Dissertation Title:

Dream Core Traveler: Experiencing the different stages of the dream Core phenomenon from the fantastical perspective of a 2D interactive game

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Abstract

This study illustrates and explores various considerations of two-dimensional games based on the Dream Core phenomenon as the story background. The core design concept originates from the fantasy scene of Dream Core that often appears in my dreams, and expresses the concept of Dream Core with fun through game design. In addition, the design and creation process of the game incorporates parts such as participant psychological analysis, repeated attempts at immersive experiences, playability testing, and participant feedback. Based on feedback from different participants on this game, this study repeatedly evaluates the game from the perspectives of whether the physical interactions between interactive props in the game are scientific, whether the protagonist's form of challenge is singular, and whether participants can immerse themselves in the game's stages, and analyzes the design strategies of exploratory immersive two-dimensional games. The article summarizes the survey results and follow-up records of the experienced users, providing valuable reference value for their future development and operation.

Introduction

The Dream Core Traveler is a practical exploration of this idea, which enables participants to explore and experience the different moments of dream core phenomena in a two-dimensional virtual space, including the black and white monochrome clips that appear in our dreams, Classic surrealist colourful Dream Core clips, and purple null clips produced during low quality sleep, etc. Participants can interact with game props in the first person and discover pre hidden memory fragments, while experiencing the psychedelic Dream Core world atmosphere, visual presentation, and unique sound effects to achieve an immersive experience. This research paper describes the preliminary research, design process, repeated usability testing, and adjustments made after feedback from game participants for the Dream Core Traveler game. In addition, this study summarizes how to develop interactive forms of two-dimensional games with high participation and playability, and improve the user experience experience of participants. This is also the focus of my research and provides substantive theoretical and objective guidance for my further exploration in the field of two-dimensional game design.

Related Research

As the theme of the game, Dream Core actually embodies a sense of dreaming and a surrealist aesthetic. When it comes to Dream Core, the first scene that comes to mind should be a pink honey dream and a ghostly echo pointing towards the future (Jingrui Zhang, 2023). Countless empty and unfamiliar environments give people a sense of deja vu, as if living here for a long time. From a scientific perspective, the Dream Core phenomenon may be related to the brain's integration of daily experiences and memories. In dreams, the brain may attempt to reorganize and integrate stored information, including past experiences and emotional experiences, the combination of new scenes and old memories, while also being influenced by potential emotional and cognitive factors. Individual emotional states, anxiety levels, potential desires, and other factors are expressed in the dream, forming the phenomenon of Dream Core, which is also the root cause of the so-called Dream Core scene (Ruifang Chen, 2009). According to the interview, most people in this environment will subconsciously feel uneasy and feel a chill on their backs. In this virtual world, there is not a single person, only unidentified monsters that are constantly crawling around the corner but cannot be seen clearly. People instinctively want to quickly escape from this terrifying dream space, only to find that their pace is slow, they want to cry for help, but they find it difficult to make a sound, and even find that their muscles are not listening to the control of the brain. This feeling often occurs in my dreams, so I want to use the form of immersive interactive games to express this strange phenomenon, which I think is very suitable.
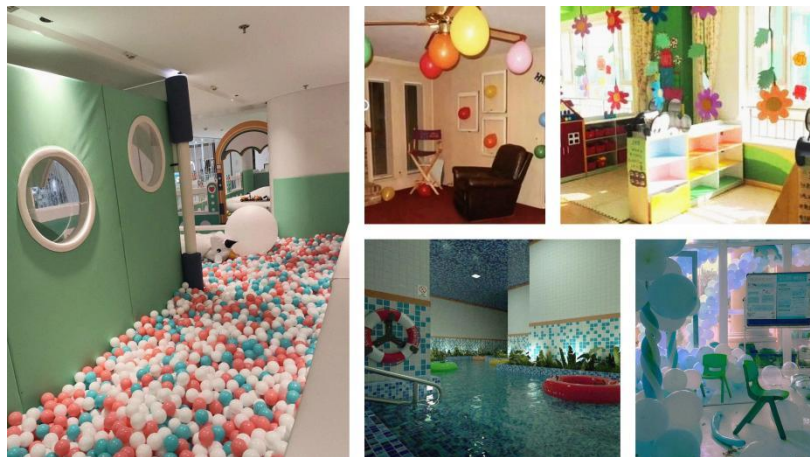

Figure 1: Real Life Dream Core Style Scenes.

In the visual design of Dream Core elements, some familiar pictures are usually used for modification, while individual elements that do not exist in reality are added to enhance the disorientation of the memory (Kaige cheng, 2023). In the environmental construction of Dream Core scenes, almost all of them have super high saturation and contrast, unrealistic but realistic scenes, and sometimes it feels like once a person is trapped in such a room, he or she will never be able to get out of it again. The small

and colourful spaces have a sense of fear and domination over childhood memories and dream memories (Zach Terrillion, 2021). The temperament of Dream Core exudes warmth and familiarity, but it is also very eerie and often cannot be explained clearly, as if it had been in a dream. This nostalgic and dreamy dreamscape is both surrealistic and immersive, and it was interesting to explore the phenomenon of Dream Core and its transformation at different moments of sleep with my own synthesised sound effects and immersive 2D scenarios, which was also my initial idea for the game.

Game design needs to have relatively diversified factors to stimulate the interest of participants, and it also requires psychological analysis of users. Before making the game Dream Core Traveler, I dismantled and analyzed the most classic two-dimensional game Super Mario, and conducted user interviews and research. Based on the interview results, the following issues were summarized and formed into a visual chart: The types of game background elements and prop elements are relatively single, which will cause visual fatigue for participants and lack of freshness. In addition, the sound effects of the props in the game are too loud and messy, which seriously affects the player's immersive experience and even causes anxiety. Since Super Mario is an early representative of classic games, the graphics and sound effects are relatively simple, which may not appear to be dominant in the era of modern games. If players are not interested in pixel art and eight-bit music, then these elements may also become users Negative factors in experience. The plot setting of the game is also relatively monotonous, lacking depth and complexity compared to some later developed games. In addition, the protagonist moves too fast in the game, and players even need to hold their breath at all times to participate, which makes the atmosphere very tense and not relaxing enough, and does not achieve the effect of decompressing the body and mind in the game. The shortcomings I have found are relative, as many players still love the classic design and unique charm of this game. But in my game design, I intentionally avoided these phenomena.
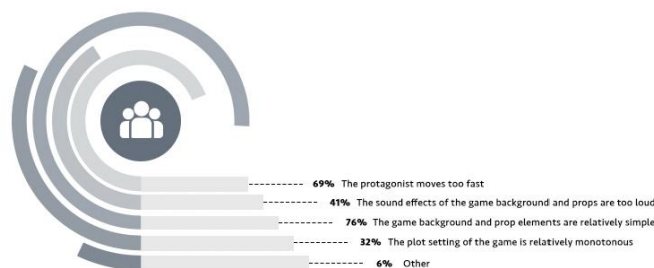

Figure 2: Super Mario Participant Interview Survey (Data Visualization Conclusion).

Immersion is also a crucial part in the field of two-dimensional games, and whether a game is worth playing depends on whether the design and developers need to pay more attention to the quality of the game experience. The game sound effects must be coordinated with the set scenes and game plot in order to immerse game participants in a variety of gameplay (James Boen, 2021). The hollow inspired sound effects and

surrealist flat atmosphere of this game create an immersive feeling that makes people feel panicked and helpless while focusing on the current target situation, and forget about the real world situation. Early immersion theory pointed out that challenges and techniques are the main factors affecting immersion, and game interaction forms are the key to immersive experiences. If the challenges are too high, participants will experience anxiety or frustration due to a lack of control over the environment, losing confidence, and vice versa, they will feel bored and lose interest. When both are low, participants' game mentality is indifferent (Jim Sigailov-Lanfranchi, 2019). This immersion has also become a mandatory course for many game products or developers to delve into. Overall, the immersion state mainly occurs when the two are balanced, which greatly improves the quality of user experience and playability. I believe that the core of game design can be achieved by giving participants a reward mechanism, including the achievement system I have set up in this game, the collection of memory fragments, and the acquisition of virtual points, to increase the long-term playability of the game. This was also strongly proved in my follow-up interviews with game experiencers that many game participants became addicted to it and were completely immersed in the game world. I think the word "complete immersion" can be used to describe this addictive phenomenon, which can also be classified as a part of psychology.
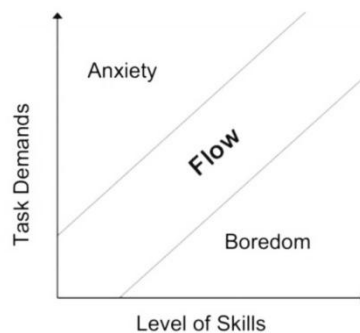

Figure 3: The flow channel (from Jim Sigailov-Lanfranchi, 2019).

Methodology

The research consists of three main parts. In the first part, I conducted a step-by-step analysis of the current two-dimensional games on the market. At the same time, I also visited my friends and recorded their experience and suggestions for the current two-dimensional games. In the second part, I will summarize the content recorded above and conduct research and learning on the basic design knowledge required for the design and production of the Dream Core Traveler. The third part involves testing

this game and adjusting it based on the participants' test results. From the emergence of the design concept to testing the feasibility to returning to the participants' user experience and recording, it has constructive significance for the sustainable development of Dream Core Traveler. By interviewing participants of the Dream Core Traveler, evaluate the design of the Dream Core Traveler from a first person perspective. This study provides guiding suggestions for optimizing the 2D game experience, immersing oneself in the game plot and scene atmosphere, and comparing the perceived ease of use and playability of 2D games among various users. The later design adjustment process includes continuous adjustments to the game based on game testing results. I specifically selected nine testers for actual game experience, as well as user interviews and questionnaire research after game testing. Quantitative analysis of the questionnaire results is conducted to evaluate whether it is possible to maximize the integration of immersion and fun while experiencing my Dream Core world, including but not limited to practical evaluations of functional interaction difficulty, playability, and engagement.

Interactive Design Process

The Dream Core Traveler uses the psychedelic elements in the Dream Core phenomenon as design inspiration, with the beginning and end of a dream as the storyline. The design position is to make use of two-dimensional game medium to let people immersively experience the fantastic experience brought by Dream Core, and hope to redefine a new form of two-dimensional game. The game is mainly divided into three major visual modules, namely the monochromatic dream area, the color surrealist Dream Core area, and the purple area after light sleep causes dream interruptions. There are a total of ten regional levels with different levels of difficulty and visual forms, and the eerie atmosphere is rendered through sound effects and scene props, hoping to create a different flow of immersive experience for 2D games. In the scene setting, there are fifteen randomly hidden treasure fragments in the prop cardboard box that need to be found and collected by us. Participants need to traverse the entire story line to gather all the memory fragments, which also means gathering the memory modules in the dream to piece together the complete Dream Core memory. The construction of the atmosphere involves the design elements of the physical environment, which roughly includes the design logic of scene collision scale, spatial perception and environmental background sound effects.
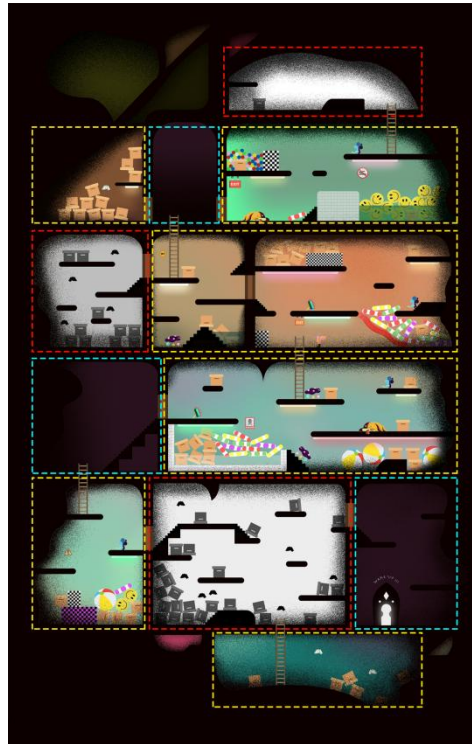
Figure 4: Three main visual modules. Monochromatic dream area (red),

color surrealist classic dream core area (yellow), light sleep dream interruption area (blue).

We first enter the game from the monochromatic dream area, which is also one of the three main visual modules in Dream Core Traveler. The difficulty setting is relatively low. After smashing the cardboard box on the left, we found that we did not find the memory fragments we wanted, and no monsters we subconsciously thought appeared, we only got one point. My design inspiration in this monochromatic segment comes from the non rapid eye movement (NREM) sleep phase during sleep. Most dreams typically occur during the rapid eye movement (REM) phase of sleep, while in the non rapid eye movement phase, brain activity increases. At the same time, the activity of the visual cortex (the area responsible for processing visual information) may be lower compared to the waking state in reality (Yujia Zhang, 2017). This may result in certain limitations on the visual effects in dreams, including the expression of color, so the non rapid eye movement stage is also called the gray dream moment (Xia Li, 2017). What I wanted to build was a monochromatic blurry area inspired by this phenomenon.
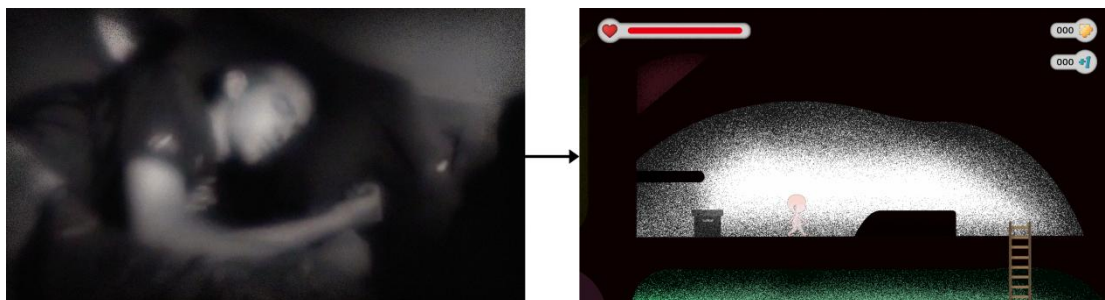
Next, the game participants follow the ladder to enter the colorful surrealist Dream Core area below. The scene settings in this part are all classic Dream Core scenes, such as eerie neon lights, abandoned swimming pools, smiling face water balls soaked in water, unknown creatures they have never seen before, and messy plastic colored balls. Through a series of symbolic and outdated childhood elements, participants can also evoke memories from their dusty dreams, as if they had previously seen game scenes in reality but were actually seeing them for the first time, creating a sense of psychological confusion. When designing the vision of this module, I combined the dream core scenes that actually appeared in my dreams many times. There were many unknown monsters appearing at any time around me. At the same time, my body movements were limited and I could only do the most basic defense. The purpose was to wake up Dream core memories of deja vu in participants' minds. Due to the interactive setting of props in the scene, we can smash the cardboard boxes hidden in different props and collect memory fragments, which stimulates the participants' desire to win and lose by collecting all the memory fragments and props, and also pave the way for long-term playability.
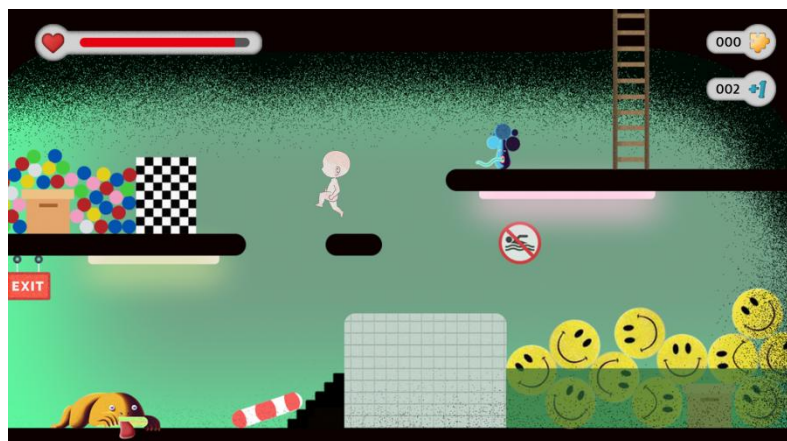

Figure 6: The surrealist style classic dream core area is inspired by the memory of dream core in my dreams.

Due to the inner interference of the Dream core props in the scene and the continuous attacks of monsters, the protagonist was frightened and his sleep quality was reduced and he fell into light sleep, thus entering the purple dream blank area of the third largest visual module. In this area, I used an audio editor to synthesize white noise sound effects to render the blank and immersive feeling of memory confusion, while at the same time combining it with the empty visual effects of light sleep. The choice of white noise was inspired by the fact that neural networks in the brain may be connected in a specific way during dreams, forming a unique experience, mainly including sound. White noise may be one result of the activity of these neural networks. Therefore, this kind of white noise without a specific melody can more arouse participants' anxiety and full devotion to the plot of the game (Emma Young,

2022), making participants have a strong desire to escape from this environment as soon as possible.

Figure 7: The purple dream area, inspired by the blank memories of light sleep quality, is also accompanied by the phenomenon of white noise at this time.

Overall, the monochromatic dream area, the color surrealist Dream Core area, and the purple area that causes dream interruptions during light sleep collectively constitute the three main visual module partitions of the Dream Core Traveler. Participants can experience different environments and atmospheres in the Dream Core phenomenon at different stages of the dream, and can also experience different sound and visual changes while exploring props and collecting memory fragments. Each independent scene contained in these three visual modules has its own stylized elements and focuses on the interaction between participants and sound melodies. The alternating design of different style modules is an extraordinary attempt to explore the diversity of two-dimensional games. Dream Core Traveler is a design based on the desire of two-dimensional games, providing users with an immersive experience. The narrative of the game mainly emphasizes people's exploratory spirit towards the phenomenon of Dream Core.

The different module settings in the game and its unique stylized elements are the most basic components of a game, and are also the key to creating a game atmosphere and giving participants a high-quality immersive experience. From a certain perspective, scene elements and prop elements can determine the potential style of a game, but it is the interactive forms and reward mechanisms that can truly bring participants into the logical setting of the game. The reward mechanism is not to limit the performance of the participants, but to allow the participants to better participate in the plot and experience the game according to the reasonable logic of the game. Therefore, the stylized elements and rules in the game should be based on the overall plot and logic. Dream Core Traveler is an exploration single-player interactive game based on the Dream Core phenomenon, which allows participants to comprehensively explore every corner of the environment. Through interaction, participants can trigger various physical settings in game scenes and props (such as water polos and swimming rings, etc.). The form of control interaction is also kept as simple as possible. Only the keys of the computer keyboard are used to control the movement

direction and physical attacks. Press W to jump, press it twice to increase the height of your jump, and it is also the key to climb the ladder upwards. A and D are the keys to move left and right respectively. S is the key to go down the ladder. Press Q to collect and attack the props and monsters in the scene, and it is also the key to open the door. This allows participants who are playing the game for the first time to control and experience the game more intuitively.
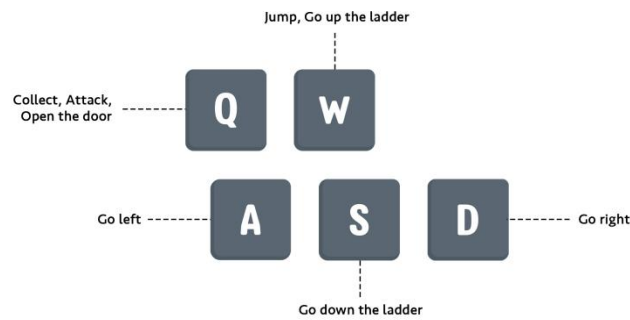
Figure 8: Keyboard control diagram

Discussion and Future Work

Through repeated participant testing and immersive experience analyses in the mid- and post-design stages, this study reveals whether the participants' commitment to the immersive experience and playability interactions in the game deviated from what I had envisioned in the early stages of the design process, as well as my understanding of these issues and whether they were optimised after rectification, which are valuable references for the Dream Core Traveler and will play a positive role in its future sustainable development. All of these have been valuable references for the Dream Core Traveler and have contributed to its sustainability in the future. After the completion of Dream Core Traveler, I firstly found nine participants as my first-generation user research subjects, and listened to and analysed their post-game experiences in detail, and also assessed whether the game elements such as interaction flexibility, physical realism, scenario immersion, sound immersion, and so on, had brought about a good user experience, and at the same time, conducted an objective reflection on this. As the participants' personal experience of the game varies greatly, it may be related to their personal gaming history, personality preferences, and physiological and psychological factors. As a result, players' game perceptions and behaviours often show a variety of biases and differences. I consolidated all the collected modification questions and repeatedly conducted game self-tests, which allowed me to collect data on unforeseen problems and information about the game,

as well as to calmly make adjustments after getting suggestions.

In the early version of Dream Core Traveler, through participant feedback and self-testing, the following problems existed: (There are duplicate problems that need to be solved in the collected feedback results)
• The moving platforms in many scenes are too far away for the characters to reach.
• Individual monsters move too fast and have a bad sense of rhythm.
• When the character touches the props in the scene, the physical mechanics phenomenon is not real enough.
• Some of the animation effects generated when hitting the props are very messy, breaking the immersive atmosphere.
• There is a problem with the special effects of the character's movements when attacking, and the continuity is poor.
• Air gaps appear when props collide with each other.
• Monster attack range is too large, affecting the visual effect.

Therefore, I have made adjustments to the modifications proposed by the above participants one by one in the following manner. Problem one I solved by increasing the character's bouncing parameter and refining the movement range of the moving platform to ensure that the character can reach all corners normally. Problem two I improved the start and end parameter points for the left and right positions in the monster's patrol area, and there was a noticeable slowdown in movement. Problem three's mistake was that the physics' mechanics parameters were not set properly, the elasticity was too big, causing the props to roll far after the character touched them, so I made the elasticity smaller and increased the gravity parameter. Problem four I discarded some of the UI effects to avoid the visual of screen clutter. Problem five The shape size in the character animation wasn't uniform, so I scaled and reworked the frame animation for the hit effect. Problem six, I recreated the collision zone frames inside each prop, and improved the accuracy to prevent the phenomenon of overlapping forces from happening again. Problem seven was mainly seen in the bat monster. I added an attack area sensing setting, the monster will only attack when the person is close to the monster, and the monster will not continue to follow the path of the person after leaving the sensing area, which effectively avoids the misalignment between the areas. After all the problems were corrected, I re-tested the game with 9 participants and received positive feedback. Through this process, I improved the user experience in the game, and it provided me with valuable reference value and learning opportunities, and importantly, I gained some confidence.

At the same time, in the later testing, I also conducted macro-level user research interviews with Dream Core Traveler experiencers, and produced corresponding visual visualization charts based on the results.

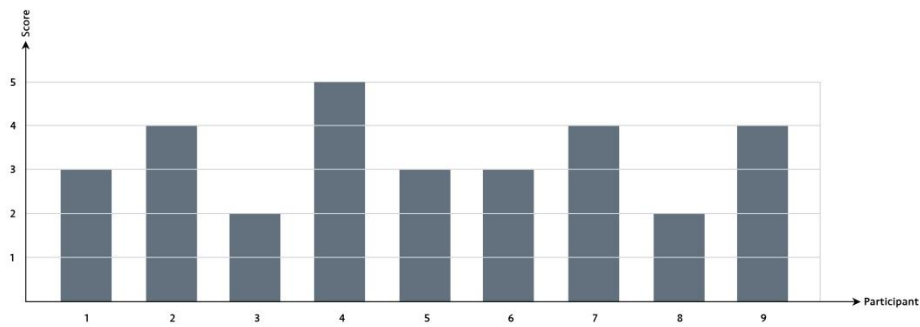-Please rate the difficulty of the interaction design in Dream Core Traveler:

Figure 9: Research on participants of the Dream Core Traveler (Data Visualization Conclusion).

-Please rate the difficulty of the interaction design in Dream Core Traveler:

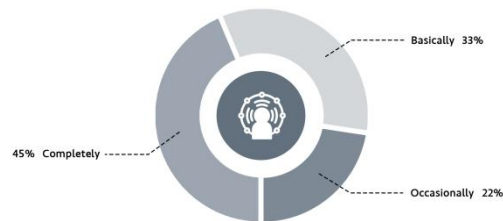Basically 33%

45% Completely

Occasionally 22%

Figure 10: Research on participants of the Dream Core Traveler (Data Visualization Conclusion).

-Are you satisfied with the sound effects of the props and background environment in this game:
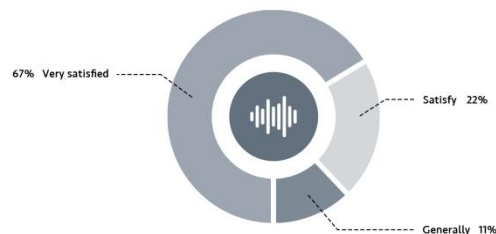

67% Very satisfied

Satisfy 22%

Generally 11%

Figure 11: Research on participants of the Dream Core Traveler (Data Visualization Conclusion).

The results of the Dream Core Traveler's game test showed that most of the participants rated the game's interaction design difficulty as medium to high, indicating that the participants were able to complete the game and control it proficiently, and would not affect the game's progress because it was too difficult, which is basically in line with the original intention of the game experience in terms of the difficulty I had set for the users. Through further analysis of the test results, I found that more than 78% of the participants were able to immerse themselves in the game's plot and environment during the experience, while the other part of the

participants who were not able to immerse themselves in the game in real time were distracted by the character's striking movements and props' special effects in the process of operation. Participants also gave an objective evaluation of the sound effects of the props and background environment in the game, with a satisfaction rate of more than 90%, which meets my requirements for a benign experience generated by sound effects, and at the same time, it can also be used to facilitate faster entry into the game, and more directly convey the psychedelic auditory effects of the Dream Core phenomenon. Overall, I was basically satisfied with my experience of Dream Core Traveler, which gave me great motivation to design and produce the game, and also provided me with a noble reference value for my future game creations.

Conclusion

This study summarizes the iterative design process of Dream Core Traveler in immersive 2D games. The report describes the conceptual design considerations for the Dream Core Traveler, the design strategies to focus on, and the participants' feedback on the difficulty of the Dream Core Traveler interaction and the experience of the game attendees. The results show that the interactive difficulty of the game will not affect the playability to some extent, and the interaction Settings that conform to the scene atmosphere will help enhance the participation of participants. In addition, exploratory 2D interactive games are not as good as the longer the flow of the experience, and too much participation time can easily cause anxiety in participants. Finally, adjusting the atmosphere of the game by collecting memory fragments, changing the physical environment between items, and some sound effects played a crucial immersive role in the participation of the game. At the same time, in order to continuously provide freshness and attraction for the game participants and increase the playability of the game, only by balancing the consistency and difference of the game interaction can it be done, and it will also make the participants experience excitement and freshness in the middle and late stages.

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