter for the Chinese market aimed at 20- to 30-year-old males, it should perform research among that demographic, specifically within the context of existing successful first-person shooters in that market.

Does culture affect how people play and pay for F2P mobile games? We believe that our research indicates that culture does affect how gamers play and pay for F2P mobile games. There is strong support for Hofstede's "collectivism" index as it affects Chinese gamers desire to play with their friends. It may also have had the opposite effect on cosmetics/skins. Though we originally thought American individualism would be a strong moderator to buy more cosmetic items, the opposite turned out to be true. Though not in our original scope of research, collectivism has been found to be a strong moderator of competition.

Collectivism also lends itself to marketing implications beyond the scope of this paper. We believe that the impact of collectivism in China is even more significant, despite the fact that most products nowadays are promoted through social media. Equally achieving critical mass within a game, as seen with *Honor of Kings* in China, would appear to suggest that the barriers to entry are higher in China. The high concentration of the top ten titles in that market seems to support this. Likewise, in a more individualistic market like the US, the barriers to entry seem lower, and consumers are less susceptible to the influence of their friends.

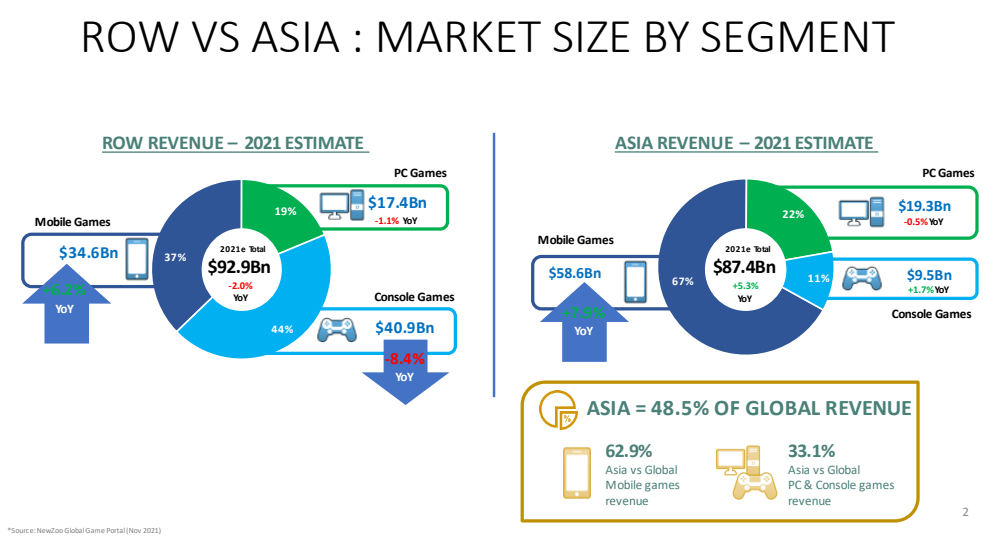
Concerning other tested dimensions, the moderating effect is less clear. Masculinity showed a moderating effect for the Americans but less so for the Chinese, at least among our surveyed respondents. The same could be said for uncertainty avoidance and power distance. Our takeaway from these data is that these indexes may influence the decision-making and behavior of gamers in both nations, but we were unable to establish this in our study.

Future Research

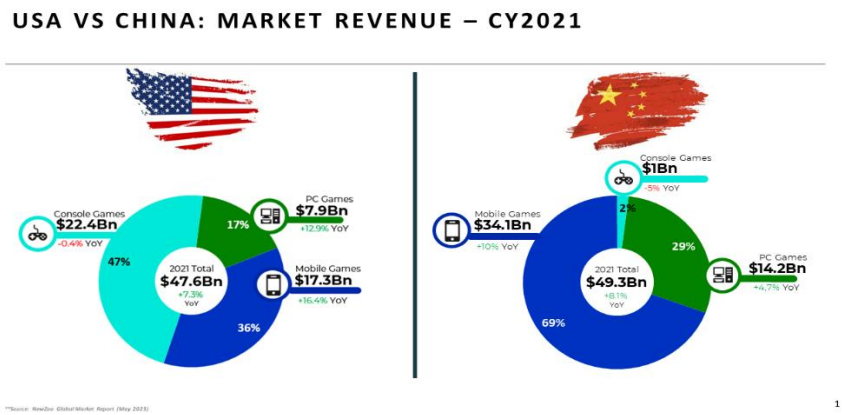
As stated in the conclusion, we found strong support for collectivism/individualism as a moderator. It would be interesting and worthwhile to conduct research focused solely on that dimension to see what other aspects of behavior it may or may not affect. For example, does it play a factor in solo games? Do consumers still consider whether their friends are playing the same game if the game has no multiplayer aspect? Are consumers more inclined to spend in-game if their friends have also spent in-game? If yes, then having a really enticing first-entry purchase becomes more important in the design of the game. Similarly, if this is the case, then being able to share with one's friends that a purchase has been made becomes an important factor in building into the game. A feature such as this may be counterproductive in a more individualistic market like the US, where consumers may prefer not to share all of their purchases with their friends for whatever reasons.

Appendix

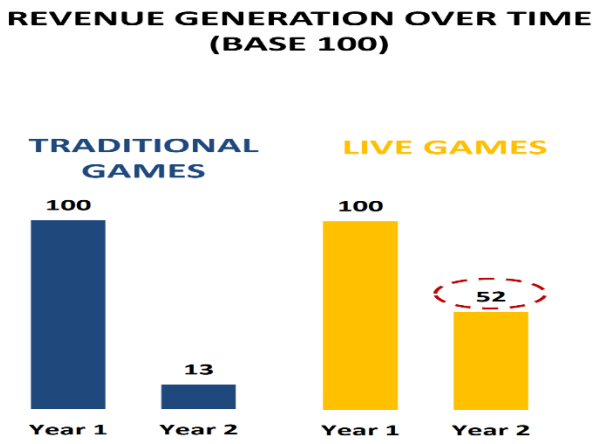
Appendix Figure 1. Rest of the world vs. Asia by market size segment.



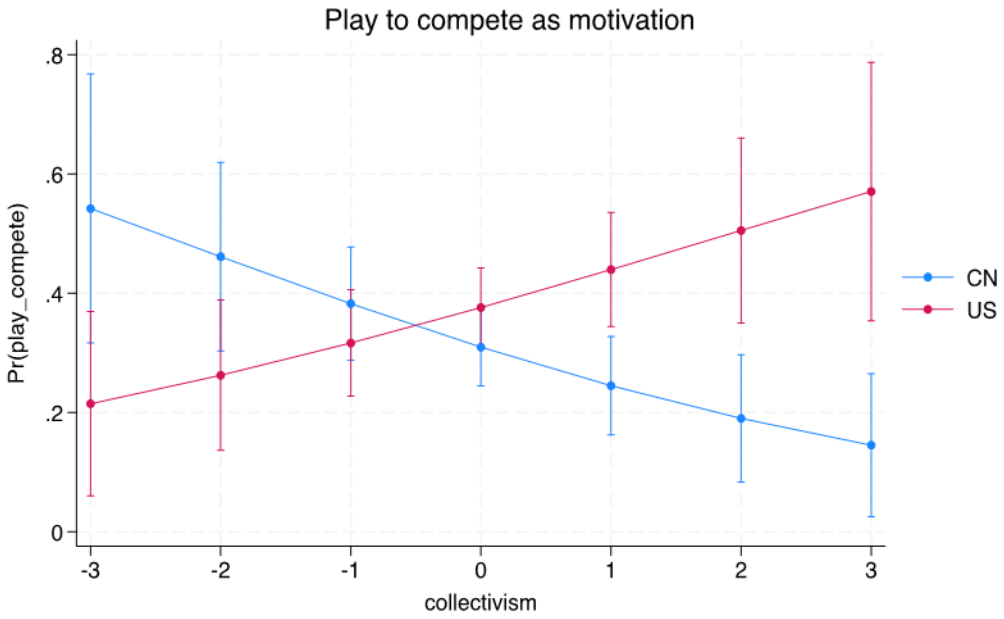
Appendix Figure 2. China vs. the United States.



Appendix Figure 3 (source: Ubisoft Q3 FY18)



Appendix Figure 4



Appendix Table 1. Virtual item platforms included in the study (Lehdonvirta 2009).

Title	Publisher/operator
Aapeli.com	Apaja, Finland
Cyworld	SK Communications, Korea
EVE Online	CCP Games, Iceland
Facebook	Facebook, U.S.
Habbo Hotel	Sulake, Finland
IRC-Galleria	Sulake, Finland
Jippii.com	Jippii, Finland
Kart Rider	Nexon, Korea
MapleStory	Nexon, Korea
Second Life	Linden Research, U.S.
Snow War	Sulake, Finland
Special Force	Nexon, Korea
Ultima Online	Electronic Arts, U.S.
World of Warcraft	Blizzard, U.S.

Appendix Table 2. Top 10 iOS titles in China for CY 2023 (source: Sensor Tower).

China

Game Name	Publisher Name	Absolute (Downloads)	Absolute (Revenue, $)	Game Genre	Game Sub-genre
王者荣耀 / Honor of Kings	Tencent 腾讯	20,923,272	$ 1,860,388,291	Strategy	MOBA
和平精英 / Peace Elite	Tencent 腾讯	16,855,356	$ 804,880,706	Shooter	Battle Royale
原神 / Genshin Impact	miHoYo 米哈游	10,229,523	$ 434,664,050	RPG	Open World Adventure
逆水寒 / Justice	NetEase 网易	11,025,128	$ 361,353,738	RPG	MMORPG
三国志·战略版 / Romance of the Three Kingdoms: Strategy Edition	Alibaba 阿里巴巴	1,066,104	$ 290,691,173	Strategy	4X Strategy
崩坏：星穹铁道 / Honkai: Star Rail	miHoYo 米哈游	6,415,574	$ 288,133,522	RPG	Turn-based RPG
梦幻西游 / Fantasy Westward Journey	NetEase 网易	1,347,170	$ 266,398,017	RPG	MMORPG
英雄联盟手游 / League of Legends: Wild Rift	Tencent 腾讯	6,832,145	$ 265,737,219	Strategy	MOBA
蛋仔派对 / Egg Party	NetEase 网易	51,422,206	$ 263,738,675	Arcade	Platformer / Runner
金铲铲之战 / Teamfight Tactics	Tencent 腾讯	14,870,025	$ 242,028,747	Strategy	Real-Time Strategy
	Top 10 Total	**140,986,503**	**$ 5,078,014,139**		
	Top 1500 Total	**710,717,897**	**$ 10,529,665,806**		
	top10 %	***20%***	***48%***		

Appendix Table 3. Top 10 iOS titles in the US for CY 2023 (source: Sensor Tower).

USA

Game Name	Publisher Name	Absolute (Downloads)	Absolute (Revenue, $)	Game Genre	Game Sub-genre
MONOPOLY GO!	Scopely, Inc.	22,870,578	$ 463,811,414	Casino	Coin Looters
Roblox	Roblox Corporation	17,900,226	$ 396,998,574	Simulation	Sandbox
Candy Crush Saga	King	6,199,964	$ 358,981,649	Puzzle	Swap
Royal Match	Dream Games	14,389,032	$ 328,120,041	Puzzle	Swap
Pokémon GO	Niantic, Inc.	4,164,953	$ 161,272,182	Geolocation	Geolocation
Gardenscapes	Playrix	7,885,138	$ 156,335,934	Puzzle	Swap
Clash of Clans	Supercell	3,656,641	$ 141,967,924	Strategy	Build & Battle
Coin Master	Moon Active	4,016,680	$ 131,481,356	Casino	Coin Looters
Homescapes	Playrix	2,337,823	$ 130,657,637	Puzzle	Swap
Call of Duty®: Mobile	Activision Publishing, Inc.	8,698,807	$ 130,301,692	Shooter	FPS / 3PS
	Top 10 Total	**92,119,842**	**$ 2,399,928,403**		
	Top 1500 Total	**868,345,108**	**$ 10,073,693,369**		
	top10 %	***11%***	***24%***		

Appendix Table 4

China vs the USA ARPU and ARPPU

China (Mobile)	**Calander Year**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023e**	**2024e**	**2025e**
	Players	477.8	493.2	532.2	560.4	589.7	634.3	666.0	681.9	693.8	707.2	717.6
	Payers	135.6	145.8	174.3	201.5	216.9	232.6	254.9	266.6	271.1	277.0	280.6
	Revenue	$ 7,440.7	$12,522.6	$17,818.6	$ 19,601.2	$ 22,167.3	$ 31,005.0	$ 34,114.3	$ 29,986.5	$ 30,766.1	$ 30,766.1	$ 31,024.6
	ARPU	$ 15.57	$ 25.39	$ 33.48	$ 34.97	$ 37.59	$ 48.88	$ 51.22	$ 43.98	$ 44.34	$ 43.51	$ 43.23
	ARPPU	$ 54.85	$ 85.88	$ 102.21	$ 97.28	$ 102.21	$ 133.30	$ 133.86	$ 112.46	$ 113.48	$ 111.09	$ 110.55
USA (Mobile)	**Calander Year**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023e**	**2024e**	**2025e**
	Players	110.6	119.3	128.8	135.5	137.7	141.4	142.4	143.6	145.2	147.3	148.7
	Payers	51.0	57.4	61.7	63.7	64.8	71.1	77.0	78.1	79.6	81.4	83.0
	Revenue	$ 6,189.0	$ 7,716.7	$ 9,925.0	$ 11,059.1	$ 11,963.0	$ 14,820.2	$ 17,251.7	$ 16,798.6	$ 17,014.1	$ 17,600.6	$ 18,230.3
	ARPU	$ 55.95	$ 64.71	$ 77.04	$ 81.60	$ 86.88	$ 104.78	$ 121.18	$ 117.01	$ 117.15	$ 119.52	$ 122.62
	ARPPU	$ 121.27	$ 134.35	$ 160.96	$ 173.62	$ 184.57	$ 208.53	$ 223.96	$ 215.04	$ 213.67	$ 216.35	$ 219.76
*ARPU : Average Revenue Per Users												
*ARPPU : Average Revenue Per Paying Users												
Source												
NewZoo Global Games Market Data May 2023												

Appendix Table 5- Sensitivity tests of main models conditional on income.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
VARIABLES	H2a	H2a	H4a	H4a	H5a	H5a	H6a	H6a	H6a	H6a
	Q49_4: spend on cosmetics/skins		Q50_3: to gain a competitive advantage		Q49_5: spend on prob-based items		Q46: It is not fair when I lose to others who have spent more on the game than I		Q47: I respect players less who have spent money in-game than people who have not	
	Main model	Control for income	Main model	Control for income	Main model	Control for income	Main model	Control for income	Main model	Control for income
American gamers	0.381***	0.445**	0.500***	0.623	1.335	1.197	1.377*	1.473	0.247***	0.224***
	(0.096)	(0.147)	(0.124)	(0.201)	(0.436)	(0.488)	(0.246)	(0.347)	(0.047)	(0.053)
collectivism	1.058	1.048								
	(0.174)	(0.182)								
American gamers*collectivism	1.078	1.133								
	(0.266)	(0.293)								
masculinity			0.936	1.026						
			(0.143)	(0.167)						
American gamers*masculinity			1.201	1.098						
			(0.295)	(0.280)						
uncertainty avoidance					1.017	1.011				
					(0.218)	(0.231)				
American gamers * uncertaintiy avoidance					0.737	0.703				
					(0.217)	(0.220)				
power distance							1.310**	1.222	0.846	0.782*
							(0.177)	(0.175)	(0.107)	(0.106)
American gamers * power distance							1.227	1.321	1.497**	1.644***
							(0.230)	(0.258)	(0.275)	(0.315)
Income (ref: Annual income from all source, bracket 1)										
Annual income from all sources, bracket 2		1.254		0.663		2.096		0.888		1.174
		(0.490)		(0.268)		(1.164)		(0.236)		(0.311)
Annual income from all sources, bracket 3		0.650		1.180		3.012**		0.998		1.463
		(0.285)		(0.503)		(1.680)		(0.292)		(0.423)
Annual income from all sources, bracket 4		0.588		0.614		2.566		1.569		1.143
		(0.277)		(0.291)		(1.564)		(0.555)		(0.380)
Annual income from all sources, bracket 5		1.792		1.448		1.033		0.808		0.809
		(0.821)		(0.633)		(0.674)		(0.267)		(0.265)
Annual income from all sources, bracket 6		1.308		1.193		1.410		1.815		1.036
		(0.763)		(0.659)		(1.140)		(0.788)		(0.441)
Observations	278	278	278	278	278	278	410	410	410	410

Odd ratios, standard errors are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Survey Part 1

Q1

Gender (please choose one)

- Male
- Female
- Other

Q2

Primary phone OS (please choose one)

- Android
- iOS (Apple)
- Other

Q3

Primary occupation (please choose one)

- Full-time student
- Student with a part-time job
- Full-time work
- Part-time work
- Unemployed
- Full-time stay-at-home parent

Q4

Do you live in a rural or urban area? (please choose one)

- Rural
- City

Q5

Annual income from all sources (please mark one)

- Less than US$35,000
- US$35,001 to $70,000
- US$70,001 to $105,000
- US$105,001 to $140,000
- US$140,001 to $175,000
- Over US$175,000

Q6

People in higher positions should make decisions without consulting people in lower positions.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q7

People in higher positions should not ask about the opinions of people in lower positions too frequently.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q8

People in higher positions should avoid social interactions with people in lower positions.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q9

People in lower positions should not disagree with decisions made by people in higher positions.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q10

People in higher positions should not delegate important tasks to people in lower positions.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q11

It is important to have instructions spelled out in detail so that I always know what I am expected to do.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q12

It is important to closely follow instructions and procedures.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q13

Rules and regulations are important because they inform me of what is expected of me.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q14

Standardized work procedures are helpful.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q15

Instructions for operations are important.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q16

Individuals should sacrifice self-interest for their group.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q17

Individuals should stick with the group even through difficulties.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q18

Group welfare is more important than individual rewards

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q19

Group success is more important than individual success.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q20

Individuals should only pursue their goals after considering the welfare of the group.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q21

How important do you rate the careful management of money in a person?

- Very unimportant
- Slightly important
- Important
- Fairly important
- Very important

Q22

How important do you rate going on resolutely in spite of opposition in a person?

- Very unimportant
- Slightly important
- Important
- Fairly important
- Very important

Q23

How important do you rate personal steadiness in a person?

- Very unimportant
- Slightly important
- Important
- Fairly important
- Very important

Q24

How important do you rate long-term planning in a person?

- Very unimportant
- Slightly important
- Important
- Fairly important
- Very important

Q25

How important do you rate giving up today's fun for success in the future in a person?

- Very unimportant
- Slightly important
- Important
- Fairly important
- Very important

Q26

How important do you rate working hard for success in the future in a person?

- Very unimportant
- Slightly important
- Important
- Fairly important
- Very important

Q27

Men usually solve problems with logical analysis; women usually solve problems with intuition.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree

- Strongly agree

Q28

Solving difficult problems usually requires an active, forcible approach, which is typical of men.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q29

There are some jobs that a man can always do better than a woman.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Survey Part 2

Q30

How many hours per week do you spend on leisure activities such as time with friends, watching TV, reading, etc.? (please mark one)

- zero
- 1 to 7
- 8 to 14
- 15 to 21
- 22 to 29
- 30+

Q31

In addition to mobile F2P games, how else do you spend your free time? (please choose three)

- Watching people play games
- Watching movies at home
- Spending time with friends
- Exercising
- Reading books
- Reading newspapers or magazines
- Travel
- Other (please fill in)

Q32

What are the top 3 games you have been playing? (please rank in order)

Q33

How many hours per week do you play F2P mobile games on your mobile phone? (please mark one)

- 1 to 7
- 8 to 14
- 15 to 21
- 22 to 29
- 30+

Q34

How many years have you been playing F2P mobile games? (please mark one)

- less than 1 year
- 1 to 2
- 3 to 4
- 4 to 6
- 6 to 8
- 8 to 10
- more than 10

Q35

Do you prefer to play single- or multi-player games?

- Single
- Multiplayer

Q36

What would you say are your primary motivations to play? (please choose up to 3 in order of importance)

- Collecting
- To advance in a game
- To level up a character
- To complete
- To socialize with other gamers
- To build friendships
- To play as a team
- To explore new worlds
- To immerse in a story
- To customize my character
- To escape
- Others (please fill in)

Q37

How many hours per week do you play video games with your friends? (please mark one)

- 0
- 1 to 7
- 8 to 14
- 15 to 21
- 22 to 29
- 30+

Q38

On a scale of 1 to 5, how important is it to you to play the same game as your friends? (please mark one)

- Not important at all
- Slightly important

- Important
- Fairly important
- Very important

Q39

How important is working with your friends in-game? (please mark one)

- Not important at all
- Slightly important
- Important
- Fairly important
- Very important

Q40

How important is working with people you don’t know in-game? (please mark one)

- Not important at all
- Slightly important
- Important
- Fairly important
- Very important

Q41

Being competitive in a game is important to me. (please mark one)

- Not important at all
- Slightly important
- Important
- Fairly important
- Very important

Q42

How important is being the best in a game or beating your competition? (please mark one)

- Not important at all
- Slightly important

- Important
- Fairly important
- Very important

Q43

How important is leveling up your characters as fast as possible? (please mark one)

- Not important at all
- Slightly important
- Important
- Fairly important
- Very important

Q44

How important is it to you to be well-known in the game? (please mark one)

- Not important at all
- Slightly important
- Important
- Fairly important
- Very important

Q45

I agree with buying items to level up. (please mark one)

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q46

How would you respond to this statement: It is unfair when I lose to others who have spent more money on the game than I have? (please mark one)

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q47

How would you respond to this statement: I respect players who have spent money in-game less than those who have not. (please mark one)

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q48

In the last 6 months, have you spent money on free-to-play mobile games? (please mark one)

- Yes
- No

Q49

If you answered yes, what type of items did you purchase? (please mark all that apply)

- Heroes
- Weapons
- Cosmetics/Skins
- Probability-based items
- Consumables
- Subscriptions
- Virtual currency

Q50

What were your primary motivations to purchase? (please mark all that apply)

- To make gameplay more fun
- To gain a competitive advantage
- To make the characters look better
- Cannot progress
- Items were on sale
- My friends were also buying

Q51

What are your favorite genres to play? Please choose up to three.

- Massive multiplayer online/Role-playing games
- Simulation
- Battle Royale
- Adventure
- Platform
- Puzzle
- Hypercasual
- Other (please fill in)

Q52

I have used free skins/cosmetic items that are available in-game.

- Never
- Rarely
- Sometimes
- Often
- Always

Q53

I have paid for skins/cosmetics in-game with in-game currency.

- Never
- Rarely
- Sometimes
- Often
- Always

Q54

I have paid for skins with real currency.

- Never
- Rarely
- Sometimes
- Often
- Always

Q55

I agree with paying for the chance to get a high-value item in-game.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q56

Do you agree with the following statement: It is ok to bet a day’s income on a horse race or other sporting event. (please mark one)

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q57

Do you agree with the following statement: You should invest 10% of your annual income in a moderate-growth mutual fund.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q58

Do you agree with the following statement? It is ok to bet a day's income on a high-stakes poker or card game.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Q59

Do you agree with the following: It is ok to invest 5% of your income in a very speculative stock (please mark one)

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Appendix: Business Models

Business Model: Pre-Internet

In the pre-internet world, starting in the 1970s with video game consoles such as the Atari 2600 and Intellivision from Mattel, companies adhered largely to the razor and razor blades business model. Games (“razor blades”) during this period were sold primarily through retail, and their success was closely tied to the installation base of the hardware (razors) for which a product worked. Even in the 1980s, with the emergence of the personal computer, the model remained largely the same. This approach is referred to as the buy-to-play model or B2P (Massarczyk, 2019).

Business Model: Internet and Digitalization

The internet's prolific growth in the 1990s allowed for the next phase of the business model to emerge: digitalization. Initially, the model was very similar to the old retail model. Through an online retailer, consumers ordered finished goods

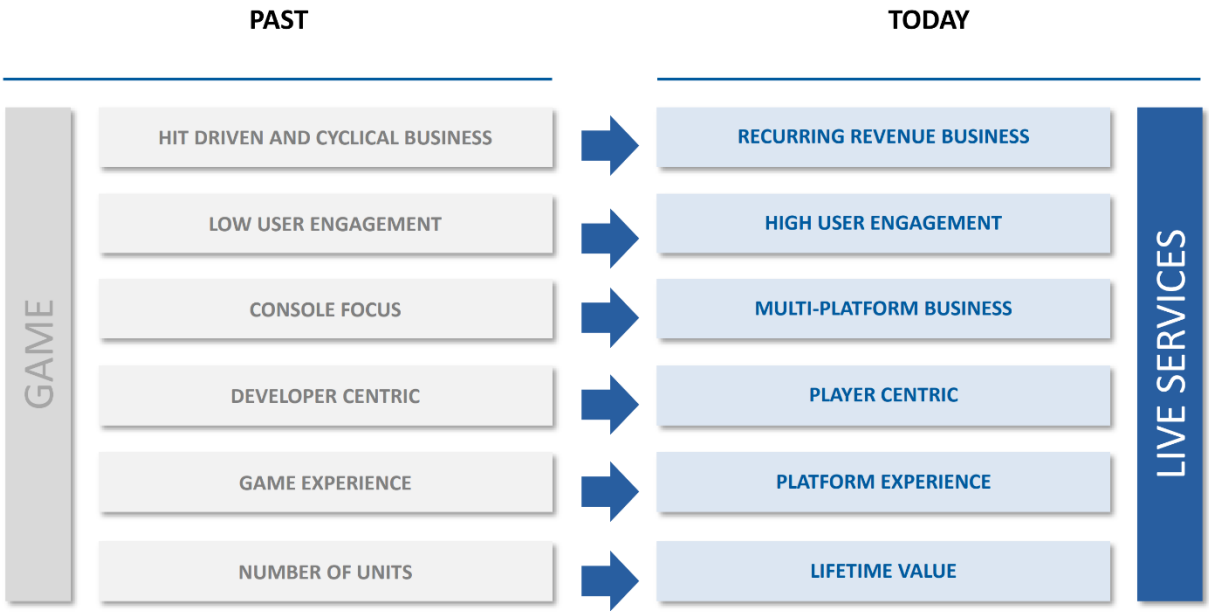
and received them at their homes. The next evolution of this model allowed consumers to download the game via the internet and have it delivered directly to a personal computer. PC game genres such as massive multiplayer online games (MMORPGs) quickly adopted the pay-to-play (P2P) model (Massarczyk, 2019). With this model, consumers usually pay an initial starting fee to get into the game, after which a monthly subscription is required to continue playing. The monthly subscription generally gives on-going access to companies' servers. It should also be noted that the subscription also provides constant fixes or tweaks to the game to improve the customer experience.

Business Model: Games as a Service (GaaS)

The confluence of the various business models has now led the most successful publishers and developers to embrace the live services model. Taking a page from the corporate restructuring of software to be a service (SAAS), GaaS (which includes all the aforementioned business models) is now the primary delivery business model for the industry. "Under the SAAS model, unlike the perpetual licensing model, the software is priced as a service and typically users pay a fee per transaction" (Ma, 2007). Users only pay when there is demand for the software, much like gamers only pay for in-game items when they need or want them.

Increased revenue and profit via increased player engagement are two of the factors driving the adoption of the GaaS model. In their FY18 Q3 financial report, Ubisoft provided interesting logic for the industry shift (Ubisoft, 2018).

Figure 2. Industry shifts.



The report highlighted that Ubisoft would have fewer releases every year but would focus on retaining and entertaining users via live services. Another graphic in the same report exemplified why "extending the tail" is so important. Under the traditional B2P model, a game in its second year of life would usually only sell 13% as much as the game did in its first year of life, but under the GaaS model, this number moved up to 52% (Ubisoft, 2018).

While some of these shifts in the industry are more evident in specific game genres like MMOs, they impact all game genres equally. Looking at point one, most of the industry used to focus on making as much money as possible on day one or year one, as highlighted by the Ubisoft report. Now game designers are building mechanisms to allow additional content to be purchased well after day one and, in

many cases, many years into the future. Digital delivery mechanisms over the internet have enabled this, freeing game companies from shelf space restrictions, regardless of the game's platform. The ability and desire to continue to sell to consumers long after they have first purchased/downloaded a game has driven companies to focus on their user engagement. In its simplest form, user engagement could be merely collecting e-mail addresses or mobile phone numbers to update a consumer with new offerings or updates. A more complex form of user engagement is known as community management. Under this scenario, companies hire community managers who then work with leaders/influencers of the community, often via social media, to provide updates and take feedback on a game. These communities create a two-way form of communication between end users and the developers and publishers of games. Consumers can communicate features and aspects of the games they like or dislike for the company to address. On the corporate side, these communities allow direct access to communicate offers, updates, etc. directly to their most loyal fans. This new paradigm shows the shift away from games of the past, when a developer generally only offered gamers their vision of a product. Naturally, the risk with this new model is that a developer fails to listen to the community and faces severe backlash. However, this new level of engagement exemplifies the move to a player-centric model.

Companies have shifted their focus from solely focusing on the number of units sold or the number of downloads a game receives due to the increasing levels of consumer engagement. Now, game companies focus on the lifetime value of a customer, or more frequently, the average revenue per paying user (ARPPU) or the

average revenue per user (ARPU). As the name suggests these metrics refer to the amount of money an individual consumer spends on a product.

Appendix: Literature Review

Play: Theoretical Analysis

The concept of "flow" mentioned above is frequently credited to Mihaly Csikzentmihali, a former Claremont Graduate University professor. In his book, *Flow: The Psychology of Optimal Experience*, the primary concept is that happiness is not a fixed state but rather something that can be developed as we learn to achieve flow (Csikszentmihalyi, 2023). Cziksentmihalyi defined flow as "a state in which people are so involved in an activity that nothing else seems to matter; the experience is so enjoyable that people will continue to do it even at great cost, for the sheer sake of doing it." To achieve flow, several key elements are involved (which, to the author of this paper, sound a lot like video games):

- There are clear goals every step of the way
- There is immediate feedback on one's actions
- There is a balance between challenges and skills
- Action and awareness are merged
- Distractions are excluded from consciousness
- There is no worry about failure
- Self-consciousness disappears
- The sense of time becomes distorted

- The activity becomes an end unto itself

Whilst it is doubtful that most gamers are consciously trying to achieve a "flow state," play, including playing video games, would appear to tick many boxes in its pursuit. On the subject of flow and video games, many scholars have tried to piece together the effects. In an empirical study of 394 mobile gamers four factors were identified that positively influenced flow experience: human-computer interactions (HI), social interactions (SI), skills (S), and challenge (Su et al., 2016). In turn, the greater the flow experience driven by these factors, especially skill and challenge, the greater the player loyalty (PL) exhibited by a player to the game. The most renowned expert on "play" is the deceased educator Brian Sutton Smith. Smith is credited in his book, *The Ambiguity of Play*, with establishing the Seven Rhetorics of Play. (Sutton-Smith, 1997).

The Seven Rhetorics of Play

Rhetoric	History	Function	Form	Players	Discipline	Scholars
1. Progress	Enlightenment, evolution	Adaptation, growth, socialization	Play, games	Juveniles	Biology, psychology, education	Vygotsky, Erikson, Piaget, Berlyne
2. Fate	Animism, divination	Magic, luck	Chance	Gamblers	Math	Bergler, Fuller, Abt
3. Power	Politics, war	Status, victory	Skill, strategy, deep play	Athletes	Sociology, history	Spariosu, Huizinga, Scott, Von Neumann
4. Identity	Tradition	Communitas, cooperation	Festivals, parades, parties, new games	Folk	Anthropology, folklore	Turner, Falassi, De Koven, Abrahams
5. Imaginary	Romanticism	Creativity, flexibility	Fantasy, tropes	Actors	Art and literature	Bakhtin, Fagen, Bateson
6. Self	Individualism	Peak experience	Leisure, solitary, extreme games	Avant-garde, solitary players	Psychiatry	Csikszentmihalyi
7. Frivolity	Work ethic	Inversion, playfulness	Nonsense	Tricksters, comedians, jesters	Pop culture	Welsford, Stewart, Cox

In this case, rhetoric is a method of discussion or expression that contains underlying values or beliefs and attempts to persuade others that it is correct (Salen & Zimmerman, 2003). Sutton-Smiths' work is considered a classic in the field of play studies. It highlights the social aspects of play in civilization and societal matters, even as people play in psychological ways.

Play: Traditional Entertainment Theory

Of great note in Lucas and Sherry's research was their observations about the play of boys and girls and the varying styles and motivations of play. There were numerous takeaways from their research on 593 American college students: 57.5% of the respondents were women and 42.5% were men. Multiple hypotheses

were tested; of particular note was that men enjoyed competitive games more than challenging games. Women, on the other hand, much preferred challenging games and were unlikely to enjoy competition against their peers. This study showed that the motivations to play differ between the sexes.

Despite the stereotypes of gamers primarily being men, a 2001 study by market research firm PC Data Online showed that 50.4% of gamers in the US were women. An additional study by the Entertainment and Leisure Software Association (ELSPA) in 2005 showed that 39% of all active gamers in the US were women, and in Korea, this number was over 50% (Taylor, 2006). Typical accounts of women in games tend to focus on identity, exploration, and socialization. This is not to say that these are the sole motivations for all women gamers. Rather, these motivations are a prevalent theme across literature, and they serve to remind researchers that the reasons we play may differ greatly by identified sexes.

Video Game Literature

Game designer Marc Leblanc built a similar taxonomy to describe why gamers feel compelled to play games. Leblanc's taxonomy of gaming pleasures is defined as follows (Costikyan, 2002):

- Sensation- Good visuals, audio, or a pleasurable tactile feel
- Fantasy- The fictional concept of suspension of disbelief
- Narrative- Games should support a sense of drama
- Challenge- An alternative word for struggle

- Fellowship- In the online/mobile community, this is referred to as community
- Discovery- In the form of either exploring new worlds or unlocking hidden secrets
- Expression- Leblanc means "self-expression," which is fairly obvious in RPG games but is evident in other products such as how you interact with an opponent or environment

Play Emergence as an Early Cultural Lens

Concerning the story of the game, game designer Ralph Kostner theorized that "by and large people don't play with game systems because of the stories" (Kostner, 2004). The stories are merely there as "side dishes" for the brain. Given that most games are usually about power and control, the stores themselves tend to be the same. Rarely do the stories change the actual game play; rather, they are designed to give the player positive feedback that he/she is doing well. Kostner draws a comparison between games and stories as follows (Kostner, 2004):

- Games tend to be experiential teaching. Stories teach vicariously.
- Games are good at objectification. Stories are good at empathy.
- Games tend to quantify, reduce, and classify. Stories tend to blur, deepen, and make subtle distinctions.

- Games are external—they are about people's actions. Stories (good ones, anyway) are internal—they are about people's emotions and thoughts.
- Games are generators of player's narratives. Stories provide a narrative.

Censorship

There is no clear set of guidelines as to what will and will not be approved for sale. In theory, any content that goes "against the national morality and culture of the Chinese people" is banned. In practice, this means any questionable political or social values are automatically not approved. Other known issues include the killing of people, the lifelike killing of animals, blood, zombies, skulls, sex, drug use, excessive violence, etc. The entire process of approval can take anywhere between 6 months and 3 years, a lifetime in the video game space. More importantly, very few games receive approval on the first submission, and the NPPA is known to come back with extensive edits that may run into several hundred thousand dollars or more. While, in theory, these requirements are universally applied to both Chinese and foreign games, the approvals show a strong preference by the NPPA for local content over foreign content. On average, local games are approved at a rate of 1–10.

In addition to strong content approval censorship, there are additional barriers to operating games in China that may have an impact on the way Chinese consumers play and pay for free to play mobile games. All gamers must register for

games using their real name and national identity number. Children under the age of 18 are limited to playing no more than 3 hours per week—one hour each on Fridays, weekends, and public holidays. Technically, probability-based item regulations exist as well, which force companies to disclose the odds of receiving a desirable item. However, how these odds are disclosed is not directed by the NPPA, resulting in various forms of disclosure that may not always be obvious to consumers.

In December 2023, the NPPA introduced draft legislation that would have made it even more difficult to operate a game in China. A common tactic to encourage game play in both China and the USA is to reward gamers for playing a game several days in a row or several hours per day. Gamers who achieve one of these objectives are often rewarded with in-game items or currency. Under the draft legislation, games in China could no longer offer such rewards. Furthermore, the legislation as proposed would have banned probability-based items entirely. The legislation as drafted was never passed for reasons not disclosed. What is known is that more than $80 billion in market cap was wiped out of China's two largest game companies, Netease and Tencent. Note that we conducted our survey in China during the discussion of these restrictions, which may have influenced the responses of our respondents.

The difference between these two approval regimes substantially affects the total number of games available to play in their respective markets. In China, according to Sensor Tower, there are approximately 25,634 games on the iOS store and 23,676 games available for Android. In comparison, the US iOS Store has over

224,000 games. The US Google Play Store has more than 400,000 (42 Matters, 2024).

Appendix: Hypothesis Discussion

Hypothesis 1

Additional support for playing games with friends in HC cultures could be found in Korea. Broad-band speeds in Korea consistently rank in the top twenty in the world (World Population Review, 2024), as recently as 2021. Despite this fact, the country still has over 8,000 PC cafes, or "PC Bangs," around the country (No, 2023). When Korea first rolled out their broadband infrastructure in the late 1990s, these cafes provided cheap access to fast internet, though they quickly became synonymous with PC gaming. Though the number of cafes has shrunk throughout the years, down from 21,549 in 2009, they remain an important part of the gaming culture in Korea, a fellow HC country like China. PC Bangs operate as "third spaces" between home and schools (Hukh, 2008). Admittedly, PC games and mobile games are somewhat different; the desire to play with friends is a commonality between China and Korea that exhibits itself in different ways.

Hypothesis 2

Starting first with Americans, games such as *Fortnite, Roblox, League of Legends,* and *Call of Duty* all make heavy use of skins. The highest spenders,

known as “whales,” spend at least $15 per month (Takahashi, 2020). Whales, according to the article, tend to skew older, though it does not say how old. We should also point out that it does not say which platform these games are on, though all four are known to be on multiple platforms, from PCs to mobiles to consoles. It is possible that the American whales that are referenced are not on mobiles. It is also possible that the “whales” in America are older than our surveyed demographic of 20- to 30-year-old men and women.

The concept of the individual-oriented and social-oriented Chinese cultural self aligns with similar lines of thinking regarding Chinese consumers. The social-oriented self is rooted in traditional Chinese conceptualizations of the self, whereas the individual oriented self has developed under Western influences along with recent societal modernization (Luo, 2008). The social-oriented self could be considered the traditional collectivistic Chinese self, similar to the interdependent self described earlier. This version of self sees himself or herself as connected or bound to others, their self-described group of family, friends, and coworkers. The individual-oriented self is more closely aligned with the Western definition of individualism. This version of self is stable, autonomous, independent, and a free entity. In an online gaming environment, it is plausible to believe that the individual-oriented self expresses itself more easily through cosmetics and skins.

Hypothesis 5

We should also point out that Hofstede's UA dimension itself is not without controversy at the individual level. In a study using the 2010 European Social Survey across 27 countries with 42,964 participants, it was found that "UA had an unacceptably low internal consistency across all 27 countries at the individual levels" (Messner, 2016). While this study was done at the European level, the "complete lack of meeting even minimal criteria of internal consistency at the individual participant level as well as the non-consistent clustering at the country level neither gives us confidence in Hofstede's conceptualization of UA nor does it support the notion of ecological analysis." Bradley Kirkman of Texas AM clearly stated, "We strongly encourage researchers to avoid further use of the overall cultural distance index" (Taras et al., 2010).

Though not in our research brief, Chinese consumers comfort with probability-based items could be partially based on the marketing of the products. In particular, word-of-mouth marketing (WOM) seems to be a powerful tool in China, possibly due to the collectivistic nature of the market. WOM includes all forms of information exchange among consumers regarding the characteristics and usage of particular products, services, or vendors (Krishen & Hu, 2018). Building on our theory that differences in cultural values explain differences in the market, Krishen of UNLV looked at the conditions for consumer satisfaction and WOM between Chinese and American consumers. In a study of 137 Chinese and 130 American respondents, with an average age of 29.28 and 35.60, respectively, the study found that for Chinese consumers, if a company delivers a positive

experience, they tend to be loyal and less likely to switch to a new provider. More importantly, the survey found that in a hedonic consumption experience, individuals are more sensitive to whether the service experience is positive. In the case of probability-based items in China, if enough consumers are purchasing them and not complaining about them, then this would likely reduce uncertainty concerning transacting in the game.

Looking at our two markets in detail, we believe there is some merit to this idea. Out of the top 1500 F2P mobile games on iOS in China during 2024, the top 10 make up 20% of the downloads and 48% of the revenue, making it one of the most concentrated markets in the world (see Appendix Table 5). In comparison, the US market during the same period, the top ten games accounted for 11% of the downloads and 24% of the total revenue (see Appendix Table 6).

Though we did not test for it directly during our survey, the concentration of the top games in China could be a result of trust in those games, and thus transacting in them is not seen as an ambiguous scenario. It is also interesting to note that all of the top games in China were developed by local developers.

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