

Escape from Oblivion: A 3D Hack and Slash Survival Horror Video Game for Promoting Awareness of Persistent Depressive Disorder

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Abstract—In this study, we developed a PC-based video game that aims to promote awareness of Persistent Depressive Disorder (PDD), also known as dysthymia. Anchored to the survival horror subgenre and a hack and slash gameplay, we constructed “*Escape from Oblivion*” as a single-player platformer game that highlights eerie game world environments and scenarios indicative of mental health conditions. It exhibits different mental states under terrible circumstances, forcing players to see and feel what it is almost like when suffering from a mental health condition like PDD. With the necessary expertise on PDD and mental health, we consulted with an expert to co-design the video game. We also evaluated the game prototype with players in terms of game characteristics. The initial version of our game received acceptable scores during the virtual open house event. Although there are several enhancements to be incorporated, our video game *Escape from Oblivion* demonstrates potential in being a promotional tool for mental health awareness.

Keywords—3D, Horror-Survival, Single-Player, Mental Health, Platformer, Hack and Slash, Video Game, PC Game

I. INTRODUCTION

In recent years, mental health has become as considerable as other societal issues (e.g., pollution, gender inequality, poverty, food insecurity, climate change, and others) [1]. The unexpected arrival of the COVID-19 pandemic has exacerbated the concerns about mental health issues [2-4]. During the pandemic outbreak, people had no choice but to stay at home because of nationwide lockdowns and the fear associated with acquiring the virus. The risk factors associated with mental health conditions have been repetitively discovered in many analyses. Serious psychological distress had significantly increased in the general population and people with pre-existing mental disorders had also been affected due to uncertainties and safety concerns. In the Philippines, the psychological impact of the COVID-19 pandemic on thousands of people was moderate to severe [5]. Many respondents noted social mobility restrictions as stressful because it prevents face-to-face interactions. The absence of traditional interaction with medical professionals resulted in the proliferation of healthcare technology in the form of innovative products [6-8].

A substantial number of researchers and practitioners have been dedicated to finding creative approaches that can promote well-being and mental health awareness. Some strategies that we encountered were virtual reality [9], social media [10], and video games [11]. Researchers noticed that although early video game research concentrated on gaming as a hedonistic entertainment, it started to capture both hedonic and eudaimonic gratifications [12]. As the video game industry evolves, new research avenues became available transforming it into a practical form of media. Different sectors of society recalibrated video games to achieve a wide range of objectives. For instance, the environment sector institutions may now employ video games to promote awareness and behavior. One example is “Trash Attack”, which bounded a set of rules to the gameplay that teaches waste segregation [13]. Beyond the fundamental principle of entertainment, educational video games are another emerging variant. In education, several examples are also notable like a mobile riddle game to improve the logical thinking of students [14]. Similarly, there have been video games in many educational disciplines [15-18].

In this study, we developed a PC-based video game that aims to promote awareness of Persistent Depressive Disorder (PDD). Also known as dysthymia, PDD is a chronic form of depression that involves a dark or sad mood causing people to lose interest in their daily activities, reduce productivity, and feel hopeless in the process. Unlike other disorders and mental health in general, PDD has not yet been integrated into a video game. Although it is milder depression, we believe that it deserves the attention of the research and video game communities. Following examples of video games as a therapeutic tool (e.g., PlayMancer [19]), we integrated pertinent attributes of evidence-based psychological therapies in a form of game mechanics. Likewise, we consulted with an expert to co-design the video game. Taking into account the complexities and human expertise demanded by this type of video game, we acknowledged that our proposed project was not fully designed to improve the situation of people suffering from PDD. For the initial version of our video game, we only aim to spread awareness of this mental health condition.

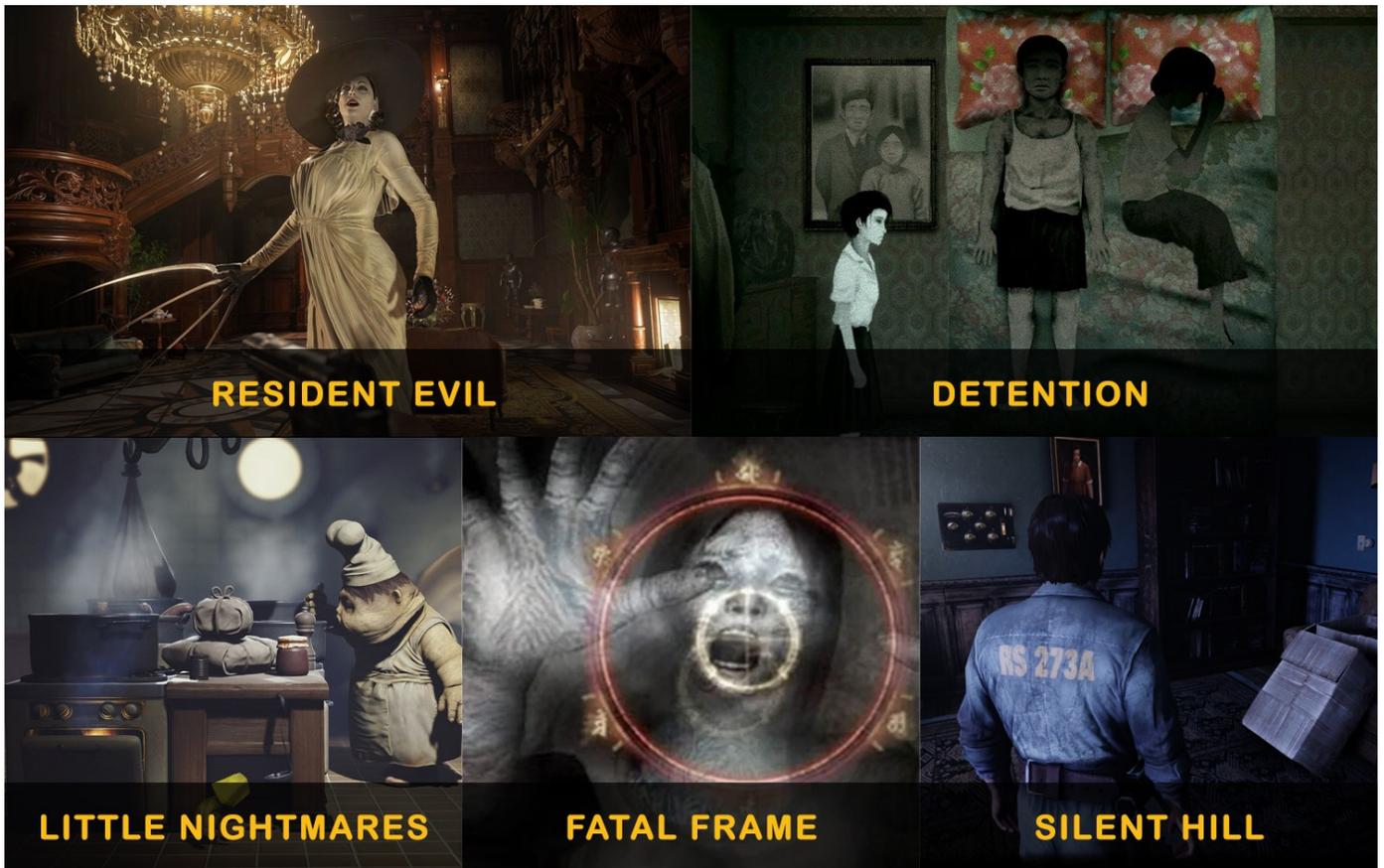


Fig. 1. Horror-Related Video Games as the Inspiration of the Proposed Video Game for Promoting Awareness of Persistent Depressive Disorder.

II. RELATED GAMES

Following a recommendation to review existing games first before diving into the game development stage [20], we looked at several commercial video games with parallel characteristics to our proposed video game project (Figure 1). The video games that we selected are heavily geared toward the horror genre and other game attributes that may be appropriate to the environment and atmosphere (e.g., dark, sad, and eerie) that we are going for. The video games that we selected are as follows:

Resident Evil. The game developers have taken inspiration from this video game mostly on its atmosphere. In Resident Evil, the attack of enemies like zombies (either by surprise or with anticipation) scared players, especially with limited resources. It is a common reason why running replaces fighting temporarily. Some characteristics of the video game that augment the gaming experience are allowing players to roam around big mansions, collecting items on the way, and solving puzzles. We also noted their heads-up display where life points indication is not just a typical meter layout. All these game elements were considered.

Detention. This genre, setting, and atmosphere of this video game served as another significant influence in our project. This game featured a school environment as the setting, which makes it intriguing and appropriate for our target audience. Moreover, we also noted that the character's behavior is always on edge. We were also influenced by how the character advances through the narrative by solving puzzles and tracking down hints.

Little Nightmares. Since this side-scrolling game is a dark-inspired theme, we conceptualized our project according to the game elements presented in various levels of this game. It also features mystery as an underlying theme because the player must learn about what is going on around him on his own. The player must also determine how the oddities of particular stages came to be. Finally, we also incorporated the platforming style and the puzzle-solving elements into our game development process.

Fatal Frame. This distinctive game mechanic of this video game also served as a source of creativity and motivation for our project. In horror films, characters are usually powerless making them more pitiful to viewers. However, this video game permits the player to fight back against the monsters albeit with limited resources. This small leeway allows the player to be engaged in the little competition available in the gameplay. Finally, we also captured the gloomy mood of this video game for our project.

In this review of related games, we realized that developing a survival horror video game is not only about chilling character designs or eerie game environments but also how you interject a hidden purpose (e.g., promote mental health awareness) within the gameplay without being too obvious for the players. Finding a balance between enjoyment and meaning is a difficult task for game designers and developers [12]. In a video game driven by puzzles as a requirement of game progression, it is considerable that players have the flexibility to decipher the game mechanics. Various game patterns are also a necessity to ensure incongruity between enjoyment and purpose is not a development barrier.

III. MATERIALS AND METHODS

A. Game Overview

Escape from Oblivion is a hack and slash video game meant to promote awareness of PDD and mental health. It follows the principal character, Seto Konsui, in a gruesome post-apocalyptic world filled with hostile monsters. The character design of these monsters follows the aesthetic applied by *Beast Chasers* – a role-playing game portraying societal issues [21]. Anchored to the survival horror subgenre, this video game challenges the player to assess the situation and devise a plan to be able to get through the level with limited resources while deciphering puzzles under pressure until the player escapes the university. The game theme contains a dark color palette, violence, minimal blood, and gore. We also specifically avoided intense violence, strong language, and sexual content. Based on the Entertainment Software Rating Board, our video game can be rated under the “Teen” rating – or suitable for ages 13 and up. Finally, the game was only playable on a PC platform since this is accessible to the target audience.

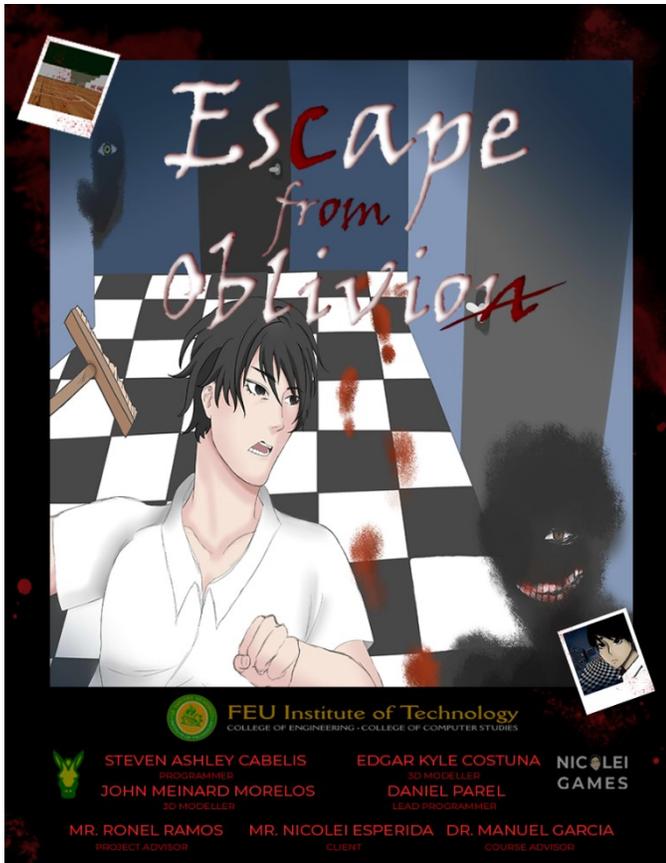


Fig. 2. Video Game Poster of *Escape from Oblivion*.

B. Gameplay

The *Escape from Oblivion* is a survival horror video game viewed from a third-person perspective. The player controls the protagonist named “Seto”, whose principal goal is to escape the frightening pointlessness presented in each stage. The success of this objective means finding a way to make progress in the game by locating essential items, deciphering puzzles, and defeating enemies around the map. To instill a feeling of apprehension and a lack of player agency, the starting weapon is a mop handle. As

the player progresses through different levels, an option to keep the current weapon or choose a new one will be offered. Just like in real life, food is needed by the character to regain health from taking damages incurred by the enemies. Defeating enemies and destroying certain items produce food with different amounts of health. With several puzzles on different levels, players can save their progress in designated stations. Lastly, we incorporated in-game posters and infographics about PDD that the character can pick up. This personal touch complements the game story, which also aims to assist in achieving the primary goal of the game.

C. Game Mechanics

We implemented several rules and procedures to restrict the player’s control within the game environment during gameplay. This limitation is also known as the *player agency* – a common characteristic of survival horror video games [22]. The in-game mechanics that we implemented are listed as follows:

- The player will not progress further into the game until the puzzles at hand were successfully solved.
- The player can only use one weapon at a time. Picking up another weapon replaces the current weapon.
- The player does not have an inventory system. All key items are stored within the game’s code.
- The “Lost Ones” monsters will only move and attack depending on the distance between them.
- Once the player reaches the 14th floor, a cutscene will play demonstrating an earthquake causing the stairs to collapse. When the player uses the rope to rappel down to the 12th floor, it becomes impossible for the player to go back to the upper floors. Upon reaching the 4th floor, there will be no stairs leading to the lower floors, instead, the player must obtain an “eye” along with a “keycard”, which will unlock the elevator on the 5th floor to proceed to the lower floors.

Aside from the general mechanics, we also implemented a set of rules for the weapons available throughout the map:

- Long-range melee weapons have the longest time for animation but deliver heavy damage to compensate.
- Medium-range melee weapons have balanced time for animation speed and damage.
- Close-range melee weapons have the fastest animation speed with a very short range and small damage.

D. Game Balancing

Each mode of difficulty has different scaling of enemy hit points (HP), enemy damage (DMG), and player DMG based on the acquired weapon, as shown in Tables 1, 2, and 3.

TABLE I. SCALING OF ENEMY HIT POINTS

Scaling of Enemy HP (x = 100)			
Mode of Difficulty	Scaling Multiplier (y)	Enemy Base HP (x * y = z)	Total enemy HP (x - z = a)
Easy	0.25	25	75
Medium	0.2	20	80
Hard	0	0	100

The scaling of the hit points will increase as the mode of difficulty changes. The boss enemy has a separate HP from the common enemies. The enemy boss HP at 300. This would make the enemy boss tougher than the other enemies

TABLE II. SCALING OF ENEMY DAMAGE

Scaling of Enemy Damage (x = 70)		
Mode of Difficulty	Damage of enemy (y)	Total enemy damage (x * y = z)
Easy	0.2	14
Medium	0.3	21
Hard	0.45	31.5

Just like in HP, the scaling of the damage of the enemy will also increase depending on the mode of difficulty.

TABLE III. SCALING OF PLAYER WEAPON'S DAMAGE

Scaling of Player Weapon's Damage (x = 70)			
Weapons and Damage	Easy	Medium	Difficulty
Mop [heavy] (y)	0.8	0.6	0.4
Total player damage (x * y = z)	56	42	28
Drawing Tube [medium] (y)	0.5	0.3	0.25
Total player damage (x * y = z)	35	21	17.5
Protractors [light] (y)	0.25	0.2	0.19
Total player damage (x * y = z)	17.5	14	13.3

Finally, the scaling of the player damage will depend on the equipped weapon which has different types and attack speeds.

E. Project Development

We selected the *Agile Scrum Methodology* as our guide for developing the video game. Figure 3 shows the processes of this project development model. The first procedure entails a client consultation to assess each aspect of the project and if there is a part of the game that requires to be reconstructed or modified. We then performed a series of planning via weekly meetings to accomplish the assigned tasks according to the timeline. Aside from the client, we also consulted with an expert as well as with our project and course advisers concerning what we completed in our daily outputs and weekly sprints. Excluding the planning and proposal stages, our development lasted for three months.

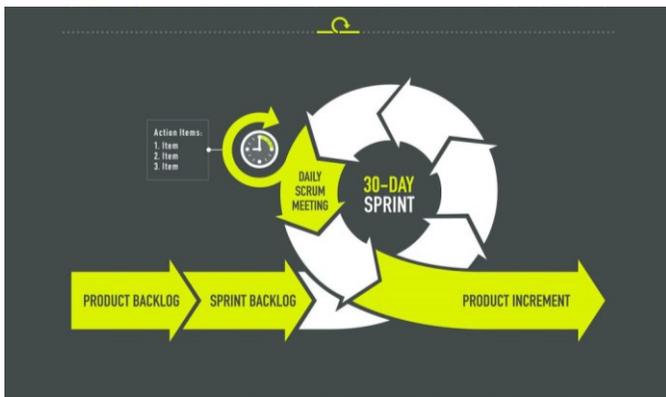


Fig. 3. Agile Scrum Methodology.

F. Game Testing

Game testing is a crucial part of the project development as it ensures that the video game works under all conditions. In our project, we used alpha testing, beta testing, and user acceptance testing. In the alpha testing, we tested the game while under the development stage to ascertain if bugs, game-breaking glitches or exploits, and errors exist in the alpha version of the game and be able to tweak the game mechanics for game balancing. Our project mentor was an essential team member during this stage, especially for providing valuable input. For the beta testing, we recruited players that were not part of the development team. It is a strategy to acquire recommendations from different people. The practice of co-designing applications with intended users is a major part of project development that has been recognized to be useful and efficient [23]. For the user acceptance testing, we asked our clients and expert to test the game for final revisions and recommendations. After creating the first game version, we then sought out another set of users to evaluate our video game. We employed a purposive sampling technique and participated in a virtual open house event where people attended to play new video games. A total of eight groups participated in this event.

IV. GAME DEVELOPMENT AND EVALUATION

In this study, we developed a video game entitled “*Escape from Oblivion*” that intends to promote awareness of PDD. We have successfully integrated the survival mechanics in terms of healing items that force the player to continuously survive with the limited amount of health available. Following our review of existing video games, we incorporated a horror aspect through the game narrative, visual design, eerie background music, and sound effects. To intensify the emotional element, we utilized a hack and slash game mechanic in the combat mode. Overall, we modeled an extensive building with 15 floors divided into three main levels (See Figures 4 and 5 for examples). Throughout the maps and on every floor, there are available items and puzzles that the player must locate and solve to progress in the game. In Figure 6, for example, the player must find relevant items that are needed for escaping the computer laboratory level. Finally, we distributed several triggers at different levels for activating a sudden attack of various mental state conditions. This strategy allows the player to experience a mental state comparable to the struggles experienced by people who suffer similar conditions. It is also a game design to adjust the difficulty of the game.



Fig. 4. Game Map: Hallway on the 12th Floor.



Fig. 5. Game Map: Hallway on the 14th Floor.

Level 1 starts with a cutscene. After which, the player will officially start playing on the 17th floor. There will be numbers written on the wall that serves as a puzzle for the player to solve. The player must figure out that the answer to this puzzle is the chronological order of the numbers. Upon solving the puzzle, a mop and a cleaning chemical will be presented to the player as the first weapon and key item, respectively. These items allow the player to go down to the 16th and 15th floors where enemies are waiting to attack. The player should explore quietly to avoid fighting as much as possible since the existing weapon has low damage. The player must locate the logbook on the 14th floor as a way to save the progress. The staircase leading to the 12th floor is blocked but can be opened with the cleaning chemical. If the player is successful, a cutscene will be triggered.



Fig. 6. Game Map: Computer Laboratory.

Level 2 starts on the 12th floor where the player will have to fight more enemies using a mop as the primary weapon. On the 11th, 10th, and 6th floors, there will be optional puzzles to solve that will unlock more information about the story. The 11th floor features a two-fold puzzle on two different keypads. The player must memorize the button sequences of each door as it answers the lock for each side. The 10th floor is a simple puzzle requiring the player to connect wires to the corresponding ports. The 9th floor has a room with a weird layout that the players can choose to examine to learn additional information about the story of the game. There will be another logbook on the 8th floor and a non-playable character (NPC) will give more information on how to progress further. Health restoration items will now be available in this area to ensure that the player will be in good condition

for an upcoming boss battle on the 7th floor. After defeating the boss, the player will acquire another key item (rope). In the 6th floor, there will be a room packed with health restoration items and additional puzzles for opening posters and infographics on PDD. The solution to the puzzles is the combination of letters found in the boss room on the 7th floor. The player can proceed to the next level as long as the key item is already acquired.

Level 3 starts on the 5th floor where an NPC is waiting. This NPC will give a task to find two key items: an eye and a keycard located on the 4th floor. On this floor, the player will be offered a different game environment indicating the level of difficulty. This floor is considered a void space and the player can travel only by jumping from platform to platform. If the player falls, the game is over. Else, finding the key items will allow turning back to the 5th floor where the player must give the key items to the NPC. An elevator will be unlocked to proceed to the lower levels. The 3rd floor will not be accessible to the player and will be explained through the game's narrative. On the 2nd floor, the final horde of enemies will be waiting for the player, which will be compensated by more health restoration items and a logbook in preparation for the final boss battle on the ground floor. The player must solve one last puzzle to open the metal shutter. The final puzzle requires the players to be able to turn all the lights on at the control box. The metal shutters will lift, and the player will be allowed to run to the exit. Halfway to the exit, the final boss will suddenly appear and block the door. After defeating the final boss, the player can finally exit the university. Exiting the building triggers the final cutscene and concludes the story.

TABLE IV. GAME EVALUATION

Characteristics	Mean	Verbal Interpretation
Gameplay	4.24	Agree
User Interface	4.31	Agree
3D Assets	4.27	Agree
Sound Effects	4.39	Agree

After we developed the first version of the game, we asked thirty random players to evaluate “*Escape from Oblivion*” in terms of gameplay, user interface, 3D assets, and sound effects. As shown in Table 4, players rated all game characteristics with mean scores equivalent to “Agree” verbal interpretation. These ratings signify the success of the project development. Despite the positive scores, we still acknowledge that our video game is only created for awareness promotion rather than a therapeutic tool. More evidence-based strategies implemented in usual care should be integrated into the gameplay [24-27]. In addition, our study lacked the usual evaluation used in healthcare research, which is the randomized controlled trial. This research design is the prominent evaluation approach for video games to serve as a therapeutic tool, as suggested in a systematic review [28]. Thus, we propose the inclusion of these components for future research. In terms of game development, we believe that adding a multiplayer component will benefit this kind of game. Aside from the teamwork and promotion of social relationships [12], there is evidence in the literature of the significant association between social interactions and mental health [29].

V. CONCLUSION

In conclusion, we have succeeded in taking the first step to developing a video game that promotes awareness of PDD. We believe that this condition, although a milder depression, merits attention from researchers, practitioners, and game developers. Beyond the fundamental principle of entertainment, we utilized video games for meaningful gaming experiences where players are not only enjoying but also learning about a mental disorder. As part of the gaming community, this video game is proof that we need to encourage the video game industry to look beyond the customary format and pursue games with noble intent.

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