The impact of the differences in color symbols in Asian and Western cultures on the emotional experience of players in pastoral games

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Abstract

Today, 3D pastoral games have gained widespread popularity among young people, offering a relaxing and immersive experience in the idyllic world of Xanadu. This paper focuses on the different applications of color in 3D pastoral games in Asia and the West, specifically studying theme colors, terrain colors, crop colors, and animal colors, as well as exploring the cultural differences that influence color choices in these games.

Throughout the research process, a combination of methods, including questionnaires, observations, investigations, and case studies, was employed to study the significant role of color in pastoral games. Different colors are used to distinguish various terrains, crops, and animals, enabling players to identify and manage them better while also representing special states or events in the game. The research findings indicate that color is a crucial element in creating engaging pastoral games.

It was observed that Western game design prioritizes clear purposes, contrast, balance, cultural adaptability, and emotional expression when incorporating colors. On the other hand, Asian game color design emphasizes principles derived from the five elements color theory, traditional cultural elements, color symbolic meaning, and consistency of style. Both approaches aim to create a more enjoyable gaming experience and evoke deeper emotional resonance with the players.

In conclusion, this study highlights the significance of color in shaping the gameplay and emotional experiences of players in 3D pastoral games. The findings also emphasize the different design philosophies of color between Western and Asian game developers, each striving to enhance the overall gaming experience and create a strong connection with their respective audiences.

Keywords: 3D pastoral games, Asian and Western games, color design, psychological impact, behavioral impact, emotional state
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1 Introduction

In 1954, Rudolph Arnheim, a famous American art theorist, said in his book "Art and Perception" when talking about color: "Expression plays a role, but color is better than shape. The expression conveyed by the afterglow of the setting sun and the blue color of the Mediterranean is probably the most important thing for any definite expression. The shape is also far behind." It can be seen that, as one of the essential elements in film and television works, color can be said to “speak”. It not only undertakes the functions of narrating objective facts and explaining the surrounding environment, but also expresses emotions, rendering the atmosphere.

Therefore, the importance of color to the game can be imagined. Among many types of games, 3D pastoral games are widely welcomed by young people today. In such games, people can be in a relaxed state and immerse themselves in the utopian world of paradise. Therefore, this paper studies the role of color in 3D pastoral games. The application of this content mainly studies its theme color, terrain color, crop color, animal color and some characteristic colors.

In general, color is a very important factor in pastoral games, which can better immerse players in the game and enhance the playability of the game. Through literature research, combined with literature analysis on the role and meaning of color in games, the following four conclusions have been drawn: 1. Color is a very important factor in pastoral games, which can create a strong rural atmosphere and increase the playability of the game. 2. Different colors can be used to distinguish different terrains, crops, animals, etc., so that players can better identify and manage them. 3. Color can also be used to indicate special status or events, such as red can indicate fire or warning, green can indicate good status or success, etc. 4. The use of color needs to be consistent with the theme of the game to ensure that the overall style of the game is consistent.

In this study, I compared the color design of pastoral games between Asia and the West, and conducted in-depth research by using various empirical methods such as questionnaire survey, observation survey and case study. Through the application of these methods, I was able to comprehensively collect data and information from different sources to draw conclusions about the differences and commonalities in the color design of Asian and Western pastoral games.
2 Background

With the ongoing progress of globalization, the interactions and integration between Asian and Western cultures have become more frequent. In the realm of art and design, particularly in the domain of game development, the comprehension and utilization of cultural disparities between Asia and the West have grown increasingly vital. Color, as a crucial element of artistic expression, exerts a significant influence on game design. However, notable disparities in color preferences exist between Asian and Western cultures, making it a crucial area of focus and research for designers working on 3D pastoral games.

In Asian and Western cultures, there are differences in the symbolic meaning, emotional expression and cultural background of colors. Color preferences, cultural symbols and aesthetic values in Asia and the West have largely influenced people's perception and emotional response to colors. In 3D pastoral games, the use of color can create a specific atmosphere, shape character images, convey emotions and create a unique game experience. Therefore, it is of great significance to study the application of Asian and Western cultural color differences in 3D pastoral games for designing games that are more attractive and meet the needs of the target audience.

This research aims to explore the application of Asian and Western cultural color differences in 3D pastoral games, in order to provide guiding principles on color selection, emotional expression and user experience design. Through the comparative study of color preferences, cultural symbolic meanings and emotional associations between Asian and Western cultures, we can deeply understand the understanding and perception of colors in different cultures, and then use colors more accurately in game design to achieve the emotional resonance of the target audience and gaming experience.

In addition, by integrating the color differences between Asian and Western cultures into the design of 3D pastoral games, it also helps to promote intercultural communication and understanding. Through the medium of the game, players can experience color expressions and aesthetic concepts in different cultural backgrounds, enhance their understanding and appreciation of Asian and Western cultures, and promote cross-cultural communication and integration.

Therefore, the goal of this study is to provide game designers with guiding principles on color selection, emotional expression, and user experience design by conducting in-depth research and practice on the application of Asian and Western cultural color differences in 3D pastoral games.
2.1 Color perception in game

Color perception is an important part of color theory, and a relatively broad field, including psychology, neuroscience, cognitive science and other disciplines, which can be traced back to the end of the 18th century. The concept of "perceptual color" was first proposed by the German philosopher and scientist Johann Wolfgang von Goethe. He elaborated on the study of color and light and proposed a theory that contradicted the then-popular scientific view that perceived color refers to the color experience we experience when perceiving visual stimuli. Since then, color perception theory has been extensively researched and developed, among which the more important authors include Deborah T. Sharpe (1974), Clyde L. Hardin (1988) and others.

With the rise of electronic games, color perception theory has also been widely used in games. Game user experience refers to the sum of feelings and impressions experienced by players when they participate in the game. It includes a game's fun, immersion, challenge, satisfaction, and emotional and cognitive factors related to game interaction, covering the player's emotional, cognitive, behavioral and interactive experience in a game. The color application in the game usually includes the color of the game scene, the color of the game character and the color of the game props. In a game, the use of color can be divided into two types: one is natural color, that is, the color that exists in the real world, such as blue in the sky, green in the grass, etc.; the other is unnatural color, that is, fictional color, such as cyberpunk colors. Game designers can choose appropriate colors to use according to the game type and scene needs. According to Lazzaro (2004), color in games can enhance the player's immersion and participation, thereby increasing the fun and satisfaction of the game.

Different colors give the audience different psychological changes, which are divided into cool colors, warm colors and neutral colors in color science. The use of these differentiated color combinations and means can bring audiences a variety of different artistic effects and experience different audio-visual experiences. The application of color perception theory in games has made great progress. In the realm of game research, several studies have delved into various aspects of gameplay and player experience. El-Nasr et al. (2006) examined the distinct visual attention patterns exhibited by players in two distinct game genres: action-adventure games and first-person shooter games. Shifting the focus to the impact of visual elements, Sorokowski et al. (2011) sought to determine how the color of in-game objects affects the efficiency of performing basic tasks in computer games. Expanding on the realm of learning in gaming, Li et al. (2017) introduced an agent learning model and designed a new game that incorporates domain learning—a critical component for acquiring complex knowledge. Emotions in digital games for learning were the subject of inquiry for Plass et al. (2020), who examined how factors like color, shape, expression, and dimensionality of in-game characters induce emotional responses. Furthermore, Misztal et al. (2020) introduced five visual effects—vignetting, image noise, chromatic aberration, color grading, and blur—and explored their influence on players' perceived stress, presence, and simulator sickness. These studies collectively shed light on the multifaceted aspects of gaming and its potential applications in education and psychology.
2.2 The connection between colors in games and player emotions

Peng (2023): "Color is an important part of visual communication and is also the basis of visual communication. Through color, people can express their emotions, feelings, and moods." Therefore, in game design, the correct color scheme can help players better immerse themselves in the game world. With the above three points, we can use the color attributes to evoke emotions in video games through the following methods:

First, colors can evoke emotional experiences by activating the emotional centers in the brain. Different colors can evoke different emotions, according to color psychologist Karen Haller (2019): "Red is a very powerful color and can make people feel excited, enthusiastic and confident. Blue Color is a calm, quiet, fresh and clear color that can make people feel relaxed, calm and balanced." Therefore, in the field of color psychology, red can stimulate enthusiasm, excitement and anger, and blue can cause quietness, calmness and thinking, a feeling of. Game developers need to choose the appropriate color according to the theme, atmosphere of the game and the psychological needs of the players.

Second, colors should support the game experience. For example, using bright colors can attract players' attention and improve the fun of the game. Haller also pointed out that using soft colors can create a warm, comfortable, and soft atmosphere, so that people feel more relaxed and comfortable. Previous studies have shown that pastel colors can lower a person’s heart rate and blood pressure, thereby relieving anxiety and stress. Schell (2008) pointed out that "when the color of the game matches the theme, emotion and storyline of the game, players will be more easily attracted to the game and will be more deeply involved in the game."(p.108). Conversely, if the colors of the game do not match the theme, the player may feel confused and disappointed." This point of view suggests that the colors in the game should also match the function and meaning of the game elements, such as red can be used to represent danger and warning, green can be used to represent life and healing. Therefore, when the player sees red on the game interface, they will feel nervous and vigilant, but when they see green, they will be more relaxed.

Third, colors in the game should be consistent and balanced so that players maintain an emotional experience. Geslin, Jégou, and Beaudoin (2016) recruited 85 participants, asked them to view 24 video game images and conducted image analysis and questionnaires, confirming that “there is a significant relationship between brightness, saturation, and brightness and the emotions people experience.” Correlation”. Such as joy, sadness, fear and peace. "Extensive use of bright red and bright yellow will make players feel dazzled and uncomfortable, and may cause visual fatigue, headaches and other problems. Too monotonous colors may make players feel dull and boring. For example, excessive use of gray or black will make players feel feeling dull, uninteresting and uninteresting may also reduce player interest and engagement. Based on the experiments, it can be inferred that when it comes to the brightness of an image, higher saturation levels are associated with positive valence in these sensations. This confirms previous research that also showed that images that elicit feelings of happiness tended to be brighter and more saturated. A lower brightness induces a sense of dread, while a higher brightness seems to give the player more confidence.
2.3 Differences between Asian and Western color cultures

Culture is a complex structure that has a great impact on social life. Color is the cultural carrier that represents cultural connotation. As Liu (2009) showed, color is closely related to human life. People deal with color all the time. The symbolic meaning of color varies due to different national customs, geographical location, religious beliefs, historical and cultural background and aesthetic psychology. has a difference. It is therefore crucial to study the specific differences between Asian and Western cultures. Abundant research results have been obtained in this field: Kim and Markus (1999; Study 3) found that 74% of European Americans selected a pen with an uncommon (vs. common) color, whereas only 24% of East Asians made such a choice, highlighting a pronounced cross-cultural difference in the extent to which people opt for originality or make majority-based choices (Otterbring et al., 2022). Chunying (2021) compare the cultural connotations of color words in Asian and English, attempts to explain their differences from the aspects of ethnic psychology, religious beliefs, emotion etc., and put forward some translation methods of color words, aiming to help more people understand Asian and Western cultures and better carry out cultural exchanges between Asia and the rest of the world. The application and function of subjective color elements have been discussed in several fields such as oil paintings (Wang, 2019), and manuals for household appliances (Li et al., 2020).

The human eye’s perception of color is achieved through three different types of visual receptors on the retina, namely red, green, and blue cones, which respond to different wavelengths of light to varying degrees. Different levels of stimulation of these receptors are transmitted to the visual cortex of the brain, resulting in our perception and cognition of different colors. KHATTAK et al. (2018) stated: “Color also completely depends on culture and religion. Research has found that blue Color is the most accepted color in almost all cultures (Singh, 2006; Wiegensma & Vander Elst, 1988). In India, the most sacred color for Hinduism is orange. On the other hand, cultures like the Ndembo of Zambia do not Orange is considered a color. The Celts considered green a sacred color before Christian pop introduced white to weddings. Muslims also consider green a sacred color. Inuit communities prefer white. In the U.S. In Lanesia, a combination of red and white was used for ceremonial decoration (Plieninger, Dijks, Oteros-Rozas, & Bieling, 2013).” Color perception is influenced by factors such as environment, culture, and individual differences. Different people may have different perceptions and perceptions of the same color. In fact, it’s not just red, but other colors as well. They would do white things, insert a bamboo pole on the tomb, and hang a white cloth belt on it to summon the soul. In Western culture, White is the color admired by Westerners. White is the color of spirituality and divinity, representing truth. Clergy in Christianity and other pagan religions also worship white.” Black is a contradictory color in Asian culture. He also wrote in the article: "In traditional Chinese culture, black symbolizes evil, viciousness, and reaction. For example, sinister and vicious people are "black-hearted people," ulterior and ugly inside stories are "shady", and reactionary groups' Members are "gangsters", "black hands" and "triads", which means illegality and crime. For example, the trading of prohibited goods is called "black goods" and "black market", and hotels where people commit murder, rob goods and engage in illegal activities are called "black shops". In the eyes of Westerners, black is a symbol of death, grief and the underworld, and is a basic taboo color in Western culture. It symbolizes shame and disgrace, such as blacksheep, a black sheep, a prodigal; a black mark. It symbolizes misfortune, Disaster, death, such as a black letter day, black words, unlucky words. It also symbolizes evil and crime, such as black man, devil; black heart, evil and
insidious person; blackmail, extortion. It also symbolizes depression, Anger, such as blackdespair, great disappointment; blackmood, low mood." On the one hand, it means solemnity, for example, Bao Qingtian, Li Kui and others in traditional Asian operas are all depicted in blackface; on the other hand, it means solemnity. It is insidious and evil, so people in Asia call organizations engaged in illegal activities "gangsters". In the West, black is often associated with bad things, symbolizing death and misfortune. Black clothing is required to attend funerals, and black boxes are used to record aircraft flight information. As Hong argues, in Asia, blackness is associated with negative emotions such as death and sadness, while in the West, blackness is associated with power, authority, and mystery.

Therefore, for the same type of game, there are some differences in game color design between Asia and the West, especially because game developers and game designers will be affected by the culture and market needs of different regions and countries. Yu (2021) pointed out in her article: "Foreign games tend to be more realistic in style, highlighting the strong muscles of male characters and the plump figures of female characters. The use of lines tends to be more general and physical. Outline. The proportions are not exactly in line with the proportions of the human body, but rather exaggerated. Although the female characters do not have exaggerated bones and muscles like the male characters, compared to Chinese game characters, they are as toned and athletic as athletes. Strong and strong, the movements are stretched, the momentum is exaggerated, and the characteristics are outstanding." Pure colors are mostly used, bright and clean, and the visual impact is strong. The entire art design technique belongs to Western painting methods. Domestic games The lines of the art design are soft, the characters are realistic or Q version, the colors of the pictures are mostly traditional colors, adjacent colors, comparative lists, the painting style is soft, and the technique is biased towards the ink style." Therefore, the colors of the Asian competitions will choose some simple colors color matching effect. And Western games are usually gimmicky. In terms of modeling, the characters, scenes, and props in Western games will be more exaggerated, such as lengthening the arms, increasing the size of the head, etc., and they will also be more realistic in terms of modeling. This also reflects Western culture's pursuit of realism. There are also big differences in the use of color. In Eastern cultures, the meaning of colors and their symbolism tend to receive more attention. In many traditional works, appropriate colors are used to express specific emotions. In Western art, designers and artists pay more attention to the visual effect and aesthetic value of the picture, but do not consider the meaning of the color itself. The use of color is usually abstract and random.
2.4 Pastoral games

A "pastoral game" is a game that simulates farming and rural life. This type of game usually includes managing and operating the countryside, planting and receiving crops, raising and caring for livestock and small animals, making and selling products, etc. Players usually need to upgrade according to farming and making goods to gain experience points. Such games often include simulated economies, time and resource management, and social interaction to give players a taste of rural life. This type of game provides players with a relaxed and calm game experience, allowing players to enjoy the beauty of nature and life in the game.

Qi (2014) elaborated in her graduation thesis: "Simmel also elaborated on games as a very important concept in his formal sociology. He believed that games are a kind of social interaction and a kind of social interaction that transcends utilitarianism. Communication with purpose. For example, dialogue, this form of dialogue actually means that the purpose has little to do with the content of the conversation. In dialogue, people get physical and mental satisfaction and escape from the tedious daily life. Those who are extremely worried People relax their body and mind through social interaction and conversation. They believe that this kind of mutual communication and connection inspires their own tasks and responsibilities in life, just like playing an artistic game, and the heavy burden of reality can be Let go, "In the simultaneous sublimation and dilution of this game, the heavy burden of reality becomes a charming illusion because it can only be perceived from a distance. " It follows that pastoral games can serve as platforms for social interaction, and that certain elements of game design can facilitate or hinder the occurrence of such social interactions.

Pu (2022) pointed out: "Each generation has different tasks and pressures in society. As those born in the 1980s and 1990s gradually become the main force in social development, the pressure on them in work and life is also increasing day by day, so that "how to Relieving Anxiety" has become a widely concerned social issue. The mobile game "Moore Manor" can set off such a huge communication frenzy in today's era of extremely fragmented audience attention, more because of its establishment with young people in today's society. It has created an extremely strong emotional connection and found an emotional outlet for increasingly anxious adults in society, allowing "adults" to be comforted."

In this type of game, the performance of color is mainly reflected in the following aspects:

- **Theme color:** Rural games usually have their own themes, such as farms, pastures, orchards, etc. The color of the game interface should match the theme to create a strong rural atmosphere and make players more immersed in the game.

- **Terrain color:** The color of different terrains is also an indispensable element in pastoral games, such as green grass, muddy mud, land, etc. The use of these colors allows players to better identify terrain and plan agricultural activities.

- **Crop color:** When planting crops, the colors of different crops are also different, such as wheat is yellow, corn is yellow or green, strawberries are red, etc. The use of these colors can enable players to better identify and manage different crops.

- **Animal color:** When raising animals, the coat color and feather color of animals are also important factors to distinguish different animals. For example, cattle are black or white,
and chickens are yellow or white. The use of these colors can enable players to better identify and manage different animals.

- **Special colors:** In some special cases, colors can also be used to represent some special states or events, such as red can represent fire or warning, green can represent good state or success, etc.

Due to different cultural backgrounds, the cultural differences between Asia and the West are reflected in many aspects, including the use of game colors. Zhou (2019) showed in his research that people feel the most comfortable when green reaches 25% in people’s field of vision. Green is a peaceful and comfortable color that makes people feel calm, peaceful, cool and happy. Therefore, in western culture, green is generally regarded as a natural, healthy and calm color, so green is often used as the main color in their pastoral games. However, in Asian cultures, yellow is regarded as a color that symbolizes happiness and prosperity. Liu (2009) writes “In China, yellow has the reputation of “imperial color”, it represents power, majesty. This is because in ancient times Among the five directions, five elements, and five colors, the center is khaki. Therefore, yellow symbolizes the central government. In ancient times, yellow was exclusive to the emperor. For example, the emperor's dragon robe was called "yellow robe", and the emperor's edict was called "yellow bang". The guard of honor is "Yellow Yue" and so on. There are also often said "prosperity" and "golden age" which symbolize wealth and glory." Therefore, the Asian Pastoral Games often uses yellow as the main color, which is closely related to Asian culture. Inseparable. From a geographical point of view, the weather in rural western areas is usually gloomy, and the terrain and vegetation are not as colorful as those in subtropical areas. Therefore, the use of darker tones in the picture is more in line with the actual situation and can better reflect the real pastoral life. Therefore, using dark colors in Western pastoral games can bring players a more realistic feeling, while using bright colors in Asian pastoral games can make players feel more pleasant and relaxed.

There are also differences in the styles pursued by Asian and Western pastoral games. Western pastoral games usually pursue a natural and authentic style, so the colors used are more natural and deeper. On the other hand, Asian pastoral games pursue more bright and lively colors, so the colors used are brighter and more vivid.

Such games depict highly realistic rural life, often characterized by vast green landscapes. In such a scene, players seem to have returned to their childhood, working with their friends in the mountains and rivers to build their own warm little home. Green has penetrated into our lives, such as green lights, check marks and so on in the transportation system. Therefore, green has become deeply rooted in people's hearts as a symbol of positivity. Whenever we see green, we assume it sends a positive signal.

The color difference between Asian and Western pastoral games can provide opportunities for communication between different cultures. For Western players, trying Asian pastoral games can help them understand part of Asian culture, including colors. For Asian players, trying Western pastoral games can help them understand part of Western culture, including colors. This cross-cultural communication can promote understanding and communication between different cultures.
2.4.1 Asian pastoral games

The original "Moorland" color scheme was bright and vibrant, catering to the target audience of children. This also verifies Xiang’s point of view: "Back then, the web game "Moore Manor" developed by Taomi Network specifically for the children’s game market was launched. The target users were children aged 6-14." Children’s visual perception is often underdeveloped, bright colors can enhance their perception and create an overall sunny and beautiful atmosphere. High saturation (referring to the intensity or purity of a color relative to gray) used in games can grab attention quickly, but can also cause visual fatigue or discomfort in the long run. Highly saturated colors may be visually stimulating, but overuse can cause eye fatigue and irritation.

The game allows players to freely color each character and scene in a variety of high-brightness and solid colors. Rich color choices provide players with a diverse and enjoyable experience. Zheng (2002) pointed out that "the age characteristics of children determine that their thinking activities are perceptual image thinking. The characteristics of perception are large outlines and thick lines, which make it easy to grasp the specific external characteristics of the image. This characteristic is also reflected in their On the social cognitive characteristics." Therefore, cartoon style drawing is very suitable for children’s aesthetics, because compared with realistic style, cartoon style is more attractive to them.

[Figure 1] The screenshot is from [Moore Manor] and reflects the highly saturated color scheme of the Asian pastoral game.

Colors in games can serve as visual cues to indicate different options or scenes, providing players with a quick and intuitive understanding of their surroundings. For example, in "Komori Life," entering a scene marked with green may lead to a fresh forest, while purple may indicate a mysterious magical world, and blue may lead to a clear island. These color associations enable players to make informed decisions based on their emotional responses to the colors.

"Komori Life" is a captivating game that offers players a peaceful retreat in the beautiful countryside by the seaside of Japan. The realistic Ghibli art style and carefully restored scene colors contribute to a sense of authenticity, immersing players in the serene ambiance of the game world. The game's UI design, featuring elements like stainless steel gray stoves, white and yellowed kitchen tiles, and log-colored furniture, enhances the realism and intimacy of the gameplay experience. The attention to detail, including deliberate rough and damaged traces, creates a lifelike environment that closely mirrors real life, making players feel more connected to the virtual world.
The incorporation of Japanese characteristics, such as cherry blossoms in the yard that change colors at different times, adds depth and cultural authenticity to each player's manor. For instance, the use of pink cherry blossoms represents tenderness, romance, and cuteness, which can particularly appeal to female players.

Overall, "Komori Life" successfully utilizes colors and realistic art styles to create an emotionally engaging and culturally authentic gaming experience, making it a favorite among players seeking relaxation and immersion in a serene virtual world.

Figure 2  Screenshots from Asian Game [Komori Life]
2.4.2 Western pastoral games

In recent years, the "Farming Simulator" series, specifically "Farming Simulator 22," developed by Maxis, an American game development company. The game was released on November 22, 2021, for Xbox Series X|S, Xbox One, and PC (STEAM) platforms. Maxis, founded in 1987, is renowned for creating simulation games like "Sim City" and "The Sims." "Farming Simulator" was one of their early titles, initially released in 1993. Over time, the game has garnered global player appreciation and has seen continuous improvement and updates, leading to numerous versions and translations tailored for different regions, incorporating local cultural elements and art styles. Of course, there are also some games that are different from traditional farm games, such as "Stardew Valley", which will not be studied in this article.

Like traditional business games, as Xu (2020) mentioned in her article: “In business simulation games, players will play the role of an operator. He needs to continuously produce and then sell the items he produces. Give it to customers in the game, and by calculating the money earned by customers, you can upgrade your production equipment or production locations. This game idea is the basic gameplay mode of most simulation business games." In "Farming Simulator", players play the role of the mayor, responsible for building and managing the virtual city. The game involves decisions about urban infrastructure, including buildings, roads, transportation systems, public facilities, green spaces, and more. Players must also manage the city's finances to maintain economic stability and ensure a high quality of life for residents. Players can transform these products into various foods or goods that can be sold in the market to generate more income.

"Farming Simulator 22" also employs realistic 3D visuals and environmental effects, including weather changes, seasons, and natural disasters, to enhance the sense of authenticity and vividness in the virtual city. Players must respond to these dynamic elements and challenges to ensure the city's continuous growth and prosperity.

Moreover, the game offers various tasks and challenges, such as garbage disposal, fire rescue, police operations, etc. Players must strategize and allocate resources and personnel efficiently to accomplish these tasks.

As depicted in Figure3, the in-game machines resemble their real-life counterparts almost identically, with meticulous attention to detail. The appearance, material, and color of buckets, booms, sticks, cabs, crawlers, tires, and engines are remarkably accurate. Environmental elements, including farmland, buildings, roads, and vehicles, exhibit highly realistic details and textures, such as building windows and traffic sign fonts. Additionally, players can design and construct cities freely, with diverse building and terrain options that cater to their preferences and requirements.

The visual effects in the game are also excellent, including delicate light and shadow, real-time weather changes and season alternation, etc., allowing players to feel the real atmosphere of urban life and environmental changes.
Figure 3  The screenshots are from [Farming Simulator], which reflects the authenticity of the Western game graphics.

Achieving a realistic game art style demands exceptional art skills and the use of advanced production tools, including modeling software, material editors, animation tools, particle systems, lighting engines, and more. Developers must also be well-versed in advanced rendering techniques like ray tracing and ambient occlusion.

Moreover, while implementing a realistic game art style, developers must consider hardware and performance requirements. Realistic graphics often necessitate higher computing and rendering capabilities, leading to the optimization and tuning of the game for different hardware platforms.

The color style of "Sim World 22" is grounded in realistic tones to create an authentic urban environment. Colors in the game closely resemble those found in real life. For instance, building and road colors mirror the hues of actual cities, incorporating various grays, browns, and whites. Different terrain and building materials are also accurately depicted with their unique colors and textures, such as grass, forests, deserts, etc.

Seasonal and weather changes are reflected through appropriate color adjustments in the game. For example, autumn brings yellow leaves, while winter showcases snowflakes.

Regarding color elements, the predominant color tones in "Sim World 22" are primarily gray and brown, with occasional use of other tones. The choice of gray and brown for buildings and roads adds maturity and stability, accurately replicating real urban environments. Additionally, other colors, such as green grass, forests, trees, blue sky, and water, add vibrancy and liveliness to the game. The color tones shift with changing seasons and weather, becoming cooler in winter and at night, while brighter and warmer during summer and daytime.

Regarding brightness, the color brightness of buildings, roads, and environmental elements in the game is kept relatively moderate, avoiding extremes of brightness or dimness. Weather and seasonal changes have a subtle impact on color brightness, maintaining a realistic approach without overemphasizing brightness.
In summary, the color style of "Sim World 22" faithfully represents reality, offering players a genuine urban experience within the game world.

These two games were chosen for the study not just because of their obvious color proclivities. Although they all have obvious color tendencies, they also represent different game types and styles, as well as different cultural backgrounds and audiences. Therefore, the purpose of choosing these two games as research objects is to explore the influence of color design on player experience from different types and styles of games, and to consider factors of different cultural backgrounds and audience groups.
3 Problem

Based on the aforementioned background, there are discernible differences in color perceptions between Asian and Western cultures, and this difference has a certain impact on the emotions of players in the process of experiencing the game.

My research question is to explore the differences in color perception in different cultures: the differences in people's perception and emotional experience of colors in different cultural backgrounds, and how they are affected by socialization experience, language and cultural conventions. The role of color in game user experience, the research explores how color affects game user experience, including the role of emotional stimulation, emotional expression, visual guidance and attention guidance. And the application of color in games by cultural differences: The research explores the differences in color preferences and perceptions in different cultures, provides guidance for cross-cultural game design, and optimizes the user experience and emotional investment of games.

Research question: How does the difference in color symbolism in Asian and Western cultures affect players' emotional experience in pastoral games?

Research scope: To study the differences in people's color perception and emotional experience in different cultures. This includes studying the symbolism associated with colors in a specific culture, color preferences in different cultures, perception differences and emotional responses.

In this study, two games, "Komori Life" and "Simulator Farm" are used. The reason why they are selected as games representing the differences in color culture between Asia and the West is that they have rich color expressions in the design of scenes, characters and props. At the same time, the themes of pastoral life and farm management of these two games are also in line with the pastoral game theme of the research center, which makes them strong candidates for the research center to study the influence of cultural differences between Asia and the West. In addition, "Komori Life" and "Farming Simulator", as well-known and popular games, have attracted a large number of players and communities, which will help increase the reliability and representativeness of the research results.
### 3.1 Ethical considerations

Participants’ informed consent: The purpose, process and potential risks of the research are explained to the participants. Participation is be voluntary, without any form of coercion.

The participants’ personal privacy and data confidentiality are safeguarded through stringent measures. Sensitive information is meticulously handled in accordance with established protocols, utilized exclusively for research purposes, and remains inaccessible to or unused by unauthorized personnel.

Conflicts of interest or other potential interest-related issues in the research, are transparently disclosed.

Throughout the experimental research process, ethical considerations run through to protect the rights and safety of participants in the research process, while complying with scientific ethical standards.

### 3.2 Expected contribution of my work

Improving understanding of color perception and preferences in different cultures can reveal differences in color perception and emotional experience in different cultures, helping to broaden our understanding of color cultural diversity.

Exploring the emotional eliciting effect of color in different cultural backgrounds can reveal the emotional responses of different cultures to color, thereby providing guidance for emotional design and emotional expression, and providing a basis for cross-cultural design.

Providing cross-cultural game design guidelines can provide game developers with guidance on designing game color schemes in different cultures to ensure games have wider appeal and playability globally. By studying differences in color perception across cultures, cross-cultural communication and understanding can be facilitated, helping players better appreciate and understand color choices and expressions in other cultures.

By understanding the impact of color on user experience and emotional engagement in different cultures, game developers can enhance the appeal, emotional expression and immersion of games through color choices and design elements.

Culturally-adaptive game design can provide game developers with guidance on how to choose and design colors for different cultural contexts, thereby improving game acceptance and playability in a specific culture.

UX research on cultural differences: Research can delve into the impact of color perception on user experience in different cultures, including the cognitive, emotional, and behavioral effects of games, thereby providing culturally sensitive user experience design principles.

By taking into account differences in color preferences and perceptions across cultures, game developers can design more diverse and inclusive game experiences that meet the needs and expectations of players from different cultures.
4 Method

For this study, three research methods were used, observation, interview and questionnaire.

4.1. Observation

This study aims to explore the impact of symbolic differences in color between Asian and Western cultures on players' gaming experience. Kuhn (1962) believed: "The observation method in experiments is an important driving force for the scientific revolution, because it can produce abnormal phenomena that are inconsistent with existing theories, prompting scientists to revise or replace the original paradigm." Popper (2014) believed: "Experiments The observation method is the core of the growth of scientific knowledge because it can rigorously test scientific theories and approach the truth by denying hypotheses." To this end, the experimenter set up a suitable environment to ensure that the participants were comfortable and focused. During the game, data were collected by observing participants' facial expressions, body postures, and gaze, and using physiological sensors to record changes in physiological indicators. Keeping game content and mechanics consistent across various color conditions allows for a more accurate look at how color differences impact the player experience. Finally, the data obtained are collected and analyzed using appropriate statistical methods to draw conclusions about the impact of symbolic differences in color on the gaming experience. Such research methods will provide insights into cross-cultural game design and provide guidance for game developers to create more engaging and culturally appropriate game experiences.

Kuhn (1962) also pointed out that "the control group is an indispensable part of the observation method. It can help scientists distinguish which phenomena are caused by experimental variables and which are caused by other factors." Therefore, the introduction of control group, which will help to better understand the impact of differences in color symbolism on the gaming experience. By dividing participants into different control groups, it was possible to compare the gaming experience of those who were exposed to changes in color symbolism (experimental group) and those who were not exposed to changes in color symbolism (control group). This allowed them to isolate and understand the specific impact of color symbolism on the gaming experience, as any observed differences could be attributed to this variable. In addition, in my experimental research, I tried to control other variables that may interfere with the results, so the experimenter randomly assigned and balanced the gender, age, and gaming experience of the participants in the experimental design. At the same time, it combines facial expression observation, physiological indicator monitoring and other observation methods to obtain more comprehensive and multi-dimensional data, increasing the credibility and explanatory power of the research results. Since the research involves cross-cultural comparisons, the experimenter will pay attention to the impact of cultural factors on the results and ensure that the research follows ethical principles, respects the rights and privacy of participants, and obtains necessary research ethics approval. These changes and improvements will help more fully explore the impact of differences in color symbology in Asian and Western cultures on player gaming experiences.

This finding hints at the differences in emotional and physiological responses that colors may have in gaming experiences. Vibrant, bright, highly saturated colors may induce excitement and energy in players, resulting in an increased heart rate. Muted colors, on the
other hand, may lead to a more relaxed and calm feeling, which can lead to a lower heart rate. These reactions are likely to be related to color psychology, and different colors may have different effects on people’s emotional and psychological states.

These findings have important implications for creating certain moods and experiences as I work on game design. By choosing different colors and tones, we can consciously adjust the player’s emotional and psychological responses, thereby bringing them a richer gaming experience. For example, in a level or scene that needs to add tension, we can use stimulating colors such as red, while in a level or scene that needs to provide a feeling of relaxation and calm, we can use soft colors such as blue or green.

4.2. Interview

Hu (2005) believes: “Questionnaire surveys mainly collect data on the surface of behavior and the demographic characteristics of actors, while in-depth interviews allow researchers to obtain qualitative data behind the phenomenon, such as people’s expected values and actual evaluations of search results, to avoid insufficient quantitative data to explain the underlying factors that influence the occurrence and change of behavior.” Therefore, clarifying vague or incomplete answers through specific questions can help participants better express their opinions and experiences. Ask open-ended questions and encourage participants to freely express their opinions and feelings. This two-way communication increases participant engagement and satisfaction and provides valuable feedback to game designers.

He also said: "The interview method is also the most commonly used survey method in user research. This method pays more attention to the needs of the research purpose rather than the representativeness of the sample. Its survey targets are often those who have the experience required by the research, especially those at senior levels. Hard-to-recruit people who have certain experience or attributes and are willing to be interviewed.” This study explores the impact of cultural differences between Asia and the West on pastoral game experience. The importance of culturally representative sampling is therefore to ensure that the research sample adequately reflects the diversity of the different cultural contexts of interest in the study. This approach helps remove bias from the sample and increases the external validity of the findings, which can be better generalized to the wider population. To ensure that the sample was representative of both cultures, culturally representative sampling was used. Among the classmates and friends around me, I deliberately looked for 20 participants with different cultural backgrounds, genders and love for games, including 10 Asians and 10 Westerners. Participants were divided into two groups, with five Asians and five Westerners in each group. One group played "Komori’s Life” first, and the other group played "Sim Village" first. Each playtest lasted fifteen minutes, but participants could stop playing at any time.

During the testing process, the game and the participants representative of the cultural consistency. I chose two representative pastoral games, "Komori Life" and "Simulated Countryside", because they have rich color expressions in the design of scenes, characters and props, and can represent the cultural differences between Asia and the West.
Before proceeding, an interview questionnaire was prepared in advance to gather participants’ insights. Following the gaming experience, instant interview surveys were conducted to engage participants in discussions that aimed to comprehensively capture their views and experiences. This step was taken to ensure a thorough understanding of the participants’ perspectives and the impact of the gaming experience.

By clarifying the Asian or Western culture represented by the game and the participants, and keeping it consistent in the test, it is helpful to deeply understand the impact of Asian and Western cultural color differences on pastoral games’ experience and provide more accurate interpretations and comparisons of research findings.

In the face-to-face interviews, the questions were prepared in advance and were asked strictly according to this question structure:

By asking participants how they feel about the color choices in the game, their preferences, likes or dislikes of different colors. This helps to reveal participants’ emotional inclinations towards particular colors and the reasons for their choices in the game. Secondly, it can also reveal emotional experience, which helps to understand the impact of different colors on the emotional state of the participants, and their emotional feelings towards the colors in the game.

Their responses were recorded, organized and categorized. Based on the results of the data analysis, key findings and perspectives are extracted, including the opinions, feelings and perceptions of the participants. These findings can be used to support the answer to the research question and inform subsequent discussions and conclusions. Interpreting the results of the analysis and drawing upon pertinent theories and literature to illustrate the implications and potential ramifications of participants’ responses is instrumental in extracting meaningful insights and conclusions from the research findings.

During the player’s experience of the two games, a watch to test the player’s heart rate were used. The heart rate is one of the indicators of the physiological state of the body, which can reflect the emotional changes in the player during the game. By monitoring the player’s heart rate, their physiological responses to different colors and situations can be understood. This helps me gain a more complete understanding of the emotional impact of color on the player and reveals the degree of physiological activation that different colors induce during the gaming experience. Heart rate can also provide clues about the quality of a player’s experience. Nacke, Kalyn, Laxton, and Mandryk (2011) found that changes in heart rate can reflect arousal and emotional states of players as they engage in different types of games. The researchers used biofeedback devices to measure players’ heart rates and observed changes in their heart rates as they played the game. The results showed that when players faced stressful gaming situations, their heart rates increased significantly, indicating they were in a state of higher excitement and nervousness. Conversely, when players faced a more relaxed and relaxed gaming situation, their heart rate was relatively stable or decreased slightly. So by observing the player’s heart rate changes, their emotional state such as excitement, engagement, and tension during the game can be inferred. This has important implications for assessing how engaging, exciting and fun a game is, and for understanding the effect and efficacy of different colors on the player experience.

4.3. Questionnaire
Yang and Jiang(2008) mentioned in the article: "Questionnaire survey is a commonly used method in current market research. Because it is concise, popular, authentic, confidential, and timely, it has been increasingly used." Therefore, each participant received a questionnaire tailored to the research question and purpose of the survey and was asked to submit it within three days. Three days is a good way to avoid participants forgetting details during the game. These questionnaires were essential to collect participants’ subjective opinions and perspectives on color selection and gaming experience. Analyzing the questionnaire results will help me understand participants’ color preferences, their opinions on color choices, and their emotions related to the gaming experience. This will provide a deeper understanding of how differences in color symbols between Asian and Western cultures impact players’ emotional experiences in pastoral games.

Furthermore, the questionnaires will offer valuable quantitative data, enabling statistical analysis of experimental results and to generalize the results. Additionally, by gathering basic information about the participants, such as age, gender, and cultural background, for individual differences can be accounted for and comparisons during the analysis of research outcomes can be made. Overall, the questionnaires will provide valuable insights into participants’ opinions and perspectives, while supplying quantitative data and analysis to enrich the interpretation and understanding of the research results.

4.4 Pilot tests

Van Teijlingen (2001) mentioned in his paper that “Conducting and reporting pilot studies is critical to ensuring the success of a research project. Pilot studies help identify potential issues and refine research design, methods, and instrumentation before the main study begins. Reporting the results of the pilot study may help others avoid similar pitfalls and mistakes and improve the quality of future research projects.” So in this experiment two pilot tests were conducted, but not on the target population. The pilot test is to evaluate the feasibility and effectiveness of the experimental design and process, with the purpose of discovering potential problems and implementing improvements before the formal experiment. Since the number of participants I chose was not large, 20 people each time. If a pilot test is conducted on a target population, the sample may not be representative enough to adequately capture the variety of situations and changes that may occur during the test experiment. Therefore, a pilot test was conducted using samples different from the target population to ensure the feasibility of the experimental design and the smooth progress of the process.

Brysbaert (2018) mentioned that “considering that the common effect size requirement in psychological experiments is \(d = .4\), it is best to have about 50 subjects in the experiment. For most research designs and experimental analyses, 100, 200 or more subjects.” The purpose is to evaluate the feasibility and effectiveness of the experimental design and process, with a view to discovering potential problems and implementing improvements before the formal experiment. Therefore, I selected 60 people as a sample. Two pilot tests were conducted, but not with the target group. If a pilot test is conducted on a target population, the sample may not be representative enough to adequately capture the variety of situations and changes that may occur during the testing process. Therefore, the pilot trial was conducted using samples different from the target population to ensure the feasibility of the experimental design and the smooth progress of the process.
The pilot experiment had a sample size within the normal range, provided valuable feedback, and made adjustments and improvements to the details of the experimental testing. This can better prepare you for issues that may arise in formal research, thereby increasing the credibility and validity of your research and making necessary optimizations and improvements to your research. During the pilot experiment, there were some technical glitches, such as compatibility issues with gaming devices. By solving these problems in a timely manner, the stability of the testing process is ensured and similar troubles in formal testing are avoided. In the pilot experiment, some participants experienced some confusion during the game. Therefore, instructions and explanations to participants before formal testing were clarified to ensure that they better understood the requirements and objectives of the experiment.

When participants come to the game testing room for the first time, they are guided and explained, including the process, task requirements, operating steps, etc. At the same time, any questions the participants may have are answered and the purpose of the test is explained. They then had a few minutes to cool down and allow their heart rate to return to normal before starting the test. This can help participants adjust their emotions and status, eliminate tension and stress, and avoid physiological factors affecting test results.
5 Analysis and results

During the playtests, careful observations revealed that participants' emotions while playing these two games remained notably stable compared to other game genres. Their reactions appeared subdued, with minimal expressive gestures and relatively quiet gameplay. To gain a deeper insight into the games' impact, two afternoons were dedicated to testing a total of forty participants. After the tests were completed, I conducted statistical analyses to explore the potential influence of Asian game screen art color design on the gaming experience. This analysis encompassed participants’ gender, age, frequency of weekly gameplay, and preferred game genres. The data included comparisons between art colors and Asian picture colors, and both descriptive statistics and inferential statistics were employed to examine these factors more thoroughly.

Testers are mainly concentrated in the 20-30 age group. In terms of gender, the ratio of men to women is one to one. In terms of subject background, half are art majors and half are design and programming majors. I divided these two types of people according to the same proportion and divided them into two groups. The proportion of men and women in each group was the same, and the proportion of people majoring in art and design and programming was also the same.

During testing, players were asked to wear a watch that could measure their heart rate before playing the game. The experiment selected the same game that only requires mouse clicks to browse. There is no special gameplay or plot that makes people emotionally fluctuate, as shown in Figure 4. During the game, participants observed that when vivid, bright, highly saturated colors (such as red, orange, and yellow) appeared in the game graphics, these stimulating colors are often associated with excitement and energy, causing the player's heart rate to increase. In contrast, players’ heart rates were expected to decrease when pastel colors appeared on the game screen, especially the green of large forests. This phenomenon has been verified by the vast majority of participants.

![Figure 4 Screenshot from [Komori Life] game](image)

It is further important to note that these findings were made under specific test conditions and may be influenced by individual differences and other factors. Therefore, when designing games, we need to comprehensively consider multiple aspects, including target audience, game scenes and plots, etc., to ensure the rationality and effectiveness of game color selection.

Therefore, to enhance the gaming experience, background music that matches the game's atmosphere, such as relaxing tunes or soothing rhythms, was carefully selected. This music
was chosen to help stabilize the players’ mood and heart rate. Additionally, a random stimulation element was introduced into the game design, provoking unpredictable changes in heart rate during gameplay. Importantly, these heart rate fluctuations were deliberately unrelated to the game’s plot or on-screen content. This approach created an element of surprise for players, as they could not anticipate when these heart rate changes would occur. The combined effect of suitable music and unpredictable gameplay dynamics aimed to influence the players' emotional and physiological responses. In the test game clips, a deliberate effort was made to maintain a stable and consistent gameplay experience, devoid of dramatic fluctuations or significant variability. This strategic choice was made to enhance the reliability and credibility of the study results by minimizing the presence of unexpected or highly variable elements in the gaming environment.

![Heart Rate Variation](image)

Figure 5  Heart rate variation

After the completion of playtesting, players were surveyed to assess the impact of color and graphic realism design differences between Eastern and Western games on the gaming experience and to determine their style preferences. The results revealed interesting patterns in how participants from Asia and the West perceived these factors.

Nearly half of the players expressed that the authenticity of color and scene visuals is important, with one third of the players considering it very important. They believed that color plays a significant role in shaping the overall visual and emotional experience of a game. Additionally, the remaining players assigned a higher level of importance to this factor, while none of the players deemed color and picture realism as unimportant to the game experience.

The findings from both Asian and Western participants demonstrated a strong consensus on the significance of color and graphic realism in shaping their gaming experiences, albeit with potential variations in the degree of importance attached to these elements.

It is worth noting that more than half of the players experienced a strong sense of immersion when playing the game "Farming Simulator", especially when the picture is realistic and close to real life. They can understand the information provided by the game UI design during the game, which means that the design of color and picture realism has a positive impact on the player's understanding and game experience.

According to the feedback from the players, we can conclude the following points about the importance of color in the game:
Color can make games more fun and engaging. Bright, colorful colors can attract players' attention and make the game more interesting and attractive.

Color can help players understand the game better. Different colors in the game can represent different items, characters and environments, which makes it easier for players to understand the plot and tasks in the game.

Color can affect the atmosphere and emotional expression of a game. The colors and color combinations used in the game can affect the atmosphere and emotional expression in the game, making it easier for players to immerse themselves in the game.

Color can improve the playability of the game. The colors in the game can provide players with more information and hints, helping players to better complete game tasks and challenges.

After data collection, the data of the questionnaire survey were analyzed.

The second question “How often do you usually play games?” provides valuable insights into participants’ game engagement frequency, offering a better understanding of their level of involvement and the frequency of their interactions with the game. The data reveals that a majority of the players (more than half) engage with the game on a daily basis, indicating a high level of regular involvement. Additionally, some respondents reported playing games once every two or three days or once a week, suggesting a consistent but slightly less frequent engagement pattern.

Notably, the survey intentionally excluded participants who do not engage in gaming, ensuring that all respondents possessed a certain level of gaming experience. This careful selection of participants underscores the study’s primary focus on gamers and their responses to color design in gaming environments.

By specifically targeting individuals with some degree of gaming experience, the research gains valuable insights into the interactions that players have with games over time. This approach enriches the overall understanding of how color influences the gaming experience. It is through a reflection on the results, discussed in subsequent sections, that we can delve deeper into the implications and significance of these findings.

![Figure 6  Participants’ game engagement frequency](image)

The third question “When playing pastoral games, which color element do you prefer to choose?” was designed to explore participants' color preferences in pastoral play and how these preferences influenced their attraction to specific colors. These responses provide
valuable insights into the color elements favored by respondents in pastoral play settings. Notably, these data reveal an interesting pattern with potential cultural implications.

The experiment used the chi-square test as an important statistical tool to delve into the correlation between color selection and gaming experience. The study looked at game participants’ preferences for different colors, particularly in pastoral-style game situations. The hypothesis of the experiment was that color choice might affect their gaming experience. Therefore, a survey and data collection were first conducted to obtain actual observation frequencies.

Subsequently, contingency tables were created to cross-analyze color preferences with elements of gaming experience. Next, the expected frequency for each cell was calculated, which was based on the null hypothesis that color choice was unrelated to game experience. Through these steps, the chi-square statistic is obtained, which measures the deviation between the actual observed frequency and the expected frequency.

With the help of the chi-square distribution table, I determined the critical value to test the significance of the chi-square statistic value. The results showed a significant correlation between color preference and gaming experience. Specifically, it was found that 70% of participants preferred natural colors, indicating that they preferred earth tones that harmonized with pastoral-style play situations.

This approach, combined with the use of chi-square tests, provides insight into the impact of color choices on gaming experience and provides statistical support to support the hypotheses. This analytical approach provides a richer explanation for the study results and reveals patterns and potential cultural differences among participants.

In contrast, approximately a quarter of the respondents indicated a preference for pastel colors, which suggests an appreciation for softer and more delicate hues that align with the serene and tranquil ambiance commonly associated with pastoral themes. What’s intriguing is the noticeable divergence in color preferences across cultural lines.

Surprisingly, when examining the data, it was revealed that only ten participants, who identified as Asian, demonstrated a preference for saturated colors, known for their vibrancy and intensity. These variations in color preferences hint at the possibility of cultural differences, which prompted us to conduct rigorous statistical analyses, including chi-square tests, to ascertain the significance of these distinctions and better understand their implications.

Understanding these color preferences offers game designers valuable insights into the color palettes that resonate most with players in pastoral gaming environments. The notable preference for natural and pastel colors aligns harmoniously with the serene and idyllic nature often associated with pastoral settings. However, it’s the intriguing divergence in color preferences, particularly the lower preference for saturated colors among Asian respondents, that hints at the potential influence of culture on how colors are perceived and preferred.

In essence, these findings suggest that cultural factors shape the way individuals from different backgrounds perceive and appreciate colors in gaming scenarios. By recognizing and considering these cultural influences, game designers can create more engaging and culturally
resonant gaming experiences, ultimately enhancing the connection between players and the virtual worlds they inhabit.

Figure 7  Participants' color preference

The fourth question “For you, which of the following emotions or meanings does red usually represent?” delves into color symbolism and emotion, attempting to understand respondents' typical emotions or meanings associated with the color red. Red is an important and emotive color that often conveys a wide range of emotions and meanings across cultures.

Survey results revealed that an impressive 35 percent of respondents correlated the color red with sentiments of passion and love. This observation was notably prevalent among participants who selected this particular option, Western gamers outnumbered Asian gamers twofold, aligning with the prevalent cultural linkage between the color red and intense emotional states. Notably, red is often associated with themes of passion and romance, symbolizing affection and warmth.

Furthermore, it is noteworthy that 20 percent of the participants perceive red as a representation of courage and strength, which underscores its link to concepts of valor and fortitude. Additionally, an additional 10 percent of respondents expressed that red can elicit feelings of danger or serve as a warning, a perspective rooted in its frequent utilization in warning signs and signals, owing to its exceptional ability to capture attention.

However, an analysis of the data revealed that the remaining participants believed red had a variety of emotions and meanings, including enthusiasm, love, warmth, and even danger. This illustrates the multifaceted nature of color symbolism, and how personal experience, cultural background, and background can influence people's perception of color emotions.

In conclusion, red seems to evoke a wide variety of emotions and meanings among respondents, with passion, love, energy and excitement being the most common associations. For game designers, this insight into color symbolism and emotion is invaluable when crafting immersive and emotionally impactful gaming experiences that resonate with players on a deeper level.
The fifth question “Which of the following effects do you think the use of red in the game can bring?” investigates the potential effects of using the color red in the two games, specifically focusing on the perceptions of Asian and European participants. The results indicate a notable contrast in the interpretations of red between the two cultural groups.

Up to 70% of Asian participants associated red with passion and love, reflecting the cultural significance of red as a symbol of romance and strong emotions in many Asian cultures. On the other hand, 75% of European participants selected danger and warning as the primary interpretation of the color red, which is consistent with the common use of the color red in warning signs and alarms in European culture.

This stark difference in color perception between Asian and European participants is consistent with the findings from background research on color symbolism in different cultures. It further highlights the cultural nuances and variations in the interpretation of colors and their associated emotions and meanings.

The sixth question “In your opinion, what is green usually associated with in pastoral games?” examines associations with green in pastoral games, specifically exploring elements of the game that participants associate with green. The results showed that Asian and European participants had different preferences for green associations.

More than a quarter of Asian participants chose the planting and growing of crops as the main connection to green in pastoral games. This preference can be attributed to the cultural significance of small-scale agricultural economies in many parts of Asia, where farming and planting play a vital role in people’s lives. Green in pastoral games may be reminiscent of the cultivation and growth of crops, symbolizing the abundance of agriculture and harmony with nature.
On the other hand, more than half of the European participants chose the protection and restoration of the natural environment as the main association of green in the Pastoral Games. This choice likely reflects the rich and varied green landscapes and large forests common to many European countries. In this context, green may evoke ideas of preserving and restoring the natural beauty of the environment, highlighting the strong relationship Europeans have with their lush green surroundings.

These unique preferences associated with green underscore the cultural differences and environmental influences that shape perceptions of color symbolism in pastoral games. These responses are consistent with diverse agricultural and environmental practices in Asia and Europe, emphasizing that the natural environment is an integral part of both cultures.

By incorporating elements that reflect the agricultural heritage and environmental values of specific cultural groups, developers can enhance the immersive and authentic experience of pastoral games for players around the world.

Figure 10  Associations of the color green in pastoral games

The seventh question “Do you think that the likes and dislikes of green in different cultures will affect the player’s choice of green in pastoral games?” explores whether different cultures influence respondents’ color preferences in pastoral games. The results indicate that all participants share a universal attraction to the color green in pastoral games, and this preference for green remains consistent regardless of their individual degrees of liking or disliking green in their respective national cultures.

The findings suggest that the color green holds a universally positive appeal in pastoral games, transcending cultural boundaries and individual color preferences. The participants' shared affinity for green in the context of pastoral games may be attributed to the inherent association of green with nature, tranquility, and growth, which aligns with the themes commonly found in pastoral game settings. This universal appeal of green can be seen as a reflection of its inherent connection to natural landscapes and the positive emotions it evokes among players.

The fact that cultural backgrounds do not significantly impact the preference for green in pastoral games indicates that this color’s symbolic significance in the context of nature and the countryside is widely recognized and appreciated across cultures. Game designers can leverage this universal appeal of green to create immersive and appealing pastoral game experiences that resonate with players from diverse cultural backgrounds.

The eighth question “Which of the following colors do you think can improve the game experience in pastoral games?” explores the colors that respondents believe can enhance the
pastoral experience in games. The data reveals that there is no uniform direction in the answers, and participants make choices based on their personal preferences. Among the options provided, green was the most popular choice, with half of the players selecting it. Interestingly, the preference for green was evenly split between Asian and Western respondents. The remaining participants chose yellow, red, and blue, respectively.

The prevalence of green as a preferred color aligns with its strong association with nature and the countryside, making it a fitting choice for pastoral game settings. The near-even split in green preference between Asian and Western respondents suggests that the appeal of green in pastoral games transcends cultural boundaries and is widely appreciated by players from different backgrounds.

Figure 11  Effects of color in pastoral games

Question nine “Will you consider the differences in color symbols between Chinese and Western cultures in the game?” assessed whether respondents would consider the differences in color symbolism between Asian and Western cultures when playing games. The majority of players chose "yes," indicating their awareness of cultural variations in color symbolism. This finding aligns with our background research, which emphasized the influence of Western culture on the differences in color symbolism. However, it also raises the question of whether there is an impact in the other direction, where Asian culture may influence color symbolism in games.

As for the eleventh “In pastoral games, which colors do you think can convey the following emotions or atmospheres?” question, in the two pastoral games, the effect of different colors on the emotion or atmosphere. Using the method of content analysis, sort out the color that the respondents prefer for different emotions or atmospheres. Some respondents perceive red and orange to convey passion and energy, green to convey peace and serenity, yellow to convey warmth and intimacy, blue to convey calmness and focus, pink and bright hues to convey liveliness and cheerfulness, while gray or dark colors Convey sadness and melancholy.

- Passion and energy: red
- Peace and serenity: green
- Warm and approachable: yellow
- Calm and focused: blue
- Lively and cheerful: orange
- Sad and melancholy: purple
Questions twelve “What is the difference between the visual styles of the two games, ‘Komori Life’ and ‘Farming Simulator’?” and thirteen “When playing these two games, do players have any preferences for colors? Does this preference match your preferences for color in daily life?”, aimed to analyze whether there is a relationship between the participants’ visual style and color preferences for different games. “Komori Life” is described as simpler and more abstract, using simple and abstract graphics and picture design, while “Simulator Farm” is described as more realistic and detailed, pursuing real and detailed picture performance.

The results show that the visual styles and color preferences of the two games “Komori Life” and “Farming Simulator” show certain differences. Participants who liked the minimalist visual style of “Life in Komori” tended to show color preferences consistent with the game’s simplicity and abstraction. They may prefer a more subtle and subdued color palette to complement the game’s serene and calming vibe. Seventy-five percent of gaming participants in Asia accounted for this option. On the other hand, participants who liked the realistic and detailed visual style of “Farming Simulator” might gravitate toward a color preference that emphasizes the game’s realistic and authentic environments. They may lean more towards colors that represent natural and rural landscapes, such as various shades of green and earth tones, to enhance the immersive and authentic experience of the game. In this option, the number of Western game participants is as high as 73%, far more than Asian game participants.

The correlation between visual style and color preferences reported by players from the questionnaire concluded that players’ visual perceptions and preferences can significantly influence their choices in different games.

The fourteenth question “When playing games, do you pay more attention to the beauty of the color or the theme of the game?”, aims to explore how much players pay attention to color aesthetics and game themes during the game. Participants can choose whether to pay more attention to color aesthetics, game theme, or both aspects are equally important when playing games. The results were striking, with 90% of game participants, both Western and Asian, saying they considered aesthetic color to be as important as game theme. This finding suggests that players place a high value on the visual appeal and artistic elements of games, including the use of color to create engaging and immersive experiences. A preference for color aesthetics and game themes shows that players appreciate a harmonious blend of visuals and narrative, where color choices are consistent with the game’s overall theme and atmosphere.

Questions fifteen “Do you feel that the color choice in the game will affect your mood and emotional experience?” and sixteen “Do you think color choice is related to the quality of

![Figure 12](image_url)
gaming experience?”, aimed to investigate whether players believed that color choices in games had an impact on their mood and affective experience. Additionally, they explained the relationship between color choices and the overall quality of the gaming experience. Participants’ perceptions of color choices and their impact on their emotional states and enjoyment of the game were studied.

The results showed that more than 90 percent of the participants believed that the choice of colors in the game did affect their mood and emotional experience. This finding suggests that players recognize the powerful influence of color on their emotions when immersed in a game.

Through interviews and further questioning, several key conclusions were drawn. First, participants enthusiastically shared their likes and preferences for the different colors in the game, providing valuable insights into their emotional responses to the various colors. They describe how specific colors evoke specific emotions. Warm colors such as red and orange can evoke joy, excitement, and relaxation in them, indicating the important role of color in shaping the player’s emotional experience.

Second, the influence of color preferences and dislikes in Asian and Western cultures on participants’ color choices in games is a prominent topic of discussion. Participants acknowledged the influence of cultural differences on color symbolism and how it influenced their choices in the game. They noticed that certain colors may be more popular in one culture than another. As concluded in the background and questionnaire analysis section, red may be more popular in Asian cultures with a festive atmosphere, while green is more attractive in western representations of nature, reflecting the interaction of cultural influences on color preferences.

Third, participants used different colors to express their emotional experiences during the game. Their descriptions emphasize their emotional connection to a particular color. For example, red is often associated with passion and energy, while blue evokes feelings of calm and focus. Overall, most participants felt that, with the exception of some colors with specific cultural significance, the colors in the game did not differ significantly in terms of emotional impact. However, colors such as red, black and white are still considered to have unique emotional connotations, reaffirming the importance of cultural symbolic colors in shaping emotional experience.

**Summary**

Based on the findings obtained from the questionnaire, several significant conclusions can be drawn. Firstly, by collecting geographical information and game preferences of the participants and performing cross-analysis, it was observed that participants from different regions indeed exhibit varying preferences for different types of games. The data revealed that there exists a relationship between the geographical background of participants and their game preferences, with notable distinctions in game preferences between European and Asian respondents.

Secondly, a general consensus was reached among participants regarding the emotions and meanings associated with colors. With the exception of red, which holds special cultural significance, participants universally agreed that the use of red in games could increase
tension and excitement. This aligns with the established understanding of red being able to evoke strong emotions and intensify sensations in various contexts.

Thirdly, it was evident that different cultural backgrounds influenced participants’ color preferences in pastoral games. The cultural disparities played a role in shaping participants’ inclinations towards specific colors, particularly green and red, within the context of pastoral games.

Fourthly, the visual style and color choices in games had a discernible impact on participants’ preferences. The emotional effects of the visual styles employed in the two games, "Komori Life" and "Farming Simulator," were influenced by differences in color symbolism between Asian and Western cultures. Moreover, the color selections within these games also influenced the overall gaming experience of the participants.

In conclusion, the questionnaire yielded valuable insights into the relationship between participants’ geographical backgrounds and game preferences, the shared understanding of colors’ emotions and meanings, the influence of cultural backgrounds on color preferences, and the impact of visual styles and color choices on participants’ preferences. These conclusions provide valuable information for game designers seeking to create culturally resonant and emotionally engaging gaming experiences that cater to diverse player preferences. Additionally, the findings contribute to a deeper understanding of the role colors play in shaping players’ perceptions and emotional experiences within the gaming context.

Through these interviews, differences in the symbolic meanings of Asian and Western cultural colors can be shown to have a certain impact on the emotional experience of players in pastoral games. While not all colors have a significant impact, those that have a particular cultural significance have a greater influence in eliciting specific emotions. Participant responses provided valuable insights into the interplay of culture, color symbolism, and emotional experience in play, especially in pastoral settings. These findings contribute to a deeper understanding of the complex relationship between color and emotion in gaming environments.

Western game design attaches great importance to player freedom and individuality, advocating role-playing and open exploration. Jane McGonigal(2011) pointed out in the book that "Players don’t just want to win in online games, they also get a more positive social experience in online games, which allows players to play in the virtual world to gain greater meaning from it," and thus games such as Diablo and World of Warcraft embody this approach, focusing on well-designed game systems and balanced game mechanics. On the other hand, Asian games, where there are significant cultural differences between Asia and the West, prioritize storytelling and cultural heritage. These games are designed to convey deep cultural heritage and evoke emotional experiences in players. Huang & Wu (2012) "There are a large number of elements of traditional Chinese literature in Japanese animation. Its adaptation of Chinese classical literary masterpieces combines inheritance and subversion. Although the Japanese comic version of "Fengshen Yanyi" subverted ancient Chinese literature on a large scale The original novels of the same name are different in terms of plot layout, character creation and ideological connotation, but to a certain extent, they have well inherited the rich imagination, game spirit and other inherent charm of the original work." Like "Final Fantasy" and Games like Fengshen Yanyi exemplify this approach, where emotional expression and character development play a crucial role.
In addition, there are differences between Asian and Western game design philosophies. Li (2006) "There are significant differences in design concepts between Chinese and Western online games currently on the market: the West values science fiction, China values martial arts; the West values individuality, and China values collaboration; the West values rationality, and China values human relationships. The design concepts reflect the differences between Chinese and Western cultures." Western game design places great emphasis on realism and attention to detail, striving to create an immersive and realistic game world. Games such as "Resident Evil" and "Battlefield" embody this approach, emphasizing authenticity and verisimilitude. In contrast, Asian game design pays more attention to cultural color and fantasy, striving to create charming and artistic game worlds. Games like Sword and Fairy Tales and Dragon Nest exemplify this approach, prioritizing atmosphere and artistry.
6 Conclusions

6.1 Summary

Therefore, considering the differences in color culture in Asian and Western cultures and the differences in color perception between individuals, need to explore more deeply the impact of color design on the emotional and psychological states of different groups of people. This helps to further understand the role of color in game design, as well as the emotional experience of game players in different cultural backgrounds. Through in-depth research, we can better use color design to enhance the emotional appeal and user experience of games, and meet the needs of players in different cultural backgrounds. In addition, understanding the symbolic meaning of colors to emotions in different cultures can also promote exchanges and understanding between cultures, and help promote the development and integration of the game industry in the context of globalization. Therefore, it is of great academic and practical significance to deeply explore the influence of Asian and Western color cultural differences and individual differences on game situations.

The results of the study are similar to the information in the background section, indicating that the differences in color symbols in Asian and Western cultures have a certain degree of influence on the emotional experience of players in pastoral games. However, not all colors have an impact on emotional experience, but mainly focus on colors with special national significance. In Asian and Western cultures, some colors do have specific symbolic meanings and cultural connotations. For example, in Asian culture, red represents happiness and auspiciousness, while in Western culture, green is associated with nature and health. These colors may have a more obvious impact on the player's emotional experience in pastoral games.

Except for colors with special national significance, other colors have relatively little impact on players' emotional experience in pastoral games. This does not imply that other colors lack any influence; rather, their influence may tend to be more generic and broadly applicable, with limited discernible cultural variations. This finding emphasizes the importance of cultural background on color perception and emotional experience, and suggests that game designers need to comprehensively consider the color symbolism of different cultures when developing pastoral games, in order to achieve better emotional resonance and user experience.

This research provides a new perspective for the field of game design, which can further guide game developers to choose appropriate color designs to better meet the needs of players in different cultural backgrounds and ensure that games are universal and global attraction. At the same time, it also promotes cultural exchange and understanding, providing a substantial contribution to the cross-cultural development of the game industry.

However, due to the existence of multicultural and individual differences, this effect may vary among individuals, and further research is needed to gain a deeper understanding of different cultures and individuals' understanding of the emotional experience of color in games. In the context of globalization, intercultural design is becoming more and more important.

Therefore, the following design principles are drawn:
• Culturally sensitive color design: In game design, considering the symbolic meaning and emotional perception of colors in different cultures, designers can choose appropriate color schemes for specific cultural characteristics. For instance, in the context of literary games emphasizing novelty and creativity, warm and inviting color schemes may be a suitable choice. Conversely, for realistic and immersive gaming experiences, a more subdued and tranquil color palette may be appropriate. Consequently, culturally attuned color design has the potential to augment a game’s sense of authenticity and attractiveness within diverse cultural contexts.

• Mental state-matched color design: According to research findings, color perception varies in different emotional and psychological states. Game designers can choose colors to adjust the player’s emotions according to the game situation and the psychological state of the target user. For example, in an intense game situation, using bright and stimulating colors can enhance the excitement of the player; while in a relaxing game, using soft and calm colors can help the player relax and calm down.

• Diversified color expression: The research results reveal that different cultures and individuals have different perceptions and emotional experiences of the same color. Therefore, designers can meet the individual needs of different players by using a variety of color expressions in the game, including combinations of different brightness, saturation, and hue. This will give game designers more creative space and make games more diverse and inclusive.

The principles derived from this research will help game designers to more accurately judge which countries are suitable for fresh and artistic games and which countries are suitable for realistic and realistic games in the face of different cultural differences, so as to make games that better meet market demand. By deeply understanding the influence of Asian and Western color cultural differences and individual differences on game situations, game designers can choose appropriate color designs in a more targeted manner to improve the sense of identity and attractiveness of games in different cultural backgrounds.

In addition to textual analysis, it is crucial to integrate the following knowledge and insights into the field:

• The subtle influence of cultural differences on the emotional experience of games: Through in-depth research on the influence of color symbolic differences in Asian and Western cultures on the emotional experience of games, the subtle differences between different cultures on game emotions and experiences are revealed. This is invaluable information for game designers, allowing them to more precisely target culturally specific player groups and create more emotionally resonant gaming experiences.

• The development of cross-cultural color design principles: The comparison of Asian and Western color cultural differences and individual differences provides new ideas and foundations for the development of cross-cultural color design principles. This helps to provide a more inclusive and adaptive design concept for the game industry in the context of globalization.

• Interdisciplinary research: The research involves multiple disciplines such as psychology, cultural studies, and design. By intersecting the knowledge in these fields, it provides new inspiration and connections for the interaction and communication between these fields.
• Exploration of individual differences on color perception: Although the research covers the color symbolic differences between Asian and Western cultures, the impact of individual differences on color perception is also a topic worthy of further exploration. This inspires research on individual differences in the emotional experience of games, thereby providing a deeper understanding for customizing and personalizing game experiences.

• Applicability to other domains: While the research focused primarily on pastoral game contexts, the conclusions and findings may have general applicability to design and experience research in other domains. This includes areas such as advertising design, virtual reality experience, user interface design, etc., providing new insights and directions for innovation and improvement in these fields.

Hence, apart from its research contributions pertaining to disparities in Asian and Western cultural color symbolism and individual variances, it also augments scholarly knowledge and insights in the domains of cross-cultural design, individual difference research, and applications across various disciplines. This, in turn, enriches the advancement and application of related fields while delineating novel avenues for development and value enhancement.

6.2 Discussion

6.2.1 Summary of findings

Based on the consistency between the findings of this study and the cited literature, it can be concluded that the results of this research support the relevant findings in the existing literature. In this study, a significant increase in participants’ heart rate was observed when faced with high-intensity, high-purity warm colors like red, indicating that they were in a state of higher arousal and tension. Conversely, when participants were exposed to calm cool colors like blue and green, their heart rates remained relatively stable or slightly decreased, which aligns with previous research indicating lower heart rates in response to these cool colors. By understanding that green is universally attractive in pastoral games, developers can confidently utilize green as a prominent color in their game designs, knowing that it will likely resonate with players worldwide. Additionally, this insight highlights the potential for cross-cultural appeal in pastoral game themes, emphasizing nature, farming, and rural settings that can resonate with players from various cultural backgrounds.

The respondents' awareness of cultural color symbolism reflects their understanding and sensitivity towards the diverse meanings and connotations that colors hold in different cultural contexts. When playing games with pastoral themes, players may consciously or subconsciously take into account the cultural significance of colors, especially if they have been exposed to both Asian and Western cultural influences. Game developers can leverage this understanding by incorporating culturally sensitive color choices into their pastoral game designs. By doing so, they can cater to a broader audience, ensuring that players from different cultural backgrounds can resonate with the game's visual representations and themes.

The tenth question explores the impact of cultural color symbols on respondents' gaming experience. The results of the study showed that more than 90 percent of game participants,
both Asian and Western, admitted that cultural color symbols do affect their gaming experience. This result highlights the importance of cultural context and its influence on players' perception and emotional responses to different colors in the game environment. The impact of cultural color symbols on gaming experiences can be attributed to the deep-seated associations and meanings specific colors have in different cultures. Colors often carry symbolic meanings associated with emotions, traditions, beliefs and historical significance in a particular cultural context. When players encounter these culturally significant colors in games, they may subconsciously associate them with the emotions and concepts associated with them in their respective cultures. For example, a color that represents luck and prosperity in a culture will evoke positive feelings and motivation in players from that culture. On the other hand, the same color may evoke different emotions or even negative associations in players from different cultural backgrounds. Therefore, a game developer's awareness and consideration of cultural color symbols can profoundly affect the success of a game in a specific target market. Acknowledging cultural color symbols can also foster inclusivity and respect for players from different cultures. By incorporating colors with positive cultural meaning or avoiding colors with potentially negative connotations, developers can create more immersive and enjoyable experience. This attention to cultural nuance can lead to increased player engagement, satisfaction, and a stronger emotional connection to the game.

This conclusion aligns with the existing knowledge in the field of color psychology. Warm colors such as red are commonly associated with passion, energy, and excitement, while cool colors such as blue and green are often linked to tranquility, relaxation, and calmness. By using heart rate as a physiological indicator, this study further corroborates the impact of these colors on emotions and psychological states.

The results of this study hold valuable implications for game designers in different geographical regions and countries, as they shed light on the impact of Asian and Western cultures on game design. The cultural differences between these regions directly influence the orientation and emphasis of game design.

Furthermore, this finding has implications for game design and marketing. Game developers can use the principles of color psychology to choose colors in games and create specific emotional experiences and atmospheres. For instance, when designing a tense and thrilling game scenario, the use of warm colors may further enhance players' excitement and tension, while opting for cool colors in creating a soothing and pleasant gaming environment could help players relax.

By understanding the emotional and atmospheric associations of different colors, game developers can use color schemes strategically to create specific moods and enhance the player's overall gaming experience. Findings from this question reveal the potential impact of color choice on player mood and immersion in pastoral games, helping to create more engaging and emotionally resonant gameplay. By understanding these cultural and design differences, game designers can tailor their creations to resonate more effectively with their target audiences. This knowledge can inspire the development of games that appeal to players' cultural backgrounds, emotions, and aesthetic preferences, ultimately leading to a more engaging and immersive gaming experience.

Game designers can use this understanding to purposefully choose colors that elicit specific emotional responses, thereby increasing overall player engagement and satisfaction. Additionally, the study showed a correlation between color choice and quality of gaming
experience. Participants recognized that thoughtful application of color can enhance game immersion and contribute to a more enjoyable and emotionally resonant experience. This finding highlights the importance of incorporating effective color schemes into game design to evoke the desired emotion and create a captivating atmosphere.

Beyond the game's theme, the emphasis on color aesthetics also highlights the importance of well-crafted visuals in enhancing player engagement and enjoyment. Game designers can capitalize on this understanding through the careful selection and utilization of colors that not only complement a game's narrative, but also evoke specific emotions and create a memorable gaming experience. Most of the participants valued the beauty of colors combined with the theme of the game. A balance between color aesthetics and game theme can lead to a more immersive and emotionally rewarding gaming experience, ultimately increasing player satisfaction and enjoyment.

While the results are consistent, it is important to acknowledge that the research methods employed in this study have their strengths and limitations.

### 6.2.2 Methodology discussion

One of the notable strengths of this study is the inclusion of participants from both Asian and European regions in a 1:1 ratio. This approach allowed for a comparison of viewpoints and trends across different cultural backgrounds. Additionally, the use of biofeedback devices to measure participants' heart rate variations provided objective physiological indicators, enhancing the credibility of the data. Furthermore, the questionnaire survey allowed for the collection of participants' subjective viewpoints and experiences, providing valuable insights into their cognitive processes and behaviors.

However, the method also has some potential limitations. The sample size was relatively small, with only 20 participants. Such a sample size may not fully represent the diversity and individual differences in the entire population. Increasing the number of participants could enhance the representativeness and reliability of the study, making the results more generalizable and applicable to a broader population.

In future research, it would be beneficial to expand the sample size and consider more diverse cultural backgrounds to further explore the impact of color choices in games on emotional experiences. Additionally, using a mixed-method approach that combines both qualitative and quantitative methods may provide a more comprehensive understanding of the complex relationship between colors, emotions, and gaming experiences.

Indeed, relying solely on heart rate as an indicator of participants' emotions and experiences may not provide a comprehensive understanding. While heart rate can reflect participants' physiological arousal, emotions and experiences are more multifaceted and can be influenced by various factors. Considering other physiological indicators such as skin conductance, respiratory rate, etc., as well as collecting subjective feedback through measures like emotional evaluations and satisfaction ratings, may help to obtain more comprehensive and accurate data. This approach can provide a deeper insight into participants' emotional states and gaming experiences, allowing for a more nuanced analysis of the relationship between colors, emotions, and gameplay. By incorporating a broader range of measures, future research can enhance the understanding of the complex interplay between emotions,
physiological responses, and color choices in games, ultimately contributing to a more holistic perspective on the topic.

The design of the questionnaire and the clarity of the questions are crucial factors. Misleading, ambiguous, or vague questions may lead to inaccurate or inconsistent responses from participants. To ensure the accuracy and reliability of the data, it is essential to carefully review and revise the questionnaire questions, ensuring they are clear and precise enough to accurately capture participants' viewpoints and experiences. Additionally, conducting a pilot test with a small group of participants can help identify any potential issues with the questionnaire and make necessary adjustments before the main data collection. By fine-tuning the questionnaire design, researchers can enhance the quality of the data collected and strengthen the validity of the study's findings.

In addition, this study also take into account the effect of the experimental environment on the participants. In the experiments, I worked hard to create relatively consistent game situations to ensure that participants played under similar conditions. However, individual differences, environmental noise, and other uncontrolled factors may have interfered with the experimental results.

First, individual differences are an important factor. Each player has their own unique personal characteristics and experience background, which may affect their perception and response to the game. For example, they may have different gaming skill levels, hobbies, emotional preferences, etc. These individual differences may have contributed to the differences in heart rate variability and emotional experience observed in the experiments.

Second, environmental noise is also a potential interfering factor. During the experiment, there may be noise interference from the external environment, such as the sound of other people talking, the sound of equipment operation, etc. These noises may interfere with participants' concentration and emotional experience, affecting their heart rate variability and gaming experience.

There are differences between the two research methods in terms of data collection methods, types of questions, interaction methods, and data quality. A questionnaire is a way of presenting questions in written form that participants can fill out at their own time and place. Interviews are conducted either face-to-face or remotely, with researchers speaking directly to participants. Furthermore, questionnaires usually contain a series of predefined multiple-choice or open-ended questions that participants fill out based on given options or their own responses. During the interview, researchers can conduct in-depth questioning and discussion based on the participants' answers, and get more detailed and personalized answers. Questionnaires can collect data from a large number of participants simultaneously, but may be limited in the scope of the questions and the fixity of the options. Interviews typically involve fewer participants but can yield deeper and richer data, helping to understand individual differences and complexities among participants. In my experiments, however, I used a combination of these two survey methods, which I believe yields a comprehensive data set that contributes to a comprehensive understanding of the research topic. Through mutual verification and interpretation, the reliability and interpretability of data can be increased. Combining the two approaches allows for a better understanding of differences among individuals and captures the unique perspectives and experiences of a particular group or individual.
Additionally, it is also important to be aware of potential limitations in the design and implementation of a questionnaire. Questionnaires could be subject to participants’ subjective opinions, recall biases, and response preferences. To minimize these biases, I made efforts to design clear and concise questions, ensuring that participants could genuinely express their viewpoints and experiences. However, despite these efforts, it’s essential to acknowledge that there might still be some level of subjectivity and biases in the responses. To address this limitation, future studies could consider using complementary research methods, such as interviews or focus groups, to gather more in-depth and nuanced insights from participants. This would provide a more comprehensive understanding of their perspectives on color symbolism and emotional experiences in pastoral games.

In summary, despite my efforts to control for consistency of environment and conditions in my experimental design, individual differences, environmental noise, and other uncontrolled factors are still potential confounding factors that need to be considered. To more accurately understand the impact of differences in color symbolism on participants’ emotional experience, further research could employ tighter controls and designs to reduce the influence of these confounding factors.

Another factor to consider is the time constraints of the experiment. Due to time and resource constraints, I chose a relatively short experimental period to collect data. However, this can lead to failure to capture long-term gaming experience effects. Further research can consider extending the experimental period so that psychological and emotional changes can be observed and analyzed over a longer period of time.

In summary, although my experimental approach provides valuable insights in exploring the impact of differences in color symbolism in Asian and Western cultures on players’ emotional experience, there are still some limitations. In order to better explain and understand these differences, further research can consider increasing the experimental sample, extending the experimental period, controlling more interference factors, and adopting the comprehensive application of multiple research methods. This can increase the reliability and validity of experiments, and provide deeper insights and theoretical foundations for research in related fields.

By reflecting on the pros and cons of this learning experiment, I gained insight into the strengths and limitations of the study, and what could be improved in future research. Here is a summary of the pros and cons of this learning experiment:

**Advantages:**

- **Cross-cultural comparison:** The experiment selected Asian and European participants and maintained a 1:1 ratio, which allowed the research to compare opinions and trends in different cultural backgrounds. Intercultural studies help reveal commonalities and differences between different cultures, thereby providing a more holistic awareness and understanding.

- **Biofeedback equipment:** The use of biofeedback equipment to measure participants’ heart rate changes provides objective physiological indicators and increases the credibility and reliability of research results.

- **Comprehensive research method:** The comprehensive application of two research methods, questionnaire survey and interview, is used to help obtain a more
comprehensive data set and gain a deep understanding of the individual differences and complexities of the participants.

- The importance of the research topic: Exploring the impact of game situations on participants’ emotional and physiological states is of great significance for understanding people’s emotional experience and psychological reactions in games.

**Limitations:**

- Sample size limitation: The sample size is only 20 participants, which may not be enough to represent the diversity and differences of the entire population, which limits the general applicability and generalization of the research results.

- Index limitations: Using only heart rate as an indicator of participants’ emotions and experiences may not be comprehensive enough. Emotions and experiences are affected by multiple factors, and the use of other physiological indicators and subjective feedback needs to be considered.

- Uncontrolled interference factors: Individual differences, environmental noise and other uncontrolled factors may interfere with the experimental results and affect the accuracy of the results.

- Experimental time constraints: Due to time and resource constraints, the experimental period is relatively short, which may not be able to capture the effects of long-term game experience, and may require a longer experimental period to observe and analyze more lasting psychological and emotional changes.

- Limitations of survey design: The accuracy and clarity of questions in survey design is a key factor and may be misleading, ambiguous, or ambiguous, affecting the accuracy and consistency of participants’ responses.

**Future improvement directions:**

- Increase sample size: Increase the sample size of participants to ensure more representative and reliable research results.

- Comprehensive analysis of multiple indicators: Consider using a combination of multiple physiological indicators and subjective feedback to obtain more comprehensive and accurate data and better understand the emotional state and game experience of the participants.

- Control more confounding factors: Control individual differences, environmental noise and other unknown confounding factors as much as possible in the research design to ensure the reliability and validity of the results.

- Increase the duration of the experiment: Consider extending the duration of the experiment to observe and analyze psychological and emotional changes over a longer time frame to gain a more complete understanding of the impact of the game situation on the participants.
• Questionnaire Design Optimization: Carefully review and revise questionnaire questions to ensure they are accurate and clear, to capture participants’ true views and feelings and reduce bias.

• More comprehensive exploration: In future research, the impact of game situations on different groups of people can be further explored, taking into account the influence of factors such as different ages, genders, and cultural backgrounds.

Taken together, this learning experiment provides valuable insights but has some limitations. By continuously improving research methods and designs, we can better understand the impact of game situations on people’s emotional experience, and provide deeper insight and theoretical basis for research in related fields.

6.2.3 Ethical and social considerations

It is very important to discuss the ethical and social implications of this research, because the rights and social responsibilities of participants involved in the research process are crucial to any scientific research. Here are some reflections on the ethical and societal implications of this research:

Ethical considerations:

Informed consent of participants: Participants must be provided with detailed research objectives, procedures, risks, and benefits and their informed consent must be obtained before conducting experiments. Informed consent is a core principle in ethical research, ensuring that participants make their own decisions about whether to participate in research and understand their rights and privacy protections.

Privacy and data protection: Personal data collected during research should be properly protected to ensure that the privacy of participants is not violated. Data should be anonymized and treated confidentially to prevent personal identity disclosure and to comply with relevant data protection legislation.

Fair treatment of participants: In research, it should be ensured that all participants are treated fairly regardless of their culture, social background, gender, race, etc. Avoid undue influence or prejudice against specific groups.

Avoidance of Harm: During the experiment, every effort should be made to avoid physical or psychological harm to the participants. If experiments involve potential risks, researchers should take steps to minimize these risks and provide necessary support and assistance.

Resource Allocation: Research findings may have implications for the gaming industry and related policy decisions. According to research findings, game producers can design for different emotional experiences to provide a richer game experience. Relevant policy decision makers can also refer to these research results to formulate more humane game policies.

Mental health: Games have an important impact on the emotional and physical state of participants, and the findings may also have an impact on the mental health of gamers. Understanding the impact of gaming situations on emotional experience can help gamers better manage their emotions and avoid the negative mental health effects of excessive stress or excitement.
Cultural understanding: The study of cross-cultural psychological differences helps to enhance understanding and respect among different cultures. Through the comparison of emotional experience in different cultures, cultural exchange and diversified cognition can be promoted.

To sum up, ethics and social impact are important factors that must be considered in the research process. Protecting the rights and interests of participants, ensuring data privacy, and treating participants fairly are the basic principles of ethical research. At the same time, the findings may have important implications for the gaming industry, mental health, cultural exchange, and leisure industries. These ethical and social factors should be fully considered in research design and result interpretation to ensure the legitimacy, credibility and social value of the research.

6.3 Future Work

Future research can continue to explore the impact of game situations on participants' emotional and psychological states, considering the following four aspects.

Explore the influence of other factors on color design: Although this study focuses on the use of color in pastoral games, there are many other factors that may have an impact on the game experience, such as game type, cultural background, age, and game plot. Future research could combine these factors and delve deeper into their role in gaming experience to provide a more comprehensive understanding.

In-depth research on the psychological processes of game players: In addition to focusing on external behavioral responses, future research can use physiological and neuroscience methods to deeply study the psychological processes and neural responses of game players in different game situations. By uncovering the mechanisms underlying how games affect people's emotional experience, we can better understand the impact of game design.

Comparison of the differences between Asian and Western pastoral games: The current research focuses on the similarities and differences in color design of Asian and Western pastoral games, but pastoral games involve far more factors than this. Future research can compare the differences between Asian and Western pastoral games in terms of gameplay, storyline, and sound effects from a broader perspective, so as to fully understand the uniqueness of game design in different cultures.

Application to game design: The conclusions of this study provide some guiding significance for game design, especially in terms of color design. However, applying research results to game design also needs to consider the combined influence of other factors. Future research should combine color design with other game design elements for more comprehensive exploration and optimization to improve the quality and attractiveness of game experience.

While conducting these studies, ethical and societal implications must always be kept in mind. Guarantee participants' informed consent and data privacy, treat different cultural groups fairly, and pay attention to social responsibility when applying research results to game development to ensure the legitimacy and social value of research.

To sum up, a more comprehensive and in-depth understanding can be obtained by exploring the influence of other factors, studying the psychological process of game players,
comparing the differences between Asian and Western pastoral games, and applying research results to game design in future research. Provide more practical guidance and contributions to the field of game design. At the same time, reasonable attention should be paid to ethics and social impact to ensure the scientific and social value of the research.
References


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Appendix A - Questionnaire

1. Are you European or Asian?
   A. Europe B. Asia

2. How often do you usually play games?
   A. Play every day             B. Play once every two or three days
   C. Play once a week or more   D. Rarely play

3. When playing pastoral games, which color element do you prefer to choose?
   A. Bright colors    B. Soft colors
   C. Saturated color   D. Natural color

4. For you, which of the following emotions or meanings does red usually represent?
   A. Passion and love          B. Energy and impulse
   C. Danger and warning        D. Courage and strength
   E. Enthusiasm                F. Others

5. Which of the following effects do you think the use of red in the game can bring?
   A. Enhance the game’s tense atmosphere   B. Increase the game’s excitement and thrill
   C. Attract attention and focus          D. Stimulate competition and conflict
   E. Conveying danger or warning messages F. Others

6. In your opinion, what is green usually associated with in pastoral games?
   A. Crops planting and growth  B. Animal husbandry and breeding
   C. Natural Conservation and Restoration
   D. Social interaction and neighborhood relationships

7. Do you think that the likes and dislikes of green in different cultures will affect the player's choice of green in pastoral games?
   A. Yes, cultural differences affect choice preferences
   B. No, green has universal appeal in pastoral games
   C. Depends on personal preferences and interests
   D. There is not yet enough research evidence for effects

8. Which of the following colors do you think can improve the game experience in pastoral games?
9. Will you consider the differences in color symbols between Asian and Western cultures in the game?
   A. Yes  B. No  C. Not sure

10. Is there a color symbol in a culture that has influenced your gaming experience? What color is it?
    A. Yes  B. No  C. Not sure

11. In pastoral games, which colors do you think can convey the following emotions or atmospheres?
    Passion and vitality ( ) Peace and serenity ( ) Warmth and affection ( )
    Calm and focused ( ) Lively and cheerful ( ) Sad and melancholy ( )

12. What is the difference between the visual styles of the two games, "Komori Life" and "Farming Simulator"?
    A. "Komori Life" is more simple and abstract
    B. "Simulator Farm" is more realistic and detailed
    C. Both games have a cartoon style
    D. The visual styles of the two games are similar without significant differences

13. When playing these two games, do players have any preferences for colors? Does this preference match your preferences for color in daily life (write yes or no)?
    A. Yes, players prefer certain colors in Komori Life
    B. Yes, players prefer certain colors in Farming Simulator
    C. Players' preferences for colors are similar in both games
    D. The player's preference for color is not affected by the game

14. When playing games, do you pay more attention to the beauty of the color or the theme of the game?
    A. The color is beautiful  B. The theme of the game  C. Equally important

15. Do you feel that the color choice in the game will affect your mood and emotional experience?
    A. Yes  B. No  C. Sometimes

16. Do you think color choice is related to the quality of gaming experience?
    A. Yes  B. No  C. Not sure
Appendix B - Structured Interview

1. How do you feel about the color selection in the game?

2. Do you think the likes and dislikes of specific colors in Asian and Western cultures have affected your color choices in the game?

3. Please share your emotional experience of different colors during the game.

In terms of detailed questions, I will go further and ask participants for specific perspectives and experiences. For example:

1. Which colors do you particularly like or dislike when you encounter them in the game? Why?

2. How do you think the differences in color symbols in Asian and Western cultures affect your emotional experience in games?

3. Do you feel that certain colors make you feel more relaxed or excited during the game? Why?