

The Designed VR Game “Weirdno” on Emotional Regulations and Reality Connections

Weiyu Zhao

The Dietrich School of Arts and Sciences, University of Pittsburgh, 4200 Fifth Ave, Pittsburgh, PA
15260 USA

wez98@pitt.edu

Abstract. Visual reality (VR) plays a huge role in mental issue prevention and therapy by providing an immersive experience and distracting patients’ attention from the pain. However, since researchers mainly focus on clinical psychotherapy, VR products are more inclined to formal medical treatment rather than recreational programs. To create a project that is both playable and helpful in improving players’ mental health, a game called Weirdno is developed in this article. Weirdno achieves the purpose of making players feel the targeted emotions through the special plot design and immersive experience from the first-person perspective. The fantasy art style and scene design allow players to hover on the edge of reality and virtuality, stimulating a more realistic feel. The open-world mode and interactive design would also increase the playability of the game based on improving players’ emotional management.

Key words: visual reality, game design, emotion managements, immersive.

1. Introduction

As the fast pace of society increasingly overwhelms people, anxiety and depression take most parts of their daily emotions of people. The mainstream of nowadays video games mostly functions in entertainment, which is the general attractable method of relieving stresses and assisting therapy of mental health among the youth [1]. However, by dragging the players completely into the virtual world, video games are not capable of well connecting with reality. Virtual reality (VR) is a helpful tool to provide skills and mental treatments through an immersive interactive experience, while, due to its fixed modes of interaction, flexibility is not sufficient of allowing players self-exploration like in video games [2,3]. High levels of immersion, dependability, and interaction of VR make it perform outstanding in both education and training as well [4]. Creating a game that contains both free exploration game mechanisms and the performance of helping players improve emotional controls still remains a challenge. With the merging of advanced VR techniques and exquisite game designs, the product is possible to deliver more immersive feelings straightforwardly to players.

This article talks about a designed game called Weirdno, which applies the concepts of defamiliarization to make a different but familiar world to players, enabling them to reconsider both the real world and virtual world from various perspectives. The abnormal shape of the objects, reverse size of the items, and fantastic colors of the landscape emphasize and distinguish the game world from reality while the existence of those components in the real world makes players feel a sense of belonging to the practical world. At the same time, conversational drama better brings players into immersive role-playing, providing the production and collision of multiple emotions. Since the story of the juvenile sometimes could reflect a player’s current or past conditions, when players meet similar situations in the game, they might rethink calmly and make the choice carefully. Therefore, the combination of the game environment and real lives are likely to motivate players’ emotions and enhance their ability to maintain the mental health.

2. Methods

Weirdno is a role-playing game that mostly tells the story of a “weird” boy. Due to that, the boy could always see the weird stuff that other people could not see, he is recognized as a weirdo by the

community. In this case, Weirдно's world contains a variety of unnatural creatures with unusual and weird appearances. At some level, those creatures are relevant to the real world but are different as well. As one of the unnatural creatures, ghosts, players can explore the whole of Weirдно's open world. Players could also follow the main plot to discover what's going on in this world, help the boy find out the reason for seeing everything differently, and understand what the word "weird" really means to them.

2.1. Concept Design

The current definitions of immersion may be roughly categorized into three groups, each reflecting a different dimension: immersion as a system attribute, subjective response to narrative elements, or reaction to obstacles in the virtual world [5]. Thus, by reacting subjectively to the "weird" concept in the overall environment, plot, and designed missions, it is feasible for players to obtain immersion during the gameplay. The meaning of "weird" varies through different perspectives, but the word itself has no standard explanation for describing things negatively or positively. To make the game didactic and meaningful, the main purpose of the Weirдно is to allow players to keep a positive attitude and be curious about the "weird" imaginations. Being different from the other games which blindly pursue unique elements and often ignore the significance of the inner, instead of seeing the external looks, Weirдно hopes players to think more deeply about the nature of an object.

The uncertainty of curiosity plays a key role in motivating players to explore, ask questions, and solve problems in the game [6], like how the "weird" elements drive players' curiosity to push Weirдно's plot move. As the plot goes on, the variance of environments, stories, and results would stimulate emotional changes [7]. Three stages in the game increasingly attract players' interests, and the unknown emotional responses in each phase still remain mysterious, which allows them to continually keep their curiosity about the game. In the first stage, players would be confused with the boy's extremely depressed, unconfident, and scared emotions of those "weird" things due to that he mentally defines the "weird" as bad things. However, as the players' interest in figuring out the current situation make them continue on the storyline, they would discover that the "weird" stuff all comes from the boy's imagination, which is the second stage. At this phase, while the players are saving the boy from the dilemma, Weirдно hopes both the boy and the players realize that "weird" imaginations are not scary. Finally, players would cooperate with the boy to create some unexpected results. The purpose of this design is to track the emotional changes as the environment varies, and study the importance of the environment and the storyline for raising the player's emotional positivity as well.

2.2. Plot Design

To provide players with the best experience possible, user-centered is the principal concept of offering an immersive feeling in the game design [8]. In Weirдно, it seems that the story focus on the main non-player character the boy but players would actually be the one to control the plot development. The overall game plot is a complete story, telling the boy's fear of imagination first, then the fight against it, and the final coexistence with it. The step-by-step plot flow allows players to gradually adapt to the contemporary situation and better bring themselves into the game to understand the expansion of the story [9]. Besides, staged plots could also make the plot transitions and connections smoother, performing a more immersive platform for players to focus on their current emotions. After triggering the main storyline by talking with the boy, players could understand the present circumstance and the boy's hesitation and dread toward his own "weird" imagination. Then the player would begin to investigate the little boy, pushing the plot forward and revealing the truth. With the advantages of VR technology, players' first-person perspectives can provide a more immersive feeling in both the visual and emotional aspects of the Weirдно. As the character who could only interact with the boy and the environment, players could deeply feel anger, sadness, and helplessness, especially when watching the boy receives unfair treatment but players could do nothing with it.

Since childhood always has a huge influence on the future formation of personalities and mental maturity, a player's every decision in the game is especially crucial to create a more coherent and logical story development. Thus, by making different choices, players would reach distinct story ends. The overall storyline would lead players to discover new creatures, investigate the reason behind them and interact with them, such as catching transparent butterflies, collecting luminous flowers, talking to elves or ghosts, and researching on never seen creatures, while the ending might be different. Taking supporting the parent's viewpoints in the whole storyline as an example, although players could explore the wonderland and help the boy as well, the boy would eventually choose to ignore all those "weird" things and act like a "normal" person. As opposed to the known fixed termination, the variable ends are capable of better improving the player's immersive experience of the importance of the decisions making and sense of participation in the game.

2.3. Environment Design

Weirdno happens in a small community in the countryside that is full of natural hills, forests, and lakes, which increases the complexity of the terrain. The real houses, neighborhoods, and schools in the game not only offer the diversity of buildings but also enhance the interactive contact of several scenarios. There are three essential environments shown in chronological order in the Weirdno — home, school, and forest.

- Home

The very first scene setting is in the boy's bedroom watching him being extremely depressed, because his parents ask him to be "normal", pretending to see nothing. By observing the bedroom, players could be aware of the boy's unhealthy mental state through plenty of small details, such as some bizarre paintings, flashing lights, and cluttered rooms. In sharp contrast to the boy's messy room, the rest of the house is relatively clean and tidy. In addition, the occasional self-playing piano and the self-writing pens all imply the unusualness here, giving players a sense of mystery. In this house, players can interact with the little boy, explore the house together, and overhear the parent's conversation to unlock the next mission.

- School

The general environment of the school in the Weirdno is not distinctive from the real-world school. Although the environment does not reflect the "weird" theme well, the plot that takes place in the school is the turning point of the whole game. At school, players would immersively witness the bullying and unequal treatment that the boy receives, which is likely to evoke the player's emotions of anger and desire to help the boy. Since the school is the crucial turning point, the player's choices of whether to motivate the boy to resist himself or to directly help him through other unusual methods all depend on themselves. There is no right or wrong in all of the choices, instead, Weirdno hopes players take the control of their irrational emotions and be responsible for their choices by taking options more carefully and cautiously. It is also a chance for players to rethink how would they react if it happens in the real world.

- Forest

Contrary to the previous two scenarios, the forest is the final place where the players could experience the completely free exploration mechanisms. The forest which is full of fantastic colors and unique creatures is the perfect display of the boy's strange ideas. Players are capable of finding the related traces of real life from the various strange-looking creatures in the game. The unique elements consisted in the forest are not only an expression of the boy's thoughts, but also to remind players of some "weird" thoughts that occasionally burst into their minds, or to provide players with a different way to re-see the world. Besides, falling leaves, fluttering flowers, and gentle music all contribute to de-stress the players.



Figure 1. The overall environment of the forest made from Unity3D.

2.4. Modeling

Weirdno's main idea is about the "weird" imaginations, not the crazy minds without any reason. The balance between the "weird" and "normal" would be essential to make the models in the game. Defamiliarization is an ideal concept to realize the connection between the virtual world and the real world, which utilizes ordinary objects or species in reality while adding unique features to them. Defamiliarization first originates from Russian formalism expressing the detachment of the conventional language [10], and later it challenges the established aesthetics of daily life and reveals ordinary aesthetics from defamiliarization [11]. These real items with completely opposed appearances are advantageous for players to acquire fresh perspectives and see the world from different aspects. The whole landscape in the Weirdno utilizes the terrain tool in Unity3D to create the hills and lakes. The grass texture, sand texture, and rock texture in the tool covering the land surface make the terrain look more realistic.

One of the "weird" phenomena in the Weirdno is that flowers always have green petals and colorful stems, being inverted from the real ones. Weirdno uses lines and points in the Houdini engine to create a single flower first. To make it more realistic, flowers in a circle with a radius of 1 are coupled as one unit and each unit contains random sizes of flowers. As figure 2. (left) show, in the scale of the circle, flowers presenting with divergent bend angles, facing degrees, length of stems, and size of petals perform the aspects of nature and wildness. The petals are colored with dim green, which is gradually changed from the dark green of the edges to the light green of the center, and the dim red color of the stem fades from top to bottom. The flowers with unusual colors but with natural shapes imply both familiarity and strangeness to the players. The trees in the Weirdno also display different characteristics like purple leaves shown in figure 2. right.

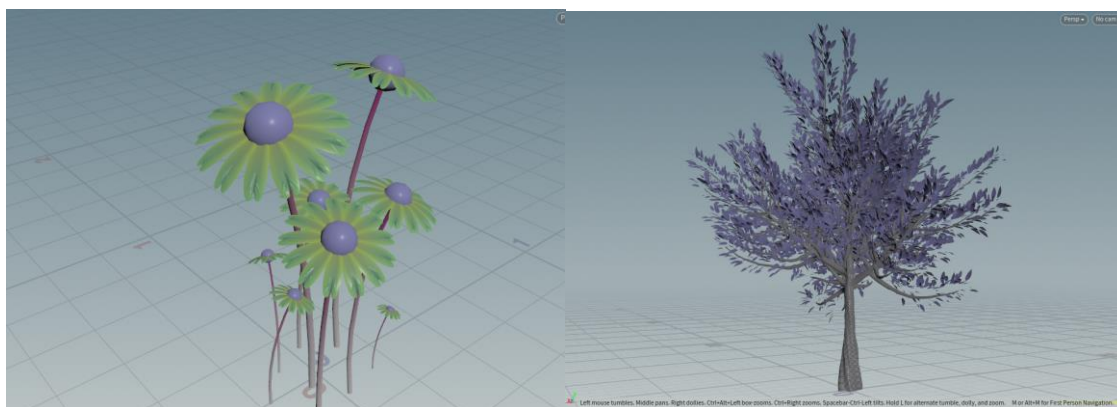


Figure 2. The model of green flowers(left) purple tree (right) made in Houdini engine.

Also instead of showing appealing fancy patterns on the wings, butterflies now are just made by simple geometry like cubes in the Weirdno as the one shown in figure 3. The body of these butterflies

is generated through Unity3D built-in cube module and they would fly along with a pre-set pathway in the environment. The luminous transparent wings would expect players to look at the inner meaning of an object rather than its alluring appearance.



Figure 3. The cubic transparent butterflies made in Unity3D.

3. Result & Discussion

3.1. Survey

A survey was designed the evaluation how Weirdno could arouse players' emotions through the immersive exploration. It asked 20 people, within the age range from 16 to 26, to record the level of immersive experience, the emotional changes, the feeling of being connected to the real world, and the overall rating. Five levels are separating the evaluation, 90-100% represents excellent, 80-90% great, 70-80% good, 60-70% normal, and less than 60% bad. The distribution of the evaluation scales in table 1 shows that Weirdno presents a higher level of creating the relationship between the virtual game and the real world and making players feel diverse emotions. Even though the rate of generating an immersive environment is not as high as the other two aspects, it still meets the average standard.

Table 1. Evaluation of twenty players rating on immersive experience, emotion diversity, connection to reality, and overall game.

Evaluation scale	Immersive experience	Emotion diversity	Connection to the reality	Overall evaluation
90-100%	1	2	4	1
80-90%	5	7	6	6
70-80%	6	6	7	8
60-70%	6	4	3	4
<60%	2	1	0	1

3.2. Result analysis

- Environment Analysis

According to the tests on the game scenes, weirdno works well in representing a dreamy environment. Since Weirdno intensifies on unreal and mystifying concepts, all the landscapes and

constructions are either covered with delicate “weird” textures or transformed into other unusual shapes. The color tone of the general environment consists of blue, purple, and pink, which visually presents a sense of fantasy and drives an immersive exploration of the wonderland. In the first half of the story, in order to deliver the boy’s fear of unknown creatures, the environment light would be relatively dim and players could barely see a few luminous objects like flowers on the grass, graffiti on the wall, and flying butterflies in the forest. Those bright creatures work more than just the light in the surroundings but the guidance which could catch the players’ curiosity to go deep in exploration of the world as well. As players discover more luminous objects, they would collide with each other to make brighter sparks enlightening the whole world. The transition of the environment from vague to clear also implies the switch of the boy’s attitude toward “weird” imaginations from rejection to acceptance.

- Reality and Visual Reality Analysis

According to the respondents who rate high in the section of connection to reality, they claim that although the Weirдно is a fanciful world full of abnormal elements, they could always reflect on their personal experience through the similar landscape and immersive story in the Weirдно. For instance, one of the players states that the purple trees in the game could always remind him of the illusionary painting he drew when he was a little boy, and the other player says he used to actually see the weird phenomenon but nobody trusts him just like the story in the game. Weirдно fulfills all the fantasies about the “weird” notions. Besides the weird-colored trees, other untraditional components, such as the special graphics-liked cracks on the wall and animals’ particular movements, also trigger the players’ memory of their own experience at some level, which is the major reason why more than half percent of players believe it has a strong connection to the reality.

- Emotions Management Analysis

Weirдно has a great demonstration of bringing diverse emotions to the players as well. Nine out of twenty people gave great or higher compliments on emotional diversity due to the ups and downs plot and flexible choices in the storylines. Since different choices affect the endings, a player claims that, instead of roughly looking through the whole story, he prefers to make prudent choices and be responsible for the result no matter what happens. One scenario leaves him with a deep impression, which asks him to select either encouraging the boy to face the bully in the school or just helping the boy scare the bully off. He chose the first one but felt extremely furious when he witnessed the whole process of bullying the boy experienced. All he can do at that moment is to comfort the boy after the bullying and cheer him to be confident enough to fight for himself next time. Based on the players’ emotional descriptions, they are always able to feel apologetic for the bad results of their casual decisions and feel proud of the boy when watching him being stronger through their help.

- Immersion Analysis

Weirдно performed mediocrely in the immersive experience evaluation and the overall rating because more than half of the people leave a good or normal evaluation, which was relatively lower than the previous two characteristic analysis scores. According to the interviews of the players, they believe that Weirдно is unable to achieve a continuous immersive experience during the game’s playthrough, and only when the plot appears densely to actively drive the emotions can players be well immersed in the game world. Except for the plot’s influence, the general environment and background music will only make players feel relaxed but not immersed for a long time. In addition, though multiple storylines make Weirдно more playable, it is hard to catch players’ attention once they stay away from the plot. Therefore, the short-term immersive experience and the monotony of the overall gameplay encourage Weirдно to further progress in mental helpfulness and diverse mechanisms designs.

4. Conclusion

VR and video games are both novel treatments for preventing psychological issues and improving mental health, while the medical procedures during the therapy make them less playable than general games. To better study the effect of open-world VR games on players' psychotherapy and emotional controls, this article developed the game called Weirдно. Weirдно expresses the theme of "weird" by combining free exploration mode, an open story, and beautiful art design. By acting as one of the strange things around the main NPC little boy, players are free to observe the development of the whole story around the boy and can make their own choices according to the relevant plot. Through the monitoring of players' emotions, Weirдно discovered that the peaceful environment has an excellent performance in slowing mental activities and the immersive plot can stimulate positive moods. 75% of the players who participated in the evaluation commented that Weirдно has the ability to evoke various emotions well and to effectively relieve their mood. In addition to emotional management, the sense of belonging, familiarity, and strangeness that players feel from the game could also help them carry out positive psychological activities. The related research has a certain reference value to the result of improvement of mental caring through VR games. With the popularity of VR headwear equipment and its convenience, VR-related products and games will receive further attention in various fields like medical therapy, building models, and practical applications. The playability mechanism of the game, coupled with the game design that is conducive to mental health, can provide targeted help to players and creative ideas in the field of both games and psychotherapy.

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