

A Study on Relieving Player's Anxiety and Promoting Self-Reflection Through Game

Design Elements

By

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Abstract

This research explores how story-driven exploration games can help players relieve anxiety and promote self-reflection through storytelling, game mechanics, visual design, and interaction design. As part of this research, the project involves creating a story-driven exploration game to examine its effectiveness in achieving these goals. The paper focuses on analyzing how the game's story, scene construction, level design, and overall atmosphere trigger the player's emotional resonance and enhance immersion. The research evaluates the game's impact on emotions and its effectiveness in relieving anxiety through user testing. The expected outcome is to provide new insights into the field of game design and mental health.

Keywords: narrative-driven exploration game, generalized anxiety, game-based self-reflection, digital storytelling, interaction design, visual design in games.

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Chapter 1: Introduction

Personal Motivation

During my journey of personal growth, games have become one of the essential ways for me to relieve anxiety. I believe that games are also becoming a medium for many people to relieve their anxiety. Its function is not just entertainment, it can allow many people to find inner comfort.

Especially after I graduated from Hubei University of Technology, I tried to enter the society for the first time, and then I chose to continue my postgraduate studies. For the first time, I tried living alone in another country, but my family left me, and I needed to face and solve many things independently. Because I have been an introvert since childhood, it is challenging for me to find new friends and expand my social circle in a short time. As a result, my anxiety became more and more serious, but I couldn't find a way to relieve it. During that time, I tried some therapeutic games, and I think my brain, body, and mind were relaxed during the game process. I also tried various types of games at the same time, and I found that different game genres have different effects on me. I don't think the purpose of games is to let me escape from real life. Instead, I think these games help me to be emotionally released and find inner peace through storytelling, interactive, and visual elements.

Additionally, I gradually realized that anxiety and mental health issues are widespread challenges. Every age group faces different stress. Such as students face academic stress, and workers face family and work stress. Research shows that people use various methods to cope with stress and improve mental health. For example, some people choose to connect with nature, which helps restore mental balance and relieve tension. Kaplan and Kaplan (1989), in

their book *The Experience of Nature: A Psychological Perspective*, emphasize that being in natural environments can significantly reduce stress, improve mood, and help people recover mental well-being from the hustle and bustle of modern society.

On the other hand, some people prefer to relieve stress through social activities, especially recreational activities with friends and family. Coleman and Iso-Ahola (1993), in *Leisure and Health: The Role of Social Support and Self-Determination*, points out that social support and participation in leisure activities are important ways to relieve stress. These stress-relief methods reflect the diverse coping strategies people use when facing psychological stress and indicate the increasing attention and demand for mental health in modern society. When the condition becomes severe, some people choose counseling. However, regardless of the method chosen, each has its own advantages and disadvantages. I firmly believe that games have the unique potential to provide a different type of experience—one that can help people relax and reconnect with their inner emotions.

In my project, I chose a narrative-driven exploration format because I believe that the combination of digital storytelling with exploration can provide players with a deeper immersion. The story and characters can empathize with the players and immerse them in the game's story. This enables them to find emotional projections within the game that resonate with their own experiences. This emotional connection not only helps players understand their feelings but also allows them to experience emotional release within a virtual space. I hope my game can provide players with a similar experience, guiding them through a warm and emotionally rich story where they gradually unravel emotional puzzles within the game world. Finally, this journey could inspire positive psychological changes in their real life. The goal of

this game project is to explore more possibilities within the realm of gaming and create an experience that helps players relieve anxiety and find inner peace.

Project Significance

This research contributes to the fields of game design and mental health by exploring how narrative-driven exploration games can serve as mediums for emotional reflection and relieve anxiety.

In terms of game mechanics, the research focuses on how task design and difficulty levels influence player immersion and thus relieve anxiety. From a visual design in the game, it explores the construction of game environments, using elements such as color, spatial layout, and lighting effects to create a calm and healing atmosphere. In interaction design, the research analyzes how the interaction between players and the game impacts emotional experiences and psychological regulation.

With the growing interest in the therapeutic potential of games, this study provides valuable insights into how game design can influence players' emotional states and provide a framework for future game designs with similar goals.

The significance of this project is that it links game design and mental health interventions, focusing not on clinical treatments but on everyday emotional well-being. While games are often seen as an escape from reality, this research emphasizes the potential of gaming as a medium to promote emotional reflection and relieve anxiety.

From my perspective, I can deeply explore how games can go beyond pure entertainment to become vehicles for emotional healing and connection. Working on this project helped me enhance my understanding of storytelling, player experience, and how game

aesthetics impact emotional well-being, thereby promoting my growth as a designer. As part of the digital future, this project is at the intersection of technology, psychology, and art, aiming to create innovative digital experiences that not only engage players but also effectively address mental health issues.

Research Summary

This section introduces the main research questions, objectives, and limitations. Through a preliminary investigation into the sources of stress and anxiety among participants, and by designing a narrative-driven exploration game that combines storytelling, visual design, game mechanics, and interactive design elements, the goal of this research is to verify whether game design can effectively relieve anxiety and promote emotional release. The research findings are documented and presented in an academic paper, aiming to contribute to the field of game design and mental health.

1.1 Research Question

Hypothesis: the use of game design elements, such as Digital Storytelling, Game Mechanics, Visual Design, and Interaction Design, aids players in relieving anxiety and promoting self-reflection.

Key research question:

How can a game be designed by applying digital storytelling, visual design, and interactive design elements, game mechanics to help relieve anxiety and promote constructive self-reflection?

1.2 Objectives

This study verifies the effectiveness of the game design through user feedback and data

analysis, providing theoretical support and practical evidence for future research in the fields of game design and mental health. The specific content and steps are as follows:

1. Based on the preliminary research and data collection, including interviews, to understand the sources of player's stress and anxiety, as well as the factors affecting their mental health.
2. Design a narrative-driven exploration game that combines digital storytelling, visual design, game mechanics, and interaction design elements to help players release emotions, relieve stress, and find psychological solace within the game.
3. Through the semi-structured interviews and data analysis methods to verify the designed games or applications, evaluate the effectiveness of games in relieving anxiety and improving emotional states, and optimize the game design.
4. Record the research results in academic papers to contribute to the fields of game design and mental health.

1.3 Limitations to research

Although the design goal of this research is to relieve anxiety through the game's design elements, the complex causes of anxiety make it impossible to ensure that the game experience would have a positive psychological impact on all players.

1. From a clinical perspective, specific research designs, such as randomized controlled trials, are typically required. However, this exceeds the scope and capacity of this research.
2. Due to the limitations of time and resources, the participants in this research are mainly from a specific group of students, which may limit the broad applicability of the research findings.

Although this research tries to explore the potential of supporting mental health through game design, the results should be interpreted with caution. I look forward to further improving the research in the future by expanding the sample range, extending the time, and optimizing the technology used in the game.

Chapter 2: Literature & Contextual Review

Nowadays, mental health issues are getting more and more attention, especially anxiety. With the increase in work and life stress, anxiety has become one of the main psychological disorders affecting people's daily lives (Craske et al., 2011). Anxiety is usually expressed itself in symptoms such as tension, restlessness, and excessive worry. People with severe anxiety may even have problems with socializing, studying, and working. At the same time, as a form of digital entertainment, game design is becoming more and more well-known in the field of mental health. Games are not only just a form of entertainment, but they have also become a new type of intervention that can help people regulate their emotions and promote mental health (Villani et al., 2018).

I chose exploration and interaction as the main mechanisms in this game because narrative-driven exploration games make it easier for players to enter immersion, and high interactivity has a unique emotional guidance effect, which provides players with a novel way of emotional management (Qin et al., 2009).

The definition of "immersion" comes from the physical experience of "being immersed," such as sinking into water (Nilsson et al., 2016). Murray (1997) describes it as "the feeling of being surrounded by a completely different reality, one that occupies our full attention and perceptual system (Murray, 1997, p98-99)." This definition emphasizes the psychological state in which users are fully immersed in an experience, whether through technology, narrative, or challenges. The immersion theory is divided into four types: System Immersion, Perceptual Immersion, Narrative Immersion, and Challenge-based Immersion.

System immersion refers to the objective features provided by a technical system. It emphasizes the degree to which the system itself provides immersion rather than the user's subjective experience. Perceptual immersion is a subjective experience. It describes the state in which the user becomes focused on the virtual environment because of multisensory stimulation. Narrative immersion refers to the user's psychological engagement and focus on a fictional story, characters, or virtual world. When the story is compelling enough, the user may feel as if they are "inside the story." Challenge-based immersion refers to the focused experience that arises when users are faced with intellectual or sensory challenges that match their abilities. This type of immersion emphasizes the "balance between skill and challenge," like the concept of Flow (Nilsson et al.,2009).

From the perspective of immersion theory, narrative immersion, and challenge-based immersion are more suitable for my project, as the game features a complete storyline driven by emotions and includes task-based challenges.

I was inspired by some narrative-driven exploration games in the same genre that bring warmth and healing to the players. For example, the game *Florence* (Mountains, 2018), *Sunset Hills* (Cotton Game, 2024), *The Star Named EOS* (Silver Lining Studio,2024), *etc.* All these games have a rich storyline combined with interesting mechanics, and the game scene models in some 3D games are also very impressive. I continue to learn about the background stories of the whole game while playing. The game process makes me feel very relaxed. In this chapter, I analyze the background related to the research theme and provide a literature review to support my research. Therefore, I put this research into a broader interdisciplinary context. I claim that an Interdisciplinary approach, drawing from anxiety research, and game design

allows for a more comprehensive understanding of how game elements can relieve anxiety and foster self-reflection. In this chapter, I analyze existing research on anxiety and various elements of game design. In addition, the background review section explores relevant case studies of games in psychotherapy to build a more comprehensive background for this research.

Literature Review

1.1 Anxiety

Anxiety Disorder is one of the common mental health conditions, and different levels of anxiety have different effects. Javaid et al. (2023) in their research counted the data of people with anxiety disorders. About 4.05% of the world's population suffers from anxiety disorders, which is equivalent to 300 million people. Especially from 1990 to 2019, the number of people suffering from anxiety disorders increased by more than 55% (Javaid et al., 2023). Excessive or inappropriate anxiety not only reduces individuals' motivation and ability to engage socially, impairing their social skills, but also affects their capacity to perform optimally at work and increases the risk of chronic health issues (Wu, Luo, Broster, Gu, & Luo, 2014). Additionally, individuals with anxiety disorders often experience depressive symptoms, with a high comorbidity rate between anxiety and depression, which further intensifies their psychological burden (Bentley et al., 2021).

There are many reasons for anxiety. From the external factors, most people's stress comes from life or work. For internal factors, many people with anxiety disorders have excessive worrying and catastrophic thinking, always assuming the worst will happen. Secondly, they may be perfectionists who set too high standards for themselves and have a low tolerance for failure (Calvo & Eysenck, 1998). In summary, many factors lead to anxiety, and

people of different ages need to face different challenges.

There are four types of anxiety disorders: generalized anxiety disorder: Specific phobias, Social anxiety, Panic disorder, Obsessive- Compulsive disorder (OCD), and Post-traumatic stress disorder(PTSD), Different types of anxiety disorders have distinct characteristics and symptoms (Himanshu et.,2020). Generalized anxiety disorder is the most widespread.

Generalized Anxiety Disorder (GAD) is characterized by excessive worry about various topics (DeMartini et al., 2019). It involves various aspects of daily life, such as work, health, family, and finances. The psychological symptoms include persistent worry, uncontrollable anxiety, and difficulty concentrating. Physical symptoms include fatigue, muscle tension, stomach discomfort, and sleep problems. The symptoms typically persist for six months or longer (Rowa et al., 2017). Generalized anxiety disorder can be conceptualized as a “basic” anxiety disorder, suggesting that increased research on generalized anxiety disorder may benefit all anxiety disorders (Rapee, 1991). This means that generalized anxiety disorder is a relatively milder form of anxiety disorder. Generalized anxiety disorder can also be classified according to its severity. People with milder generalized anxiety disorder may feel worried and nervous but still be able to complete daily tasks (DeMartini et al., 2019).

Therefore, to cope with the negative effects of anxiety, patients with different degrees of anxiety seek out appropriate treatments. Psychotherapy and drug therapy are common treatments. However, these two treatments are more suitable for patients with severe anxiety, and some drugs cannot be used for a long time (National Institute of Mental Health, n.d.). Therefore, for patients with mild anxiety or daily treatment approaches, exercise, meditation,

or participation in other leisure activities (such as video games or watching movies) may be helpful. These activities can reduce excessive treatment signals, thereby relieving anxiety to some extent (Therapist Aid, 2016).

1.2 Game & Anxiety

There are more and more video games or serious games on the market with the tag of “healing”. Such games are more convenient, more attractive, and more diverse in psychological intervention methods. But there are some differences between video games and serious games. For example, games that improve health are often called "health games" or "serious games", which use the motivational potential of games to support players' physical and mental health (Thiele-Schweiz & Sauer, 2020). Thiele-Schweiz and Sauer (2020) explored the use of a 'health game' in their research, emphasizing the potential of play in health education and treatment. Its main strength is its macro viewpoint, showing how games may be effective in a variety of health scenarios, such as helping patients understand their condition and reducing their psychological burden through entertainment and interaction.

These games focus on various mental health problems, including stress, anxiety, and depression. Video games are more playable and provide an attractive alternative that circumvents common barriers to traditional mental health treatment. Pine et al. (2020) presented a systematic review of casual video games, which provided me with a new perspective. Casual video games (CVGs) are advantageous in that they are easy to pick up and have become an emerging mental health intervention (Pine et al., 2019).

Whether it is a serious game or a video game, the design process must be based on

different design elements. Aldana et al. (2023) pointed out that game design needs to optimize emotion regulation, including color, context, fun, etc. Nielsen and Wilson (2018) pointed out that in the context of depression and anxiety intervention, the research combining electronic mental health intervention and human-computer interaction design showed that interactivity and user experience play an important role in affecting efficacy. By optimizing the user experience, patient engagement can be enhanced, thereby improving treatment compliance and treatment outcomes.

From a broader perspective, there are two main approaches to the application of games in the field of mental health: one is to promote emotion regulation and psychological intervention through immersion and game design (Fleming et al., 2017) and the other is to enhance user engagement and treatment compliance through human-computer interaction design (Cheng, 2020). But I think these methods have limitations. A common point of these research is to emphasize the importance of motivation and immersion in emotion regulation. Health games and video games provide an entertaining, challenging, and interactive scenario, allowing players to escape from daily negative emotions and enter a virtual and controllable world. However, the effect of this immersion world is short-lived. This may be regarded by players to escape reality. When players are out of the game, negative emotions may resurface in their minds. Therefore, there is a lack of empirical data on the role of games in long-term psychological intervention. If players play games for a long time to escape negative emotions, it may lead to dependence, fatigue, and other problems (Kiszka et al., 2024). I think future research needs to pay more attention to the long-term intervention effects of games. I hope that my research not only explores how game design elements affect player anxiety but also

considers whether even a short gaming experience can enable players to self-reflect on themselves and have a lasting impact.

1.3 Application and Analysis of Game Design Elements in Relieving Anxiety

There are more and more cases of combining game design and mental health. To make a healing game, I need to consider the various design elements in the game, balance, and adjust the various design elements to create a complete game. Players relax and have fun while playing games, but game developers need to think about interactive design, storytelling, mechanism, and visual design because adjusting these design elements gives players different feelings. How to design a game that helps players relieve anxiety, inspire self-reflection, and foster empathy is what I need to consider.

Interaction design is an essential part of a game and a key factor in improving the player experience. Through interaction design, players can establish an emotional connection and engage interactively with the game. Galvão et al. (2023) proposed that interaction design can put players in others' situations, allowing them to experience deep emotional resonance. This approach not only fosters players' empathy but also enhances their sense of engagement within the game.

Game mechanics are the core of every game and directly affect player behavior and emotions. Ali et al. (2023), through analyzing elements such as combat, collection, and social interactions in competitive games like *League of Legends*, found that these mechanics can significantly affect players' moods, emotions, and behaviors. When players cannot complete a level, they may feel emotions such as anger, frustration, or a sense of failure. When players

succeed in the game, they are likely to feel happy. Core mechanics like combat and collection have been found to enhance players' sense of achievement and self-efficacy, especially when they successfully overcome challenges (Ali et al., 2023). Therefore, how design game mechanics can motivate players, or relax them, while not inducing anxiety, The goal of the game is to relieve anxiety and promote self-reflection, is a question worth thinking about it. Another important consideration is how to adjust the game's difficulty settings to meet the needs of different players, enhancing the challenge without imposing too much emotional burden.

Visual design also has a unique importance in the gaming experience, because it can use visual elements to create a soothing or tense environment, thereby affecting players' emotional states. Lin-Stephens (2020) analyzed the role of visual stimulation and found that visual forms such as virtual reality (VR), video, and paintings can effectively externalize players' emotions, and help them manage their inner anxiety.

Additionally, different game types require different color schemes and visual styles to match their unique themes and content. Research shows that color significantly affects emotions; for example, warm colors can evoke positive and energetic feelings, while cool colors can convey a sense of calm or tranquility (Martins & Vairinhos, 2023). The use of color combinations can help players feel more immersed, comfortable, and relaxed, thereby achieving the goal of relieving anxiety. Zhu et al. (2023) explored the effects of ceramic art design and visual aesthetics on people with anxiety in their research. They found that use of visual aesthetics, particularly soft colors and lighting combined with natural elements, can effectively relieve anxiety. Therefore, I believe that using color and lighting to create a warm

game scene can effectively help relieve players' anxiety.

Another important element in game design is digital storytelling. It can effectively enhance the interaction between players and the game. It is defined as the art and practice of communicating stories through words, images, sounds, or other media (Robin, 2006). Digital storytelling has advantages over the commonly used communication techniques in organizations, whether it is emails, reports, or formal speeches.

Over the past decade, more and more people have been dedicated to creating meaningful and engaging stories in interactive media, especially digital games. Examples include successful commercial games such as the *Assassin's Creed* series, the *Prince of Persia* series, and the *Fable* series (Wei et al., 2010). Additionally, Nedia et al. (2011) explored the applications of digital storytelling in the field of mental health. They suggested that digital storytelling has the potential to foster empathy, strengthen social connections, and support recovery-oriented mental health services (Ferrari et al., 2021).

Through participatory narrative activities, digital storytelling has also been proven effective in reducing anxiety, depression, and stress (Ogbeiwi et al., 2024). In general, digital storytelling is a potential tool for mental health intervention. Integrating digital storytelling with gameplay can enhance player interaction and increase their sense of immersion.

I think that incorporating the creator's personal experiences or emotional stories into the game's stories may foster deeper emotional resonance for players. Flanagan and Nissenbaum (2016) discussed this topic in their book *Values at Play in Digital Games*. They explored how game design can incorporate ethical and social values, emphasizing that games can influence players' attitudes and behaviors through value-driven design. Players can

experience others' perspectives through gameplay, thereby fostering empathy. Bizzocchi and Tanenbaum (2012), in their research on *Mass Effect 2*, found that the game's carefully designed narrative structure and character development not only allow players to complete tasks but also to experience the character's inner world and emotional conflicts.

These design elements interact to form a complete game experience. Based on the above analysis, I think it's important to note that the synergy and potential conflicts between these elements have not been fully empirically studied. Most studies tend to analyze each factor in isolation, lacking a comprehensive understanding of the complex interactions between these elements.

Contextual Review

In the contextual review, I analyze relevant papers and case studies and describe the features and advantages of these cases, as well as the similarities or differences between these cases and my project. Provide useful perspectives and insights for my research.

Rodrigues et al. (2022) studied a game that uses interactive stories and decision-making mechanics to raise awareness of mental health. The background of this game is based on the real stories of university students facing depression and loneliness during the COVID. The game mechanics are set as the character confronts and overcomes pessimistic emotions. In the game, "Mr. Shadow" is the personification of the character's depressive feelings, following the character like a shadow and affecting their daily decisions. Players must make decisions at each level to advance the storyline. The goal of this design is to allow players to bring into the character's perspective, experiencing the daily challenges faced by people with

depression through the presence of "Mr. Shadow."

From a digital storytelling perspective, the authors chose a slow-paced narrative approach to unfold the story. However, the pace of the storyline's progression depends on the player's decisions. Since players take on the role of a person with depression, the authors designed each decision to impact the game scene, allowing players to more deeply experience the challenges faced by people with depression. If the player chooses to face life positively, the game scene gradually becomes brighter and warmer; if the player chooses avoidance or is dominated by negative emotions, the scene grows darker and more oppressive. The game's goal is to guide the character toward gradually opening and reconnecting with others. The game's ending varies based on the player's decisions, illustrating the potential impact of depressive emotions on daily life and the hope that comes from facing life positively (Rodrigues et al., 2022).

From the perspective of my project, I believe this game offers an important insight. It emphasizes the role of digital storytelling in mental health games, using carefully crafted storylines and interactions to allow players to experience and understand the feelings of people with depression. My research aims to guide players in emotional reflection and management through digital storytelling and thus can draw on this game's approach to concretizing emotions—especially negative emotions so that players can feel their existence.

Kowal et al. (2021) discussed the potential of commercial video games to relieve symptoms of depression and anxiety in their research. They think that traditional mental health treatments are important, but as games become a new medium, the low cost and entertainment value of video games are increasingly becoming an option for mental health intervention. In

their article, Kowal et al. (2021) cited games like *Animal Crossing* and *Minecraft*, emphasizing that relieving loneliness is a significant feature of this type of game. Additionally, these games incorporate social functions, enhancing their impact.

I think this research has significant implications for my program. Firstly, it verifies the feasibility of using games as a mental health intervention tool, indicating that games can not only as entertainment but also to cope with negative emotions. Additionally, Kowal et al. (2021) point out that positive feedback mechanisms in games (such as rewards and level progression) can help players experience a sense of accomplishment, thereby improving their emotions. This type of mechanism can be applied to my project.

Lee et al. (2023) introduced their game *MindTerrior* in their research. It is a mental health game designed to relieve mild anxiety, emphasizing the use of game scenes to specifically represent the player's emotional state. The game visualizes the player's emotions by projecting them onto the game scene. Players can improve these emotional projections through in-game activities such as walking, gardening, and cleaning, thereby changing the game scene. Players need to experience life-like activities in the game. These activities may seem simple, but they make it easier for players to immerse themselves in the experience. If you follow the game's instructions and game, the game scene will change. This design not only enhances the player's emotional engagement but also, through this feedback mechanism, makes players more sensitive to their own emotional changes.

For me, the advantage of this game is concrete emotional space design, which provides a good reference for my research. By enhancing visual and interactive design, players can understand their emotions. This is a great way to connect the player's emotion to the game

scene and visuals. Additionally, activities such as gardening and cleaning in the game are given gamified reward mechanisms. This design, which combines real-life behaviors with in-game activities, helps transform experiences into positive actions in real life.

Additionally, the games *Florence* and *The Star Named EOS* are two popular narrative games on the market. *Florence* showcases the advantages of combining interactive design with narrative throughout the game. The storyline in the game revolves around the life of the character, Florence. Through simple interactive mechanics, players can deeply experience the character's emotional journey, such as falling in love, breaking up, and personal growth. Especially during the game, when Florence meets her romantic partner, players complete puzzles symbolizing their growing relationship. The puzzle pieces gradually change from complex to simple shapes, representing the deepening bond and mutual understanding between them. This interactive approach allows players to feel the character's emotional changes. Players are not just playing a game; they are experiencing another person's life journey. In my project, I also need to consider how to integrate interactive elements with the storytelling.

Another game that creates a sense of psychological immersion is *The Star Named EOS*, a narrative puzzle healing game. It tells the story of a character who reconstructs memories through photography and exploration. Through scene exploration and photo collection, the game immerses players in an emotionally rich world. By taking and observing photos, players gradually piece together the full story. I think the highlight of this game is the scene depiction and visual design, with beautiful scenes.

In the game, players take on the role of a photographer, recording scenes and characters through the lens. The core gameplay is to unlock the character's memories fragments by

recording specific photos. Players need to observe environmental details, find the elements that trigger memories, and take pictures of them. For example, when players take a photo of a familiar scene, the game triggers a memory for the character. Through this process, players gradually piece together the emotional story between the character and the other character. This digital storytelling approach not only enhances the game's sense of immersion but also allows players to experience the emotional complexity of reconstructing memories throughout the gameplay.

This approach of reconstructing memories is a good way to describe the entire storyline. In my game design, players need to gradually piece together the complete story through exploration and collecting clues. I think this game provides me with a great narrative technique for several reasons. Firstly, it encourages players to actively participate, not just in receiving the story but in discovering and sorting it out, which increases their emotional investment. Second, the fragmented memory structure creates a sense of mystery and curiosity, motivating players to explore.

Summary

In the literature review section, I explored relevant literature on anxiety and the application of games in relieving anxiety. I also analyzed the literature on design elements in games. This provides an interdisciplinary and broad background for my project. Exploring the literature on anxiety provides a foundation for understanding of the generation and persistence of anxiety disorders. Secondly, I explored the relevant research on games in the field of mental health, which can better understand the potential of video games in improving mental health.

Finally, I deeply studied four design elements. Through the research of these elements, I hope that my project creates a gaming experience that can positively affect the emotional health of players.

In the contextual review section, I analyzed two games and three research papers. I was inspired by these cases, as they served as the basis for designing a digital game for addressing generalized social anxiety. The positive feedback mechanism of the game can effectively relieve anxiety, which is also worth learning in my design. Through the integration of interactive design and visual elements in digital storytelling, players can experience their emotions and engage in self-reflection during gameplay.

Chapter 3: Methodology & Methods

I am exploring how game design elements can relieve players' anxiety and promote self-reflection in my research. I am using Research Through Design (RTD) as my methodology, which includes an iterative process aimed at collecting qualitative data through the creation of the game itself (Gaver, 2012).

Methodology

Research Through Design

In the field of design research, Research Through Design (RTD) is a common methodology. As a practice-oriented research paradigm, it provides designers with a new pathway to construct knowledge through practical activities. Integrating the RTD methodology into game design practice, particularly in exploring emotional well-being and self-reflection, demonstrates significant potential and promising prospects (Gaver, 2012). Gaver (2012) emphasized that the point of RTD to solve a single problem is not the final goal, but to conduct in-depth investigation and research around a mature work to get richer and more novel research content and insights.

In the process of game development, participation is essential for iterative testing. This continuous cycle of creation, reflection, and improvement aims to achieve the initial design goals. Additionally, the RTD provides a framework for my research, characterized by its cyclical and iterative approach. In my project, I first made an initial game prototype (first prototype), then test by players. These tests include qualitative analysis methods, such as interviews and observation, to collect data. This helps me evaluate whether the game design

successfully triggers emotional responses from players and encourages self-reflection. Finally, based on player feedback, I made the second prototype.

Method

To answer my research question, I use Play testing as my research method (Choi et al., 2016).

This research method helps me complete the research effectively. During the concept game testing stage, semi-structured interviews and observations helped me collect real test data. Narrative analysis and thematic analysis helped me get a deeper understanding of the relationship between game design and player experience. Finally, the second prototype was made based on the player feedback data.

Contextual Playtesting

Game testing, or using games to inform game design, provides feedback to designers, helping them understand whether the game meets their goals and aligns with player expectations (Choi et al., 2016).

In the final stage, to validate the research question during the data collection stage, I conducted two Semi-structured Interviews (a Pre-game interview and a post-game interview) and took notes recorded during observations of the game testing sessions. Subsequently, in the data analysis stage, I used Narrative Analysis and Dialogical Analysis. The process is illustrated in Diagram 1.

1.1 Data Collecting

Semi-structured Interviews

Semi-structured Interviews are a flexible data collection method that balances the guiding nature of structured questions with the openness of unstructured conversations, enabling a deeper understanding of participants' experiences (McIntosh & Morse, 2015). McIntosh and Morse (2015) emphasized in their research that by flexibly adjusting the question framework, it is possible to effectively adapt questions to a more diverse range of participant backgrounds and get theoretically meaningful insights during the interview process.

During the game testing stage, I conducted two interviews: a Pre-game interview and a post-game interview. I invited 5 players to participate in the testing, conducting interviews before and after the game. The outline of questions was based on my research question and project objectives. This approach allows for an in-depth exploration of participants' responses while ensuring that all key topics are covered. The collected data was analyzed and summarized.

Observation Method

The Observation Method is one of the approaches to address the research question. Direct observation can get the most objective and valuable data. I drew on Kawulich's (2005) definition and application of the Observation Method, aiming to get data by observing players' behaviors and reactions during their interactions with the game. As an observer, the role is more than just observing participants' behaviors. It involves closely observing their emotional reactions, such as facial expressions, verbal responses, actions, and emotional changes. Following the method outlined by Kawulich in his research, I divided the observation process into four key stages: entering the scene, making observation, recording behaviors, and reflecting on the data. Specifically, I entered the players' testing sessions as an observer while maintaining the participants' independence. This approach allowed me to thoroughly explore

and effectively evaluate whether the collected data aligns with and supported d my research goals.

1.2 Data Analysis

Narrative Analysis:

Narrative Analysis is a qualitative research method that includes listening to and analyzing participants' stories to gain deeper psychological and social insights. In other words, Narrative Analysis focuses on collecting and interpreting personal stories to understand how individuals perceive them (Lyons & Coyle, 2007). In my game project, this method can be used to analyze players' narrative content from interviews and observe their behaviors and reactions. This helps to further understand how the game effects players' emotions and cognition. In semi-structured interviews, players' answers usually take the form of narratives. The Narrative Analysis method allows me to analyze the themes, structures, roles, and plots in the conversational content.

Thematic analysis:

Thematic Analysis is defined as a method for identifying, analyzing, and interpreting patterns of themes in qualitative data (Braun & Clarke, 2006). The advantage of Thematic Analysis is its flexibility, which is reflected in two main aspects.

The first is its ability to adapt the analysis to the research question, objectives, and theoretical framework. The second is its flexibility regarding research samples. Thematic Analysis effectively addresses common challenges in qualitative data collection methods and is well-suited for studies with smaller interview samples. This ensures rigor and validity in the results of interviews. In my research project, I used thematic analysis to analyze the data from the two interviews. The process followed the framework outlined by Braun and Clarke (2006), which provides step-by-step guidance on practical analysis. The framework includes steps such as initial coding, searching for themes, and reviewing themes. My research focused on identifying key points in the data, such as sources of anxiety and the adjusting effects of game design elements.

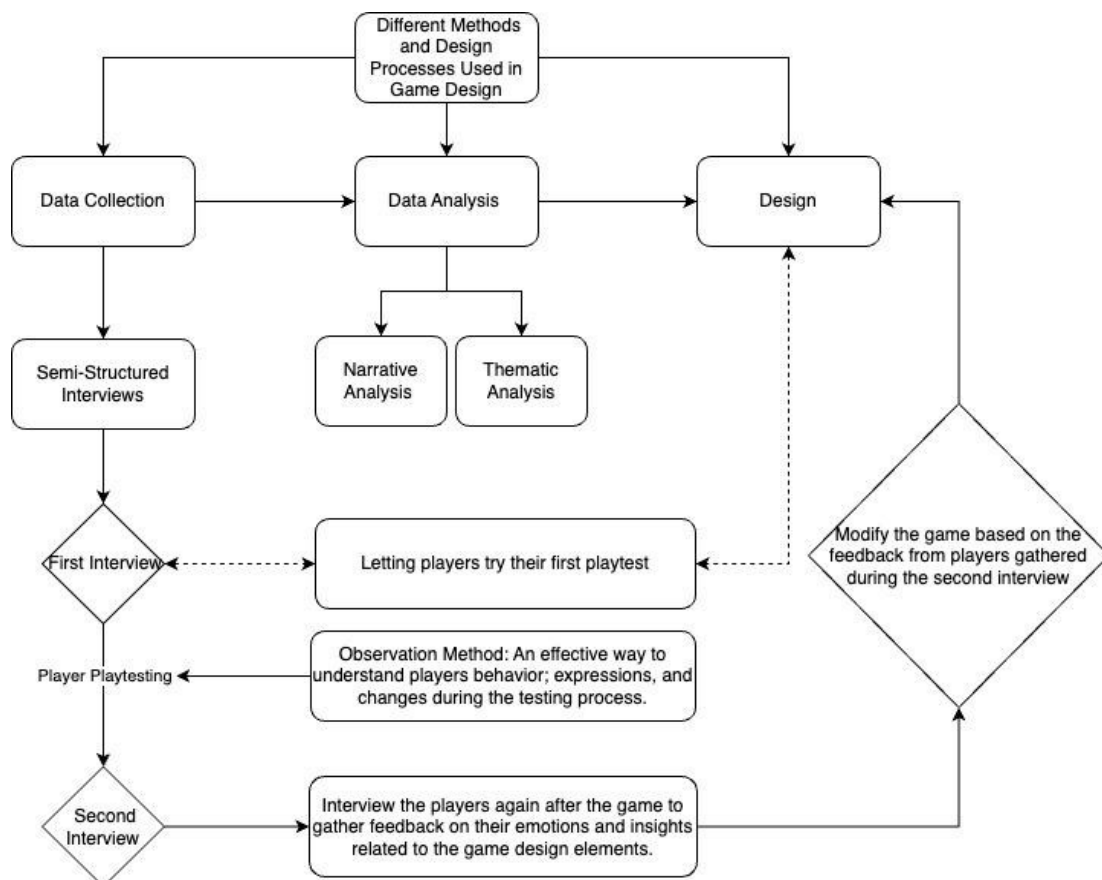


Diagram 1: Different Methods and Design Processes Used in Game Design

Theoretical Framework

In this section, I explore the intersection of game design and psychological theories, analyzing how games relieve player’s anxiety and promote their self-reflection. I integrate relevant psychological theories such as the PERMA model, self-awareness theory, flow theory, and narrative transportation theory (Seligman, 2011; Duval and Wicklund, 1972; Csikszentmihalyi, 1975; Green and Brock, 2000). Each theory provides a unique perspective on how game mechanics and digital storytelling can deeply engage players and enhance their overall well-being.

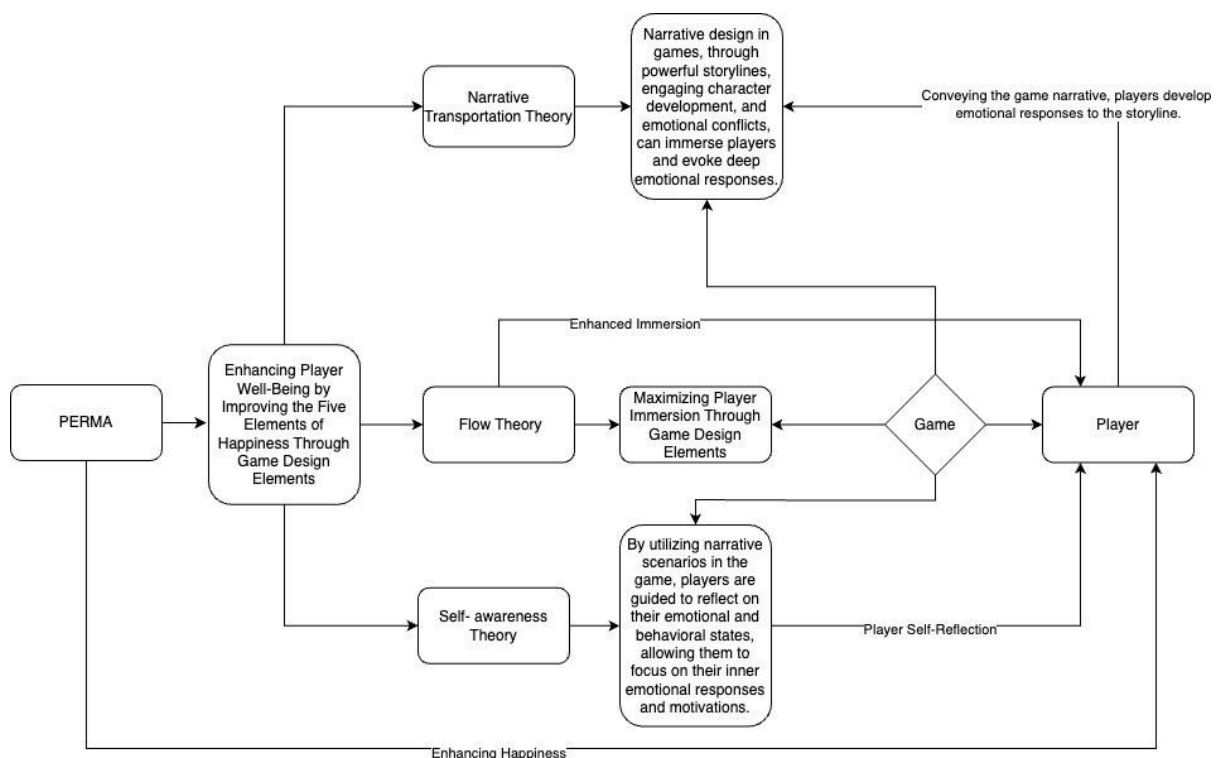


Diagram 2: Theoretical underpinnings and frameworks

The PERMA model was proposed by Martin Seligman, the founder of positive psychology, in 2011. It is a framework for describing happiness that includes five core elements: Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment (Seligman, 2011).

The definitions of these five factors are as follows:

Positive Emotion: Refers to the enhancement of positive feelings toward the past (e.g., by cultivating gratitude and forgiveness), the present (e.g., through physical pleasures and mindfulness), and the future (e.g., by building hope and optimism), all within a certain range. Engagement is an experience in which a person can fully use their skills, strengths, and attention to complete a challenging task. Relationships are the foundation of well-being. Connection with others can give life purpose and meaning. Meaning and purpose can be found by belonging to and serving something greater than oneself. Achievement refers to the pursuit of accomplishment, competence, success, and mastery across various areas of life. Even if achievement does not necessarily lead to positive emotions, meaning, or relationships, people still strive for it (Positive Psychology Center, n.d.).

Seligman thinks that by cultivating these elements, individuals can improve their happiness and life satisfaction. The PERMA theory provides a theoretical framework for my research, allowing me to understand how to provide players with positive emotional experiences through game design elements so that players can get a sense of happiness in the game and thus improve their mental health.

Based on the framework of the PERMA model, the self-awareness theory is used to guide players to self-reflect on their emotions and behavioral states in narrative-driven exploration games. The self-awareness theory was initially proposed by Duval and Wicklund (1972), who think that when individuals become more aware of their internal states (such as emotions, beliefs, and motivations), they will begin to reflect and evaluate themselves. This self-awareness is divided into private self-awareness and public self-awareness. Private

self-awareness refers to an individual's awareness of their internal emotions, beliefs, and motivations. For example, when individuals have anxiety or stress, they will reflect and be aware of the sources of these emotions. Public self-awareness refers to an individual's concern about how they are perceived by others. When a person becomes high in public self-awareness, they pay attention to their appearance, behavior, and whether these align with social norms, as well as whether others are judging them (Fenigstein et al., 1975).

When players are immersed in the game storyline, they make players pay attention to their inner emotional reactions. Through this self-reflection process, the player can understand and reflect on their negative reactions when facing challenges and stress. This self-reflection not only helps them adjust their anxiety within the game, but it also allows them to apply their emotion regulation and reflection skills to real life, promoting positive mental health and avoiding using games to escape.

Game immersion can also be explain in terms of flow theory. Flow Theory was first introduced by Mihaly Csikszentmihalyi in 1975. He proposed that when people engage in an activity that is challenging but within their skill level, they enter a "flow state,". The state of mind itself is the reward. Flow Theory includes nine dimensions: clear goals, immediate feedback, balance between skill and challenge, intense concentration, sense of control, loss of self-consciousness, altered sense of time, merging of action and awareness, and intrinsic motivation (Beard, 2015; Csikszentmihalyi, 1975).

These nine dimensions can be used to measure the flow state players experience during gameplay. When players enter a state of deep engagement and intense focus, their emotional experience and sense of well-being improve. Games can help players achieve this immersive

state, allowing them to temporarily forget the pressures and anxiety of real life, leading to psychological healing and emotional relaxation.

In game design, Narrative Transportation Theory highlights how story-driven games can help players experience emotional resonance, enter a deep state of immersion, and feel emotional support and healing through interactions with virtual characters. Narrative Transportation Theory, proposed by Melanie Green and Timothy Brock in 2000, suggests that when individuals are drawn into a story world, they temporarily disconnect from reality and become fully immersed in the story and its characters. This "transportation" process can influence a person's emotions, attitudes, and beliefs.

This chapter discusses the methodology and methods used in this research, with a particular focus on Research through Design (RTD), game testing, and qualitative data analysis methods such as semi-structured interviews, observation, narrative analysis, and thematic analysis.

In addition, it explores how psychological models such as PERMA, Flow Theory, Self-Awareness Theory, and Narrative Transportation Theory provide a theoretical framework for the game's potential to relieve anxiety and promote self-reflection.

In the next chapter, I will provide a detailed overview of my project development process, game testing data, conclusions and reflections, as well as updates to the second prototype.

Chapter 4: Project & Prototype

Chapter Overview

In this section, I introduce the development process of the game prototype and the feedback and data analysis from game testing. First, I introduce the project's conceptual development, followed by the production process of the first prototype. Then, I analyze the user testing data, summarize the results, and reflect on the findings. Finally, I explain how I adjusted the game based on player feedback and suggestions.

First Prototype

For concept validation, I integrated a literature review on the application of visual design, storytelling, game mechanics, and interaction design in games, as well as relevant research on games relieving anxiety. After analyzing relevant game case studies, I developed the first prototype. It aims to answer this question through user testing of the game:

How can a game be designed by applying digital storytelling, visual design, and interactive design elements, game mechanics to help relieve anxiety and promote constructive self-reflection?

Development Process

The literature review explores the impact of four key design elements in games. So, what I need to consider in the first prototype is: that from the perspective of visual design, I build the game scene and combine it with digital storytelling to make the player's emotional resonance. I also use the game mechanics and interesting interactive designs in the game to enhance the sense of immersion.

During the creation of the first prototype, I went through three stages:

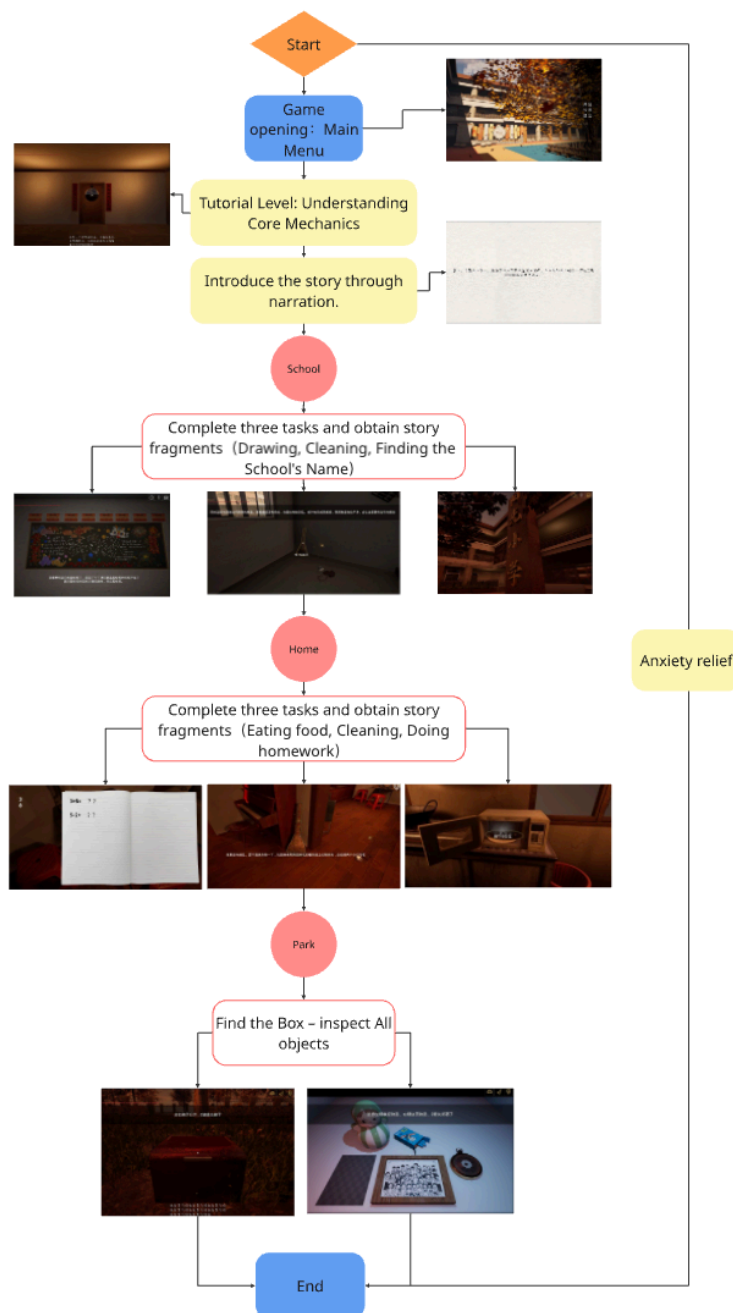
Stage One: Game Concept and Preliminary Design

Stage Two: Design and Development

Stage Three: Testing and adjustment

Game Flow Diagram

The vision for the first prototype is to divide the entire story into three levels, with each level corresponding to a different game scene. The events and gameplay in each scene are adapted from real growth experiences. Combining game mechanics and interactions, the plot is triggered after completing the task. After entering the game, a narration will appear to



introduce the story, and the prologue of the whole story will be introduced in the text. Then the player will enter a room, a teaching level, in which the core mechanism of the entire game is introduced to the player: the pocket watch switches time, and the player will go to scenes of different periods (such as day and dusk) to look for clues and obtain fragmented stories. After the introduction of the content at the beginning of the story and the presentation of the core

Figure 1: Flowchart illustrating the game process for the three stages.

mechanism, the player will enter the first level (Scene 1: school and its surroundings). In the first stage, players complete basic tasks according to the tasks and clues. For example, in the first scene, three tasks need to be completed: time, place, and character information. Finally, each time a task is completed, a short story in text and image format will be triggered. Then the player will follow the prompts to go to the second level. The content of the second level is like the first level. Players still need to complete three tasks according to the prompts - trigger a fragmented story - and go to the next stage. In the third level, I need to present the game's ending to the player. This level contains only one task—finding the time capsule. The player needs to search the scene, checking landmarks such as under trees, benches, and playground equipment to find the buried box. Upon opening the box, they discover a letter and old keepsakes from childhood, triggering an emotional climax. At this point, the game ends here (Figure 1).

Stage 1 Goal: Game Concept and Preliminary Design

Based on my research question, I have clearly defined the purpose of the game and its target audience. In addition, I need to define the game genre, reference game case studies, and identify the technologies that may be used. After defining the game concept, I tried an initial design, which included: the core game mechanics, user skills and gameplay, the story framework, background setting, art style, and music.

Game Concept

I searched for many games with tags such as "healing," "anxiety," and "warmth." Based on my research question and objectives, I engaged in brainstorming and idea expansion (Figure 2).

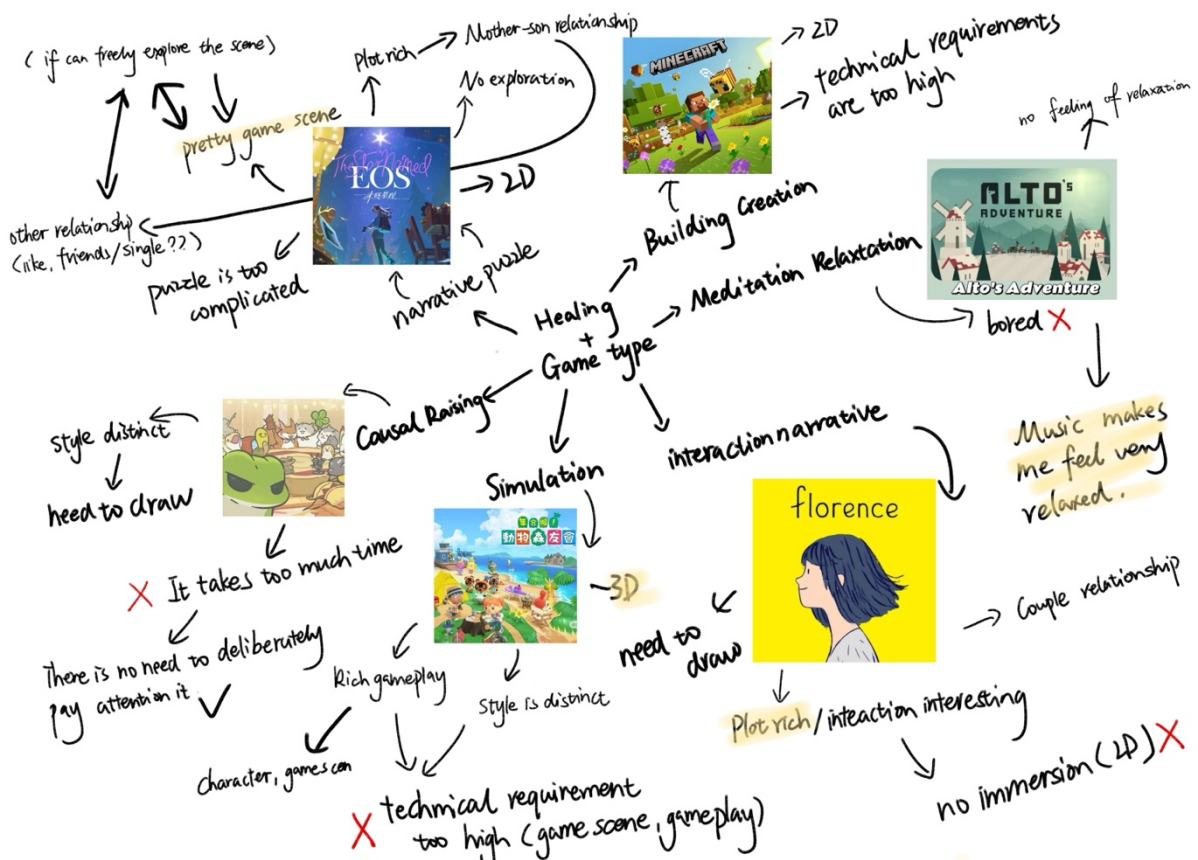


Figure 2: Brainstorming for game concept.

Finally, I decided to choose narrative-driven exploration as the genre for my game. In integrating and game mechanics, it is hoped that the player's experience of immersion is enhanced. Additionally, this mechanism has the potential to guide players into a "flow" state. According to Flow Theory, four key aspects—sense of control, focus, curiosity, and intrinsic interest—play a crucial role in achieving this state. In a narrative-driven exploration game, players gradually unlock the story by exploring. This approach not only enhances immersion but also encourages players to engage more deeply with the story through active participation. The exploration process stimulates curiosity and provides a sense of achievement.

Initial Design

Based on the game concept. I tried the initial design. It includes my initial ideas and concepts for this project (Diagram 3). During the initial concept design phase, I developed a basic design framework that included the game's visual style, core mechanics, background music style, and the types of skills the user would need.

Based on this framework, the subsequent design work gradually unfolded and was continuously refined.

For example, after deciding on the visual style of the game, I looked for architectural styles that matched it as visual references; In the design of user skills, I further thought about how these skills work in different levels and how players interact with game scenes and objects through these skills.

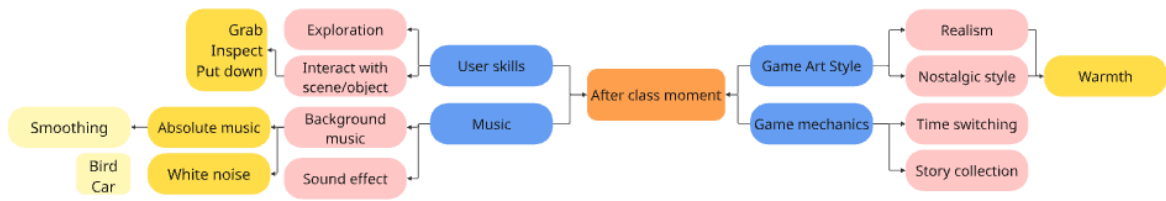


Diagram 3: The initial design concept

Core Mechanics

Since the game's setting revolves around a time-travel story, I chose a time-switching system as the core mechanic when designing the gameplay. Another core mechanic is the story collection system. Since the game is a narrative-driven exploration game, digital storytelling plays a crucial role. I need to ensure that players can gradually uncover the full background story through exploration.

User Skills (Interaction design)

Basic user skills can also be understood as the player's interaction with the game. So, in the game, I set "exploring scenes" and "interacting with scenes (objects)" as user skills, and players can freely explore anything in the scene. These two mechanisms affect players' immersion and gaming experience.

Background Setting

The background to the setting is stated as: “In the year 2035, you feel anxious and lost due to work stress and the monotony of life. You often miss the happy and carefree days of your childhood but find it difficult to find the long-lost enthusiasm and fun in daily trivialities.

One day, you accidentally obtain a mysterious pocket watch that can travel through time and space. The appearance of the pocket watch gives you a chance to take you back to a time when you were young, filled with dreams and hope. You decide to take this opportunity to return to the past, relive your childhood, and rediscover the self you once lost.”

Story Framework

In the game, I use a linear narrative structure, gradually progressing to guide players through the character’s perspective, allowing them to experience their childhood and uncover their past. Each story is carefully designed to immerse players and relax their mood.

1.1 Story Outline

From a psychological perspective, recalling positive past experiences is believed to relieve anxiety (Josephson, 1996). The nostalgic atmosphere provided by the game allows players to relive the past in a safe environment, through interactive experiences, rediscover and understand their emotional needs. Therefore, I decided to combine the story with my personal growth experiences and make some adaptations. I selected a specific fragment of my growth experience and transformed it into the game's narrative storyline.

Because of my cultural background, I made special reference to many Chinese cultures and living habits. Because China's education model is relatively unified, most of the events in all games are representative. For example, in the family scenes of the game, the interaction between the character and his mother reflects the affection and love in Chinese families. In Chinese families, it is a common parenting method for children to be rewarded by their parents after completing their homework (Xu, 2023). This plot reflects the traditional concept of "family

education". In school scenes, blackboard newspapers, as a unique cultural symbol, are deeply rooted in China's education system. In many schools, students are regularly responsible for designing and making blackboard newspapers, which is not only an exercise of students' creativity but also a reflection of school culture and class cohesion (Xueshu.com, n.d.). In the game, by completing the blackboard newspaper task, the protagonist not only gains clues to his growth but also recalls the joy of character in class activities during his childhood.

At the beginning of the game, a short introduction presents the story's opening and initial cause. The character is an ordinary person living in a fast-paced urban environment. She gradually realizes that adulthood is not what she imagined. Her daily life is filled with stress, and she begins to feel numb and anxious about life. She must work overtime almost every day. She wants to return to her childhood, believing that back then, every day was filled with anticipation. There was less pressure and no complicated choices. By chance, she receives a pocket watch that allowed her to travel through time. When she touches the pocket watch, her consciousness is suddenly returned to her childhood. During this journey, she travels through familiar places such as the school, home, and park. During the exploration, by following hints and completing tasks, she recalls many childhood memories, dreams, and aspirations. In the end, the secret behind the pocket watch is revealed; it is an item from a time capsule she buried during her childhood. Inside, she also finds many old belongings and letters from her younger self.

The game adopts a nostalgic, narrative-driven exploration as its main design approach, aiming to evoke players' emotional resonance through visuals, interactions, and storytelling. Players control the character, returning to the places where she lived as a child, experiencing

the activities she once enjoyed, and reliving the joyful memories of her childhood. The game is not just a recollection of the past but also a journey of self-identity and emotional healing. In real life, we often forget our original aspirations as we grow, carried forward by the stress of life. However, by looking back on the past, we may rediscover the moments that once brought us warmth, dreams, and hope.

1.2 Story Plot

At the beginning of the game, the character's background is introduced through narration. The character's current life situation is revealed through text narration. By chance, the character acquires a mysterious pocket watch that allows time travel. She then travels back to the place where she lived as a child. (introducing the game's storyline).

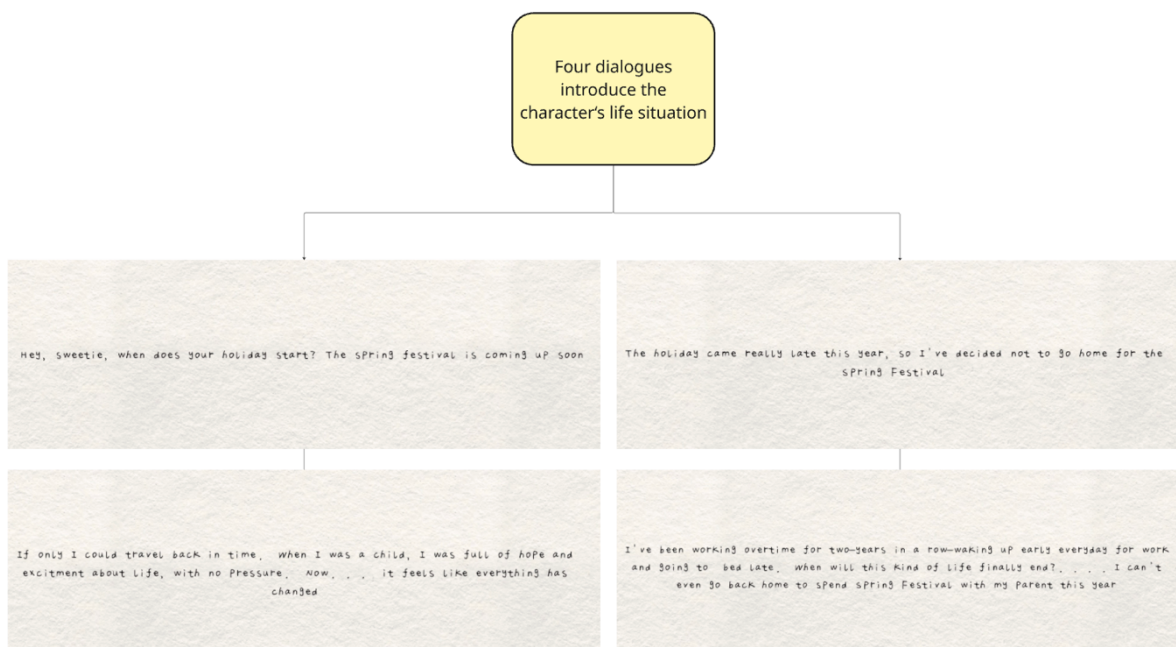


Figure 3: Story introduction at the beginning of the game (1)

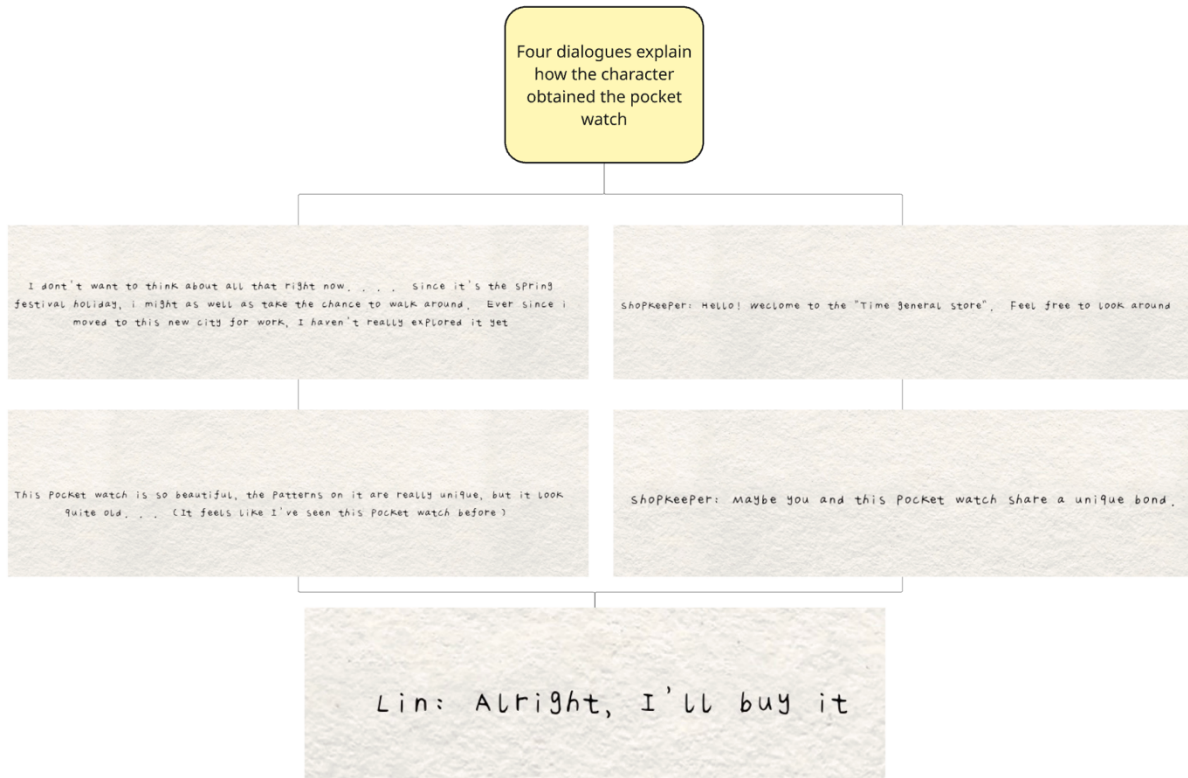


Figure 4: Story introduction at the beginning of the game (2)

In the first level, the story fragments that need to be collected are about the character's childhood experiences at school. There are three specific events to uncover.

1. Because the blackboard painting contest win first place, the teacher takes a group photo of the whole class and gave the photo to the character (Figure 5).

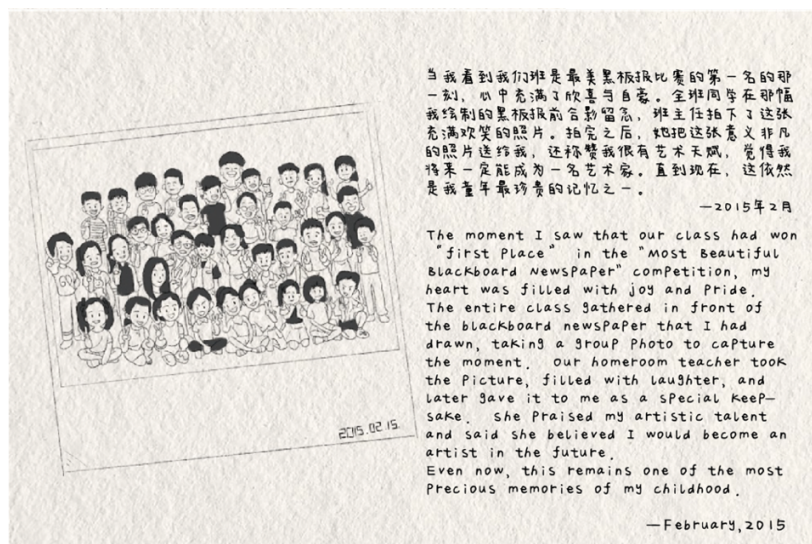


Figure 5: Story Fragment 1

2. Because the character wins the title of "The Most Beautiful Student on Duty," the teacher gives her a box of crayons as a reward (Figure 6).

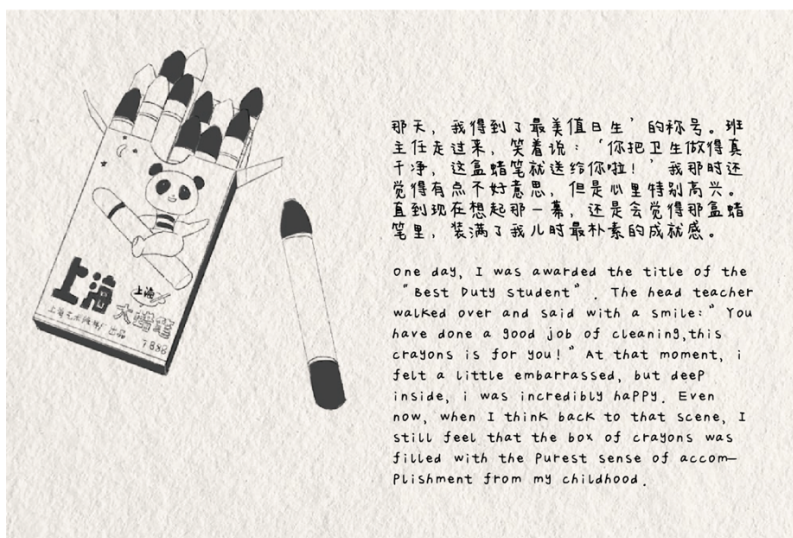


Figure 6: Story Fragment 2

3. There are memories of the character playing with her friends at school when she was a child (Figure 7).



Figure 7: Story Fragment 3

In the second level, the story fragments that need to be collected are about the character 's childhood experiences at home. There are two specific events.

1. The character's mother gives her a toy as a reward for completing her homework on time every day (Figure 8).



Figure 8: Story Fragment 4

2. Her mother tells her that she needs to finish her meal before she can go out to play (to move the story forward).

Trigger the finale of the game/story in the third level.

1. The character finds the "time capsule" buried in childhood, opens it, checks each item, and obtains the trigger for the finale (Figure 9).



Figure 9: Screenshot from the game: Object inside the box

Game Art Style

For the art style, I chose a realistic style and referred to the architecture and environment in China more than a decade ago. Wulf et al. (2018) mentioned in their study the relationship between memories of past video game experiences and nostalgia. They argued that nostalgia is a mixed emotion triggered by reflecting on the past and is positively linked to well-being. Inspired by this idea, I aimed to create a narrative-driven game with a nostalgic style and a high degree of exploratory freedom. This style not only enhances the immersion of the game but also provides players with a real and intimate cultural experience.

Stage 2 Goal: Design and Development

Game Mechanics

The time-switching mechanism allows players to switch between different time points to promote the development of the game plot. As the core interactive tool of the game, the pocket watch symbolizes the connection between time, memory, and emotion. The design inspiration comes from the connection between the passage of time and memories. Players can trigger the time-switching mechanism by pressing the "E" key. For the shape of the pocket watch, I referenced an Object from my childhood, which has a unique meaning to me. I restored its shape in 3D modeling software (Figure 10). Finally, I imported the models into Unreal Engine 5 (Tan, 2024). To enhance the gameplay experience, I also created short animations, such as the rotating clock hands.



Figure 10: Screenshot from the game: Pocket watch

The following is a blueprint from UE5 for implementing the time-switching mechanic.

The picture shows the logic of the production very well (Figure 11).

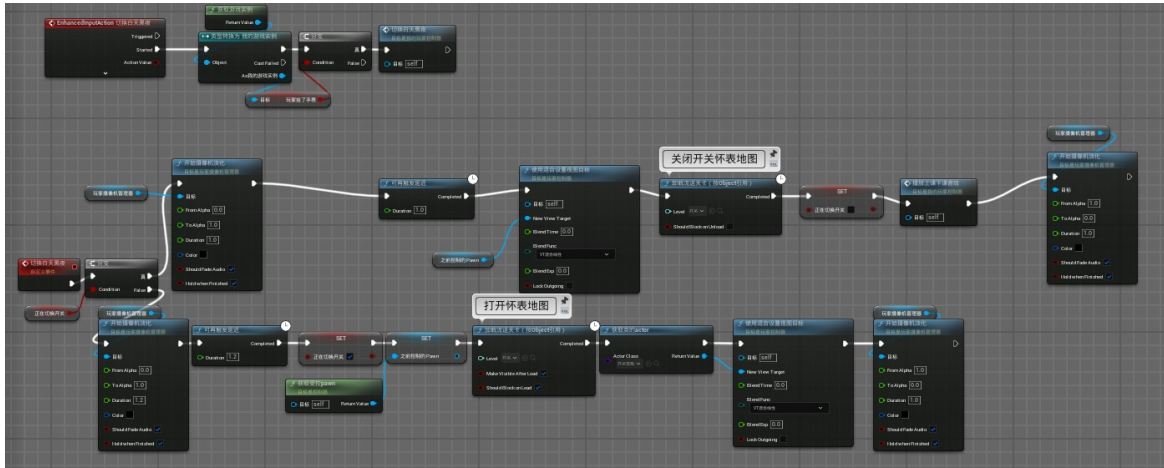


Figure 11: Screenshot from UE: Blueprint of the "Time-Switching Mechanic"

In terms of gaming experience, players need to switch time and look for clues at different times to obtain story fragments. The advantage is that it avoids the monotony of the game and increases the fun. In addition, this time-switching exploration method enhances the player's active thinking and exploration, allowing them to feel the sense of achievement of gradually piecing together memories during the game. This dual-time system design allows players to constantly compare, think, and look back during the exploration process, thereby enhancing the sense of immersion. For example, Zhang (2010) highlights the emotional and interactive value of time travel mechanics in narrative game design. In his literature, he studied the game *The Legend of Zelda: Ocarina of Time*, suggesting that players experience different game worlds and tasks by switching between the "childhood" and "adulthood" time periods.

This time-switching mechanic not only enriches the narrative layers of the game but also enhances the player's sense of immersion and interactivity (Zhang, 2010).

Character and Actions

I designed the character to be a 10-year-old girl, which better fits the game's narrative setting. In Unreal Engine5 (UE5), I performed rigging on the character model and then designed the character's movements and animations. In addition to the "walking" action, I added "running" and "jumping" actions. such as "sweeping the floor", I adjusted the character's movements when special tasks such as “sweeping the floor” needed to be completed (Figure 12).

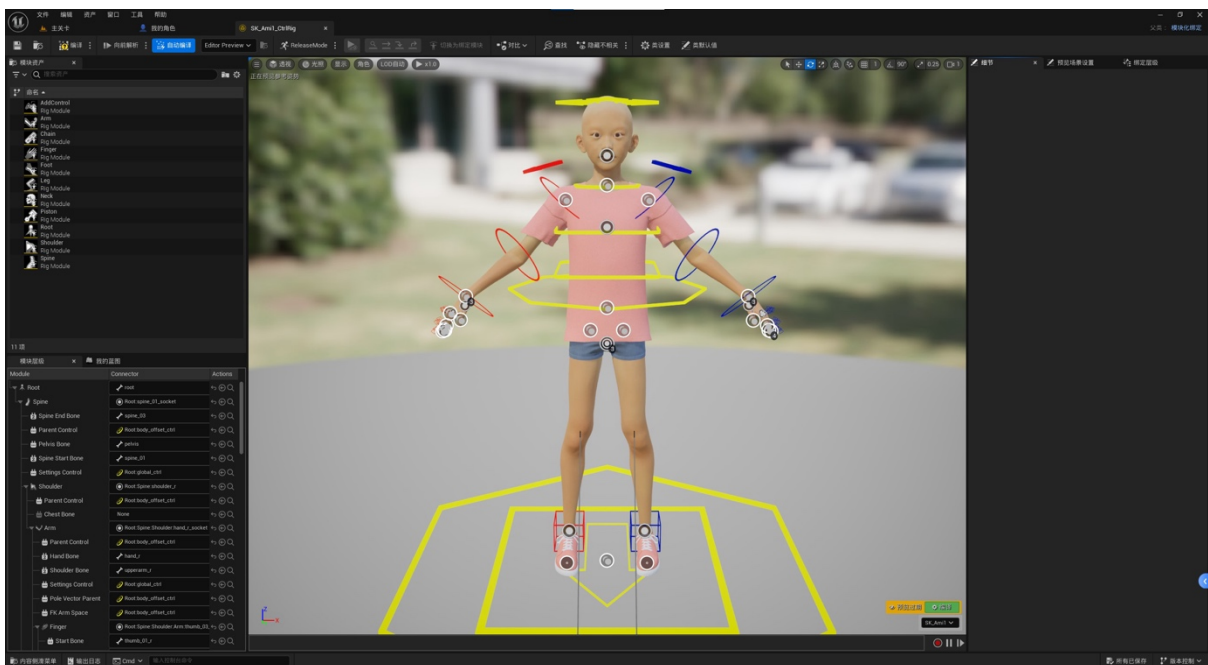


Figure 12: Screenshot from the UE: Character

Background music

In a game with the theme of "healing", background music is very important. Studies have shown that audio elements play a significant role in enhancing player immersion. (Gormanley, 2013). Therefore, before making the background music of the game, I referred to many healing games of similar types and analyzed their sound styles and emotional expressions. Through comparison, I found that games of this type typically use soothing, calm instrumental music with a steady rhythm and minimal dramatic shifts, to create a relaxed and comforting atmosphere.

Based on the above observations, when selecting music materials that can be used for free, I tend to choose gentle and peaceful instrumental works. At the same time, combined with the specific scene settings in the game, I decided to add some white noise elements with a natural atmosphere, such as birdsong and wind, to further enhance the sense of immersion. Afterward, I used Adobe Audition audio editing software to trim, apply fade-in and fade-out effects, and rearrange the selected audio tracks, making the overall sound more aligned with the emotional tone and narrative atmosphere of the game.

User Skills and Gameplay:

The skills that players have include exploration and scene interaction (objects) to advance the plot. The basic user skills are grabbing, inspecting, and putting them down. The implementation logic in UE is: pick up the objects- press e to attach the object in front of the camera - press e again to cancel the attachment - get the mouse "xy" axis to rotate the object when attached (Figure 13).

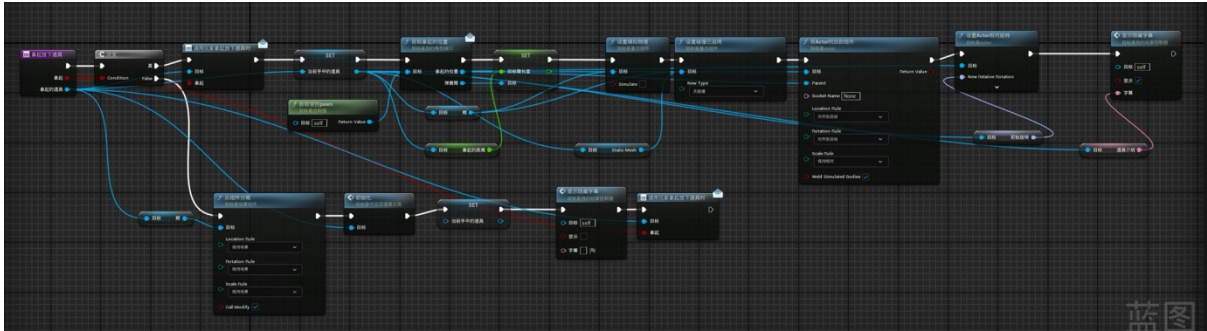


Figure 13: Screenshot from UE: Blueprint of the "User skills"

Different gameplay and interaction methods are set according to the needs and events of different scenarios. According to the UI graphic prompts in the upper right corner, inform the player of the number of tasks in each scene and hint at the content of the player's tasks. If the task is not completed, the player cannot go to the next scene. After the task is completed, the UI graphic in the upper right corner will turn yellow (Figure 14).



Figure 14: Screenshot from the game: Task UI

Three interactions/gameplays exist for the first scene (school).

Interaction/Gameplay 1: Draw a blackboard newspaper, which is a combination of gameplay and mechanism. Players follow prompts in the daytime classroom to find an interactive area (draw on the blackboard). They then use the time-switching mechanism to go to another time

(dusk). The player finds that the blackboard is complete. At this stage, there are a few prompts, but more of the story fragments need to be triggered by the player during the exploration process. During the exploration, the player approaches the blackboard and focuses the view on the blackboard and gets the story fragment (Figures 15 and 16)

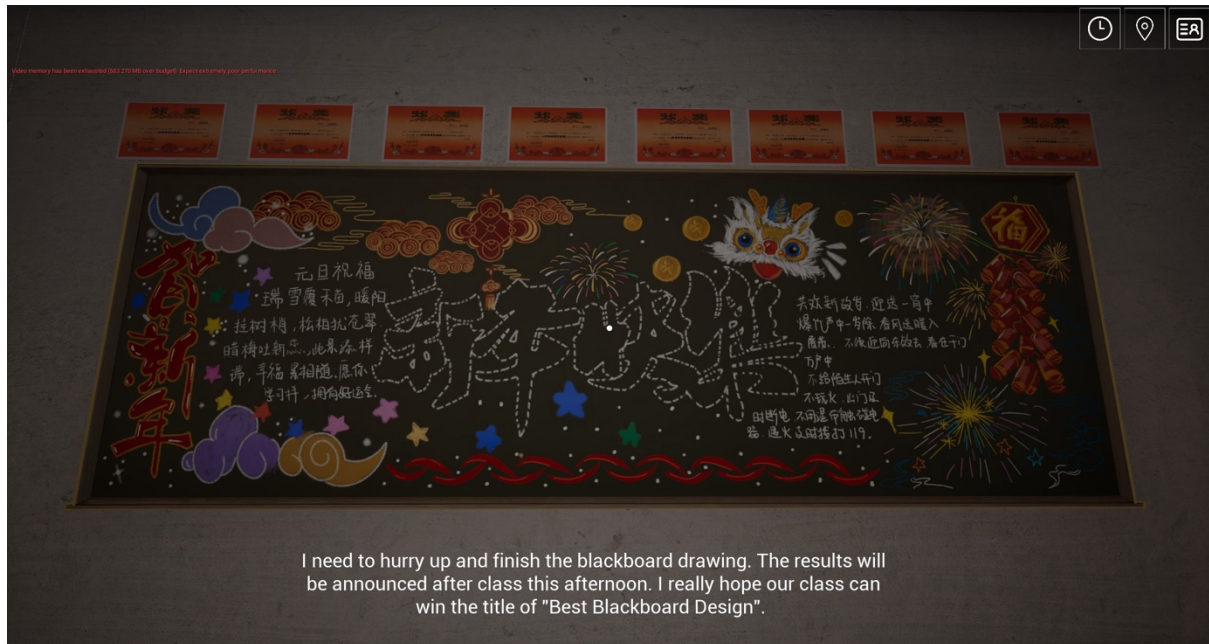


Figure 15: Screenshot from the game: unfinished blackboard



Figure 16: Screenshot from the game: finished blackboard

Interaction/Gameplay 2: Players find the broom and interact with it in the classroom during the day according to the prompts. After completing the sweeping task, the player follows the prompt to use the time-switching mechanism to switch time. In the classroom at dusk, aim the view at the name on the blackboard to get the second story fragment (Figures 17, 18, and 19).



Figure 17: Screenshot from the game: Broom and Trash

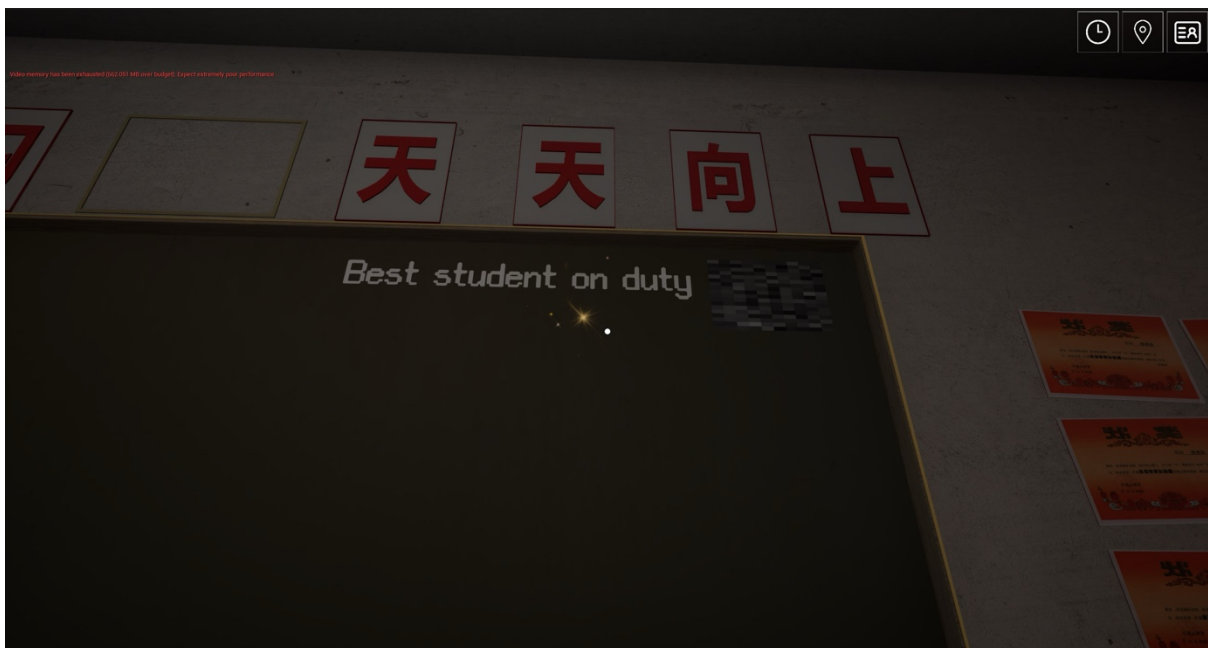


Figure 18: Screenshot from the game: Clue hint on the blackboard

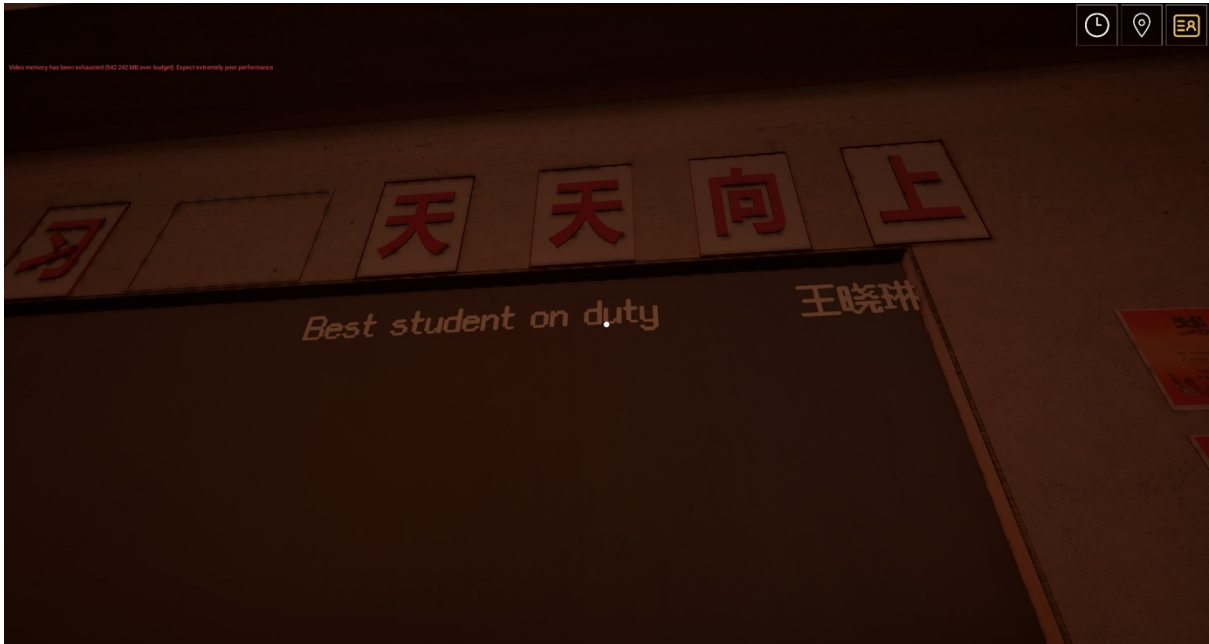


Figure 19: Screenshot from the game: Clue hint on the blackboard

Interaction/Gameplay 3: When the player points the view at the name of the school in the exploration scene, he will get the third story fragment. After completing the three tasks, the player will freely explore the school and its surroundings according to the prompts and go to the second scene (Figure 20).



Figure 20: Screenshot from the game: School name

Three interactions/gameplays in the second scene (home)

Interaction/Gameplay 1: Players obtain story fragments after completing the homework according to the prompts (Figure 21).

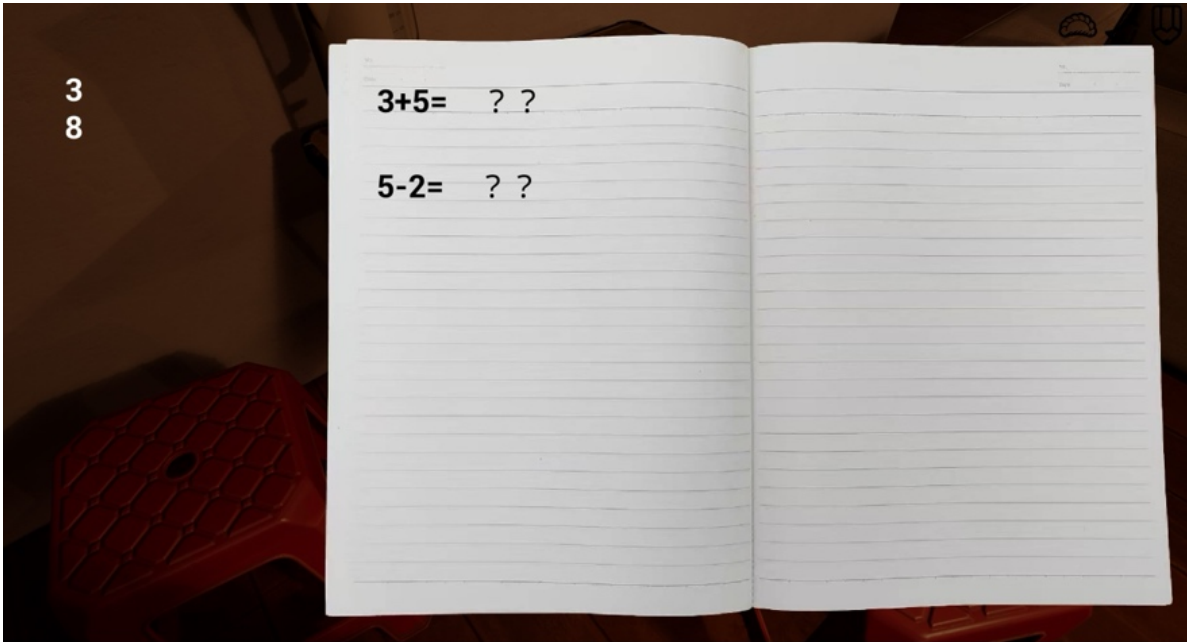


Figure 21: Screenshot from the game: Homework

Interaction/Gameplay 2: Players are prompted to heat up the food and finish eating it according to the prompts (Figure 22).



Figure 22: Screenshot from the game: Heating food in a microwave oven

Interaction/Gameplay 3: The player is asked to find the broom in the room according to the prompts and go to the third scene after finishing cleaning (Figure 23).



Figure 23; Screenshot from the game: Broom and Trash

An interaction/gameplay for the third scene (park)

Interaction/How to play: According to the prompts, players freely explore the scene - find props (shovel) - dig out the box - interact with the items in the box - understand the origin and story of each item (Figures 24 and 25).



Figure 24: Screenshot from the game: Shovel



Figure 25: Screenshot from the game: Box

Developing Game Aesthetics

My goal is to create a warm, realistic, and nostalgic game scene. It is important to create a sense of atmosphere that matches with the background setting of the game. In the previous conception, the story background of the game takes place after class. So, I chose the school and its surroundings, home, and park as the three main scenes of the game (Figure 26).



Figure 26: Screenshot from the game: School, Home, Park

When making the main model, I referred to many landmark buildings in the real world. For example, for the main building of the school, I referred to my primary school and modified some of the details of the building. In addition, there is a second scene "Home", and I also referred to the decoration style from ten years ago (Figure 27).



Figure 27: Screenshot from the game: The main building of the school

While building the scene, I also added a lot of period symbols. For example, commercial streets around the school and Chinese news broadcasts (Figures 28 and 29).



Figure 28: Screenshot from the game: Commercial streets around the school



Figure 29: Screenshot from the game: Television

Light and Shadow - Visual Design

The use of color and light and shadow design plays a key role in shaping emotions. Most of the scenes are painted in soft warm colors for memories. I used daylight and warm yellow light to enhance the warmth (Figure 30).

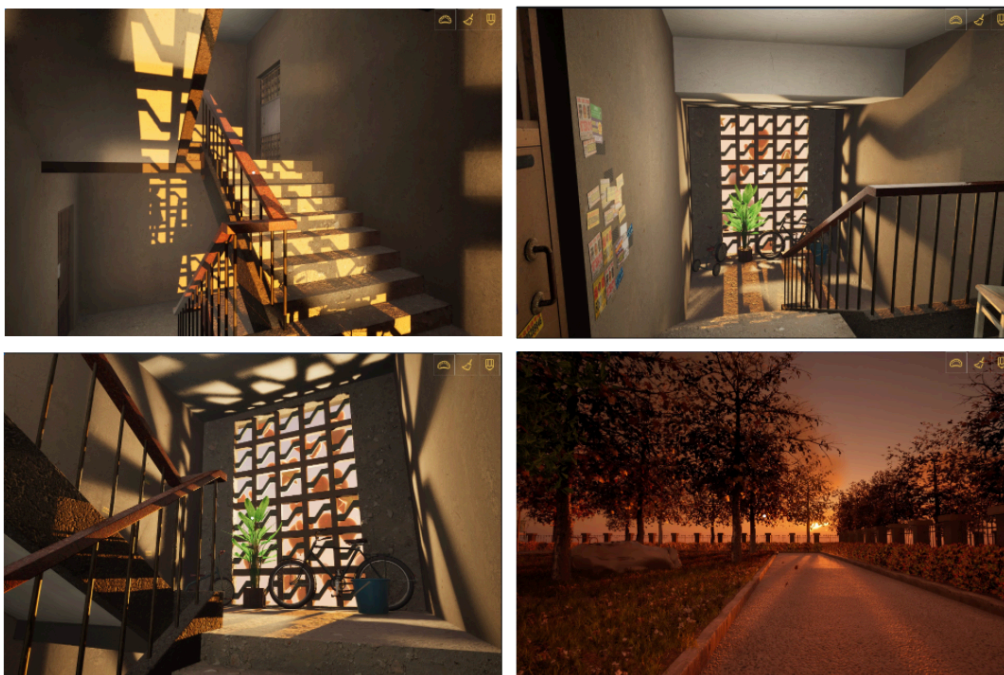


Figure 30: Screenshot from the game: Light and shadow effects in different scenes

Stage 3 Goal: Testing and Adjustment

In terms of game testing, this round of iteration focuses on the task-triggering logic (such as whether the player can complete the tasks in order and obtain key clues), and basic game feedback (such as text prompts and visual feedback during interaction). At the same time, to ensure that the basic gameplay of the game meets the design goals, this stage focused on the smoothness of the interaction (to prevent the occurrence of some bugs) and problems during the internal test were recorded so that they can be optimized and adjusted in subsequent iterations. The final goal of a round of iteration is to build a complete and smooth version.

Evaluation and Reflection

During scene construction, the 3D model contained an excessive number of texture maps and polygon faces, which significantly impacted performance and caused noticeable frame rate drops during internal testing. After completing the first basic prototype, I compiled a list of recurring issues and identified areas that needed optimization.

Complication

When I tested it myself, I often encountered unexpected situations. For example, some interactive objects did not respond as originally designed. For example, in the second scene (home), there is a level that requires heating food, but the food could not be taken out after being put into the microwave. In addition, the time and location of the clues were incorrect. For example, I had already left the classroom, but the game would still prompt "Please find all the clues before you can leave the classroom."

Final Thoughts: First Prototype

I am quite satisfied with the result of this prototype because it is relatively complete and can provide a complete game experience for game testers. The first prototype served as an important starting point for exploring the game's core mechanics, narrative structure, and visual style, and successfully established the intended atmosphere and interactive flow. However, further optimization is still needed to enhance player immersion, emotional connection, and playability. In the subsequent iteration process, player feedback was combined with the iteration process to continuously adjust. I hope that in subsequent versions of the game, through continuous iteration and improvement, I would reach the goal of creating a game that can truly help players reduce anxiety and promote self-reflection.

Data Analysis

Conceptual playtesting is a method used during the early stages of game development to validate core concepts. The first prototype is relatively complete. During gameplay, players can experience the game's mechanics and interactions, follow the storyline, and explore the game scene. In this section, I present the results, discussion, and conclusions from the concept playtest and attempt to answer my research question.

Results

In this research, I invited five people to be my game testers. I used Chinese throughout the interview because all five players are from China. Then I conducted two semi-structured interviews (Pre-game interview and post-game interview) and directly observed the testers (face expressions, mannerisms, choices) during the gameplay session. Then I analyzed their anxiety state and changes in self-reflection before and after the game test based on the two interviews and direct observation. I encouraged the game testers (#1 to #5) to share their thoughts while playing. Finally, the data from the interviews were analyzed using narrative analysis and thematic analysis. In this analysis, key themes were identified through pre- and post-game interviews, narrative analysis and direct observation.

After the first interview (Pre-game interview), I learned that most of the five testers were between 23 and 30 years old, and there were no notable age outliers among them. Their occupations are divided into three categories: students, teachers, and freelancers. They took the test after seeing recruitment information shared by others on social platforms. All

testers have been exposed to different types of games and enjoy playing different types of games. Besides playing games, some testers also choose to watch movies or TV shows, listen to music, or read novels, as these activities help them relax as well. In the next paragraph state something immediately: several key themes arose from the pre-game interview. These are: Favorite game type, reasons for anxiety-internal expectation, reasons for anxiety-external social pressures, and games as a short-term means of relieving anxiety. Each theme will be discussed in turn.

Favorite game type

#1: I play games a lot. My favorite genres are first-person shooters and multiplayer online battle arena games. I find them exciting!

#3: I like trying out all kinds of games. But if I had to rank my favorites, I'd say simulation, management, and life-building games are my top three—like *Animal Crossing*. I really enjoy experiencing different roles in games. For example, I once played a game where I was a café owner, and my job was to serve coffee every day.

#4: I love playing Massively Multiplayer Online Role-Playing Games, like *Final Fantasy*. I enjoy the storyline, and the game gives me a lot of freedom to explore different places.

Reasons for anxiety

The sources of anxiety for most game testers are mainly related to real-life factors, such as numerous and complex work tasks, academic pressure, confusion about the future, and the gap between personal expectations and reality.

External social pressures

#1: My parents have high expectations for me, which puts a lot of pressure on me. I am afraid that they will be disappointed. I also hope that I can become better, but I still haven't reached my own expectations.

#2: My boss gives me a lot of work, and the tasks are all different. I feel like it's beyond my ability to handle it. If I don't finish my work, I'm afraid I might get fired.

Internal expectation

#4: I'm afraid I won't be able to complete my graduation project. There have been way more challenges in the process than I expected. This has led to a huge gap between the time and effort I planned to spend and what it takes. The result is also quite different from what I originally hoped for. In short, not meeting my expectations has created a big sense of disappointment, which makes me feel anxious.

#5: I feel like my professional skills are too weak, which might make it hard for me to find a job. I'm really worried about my future.

Games as a short-term means of relieving anxiety

4/5 testers believe that playing games can temporarily relieve their anxiety. One tester believed that games would increase anxiety, viewing them to escape reality. #1 also believes that the social nature of the game brings a sense of companionship and helps with emotional healing.

#1: Yes! I really enjoy the co-op mechanics in games because I often invite my friends to play with me—it makes the game a lot more fun. But if I get matched with random teammates, I usually won't turn on my mic to talk to them.

#4: I think gaming is the only way for me to relieve anxiety. I believe all design elements in a game are important. Different games focus on different aspects, depending on their design

purpose. After all, there's no such thing as a perfect game—there will always be some flaws or shortcomings.

#5: Games don't really help me relieve anxiety. In fact, I sometimes feel even more anxious because I know I'm playing instead of solving my problems. It's just a temporary way for me to escape from them.

After the game test, I conducted a second interview (Post-game Interview). The second interview was scheduled one week after the game testing, with the aim of understanding the longer-term impact the game had on players, particularly whether it had any lasting effects on their emotions during that week. Through this interview, I hope to gather the following information: whether players recalled content from the game during the week when they felt anxious, leading them to engage in self-reflection, gain motivation, and ultimately achieve long-term relief from anxiety.

In the second interview, I learned that all testers experienced varying degrees of relaxation during the game test, and they all felt that the gaming experience was enjoyable. In the next paragraph state something immediately: several key themes arose from the post-game interview. These are: The game temporarily relieved anxiety, Components of game design and anxiety alleviation, Details unexpectedly alleviating anxiety, Emotional responses to gameplay, The long-term impact of games on anxiety relief, and Suggestions for game improvement. Each theme will be discussed in turn. The thematic analysis incorporates both narrative analysis of the post-game interviews and direct observations of the gameplay process.

Narrative Analysis: The long-term impact of games on anxiety relief

Although the game was able to evoke emotional resonance in players through its story and tasks, it failed to create a lasting impact. They believed that the game did not have a long-term impact on them. 4/5 players felt that the game was too short and lacked sufficient content, making it insufficient to achieve a long-term emotional impact. 3/5 players felt that although certain storylines and tasks did trigger their memories, they were not strong enough to create deep emotional resonance or lasting memories. Especially after completing the plot, players are not encouraged to continue thinking, expressing, or retaining this experience, which makes the childhood memories originally evoked fade quickly after the game ends. As a result, players only experienced relief from anxiety and self-reflection during the gameplay or for a short period afterward.

#5: During the week, I would almost forget about the game, and then when I was done, my anxiety would come back.

Direct Observation

During the playtesting process, I directly observed five testers in action. Some testers displayed relaxed expressions and were highly focused on the game, actively searching for clues. Sometimes, testers also showed happy expressions. Additionally, a few players showed signs of impatience, often clicking the mouse rapidly, especially when searching for clues.

The game temporarily relieved anxiety

During the game test and within one or two hours after the game test, 4/5 players' anxiety was relieved, and their emotions and mentality became calmer, but one player became depressed.

#3, #4, and #5 thought that the game relieved their anxiety and made them relax. They were impressed by the soothing background music in the game and the warm atmosphere created by the game scenes and light and shadow.

#1: During the game test, I felt very relaxed. However, compared to before playing, my mood became a bit lower—maybe because it made me nostalgic for the carefree days of my childhood.

#4: Of course! I really enjoy slow-paced games. The background music helped me feel much calmer.

#5: I did feel relaxed, especially while exploring the park. I liked the plants in the game.

#3: I felt very relaxed, and it helped ease my anxiety. I enjoy this nostalgic-style game. It might be because I love watching period dramas.

Components of game design and anxiety alleviation

#2 and #5 believed that the scenery in the game relieved their anxiety, such as the diversity of game scenes, the light and shadow of the scenes, and the special scenes that evoked their memories. #1 thought some of the game mechanics were fun, such as cleaning and drawing. #3 also felt that the game's story was relatable, evoking a strong sense of empathy. It reminded them of their own childhood experiences, such as the carefree feeling after school in elementary school and playing with classmates.

#1: Especially the interactive design of the game. When I was exploring the classroom, I almost forgot about my anxiety. I liked that I could freely draw on the blackboard.

#2: It relieved some anxiety. What impressed me the most was the atmosphere of the scenes and the high level of detail in recreating a Chinese city from 10 years ago. The environment

design was excellent, especially the indoor scenes. When I turned on the TV, it was playing the news, which gave me a strong sense of nostalgia.

#3: I had similar growth experiences as the game's character, so the story resonated with me emotionally.

Details unexpectedly alleviating anxiety

#2 found a bug involving the car in the game amusing (In the game, moving cars are present, but when the player character stands in front of a car, the vehicle stops immediately after a collision occurs.)

This design contradicts real-world logic. Normally, after being hit, the character should experience feedback mechanisms such as being knocked back or respawning at the starting point to enhance the game's sense of realism). One player felt that the greenery in all the scenes was very beautiful, and that the scenery helped calm their mood.

#2: Although it was unrelated to the test's topic, he admitted that it was the most entertaining moment in the game.

#5: I did feel some relief. I really liked the outdoor scenes—green plants always help me relax. I enjoyed the sunset and standing under the shade of the trees to take in the scenery.

Emotional responses to gameplay

In the second test, players were interviewed about their experience and feelings about the game's story, mechanics, interactions, and visual design. Through the five players sharing their stories, I can see that different testers showed different degrees of emotional investment and resonance, especially when faced with plot settings in the game that have symbolic childhood

significance. #1 and # 3 strongly associated the blackboard poster task with their childhood memories, evoking recollections of holidays, crafts, and art creation.

#1 connected the game's blackboard poster and cleaning tasks with their own childhood experiences of preparing for school festivals and competitions.

#1: The task of drawing the blackboard poster in the game instantly brought me back to elementary school. Back then, we had to change the blackboard poster for every holiday—like National Day or Dragon Boat Festival—and it had to include both drawings and text.

#3 drew a strong connection between the in-game achievement of “Best Blackboard Poster Class” and their own childhood experience of “winning the Classroom Decoration Award three times in a row.” They specifically mentioned that it reminded them of the sense of accomplishment they felt when praised by their teacher.

#3: The blackboard poster drawing in the game really moved me emotionally. I've been learning to draw since I was a child, and I was always the one designing the illustrations. What I'm most proud of is that our class won the 'Best Blackboard Poster' award three times in a row.

#3 repeatedly emphasized feelings of being "moved," "familiarity," and "rethinking their childhood self" during their account, indicating that the game effectively triggered memories of their childhood and personal growth.

#5's experience reflected narrative divergence. Although they had similar past experiences, their low sense of engagement resulted in a narrative lacking emotional depth.

#5: The blackboard poster in the game reminded me of similar activities in our class, but most of the time it was the teacher who did all the drawing. As a student, I didn't feel involved. So,

when I saw the game’s main character drawing it themselves, it felt familiar—but I didn’t feel particularly immersed.

In addition, the scenes of the character returning home, doing homework, eating dumplings, and cleaning, represent a culturally universal narrative moment that effectively evokes childhood reflection. Even if players did not have identical experiences, these scenes can still elicit emotional resonance.

#1 and #3 mention details such as “heating dumplings”, “doing homework”, and “going out to play”, and family daily life is endowed with nostalgic emotions.

#1: I remember when I was a kid, my mom was busy with work. So, I often came home alone, heated the food, and ate by myself. Then I would go out to play with my friends.

Finally, regarding the last scene (digging up the box in the park), all players mentioned that this part was particularly emotionally touching.

#1: I used to like collecting toys or items from my childhood. When I see those things again, they bring back memories of past experiences. I believe each of those items holds special meaning.

#2: I did the same thing when I was a kid—writing a letter to my future self. Back then, I wanted to grow up, and I was so curious about the world I’d live in as an adult. I wrote down my hopes in the letter, like what I wished my future self would be like.

Suggestions for game improvement

Additionally, it cannot be ignored that some of the mandatory mechanisms in the game may increase anxiety. For example, #1 and #2 felt that the tutorial level did not explain the mechanics in enough depth, which led them to possibly overlook core gameplay elements

during their playthrough. #3 and #4 felt that there were too few hint clues, making it difficult to complete game tasks, which increased their anxiety.

#1: If you hadn't stood by my side, I might never have found a way out of the classroom. I always overlooked the core mechanic (switching time) because the tutorial didn't emphasize its importance enough.

#3: In the process of playing the game, I thought the clues were not enough. I spent a lot of time looking for clues.

Discussion & Conclusion

This research explores how game design elements impact players' anxiety and promote self-reflection through user testing and interview analysis. The results of the study show that elements in game design can help players relieve anxiety to a certain extent. Visual design, storytelling, and the level of interactive freedom are key factors influencing players' emotional experiences. Among these factors, visual design in the game has the most significant effect on anxiety relief, while the impact of the story varies depending on the player's individual background. Additionally, the background music, combined with the game experience, had a positive effect.

1.1 Implication of Findings

Based on existing literature and theories, this study further verified the impact of game design elements on relieving anxiety, especially the construction of game scenes. The lighting, color, and environment design in the game play a key role in creating a relaxing atmosphere,

which is consistent with the research of Martins & Vairinhos (2023) on emotion regulation game design. For example, warm colors can evoke positive and energetic emotions, that is, visual elements can effectively influence the emotional state of players.

Additionally, the game's story also played a role, as some players recalled past experiences while playing. However, this impact varied significantly based on individual experiences, indicating that the emotional regulation effect of the game's story is highly subjective.

Additionally, interaction design and mechanics influence players' immersion. Through Game testing, it was found that mechanics, such as the blackboard interaction, helped enhance players' sense of immersion in the game world.

Based on the PERMA model, the game's lighting variations, color combinations, and environment design can enhance players' positive emotions, creating a soothing and calming atmosphere that provides short-term emotional relief. Engagement is enhanced through the optimization of game mechanics. When players are fully immersed in the game world, their anxiety can often be temporarily reduced.

Narrative Transportation Theory provides a framework for understanding how game narratives influence players' psychological states. According to the findings of this research, emotionally conflicting storylines can evoke players' emotional resonance, enhancing their sense of immersion. However, the impact of the story varies from person to person. Some players were able to establish an emotional connection during the game, while others felt that the storyline had a limited effect on relieving their anxiety.

This suggests that the emotional regulation effect of the narrative depends on the player's individual background and level of immersion in the storyline. Self-awareness theory suggests that game narratives can guide players to focus on their emotions and behavioral states, fostering self-reflection. Some players recalled happy childhood experiences during the game and used these memories to reflect on and relate to their real lives. This increased self-awareness may have a positive impact on mental health. However, not all players experienced this change. For example, the cultural and temporal specificity of the game's setting—taking place in a particular period (such as the 2010s) and a location in China—may not fully resonate with all players, especially those who are unfamiliar with that background. This may result in players who lack the relevant background or emotional connection to that time and place being unable to experience anxiety relief through the game.

1.2 Implications for Game Design

This research provides several insights into game design. Firstly, in healing games, visual design should be optimized as a core element, for example by enhancing the changes in light and shadow and increasing the richness of environmental details. Additionally, choose some items with special meanings to appear in the game scene to trigger players' memories. For example, some meaningful objects, perhaps gifts from others, or old objects that bear traces of time, often symbolize the culture and emotions of that era. However, this requires determining the type of interactive props based on the game background setting. If the game is set in a specific era, then the interactive objects within the game should also align with the characteristics of that period. Secondly, the story should provide more freedom, allowing

players to more actively construct their own gaming experience rather than passively accepting the plot. A plot that is too simple cannot trigger emotional resonance in players. If adding a storyline and providing an open storyline allows players' decisions to affect the outcome, this may be more effective. For example, the game can use an open-ended narrative or a branching narrative, allowing the story to develop in multiple directions or lead to different endings. Finally, the game's interactive design should increase freedom as much as possible reduce unnecessary restrictions and allow players to explore the game world more flexibly. In terms of task design, it is necessary to find a balance between the challenge and the player's emotional regulation needs to avoid additional anxiety caused by excessive task difficulty (Klein et al., 2019).

1.3 Key Contribution

The main contributions of this research are reflected in the following aspects:

1. The role of game design in anxiety relief and self-reflection was verified, and it was found that visual design in the game is the factor that most directly affects players' emotions, while story and interactive freedom affect immersion.
2. This research provides some optimization suggestions for the design of therapeutic games in the future video game therapy field. This study proposes strategies such as optimizing the visual design in the game, increasing the degree of freedom of game interaction, and optimizing the adaptability of the story to improve the effect of the game in anxiety management and psychological adjustment.

1.4 Limitations and Future Research Directions

Although this research provides some empirical support, there are still some limitations. The limitations are as follows:

1. This research has a small sample size, with interviews conducted with only five participants. Future research could expand the sample size to improve the generalizability of the findings.
2. This research primarily relies on subjective interview data and lacks objective physiological measures of anxiety changes. Future research could incorporate biofeedback technology to more accurately assess the impact of games on emotions.
3. The game scenes, stories, and gameplay used in this study are based on Chinese cultural backgrounds, such as school, family environment, and cultural symbols. These elements may be more emotionally connected for players with similar cultural backgrounds but may not produce the same sense of immersion or emotional regulation for players from different cultural backgrounds. This cultural specificity may affect the generalizability of the research results. Therefore, future research can explore how players from different cultural backgrounds experience and understand game narratives, and further study how cross-cultural game design can optimize emotion-regulation effects.
4. This study only examined the short-term effects of games on anxiety relief, as testers did not show signs of long-term impact. In the future, research could explore how to design a game with lasting effects to assess whether games can influence players' emotional states over a longer period.

Second Prototype

After conducting player testing, I received a lot of valuable feedback. Some testers provided suggestions regarding the game's clue design. For example, they felt that the hints were insufficient, causing them to spend a lot of time searching for clues, which could potentially increase anxiety. Some players suggested adding more dreamlike or fantasy elements to the game to enhance its sense of healing.

Compared with the first prototype, the game updates include:

1. One player suggested adding some floating balloons to provide players with a healing feeling
2. If the player collides with a car, the player will be reborn at the entrance of the learning center (to increase the fun)
3. Bug fixes. For example, some interactive objects fail to trigger properly due to setup issues, and certain clue prompts are activated too early, preventing players from picking up items as intended. In addition, some areas that were originally set as inaccessible can still be entered and explored by players, causing confusion in the experience.
4. Remove unnecessary models, such as those that the player cannot interact with or that are unrelated to the game's storyline, to improve game performance and optimize the overall gameplay experience.
5. Add more hint clues to ensure smooth progression of the storyline during gameplay.

This chapter discussed the development and prototyping process of the game project, the conceptual playtesting and result analysis, as well as reflections on the project. (Implication of Findings, Implications for Game Design, Key Contribution and Limitations) The next chapter will build on the practical outcomes of this chapter to further explore future directions

for optimization and potential expansion, while also summarizing and reflecting on the limitations of the game project.

Chapter 5: Digital Futures Exhibition

Exhibition Overview

This exhibition is the 2025 graduate exhibition of OCAD University's Digital Futures program. The exhibition will be held from March 27 to April 4, 2025, at OCAD U Waterfront Campus, 130 Queens Quay East, Level 4R, Toronto.

Exhibition Layout

My exhibition space is a small, closed room with red walls. I decorated the room in Chinese style, hoping to restore the game scene more and enhance the player's immersion. I put a lot of old posters and calendars on the wall, and the inspiration comes from my real life (Figure 31).



Figure 31: Photos taken by Lanlan Chen

I referenced my bedroom from 20 years ago, which also had a lot of old movie posters and calendars pasted on it. On the table, I placed the traditional Chinese handicraft "paper cutting", which includes the Animals of the Chinese zodiac. The photo in the frame on the table is the same as the one in the game, which creates a meaningful connection with the game's content. In addition, I placed several items with a Chinese style, such as the toys on the table, the Chinese knot on the floor lamp, and the bell on the door. These items all feature nostalgic Chinese elements. There are many small advertisements pasted on the other wall, which is also a feature of old Chinese houses. Twenty years ago, many residential building hallways were covered with small advertisements, which was a popular way to promote products and services at the time. I pasted "good fortune" on the door, which is a traditional Chinese custom. Every time the New Year arrives, people put "good fortune" on their doorways, symbolizing their hopes for the coming year, wishing for a life filled with happiness, health, and joy (Figures 32).



Figure 32: Photos taken by Lanlan Chen

Player Feedback During the Exhibition

During the exhibition, players from different cultural backgrounds tried out the game. Many players from China believe that the game's story, gameplay, game scenes and background music bring back their old memories. For example, player A said: You really restored the scenes in the game, which brought back a lot of memories for me, especially the scenes in the corridors. I remember that my previous home was the same. They think the game's scenes are amazing, and the realistic style is very close to the real scenes. But during the game, I found through observation that even players with Chinese backgrounds still could not complete the game smoothly, unless I gave them prompts. A small number of players from other cultural backgrounds also tested my game. Most of them paused or gave up halfway through the game. They said it was difficult for them because they did not understand the tasks and the purpose of the game. However, some players said they really liked the game scenes. This feedback made me start to rethink the tension between "personal narrative" and "universal". My original intention was to stimulate resonance by deeply restoring my childhood memories, and this exhibition made me realize that this resonance is indeed effective for players with similar cultural backgrounds, but for players from other backgrounds, clearer guidance mechanisms or interactive designs are needed to establish a channel of understanding.

Chapter 6: Future Work & Conclusion

Future Work

I started this project because I enjoy playing games. Although I don't have a professional background in gaming, I enjoy creating and am happy to learn new things. This allowed me to continue to grow in my design career and I learned a lot from the experience.

One of the visions of this paper is to publish its process and findings online so that more game makers can access and reference it. I hope that my project can provide some inspiration and guidance to these game makers. Although this thesis project was limited in time, I think it has the potential for further expansion in the future. So, I have decided to try to contact some professional game designers or researchers in the field of mental health and discuss with them the potential and development of game design in the field of mental health.

In addition, I hope to further improve this project. If I discuss with researchers in the professional field and learn from them, I think I will be more confident in doing a better job on this project.

Scopes and Limitation

Through prototype testing and feedback from testers, I think my project has had a mild anxiety-relieving effect. However, in terms of player self-reflection and long-term impact, my project did not work. Because the sample size was small, the findings may not fully represent a wider group, especially players from different cultural backgrounds. I think if I want to develop a professional mental health game with therapeutic effects, I need to collaborate with researchers in the field of mental health research. Finally, the user test was conducted in my

home, not in the tester's private space, and being in an unfamiliar environment is likely to increase tension and anxiety.

Final Thoughts

This was my first attempt at creating a game, so during the initial concept development, I didn't intentionally aim for cultural universality. Instead, I chose to start from a personal perspective, using childhood memories as the core of the narrative and childhood experiences as the basis for the gameplay. The storyline, environmental setting, and interactive details in the game are all drawn from my memories of childhood. Every design detail is a dialogue between my present self and my past. I hope this game is not only a form of entertainment, but also an expression of emotion.

During the production process, I went through several stages. In the first stage, I researched reference materials for various scenes and items that would appear in the game. Reconstructing these items and scenes during the game's development truly moved me. I felt a sense of relaxation and relief from anxiety as I brought these memories back to life. I believe that the process of making this game brought back memories of my childhood. Although that period was quite ordinary and my daily life was simple, I consider it the most relaxed and joyful time of my life so far. I wanted to capture these beautiful memories and present them in the game in a very gentle and fun way.

However, the feedback I received from playtesting and after the exhibition made me start to reflect: can a highly narrative-driven game that tells a deeply personal story be understood and accepted by a broader audience?

I believe that universality allows more players to quickly understand and engage with a game, but it is not the only way to touch people's hearts. I prefer to understand "universality" as a "connection starting from the individual," rather than a "commonality that erases cultural differences."

Creating from a personal perspective allows me to invest genuine emotions, giving the work more depth and emotional warmth. I believe that autobiographical expression in game creation is not only a release of personal emotions but also a way to establish emotional connections.

Although everyone's upbringing is different, the loneliness, dreams, curiosity, disappointment, sense of accomplishment, and the care and love of family are experiences we all go through. When I present the real details of my life in the game, players are also invited to reflect on their own experiences. Although their stories may be completely different, the emotional resonance we share is real. I believe that a game telling a personal story doesn't exclude others from participating. It is precisely this specific and authentic narration that builds a kind of "cross-cultural" bridge. My goal is for players to feel relaxed during the game and for the story to help them recall their own happy childhood memories.

Finally, through this specific and real narrative method, I believe it can transcend cultural differences and allow each player to find their own emotional connection in the game.

Bibliography

Ali, N., Tajuddin, S., & Bramantoro, A. (2023b). Emotions In Video Games: An Investigation Of Game Mechanic Influences. *023 6th International Conference On Applied Computational Intelligence In Information Systems (Aciis), Bandar Seri Begawan, Brunei Darussalam, 2023, 36, 1–6.*

<https://doi.org/10.1109/Aciis59385.2023.10367383>

Aldana, J., Trujillo, S., & Díaz, E. (2023). Recommendations For The Development Of Video Games To Reduce Stress In Young People. *2023 Fourth International Conference On Information Systems And Software Technologies (Ici2st)*, 104-111.

<https://doi.org/10.1109/Ici2st62251.2023.00022>

Bizzocchi, J., & Tanenbaum, T. J. (2012). "Mass Effect 2: A Case Study In The Design Of Game Narrative." *Bulletin Of Science, Technology & Society*, 32(5), 393–404.

Bentley, K. H., Bernstein, E. E., Wallace, B., & Mischoulon, D. (2021). Treatment for anxiety and comorbid depressive Disorders: Transdiagnostic Cognitive-Behavioral Strategies. *Psychiatric Annals*, 51(5), 226–230. <https://doi.org/10.3928/00485713-20210414-01>

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>

Cotton Game. (2024). *Sunset Hills* [Video game]. Cotton Game.

Choi, J. O., Forlizzi, J., Christel, M., Moeller, R., Bates, M., & Hammer, J. (2016).

Playtesting with a Purpose. *CHI PLAY '16: Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play*, 254–265.

<https://doi.org/10.1145/2967934.2968103>

Calvo, M. G., & Eysenck, M. W. (1998). Cognitive bias to internal sources of information in anxiety. *International Journal of Psychology*, 33(4), 287–299.

<https://doi.org/10.1080/002075998400321>

Coleman, D., & Iso-Ahola, S. E. (1993). Leisure and Health: The role of Social Support and Self-Determination. *Journal of Leisure Research*, 25(2), 111–128.

<https://doi.org/10.1080/00222216.1993.11969913>

Cheng, V. W. S. (2020). Recommendations for implementing gamification for mental health and wellbeing. *Frontiers in Psychology*, 11.

<https://doi.org/10.3389/fpsyg.2020.586379>

Craske, M. G., Rauch, S. L., Ursano, R., Prenoveau, J., Pine, D. S., & Zinbarg, R. E. (2011).

What Is An Anxiety Disorder? *Focus The Journal Of Lifelong Learning In Psychiatry*,

9(3), 369–388. <https://doi.org/10.1176/Foc.9.3.Foc369>

DeMartini, J., Patel, G., & Fancher, T. L. (2019). Generalized Anxiety Disorder. *Annals of Internal Medicine*, 170(7), ITC49. <https://doi.org/10.7326/aitc201904020>

De Vecchi, N., Kenny, A., Dickson-Swift, V., & Kidd, S. (2016). How digital storytelling is used in mental health: A scoping review. *International Journal of Mental Health Nursing*, 25(3), 183–193. <https://doi.org/10.1111/inm.12206>

Flanagan, M., & Nissenbaum, H. (2016). *Values At Play In Digital Games*. The Mit Press.

Ferrari, M., Fazeli, S., Mitchell, C., Shah, J., & Iyer, S. N. (2021). Exploring Empathy and Compassion using Digital Narratives (the Learning to Care Project): Protocol for a multiphase mixed methods study. *JMIR Research Protocols*, 11(1), e33525. <https://doi.org/10.2196/33525>

Fenigstein, A., Scheier, M. F., & Buss, A. H. (1975). Public and private self-consciousness: Assessment and theory. *Journal of Consulting and Clinical Psychology*, 43(4), 522–527. <https://doi.org/10.1037/h0076760>

Gormanley, S. (2013). Audio immersion in games — a case study using an online game with background music and sound effects. *The Computer Games Journal*, 2(2), 103–124. <https://doi.org/10.1007/bf03392344>

Gaver, W. (2012). What should we expect from research through design? *CHI '12: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*.
<https://doi.org/10.1145/2207676.2208538>

Galvão, V. F., Maciel, C., & Da Hora Rodrigues, K. R. (2023). How To Promote Empathy In Games? An Analysis Of The Structural Elements To Be Considered In The Interaction Design. *Proceedings Of The Xxii Brazilian Symposium On Human Factors In Computing Systems*, 1-12. <https://doi.org/10.1145/3638067.3638073>

Himanshu, Dharmila, Sarkar, D., & Nutan. (2020). A Review of Behavioral Tests to Evaluate Different Types of Anxiety and Anti-anxiety Effects. *Clinical Psychopharmacology and Neuroscience*, 18(3), 341–351. <https://doi.org/10.9758/cpn.2020.18.3.341>

Josephson, B. R. (1996). Mood Regulation and Memory: Repairing Sad Moods with Happy Memories. *Cognition & Emotion*, 10(4), 437–444.
<https://doi.org/10.1080/026999396380222>

Javaid, S. F., Hashim, I. J., Hashim, M. J., Stip, E., Samad, M. A., & Ahababi, A. A. (2023). Epidemiology of anxiety disorders: global burden and sociodemographic associations. *Middle East Current Psychiatry*, 30(1). <https://doi.org/10.1186/s43045-023-00315-3>

Kaplan, R., & Kaplan, S. (1989). *The experience of nature: A Psychological Perspective*.

Cambridge University Press.

Klein, E., Bieck, S. M., Bloechle, J., Huber, S., Bahnmueller, J., Willmes, K., & Moeller, K. (2019). Anticipation of difficult tasks: neural correlates of negative emotions and emotion regulation. *Behavioral and Brain Functions, 15*(1).

<https://doi.org/10.1186/s12993-019-0155-1>

Kiszka, P., Strojny, A., & Strojny, P. (2024). High immersion/escapism motivation makes gaming disorder risk less dependent of playtime among highly engaged male gamers. *Frontiers in Psychiatry, 15*. <https://doi.org/10.3389/fpsy.2024.1443091>

Kowal, M., Conroy, E., Ramsbottom, N., Smithies, T., Toth, A., & Campbell, M. (2021). Gaming Your Mental Health: A Narrative Review On Mitigating Symptoms Of Depression And Anxiety Using Commercial Video Games. *Jmir Serious Games, 9*(2), E26575. <https://doi.org/10.2196/26575>

Kawulich, B. B. (2005). Participant observation as a data collection method. *Forum Qualitative Sozialforschung, 6*(2), 22. <https://doi.org/10.17169/fqs-6.2.466>

Lin-Stephens, S. (2020). Visual Stimuli In Narrative-Based Interventions For Adult Anxiety: A Systematic Review. *Anxiety Stress & Coping, 33*(3), 281–298.

<https://doi.org/10.1080/10615806.2020.1734575>

Lyons, E., & Coyle, A. (2007). Analysing Qualitative Data in Psychology. In *SAGE*

Publications Ltd eBooks. <https://doi.org/10.4135/9781446207536>

Luo, Y., Wu, T., Broster, L. S., Feng, C., Zhang, D., Gu, R., & Luo, Y. (2014). The Temporal

Course Of The Influence Of Anxiety On Fairness Considerations. *Psychophysiology*,

51(9), 834–842. <https://doi.org/10.1111/psyp.12235>

Lee, A., Lee, J., Ahn, S., & Lee, Y. (2023). Mindterior: A Mental Healthcare Game With

Metaphoric Gamespace And Effective Activities For Mitigating Mild Emotional

Difficulties. *Extended Abstracts Of The 2023 Chi Conference On Human Factors In*

Computing Systems, 1–6. <https://doi.org/10.1145/3544549.3583831>

Murray, J. H. (1997). Hamlet on the holodeck: the future of narrative in cyberspace. *Choice*

Reviews Online, 35(03), 35–1342. <https://doi.org/10.5860/choice.35-1342>

Mountains. (2018). *Florence* [Video game]. Annapurna Interactive.

Martins, S., & Vairinhos, M. (2023). Ludic And Narrative Immersion In Virtual Reality

Exposure Therapy To Animal Phobias: A Systematic Literature Review. *Virtual*

Worlds, 2(4), 303–325. <https://doi.org/10.3390/Virtualworlds2040018>

McIntosh, M. J., & Morse, J. M. (2015). Situating and constructing diversity in Semi-Structured interviews. *Global Qualitative Nursing Research*, 2.
<https://doi.org/10.1177/2333393615597674>

National Institute of Mental Health. (n.d.). *Generalized anxiety disorder (GAD)*. U.S. Department of Health and Human Services. Retrieved March 27, 2025, from
<https://www.nimh.nih.gov/health/publications/generalized-anxiety-disorder-gad>

Neilsen, A. S., & Wilson, R. L. (2018). Combining E-mental Health Intervention Development With Human-Computer Interaction (Hci) Design To Enhance Technology-facilitated Recovery For People With Depression And/Or Anxiety Conditions: An Integrative Literature Review. *International Journal Of Mental Health Nursing*, 28(1), 22–39. <https://doi.org/10.1111/Inm.12527>

Nilsson, N. C., Nordahl, R., & Serafin, S. (2016). Immersion revisited: A review of existing definitions of immersion and their relation to different theories of presence. *Human Technology*, 12(2), 108-134. http://humantechnology.jyu.fi/archive/vol-12/issue-2/immersion-revisited/@@display-file/fullPaper/Nilsson_Nordahl_Serafin.pdf

Ogbeiwi, O., Khan, W., Stott, K., Zaluczkowska, A., & Doyle, M. (2024). A systematic review of digital storytelling as psychotherapy for people with mental health needs.

Journal of Psychotherapy Integration, 34(2), 115–132.

<https://doi.org/10.1037/int0000325>

Positive Psychology Center. (n.d.). *PERMA™ theory of well-being and PERMA™ workshops*. University of Pennsylvania. Retrieved March 27, 2025, from <https://ppc.sas.upenn.edu/learn-more/perma-theory-well-being-and-perma-workshops>

Pine, R., Fleming, T., Mccallum, S., & Sutcliffe, K. (2020). The Effects Of Casual Videogames On Anxiety, Depression, Stress, And Low Mood: A Systematic Review. *Games For Health Journal*, 9(4), 255–264. <https://doi.org/10.1089/G4h.2019.0132>

Qin, H., Rau, P. P., & Salvendy, G. (2009). Measuring player immersion in the computer game narrative. *International Journal of Human-Computer Interaction*, 25(2), 107–133. <https://doi.org/10.1080/10447310802546732>

Robin, B. R. (2006). The educational uses of digital storytelling. *Society for Information Technology & Teacher Education International Conference, 2006*(1), 709–716. <http://digitalstorytelling.coe.uh.edu/articles/Educ-Uses-DS.pdf>

Rodrigues, M. A. F., De Oliveira, T. R. C., De Figueiredo, D. L., Neto, E. O. M., Akao, A. A. A., De Lima, G. H. M., Silva, V. L. N., & Karl, A. L. (2022). An Interactive Story Decision-Making Game For Mental Health Awareness. *2022 Ieee 10th International*

Conference On Serious Games And Applications For Health (Segah).

<https://doi.org/10.1109/Segah54908.2022.9978592>

Rapee, R. M. (1991). Generalized anxiety disorder: A review of clinical features and theoretical concepts. *Clinical Psychology Review, 11*(4), 419–440.

[https://doi.org/10.1016/0272-7358\(91\)90116-c](https://doi.org/10.1016/0272-7358(91)90116-c)

Rowa, K., Waechter, S., Hood, H. K., & Antony, M. M. (2017). Generalized Anxiety Disorder. *Psychopathology, 149*–186. <https://doi.org/10.1002/9781394258949.ch4>

Silver Lining Studio. (2024). *The Star Named EOS* [Video game]. PLAYISM

Tan, T. W. (2024). Game Development with Unreal Engine 5 Volume 1. In *Apress eBooks*.

<https://doi.org/10.1007/978-1-4842-9824-4>

Thiele-Schweiz, M., & Sauer, A. (2020). Wunderpille Games!? In *Transcript Verlag eBooks*,

367–386. <https://doi.org/10.1515/9783839453285-018>

Therapist Aid (2016) *Treating anxiety with CBT: Article, Therapist Aid*. Available at:

<https://www.therapistaid.com/therapy-guide/cbt-for-anxiety> (Accessed: 06 December 2024).

Villani, D., Carissoli, C., Triberti, S., Marchetti, A., Gilli, G., & Riva, G. (2018). Videogames for Emotion Regulation: A Systematic Review. *Games for Health Journal*, 7(2), 85–99. <https://doi.org/10.1089/g4h.2017.0108>

Wulf, T., Bowman, N. D., Velez, J. A., & Breuer, J. (2018). Once upon a game: Exploring video game nostalgia and its impact on well-being. *Psychology of Popular Media*, 9(1), 83–95. <https://doi.org/10.1037/ppm0000208>

Wei, H., Bizzocchi, J., & Calvert, T. (2010). Time and space in digital game storytelling. *International Journal of Computer Games Technology*, 2010, 1–23. <https://doi.org/10.1155/2010/897217>

Xu, K. (2023). *A qualitative study on effective parental involvement in homework among middle-grade primary school students* [in Chinese]. *Advances in Psychology*, 13(7), 2718–2725. <https://doi.org/10.12677/ap.2023.137335>

Xueshu.com. (n.d.). *The role of blackboard newspapers in quality education in schools* [in Chinese]. <https://www.xueshu.com/haowen/105464.html>

Zhu, L., Chen, E., & Ai, Q. (2023). The Positive Impact Of Visual Beauty Of Color And Contemporary Ceramic Art Design On Anxiety Patients. *Cns Spectrums*, 28(S2), S55–S56. <https://doi.org/10.1017/S1092852923003905>

Zhang, W. (2010). *Time travel in video games: A case study of The Legend of Zelda: Ocarina of Time* [in Chinese]. *Journal of Game Studies*, 5(3), 45–60.

Appendices

Appendix A: Invitation Template

Date: Oct 01, 2024

Dear XXX,

You are invited to participate in a research study for “A Study on Alleviating Player Anxiety and Promoting Reflection Through Game Design Elements”. The purpose of this study is to explore how game design elements (like narrative, game visuals, interactions, and game mechanics) can help alleviate anxiety and encourage self-reflection in players.

Check to see if you meet the following criteria:

1. Are you 18 or older?
2. Do you feel you experience mild anxiety (or social anxiety)?

Definition and symptoms of anxiety: which is generally characterized by symptoms such as occasional worry, restlessness, or difficulty concentrating that do not severely impair daily functioning (Rickwood, Debra, and None Bradford, 2012).

3. Do you enjoy playing games, and have you found that gaming sometimes helps you relax and relieve anxiety?

I also ask that you: Are not currently taking any medication for psychological treatment or undergoing serious psychological therapy (this is important, and we can discuss it!).

If you think you fit the criteria above, you are invited to reply to this email! I'll send you an informed consent form right away and we can go over the form together. After receiving the

consent form, you will still have up to three days to decide whether you want to officially participate in my study. Also, if you know anyone else who meets these criteria, feel free to recommend them to me—I'd really appreciate it!

As a participant, you will be asked to play a specially designed game, about 30-60 minutes, and take part in two interviews (one before and one after the game), where we'll discuss your feelings and feedback. Each interview will be short, about 30-60 minutes.

Possible benefits of participation include the opportunity to explore how games might help you relax or self-reflection and potentially reduce anxiety. The findings from this study may contribute to a better understanding of how games can be used for mental health purposes.

There also may be risks associated with participation including eye strain and physical discomfort from prolonged sitting. Eye strain may result from extended screen time, particularly when solving puzzles or reading large amounts of in-game content. Sitting for long periods could lead to back or neck pain, especially during longer game or testing sessions. If participants experience physical discomfort during the study, they are encouraged to pause the game, take breaks, adjust their posture, or engage in simple physical activities to alleviate discomfort.

If you have any questions about this study or require further information, please contact the Principal Investigator Ayumi Goto using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at OCAD

University [insert approval #]. If you have any comments or concerns, please contact the

Research Ethics Office through. esearch@ocadu.ca.

Student Investigator:

Lanlan Chen, Graduate Student Researcher

OCAD University

(437)313-8853

chenlanlan@ocadu.ca

Appendix B: Interview Questions

Semi-structured Interview Questions (in person, online offered as option)

Pre game interview question (30-60 minutes)

Personal Information:

1. What is your age?
2. What is your occupation?
3. Do you play video games? If so, what types of games do you usually play?
4. Have you ever experienced anxiety relief through mediums such as narrative, interactive, or visual elements (e.g., movies, books, games)? Can you give me an example?

Anxiety and Mental Health Status:

5. What do you think is the main source of your current emotional state? What events that made you feel anxious or stressed?
6. Do you think games can help reduce anxiety and improve mood? If so, which elements do you expect to see?

Post-game interview questions (30-60 mins)

Feedback on the Game Experience:

1. How do you feel overall about the game? What aspects left a strong impression on you?
2. Did the game's storyline affect your mindset or emotions? If so, could you describe in detail which specific scenes evoked emotional resonance?

3. Did the game's visual design (such as colors, game scenes, animations, or art style) affect your emotions or mental state? If so, which specific visual elements made you feel relaxed?
4. Did the game's interaction design (such as controls or interaction with the game world) affect your mindset or emotions? Which specific interaction methods helped you become more immersed, and relaxed?
5. Did the game's mechanics (such as level design or challenge difficulty) affect your emotions? If so, which specific mechanics caused emotional changes, such as alleviating anxiety?

Emotional State and Changes:

6. How is your emotional state different now compared to before the game? Could you describe it in detail?
7. Did your anxiety levels change during the gameplay?
8. Did the game prompt you to reflect on your Self-reflection or behaviors outside the game space? If so, could you share a specific scene or moment?
9. Do you think this game has any potential long-term effects on improving mood or mental health? If so, why or why not? (This question requires feedback and a response one week after the test).

Appendix C: Consent Form Template

Date: Oct 01, 2024

**Project Title: A Study on Alleviating Player Anxiety and Promoting Reflection Through
Game Design Elements**

Student Investigator:

Lanlan Chen, Graduate Student Researcher

OCAD University

(437)313-8853

chenlanlan@ocadu.ca

PURPOSE

This study aims to explore how specific game design elements (such as narrative, game mechanics, visual design, and interaction design) can help alleviate mild anxiety symptoms (Definition and symptoms of anxiety: which is generally characterized by symptoms such as occasional worry, restlessness, or difficulty concentrating that do not severely impair daily functioning). Your participation will help us gain a deeper understanding of the emotional change's players experience during gameplay.

Participant Requirements:

1. Must be 18 years or older.
2. Proficiency in English or Chinese.
3. Experience mild anxiety symptoms and are not taking any medication related to psychological treatment.

4. Able to complete a game independently.
5. Have prior gaming experience and have used games to relax and alleviate anxiety.

I also ask that you: Are not currently taking any medication for psychological treatment or undergoing serious psychological therapy (this is important, and we can discuss!).

WHAT'S INVOLVED

As a participant, you will be asked to play a specially designed game and take part in two interviews (one before and one after the game), where we'll discuss your feelings and feedback.

1. Pre-game Interview (about 30-60 min)

We will conduct a one-on-one semi-structured interview with you to understand your views on anxiety and gaming. The interview is expected to last 30-60 minutes. The interview will be recorded, and notes will be taken by the researcher for later analysis.

2. Game Test: (about 30-60 min)

You will participate in a game session, where you will experience a specially designed game for approximately 60 minutes. You may stop at any time. The researcher will non-intrusively observe and record your behavior and emotional responses. If you seek assistance during the game, the researcher will answer any questions you may have.

3. Post-game Interview: (about 30-60 min)

After the game test, we will conduct a second interview to gather your feedback and further understand how your gameplay experience affected your anxiety. This interview is expected to last 30-60 minutes. The interview will be recorded, and notes will be taken by the

researcher for later analysis.

POTENTIAL BENEFITS

No incentive will be offered for participation in this study. Participants will not be paid to participate in this research. However, you will not receive any benefits from participating in this study. Participating in games provides an opportunity to explore how games might help you relax or self-reflection and potentially reduce anxiety. The findings from this study may contribute to a better understanding of how games can be used for mental health purposes. In addition, your participation will make a valuable contribution to understanding how game design can help individuals with anxiety.

POTENTIAL RISKS

Potential Risks:

The risks involved in this study are minimal, but you may experience slight discomfort or emotional fluctuations during the interviews or gameplay. If at any time you feel uncomfortable, you may choose to take a break, stop for the day or withdraw from participating in the study.

Psychological Support:

If you experience an emotional trigger or other unexpected increase in anxiety during the study, the research team will provide information for counseling support to ensure you receive timely care and emotional support.

For those affiliated with OCADU, the following is available:

1. Online Booking: Participants can book a face-to-face or online appointment with a counselor from the Wellness Centre. There are no professional psychologists, but there are counselors and community workers)

[Virtual Counselling Session – Bookings Page](#)

[In-person Counselling Session - Bookings Page](#)

2. Guard Me Student Support Program (GMSSP) - a mental wellness program available 24/7/365 for all OCADU students. Students can call GMSSP anytime and from anywhere 1-844-451-9700 or chat using the TELUS Health Student Support app.

For others, the following is available:

1. Two Official Clinic Links: Both clinics have licensed mental health professionals available for online booking. Therapists with MSW (Master of Social Work) and RSW (Registered Social Worker) qualifications are covered under student insurance (Student care Insurance covers approximately 8 sessions).

<https://www.shiftcollab.com/therapists>

<https://www.wellnest.ca/therapists>

CONFIDENTIALITY

Privacy Protection:

1. Your personal information (including interview content, game experience data, etc.) will be

kept strictly confidential and used solely for the purposes of this study, with only the research team having access to it.

2.No identifiable personal information will be mentioned in the study results.

3.All data (including raw and analyzed data) will be stored in a secure database. After the study is completed, identifiable participant files (such as consent forms, personal information, and email communications) as well as all data will be immediately destroyed.

Audio-recording:

Participants will have the right to review, upon request. This can be done by contacting the researcher within one week after the recording.

All recordings will be securely stored on a password-protected device and encrypted cloud storage, ensuring only authorized individuals have access. The raw and transcribed recordings will be accessible solely to the Principal Investigator, Ayumi Goto and Graduate Student, Lanlan Chen Researcher for transcription purposes. All recordings will be destroyed after following the completion of the research (Sep 01,2025).

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study.

Further, you may decide to withdraw from this study at any time, or request withdrawal of

your data prior to data analysis and you may do so without any penalty or loss of benefits to which you are entitled. Your choice of whether or not to participate will not influence your future relations with OCAD University or the Principal investigators, Ayumi Goto, and Graduate Student Researcher, Lanlan Chen involved in the research.

To withdraw from this study, let PI or Graduate Student Researcher know at any point during the study or you may contact Ayumi Goto or Lanlan Chen by email at agoto@ocadu.ca or chenlanlan@ocadu.ca

To withdraw your data from the study, please contact Ayumi Goto or Lanlan Chen by email at agoto@ocadu.ca or chenlanlan@ocadu.ca no later than one week after data collection. Any data collected up until the point of withdrawal will be securely deleted from all records.

Audio recordings, as well as transcriptions, will be permanently erased from both physical and cloud storage, and any hard copies of data will be shredded. No data will be used after the participant requests withdrawal.

PUBLICATION OF RESULTS

Results of this study may be published in student theses. In any publication, data will be presented in aggregate form, ensuring that individual participants cannot be identified.

Quotations from interviews or surveys will not be attributed to you without your explicit permission.

Feedback about this study will be available to participants. If you are interested in receiving a summary of the findings, you may contact Ayumi Goto or Lanlan Chen at agoto@ocadu.ca or chenlanlan@ocadu.ca. Feedback will be available approximately in Sep 01,2025 after.

Participants will be informed when the results are ready.

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please ask. If you have questions later about the research, you may contact the Principal Investigator, Ayumi Goto or Graduate Student Researcher, Lanlan Chen using the contact information provided

This study has been reviewed and received ethics clearance through the Research Ethics Board at OCAD University [insert REB approval #]. If you have any concerns or comments about the ethical conduct of the study, you may contact the Research Ethics Office at research@ocadu.ca.

If you have questions regarding your rights as a participant in this study, please contact:

Research Ethics Board c/o Office of the Vice President, Research and Innovation

OCAD University
100 McCaul Street
Toronto, M5T1W1
416 977 6000 x4368
research@ocadu.ca

AGREEMENT

I agree to participate in this study described above. I have made this decision based on the

information I have read in the Information-Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time.

Name: _____

Signature: _____

Date: _____

Thank you for your assistance in this project. Please keep a copy of this form for your records.

STATEMENTS THAT MAY BE REQUIRED FOR SPECIFIC STUDIES

Depending on the study:

Shortly after the interview, if you would like a copy of the transcript, I will send you a copy to give you the opportunity to confirm the accuracy of our conversation and to add or clarify any points you wish.

Yes, I would like to hear more about the study. You may reach me by (provide contact information):

Email:

Phone:

No, I do not want to hear more about the study.

Audio-recording and Note -taking

I agree to be Audio-recorded during the two interviews (Pre-game interview and post-

game interview) and have notes taken during direct observation for the purposes of this study.

I understand how these recordings will be stored and destroyed.

I do not agree to be Audio-recorded during the two interviews (Pre-game interview and post-game interview) and have notes taken during direct observation for the purposes of this study.

Signature of Participant

Date