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Creating Tension through Game-Centric Design in Survival Horror Video Games

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ABSTRACT

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The process of eliciting emotions in players is an essential cornerstone of creating a memorable experience in video games. Whether it be feeling powerful after defeating a challenging boss, the sadness felt after an untimely death of a beloved character, or receiving a tantalizing sword from a chest hidden deep within a monster-infested dungeon.

This study aimed to explore the essential elements of what creates a survival horror game by analysing other games in the genre and exploring ideas such as level design, atmospheric creation, sounds, ambiance, and game mechanics, which enhance and create the feeling of tension and stress in the player. These aspects are furthered by looking closely at how these emotions are evoked and the efficiency of each element of the game—finally compiling the findings into an application featuring a fully designed game prototype.

The prototype was developed in the Unity game engine and supported three different gameplay scenarios in order to test and examine the impact that the elements, mechanics, and ideas discovered in prior research have on the ability to create tension. These scenarios were used in a qualitative playtest, the results of which indicated that the mechanics and elements implemented in the prototype were an effective means of creating tension.

Keywords: tension, survival horror, Unity, level design

CONTENTS

ABBREVIATIONS AND TERMS

Unity	A 3D game engine.
Survival horror	A sub-genre within the horror genre.
Player agency	Player's ability to affect the playable world.
Catharsis	Relief of tension.
Blood	Primary resource in the prototype.
Blood Gauge	GameObject that indicates amount of Blood player has.
Object pool	A collection of objects that can be reused
VFX	Visual effects.
Build	A compiled computer program.

1 INTRODUCTION

Survival Horror, as a horror subgenre, specifically in the medium of games, is known for its ability to make players feel like they are in nigh impossible situations, where resources are scarce, surrounded by numerous enemies, and the walls are closing in. Nevertheless, players triumph and move on to the next challenge. This thesis will focus on how game and level design have been used to build tension and guide players from safe rooms to arenas to intense boss fights in a way that creates anxiety.

Game Design and Level design are specific game-centric disciplines utilized in every video game, sharing principles and approaches with areas like architecture, theme park design, and cinema. Analyzing how Disneyland, for example, creates paths that guide visitors throughout each section of the park, place activities at crucial junctions, and structure their rides can provide valuable insights into structuring a game experience. In Jesse Schell's The Art Of Game Design: A Book of Lenses, he explains, "One excellent example is the castle at the center of Disneyland. Walt Disney knew that there was some risk of guests entering the park and milling about at the entrance, unsure of where to go. The castle is placed such that the guests' eyes are immediately drawn to it upon entering the park…" (2008). These concepts can also directly apply to game worlds, as they share similar challenges in keeping a player's attention. How do we guide the player, so they do not lose their way? To be able to design a space or encounter that challenges a player is essential to making an engaging gameplay experience.

The main questions this thesis aims to answer are what kind of game and level design methods and techniques are used to create or support the creation of tension and research how effective they are when applied to a level prototype.

To answer the questions posed, the analysis of other media will be conducted while providing examples to reinforce their importance to the genre and then creating a playable prototype comprising a stage, replenishable resource, enemy, and a handful of mechanics. The prototype will be used as a basis for user testing in order to gauge the effectiveness of the tension-creating design techniques and methods explored in this thesis.

2 STRESS AND TENSION

Stress is our body's response to threatening or challenging scenarios and situations. According to Holly Blake, a Professor of Behavioural Medicine at the University of Nottingham, when we feel under pressure our nervous system releases stress hormones that include adrenaline and cortisol. These hormones help us deal with the threat of danger, better known as the stress response or fight-or-flight response. There are also cardiovascular effects such as acute heart rate and blood pressure increase (Blake 2017).

In video games, stress, more often than not, manifests itself during an encounter with an enemy. In survival horror games, these kinds of encounters are numerous. It is paramount to effectively balance creating stressful encounters for players while not overwhelming them to the point where they become accustomed or numb to the conflicts presented to them.

2.1 Tension in other media

Speaking in the context of cinema, Tanya Krzywinska explains in her essay "Hands-on Horror" that "Many constitutive aspects of the horror film genre inform horror games, primarily in the way they are marketed, their graphic and iconographic styles, their shock tactics, themes and storylines." (2002).

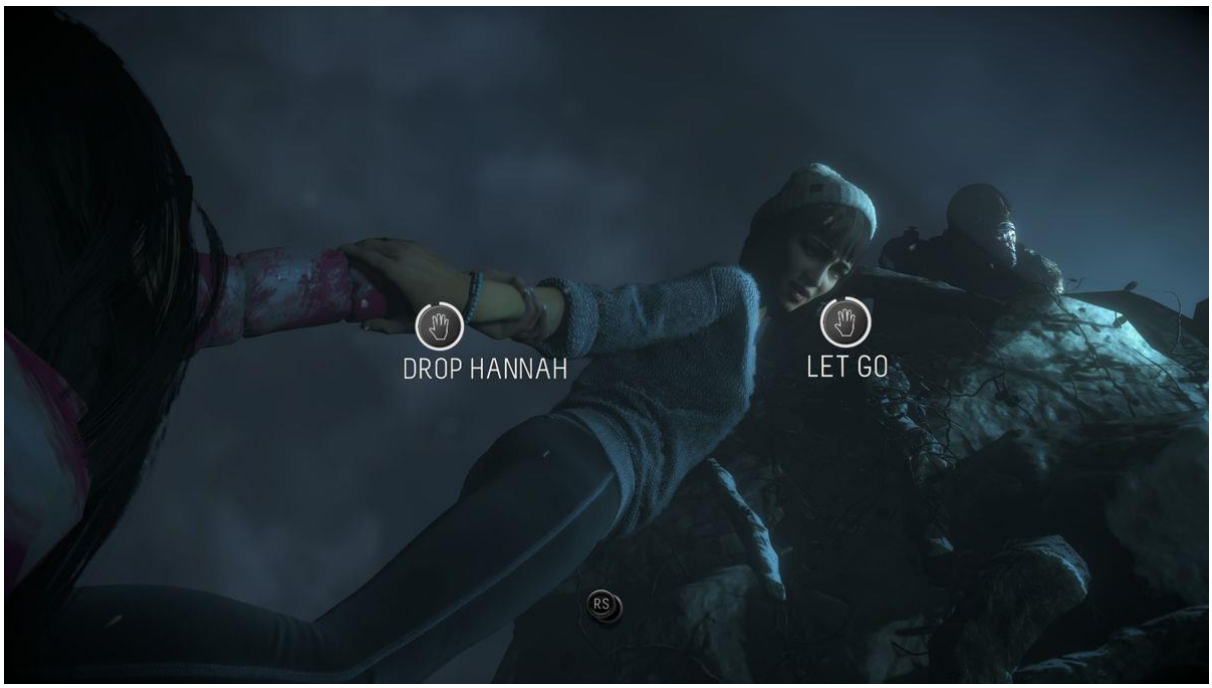
The interactive drama horror genre is an excellent example of the intersection of cinema and games. The most emblematic games in the genre include Until Dawn, The Quarry, and The Dark Picture Anthology. In these games, the player often controls an ensemble of characters with complicated interpersonal relationships and various personality types, which can affect the player's decisions during the game. For example, a character with a rash character trait is likely to have more reckless options available during crucial decisions compared to a more level-headed character. These characters are at the mercy of monsters, murderers, and otherworldly entities, and it is the player's job to ensure they survive the game's trials and tribulations.

Tropes and scenarios borrowed from movies appear aplenty, with most of the premises starring a group of teenagers going on a trip to a remote location, as

seen in The Quarry (2022), where a group of summer camp counsellors decides to stay one more night at the secluded camp grounds during a full moon, unaware of the dangers that lurk in the night. Alternatively, in House of Ashes (2021), an oblivious group of United States marines stumbles upon a dormant alien ship.

The scenarios the player finds themselves in often mirror sequences found in horror movies, from scenes featuring the "take my hand" trope (PICTURE 1; PICTURE 2.) to hiding from a killer almost in plain sight while strenuously holding one's breath. Unlike films, games often give the player a choice or a means of interaction, which may have various consequences depending on the player's decisions up until this point or during a sequence.

PICTURE 1. The Conjuring 3 (2021), Warner Bros. Pictures.



PICTURE 2. The Quarry (2022), Super Massive Games.

Tension is often created by building up suspense, creating uncertainty, or incorporating the element of surprise to keep an audience at the edge of their seats, anticipating the next scare. These methods can be observed in various creative fields, often utilized in other forms of media such as literature, cinema, or music. Thus, it is fruitful to examine different mediums, to contrast, compare and borrow, that could be utilized to create tension in one's projects and endeavors.

3 TENSION IN SURVIVAL HORROR

As a form of entertainment, the horror genre, across all mediums, has been able to captivate audiences thanks to evoking incredibly intense feelings of anxiety, stress, and fear. Whether it is an anxiety-inducing chase sequence in a motion picture or a fierce chapter of a book, the hallmark characteristic of horror is the intensity of emotion.

In video games, these intense emotions are created through a layered concoction of design, systems, pacing, and art. These aspects often rely on each other to create the desired effect, such as a suspenseful corridor with flashing lights that cause the player to jump at every shadow and ambient sounds that exacerbate a petrifying creature, as noted in Extra Credits' video regarding pacing in games. "Survival horror games use tension as the principal form of engagement. A good survival horror game will build the tension, scare you at the crescendo and then release so they can build you up and scare you again." (Extra Credits, 2011).

3.1 Survival horror

Game subgenres are often described as complicated to differentiate and, in some cases, hard to define due to the number of themes, mechanics, and motifs they share within themselves and with the larger media landscape. Laurie N. Taylor describes the issue with video game genres,

> "Video game genre definitions are more problematic than the already fluid genre definitions for most other media forms because video game genres rely on existing genres—from art and literature—and then add genre conventions related to gameplay."(Taylor, 2009).

Horror genres often tackle themes like vulnerability, isolation, and the fear of the unknown. When considering what defines survival horror in particular, distinguishing it from adjacent genres like action horror or psychological horror is often challenging. What sets survival horror apart from other subgenres is its focus on placing the player in a hostile environment, where the odds are weighed

heavily against the player's avatar (Perron & Hand, 2004, 17). The player is vulnerable, often unable to fight back or being substantially weaker than the foes they encounter.

The player is often starved for resources, having to scavenge and avoid enemies due to a lack of ammunition, health, or means to survive said encounter. Carl Therrien describes the effects of resource management mechanics on player behavior as follows, "In a context where ammunition is hard to find, players are more likely to use these resources very carefully, take the time to aim properly, and salvage more powerful weapons for the most terrifying encounters" (Perron & Therrien 2014, 35).

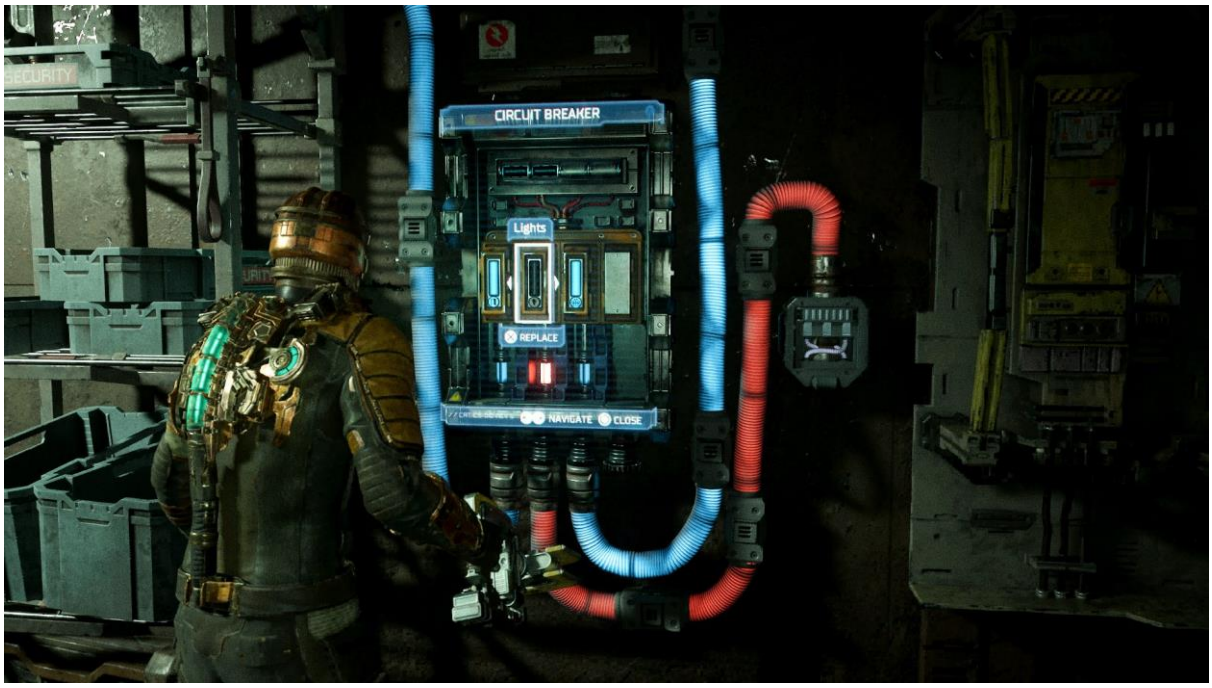
The themes and motifs often explored within the genre tend to skew towards feelings of isolation and fragility, either of body or mind. In a 2018 GDC talk about revitalizing the Resident Evil franchise, Peter Fabiano, the producer for Resident Evil 7, remarks how "The unknown leads to anxiety, which gives birth to fear" (2018, 9:00). In combination with the player's lack of agency, as in the inability to defend themselves, these themes can become quite potent. In Outlast 2, one of the main themes is the inability to protect yourself and the ones you love. The player's lack of weapons emphasizes this, ultimately resorting to hiding and fleeing from enemies paired with a narrative about being helpless in the face of greater power.

3.2 Player Agency

Player agency, the player's ability to interact with the playable world, whether it be their ability to shoot, hide or see, is often manipulated in games to emphasize a feeling, motif, or theme. Restricting or broadening how the player interacts with the world can be essential to improve a game's pacing and keep the player engaged by surprising them.

In Motive Studio's Dead Space Remake (2023), the player comes across circuit breakers throughout the game. These circuit breakers have a finite amount of active slots, meaning the player must decide between having the lights on, enabling oxygen, or having gravity enabled, all of which affect the player's approach

moving forward in the area. Early in the game, the player must decide between having the lights on or enabling an elevator shortcut. Choosing to enable the elevator means traversing the area in almost complete darkness exposing the player to surprise attacks while keeping the lights, and not enabling the elevator means taking a longer route, which may be crawling with alien monsters (PICTURE 3.).



PICTURE 3. Dead Space (2023), Motive Studios.

From a design perspective, player agency informs how levels are constructed and how encounters with enemies should be built. For example, player agency can be manipulated by restricting the player's ability to run during a chase sequence by setting said sequence in a swamp or by taking away their ability to see by shutting off the lights in a particularly spooky corridor.

At the beginning of Dead Space 2, the player is trapped in an asylum brimming with monstrous alien creatures. The player character is bound in a straitjacket, essentially stripping the player of the ability to defend themselves, making the player utterly helpless in the face of adversity (PICTURE 4.). The player is forced to run from foes instead of engaging them and must use the terrain around them to escape from enemy encounters. Diminishing the player's agen-

cy by removing their ability to defend themselves creates a more potent intensity to the section.

PICTURE 4. Dead Space 2 (2011), Visceral Studios.

Shifting between player empowerment and player weakness is essential to using player agency to create tension. Resident Evil 8, for example, has a section that embodies this method. During a particular section of the game, the player is subjected to hours of action-packed gameplay, contending with a cohort of undead and a particularly monstrous madame. The player then arrives at the Beneviento house, where they are stripped of their weapons and ability to fight back, diminishing their agency significantly (PICTURE 5.).

This forces the player to re-evaluate their play style, favoring stealth and patience rather than the run and gun they might have become accustomed to. This necessitates a change in level design as well. Instead of wide hallways, the player is greeted with tight corridors and an enemy that cannot be directly engaged. Instead of utilizing their arsenal of weaponry, the player must cower and hide within cupboards and closets, meaning the stage must have conveniently placed hiding places to avoid making this shift in agency impossible.

PICTURE 5. Resident Evil 8 (2021), Capcom.

3.3 Resource Management

Resource management is not entirely unique to survival horror, but the way it is utilized in conjunction with the themes and motifs of the genre is often why it is attributed as a key aspect of the genre.

In a survival horror experience, resources are often scarce, emphasizing the feeling of weakness and fragility stemming from the player never having enough resources to feel like they could survive an encounter with an enemy.

In Outlast 2, the primary resources are bandages and batteries, the batteries being the more critical resource (PICTURE 6.). The batteries enable the player to use night vision, which is incredibly important in most game sections. Using the night vision mode of the camera allows the player to see things they would not otherwise be able to see, such as enemies lurking in the dark or an alternative, safer path ahead. Without night vision, the player is forced to explore levels in complete darkness, relying on light sources blotted throughout a stage, which, most of the time, are few and far between.

These batteries are scarce, meaning the player must either spend additional time exploring hostile environments or preserve them through frugal and

thought-out gameplay. Resource management comes with multiple sub-mechanics. The preservation mentioned above of resources, the need to continuously search for said resources and make crucial decisions on what resources to keep due to an often-finite amount of inventory space. Especially in games with finite inventory space, the latter is paramount.

PICTURE 6. Outlast 2 (2017), Red Barrels.

3.4 Death and Penalties

Many horror titles put a lot of emphasis on death. Not only does one have to tackle one's internal fear of death, but one also may have to fear losing a substantial amount of progress or resources. Death can be a powerful motivator that pushes players to approach enemy encounters cautiously and emphasize having enough resources to defend themselves, thus strengthening their resolve to explore the stage more thoroughly.

Some games also have a finite number of locations or situations where players can save their progress. For example, in the original Resident Evil (1996), a player can save only if they have an ink ribbon. This finite item can be found scattered around the stage, which can only be used at a typewriter to save their progress.

Repeated death or failure state can cause frustration in players, which may cause the complete loss of tension or, in a worst-case scenario, the desire to keep playing. In an article written by Kiel M Gillead and Alan Dix, the authors posit that "*Frustration is that which arises when the progress a user is making towards achieving a given goal is impeded. It is a negative emotion and if monitored for can be used to indicate when a user is in need of assistance." (2004)*

Games often make it seem as if the player is near death when they have a sizeable amount of health left. One game series that implements this kind of functionality is the Resident Evil series. In Resident Evil (2015), when the player's health is low or critical, the "Danger" condition state activates. Although the player is not in any immediate danger, this low-health state is visually exacerbated. Jill or Chris, the two playable protagonists, start limping and holding their side, while in the inventory menu, the health indicator, which resembles a heartbeat monitor, pulses profusely and is displayed in a dark red color. These aspects give the impression that the player is in grave danger of dying, despite being able to take one or two more hits, depending on the difficulty.

PICTURE 7. Resident Evil (2015), Capcom, edited.

3.4.1 Catharsis in the form of safety

One key aspect of the genre is the release and relief the players can experience after prolonged tension. Catharsis can essentially be considered a reset, after

which tension can increase again. Catharsis can be achieved by having the player triumph over a hoard of enemies, escape after a chase sequence, or have the ability to catch their bearings in a safe room.

A safe room is a common design concept that often helps alleviate tension in the form of catharsis. There have been many iterations over the years, yet their implementations often revolve around the same ideas: giving the player a safe place to regain themselves, craft, save, and/or rest. These rooms often do not have enemy encounters, traps, scares, or anything that might harm the player, functioning like a safe haven.

Commonly, safe rooms are placed at the start of a new area to give the player a chance to save, re-arrange their inventory or upgrade their character or after an enemy encounter, which provides them with a chance to recover from the tension of the previous battle.

In Evil Within (2018), the safe room can be found by listening out for a rendition of Clair De Lune and finding a shining mirror. In the safe room, the player can save their progress, upgrade the player character, ingest some story exposition from the newspaper stand, and open safes, which hold a variety of resources (PICTURE 8). Players can also use them to catch their breath and take some time away from combat, essential when effectively creating tension throughout a game.

PICTURE 8. Evil Within (2014), Tango Gameworks.

When speaking about what bad horror games tend to do to ruin tension, Extra Credits explains that bad horror games often end up maintaining a high level of tension, to the point where they become routine instead of shocking, and that maintaining said tension can also lead to player exhaustion.(Extra Credits, 2011). Meaning these moments of rest in safe rooms are essential not only from a pacing standpoint but also from an emotional one.

3.5 World Building

All of the aspects explored thus far only work when they amalgamate in the game world. This world must be believable to the point where the player can truly immerse themselves and take the role of the player avatar. Thus, the world must have enough substance for the player to latch on to and feel connected to. As Anne Reid, the narrative director at Massive Entertainment explains, “Worldbuilding usually involves creating the rules and structures of the imaginary world, so the imaginary world will feel consistent and rich with depth.” (Reid 2020).

Often the world is as important as the characters that reside within it, as it often informs the motivations and challenges they face and how they can interact with the world itself. In Dead Space (2008), The Ishimura, the ship on which the

game takes place, contributes as much to the overall horror as the terrifying aliens it is infested with do.

The hallways of the Ishimura are littered with scrawls by crew members, written either to convey vital information relating to survival or delirious notes of people who have lost hope. Notes and audio logs can be found throughout the many areas of The Ishimura, which chronicle the struggles of everyday people experiencing the catastrophic events that occur on the ship.

Some elements shed light on the day-to-day, more mundane, and corporate aspects of the denizens of The Ishimura. Logs relating to complaints about plumbing, subtle invitations to a poker game, hearing strange noises from the vents or conspiratorial contemplation regarding The Ishimura higher-ups can be found around the ship, giving a real sense that people lived there.

Each central area has an infographic that explains the function of the sector and the work that takes place there. The infographic in Hydroponics, for example, gives context to the area and sets the tone with its almost propaganda-esque representation of its workforce, who in reality are sceptical of the orders given by the top brass.

PICTURE 9. Dead Space (2008), Visceral Studios.

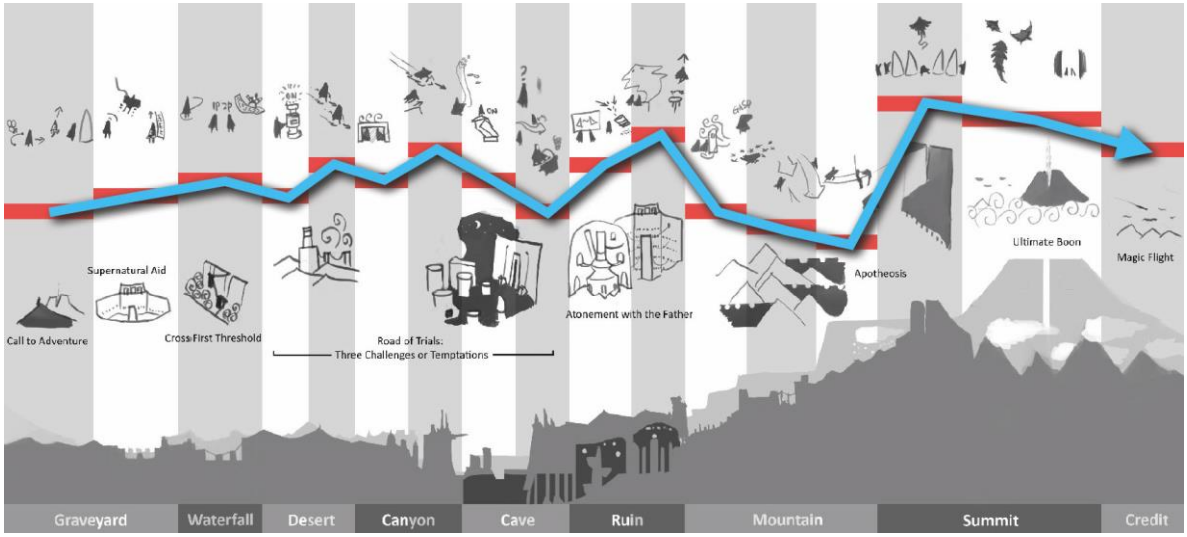
4 CREATING TENSION THROUGH GAME AND LEVEL DESIGN

Tension is created in video games when systems, design, and art synergize and thus creating a cohesive experience that ebbs and flows. From a level design perspective, making the world where said horror is experienced necessitates utilizing techniques, methods, and concepts that can create a space that fosters tension and leaves players feeling uneasy while allowing them to overcome the odds.

"In level design, flow is how it generally feels to move along different paths / between different parts of a level. Is the path simple or complicated? Straight or curvy? Slow or fast? All of these factors affect the player's movement through the space. In short, designing flow is about designing movement.", Yang (2023).

4.1 Pacing

Pacing, in the context of level and game design, is the process of creating an engaging level, system, or mechanic that does not overwhelm the player with complexity or difficulty nor bore them with something mundane or dull. The key is striking a balance in pacing a feature, filling with peaks and valleys (PICTURE 9). This notion can be found in all kinds of narratives. Whether in cinema, literature, theatre or video games, this concept is often recognized as the fabled "Hero's Journey" coined by author Joseph Campbell.



PICTURE 10. Designing Journey (2008), Jenova Chen.

In contrast, the hero's journey does not often consider the player's ability to affect the game's pacing themselves, as Jacek Wesołowski notes when discussing the difficulties in comparing the player's role in video games to audiences in a film,

> "The problem is, we have much less control over pacing in a game than in a film. Cinematic pacing is completely under the director's control, and the audience's focus is led by the camera. They simply cannot look the other way. Subtle cues work reliably because the audience is much less focused on acting on their own, and thus more focused on paying attention." (Wesołowski 2009).

Wesołowski continues by exploring how easy it is for players to deviate from the critical path by explaining that "No game is linear. There are many ways for the player to digress: bonus stages, side quests, user-generated content, loadout screens, menus -- even background vistas. A film director can rely on the audience watching the film in a preset order in a controlled environment. Players are perpetually distracted, usually by the game itself." (Wesołowski 2009)

4.1.1 Repetition

Our ability to recognize patterns and adapt is a strong suit of our species, and this causes a particularly tricky obstacle to overcome when creating levels. Once the player can anticipate the scares and appearances of would-be enemies, they slowly become numb to their attempts to induce stress within them. Thus, it is imperative to reduce repetition as much as possible. Thomas Grip, the creative director of Frictional Games, explains that to fight the repetitive nature of more difficult sections in their game, Amnesia: The Dark Descent, they changed the game environment after each death, creating a feeling of uncertainty within players and negating their ability to create a mental pattern of the stage.

4.2 Chase sequences

Chase sequences are a cornerstone of the horror genre, which aims to thrill, induce anxiety, and manufacture fear in their audience. In video games, the player is thrust directly into the victims' shoes, responsible for their own or others' survival.

The main factor that creates an engaging chase sequence is the assertion that the player must feel that they cannot directly defeat their assailant. The player must feel powerless in the face of an insurmountable challenge, prompting the player to conclude that escape is the only means of survival.

In the reimagined Resident Evil 2 (2019), the player is periodically chased by a seven-foot creature called Tyrant, colloquially known as Mr. X, who happens to be impervious to most weapons and artillery. He often appears by bursting through walls or storming down hallways with loud booming footsteps, with the sole objective of crushing the player's character in his iron grip (PICTURE 10). When encountering Tyrant, the only course of action is to turn around and run.

PICTURE 11. Resident Evil 2 (2019), Capcom.

4.3 Environmental storytelling

Environmental storytelling is a design device that tells, enforces, or foreshadows a narrative and its themes. This can take the form of objects in the world that give a larger context to the events happening to the player. In Dead Space (2008), for example, mysterious symbols can be found littered all over the Ishimura (PICTURE 11), the ship on which the player finds themselves stranded. Later it is revealed to be text found on The Marker. This ancient alien artifact causes the Necromorph scourge that plagues the ship, which also acts as a catalyst for the degradation of Isaac Clarke's sanity.

PICTURE 12. Dead Space (2008), Visceral Games.

These visual storytelling elements are often used to foster anticipation in players by foreshadowing possible encounters. Blood trails leading to an eviscerated door, a hallway cluttered with carcasses suspended in a spider web, or a slew of bodies crowded around a pit indicate that whatever is ahead is not good, leaving the player in a state of constant anticipation.

In Striking Distance Studios' Callisto Protocol (2022), many areas either foreshadow an encounter with an enemy, a scare, or an unsettling event (PICTURE 12). These are interpolated with fake-outs or delayed scares, where the player's attention is drawn to a point where they anticipate a scare, but the scare itself is

executed either in a delayed manner or in another sequence where the player has lowered their guard.

PICTURE 13. Callisto Protocol (2022), Striking Distance Studios.

5 PRACTICAL PROJECT

The main objective of the practical project was to create a functioning stage in which one could observe how different game design mechanics affected the player's experience. Namely, what mechanics created tension during the play sessions.

The stage comprises multiple rooms and corridors, two of which are chase sequences. The other rooms mainly function as tension builders and exploratory sections, focusing on gathering resources and providing context to the game's story through environmental storytelling.

PICTURE 14. Blood Loss title screen

To survive, the player must search each room for blood bags, which are used to restore a portion of their health, herein-after referred to as Blood Gauge.

The utility of the game prototype was to measure how removing certain elements impacted the player experience. The project was constructed to support three different scenarios of gameplay. Herein-after, the three scenarios will be referred to as Scenarios One, Two, and Three. In scenario one, the player continuously loses blood and has a blood indicator object called the Blood Gauge, indicating their blood amount. In contrast with Scenario one, in Scenario two,

the player does not passively lose blood and does not have a health indicator, instead only taking damage from enemies. Finally, Scenario three is similar to Scenario one, the difference being that the player cannot sprint. The goal is to measure whether a diminishing resource affects tension and whether removing the player's ability to run, thus limiting their agency, affects feelings of anxiety.

PICTURE 15. A room where a key card can be found.

5.1 Technical details about the project

The game was built in the Unity engine using C# as the primary scripting language. The project consists of two scenes. The Main scene contains most of the game logic, object pools, environments, and the player object, while the UI scene houses the menus, start-up screens, and some VFX.

The project is stored in a git repository, and the three different scenarios are housed in separate branches, ensuring that the unique changes required do not interfere with the overall project codebase.

5.2 Mechanics

The main mechanical elements of the project consist of the Blood Gauge, Terminals, Key Cards, and enemy monsters. Depending on the scenario, some of these mechanics may not be available to the player.

- The Blood Gauge indicates the amount of blood that the player has, which is diminishing over time. The Blood Gauge can be replenished by picking up blood bags (PICTURE 15).
- Terminals are objects that are interacted with to open doors. Certain terminals require a key card to be opened.
- Key Cards are objects that can be picked up and used on certain terminals to open them.
- Enemy monsters chase players during chase sequences and can damage the player.

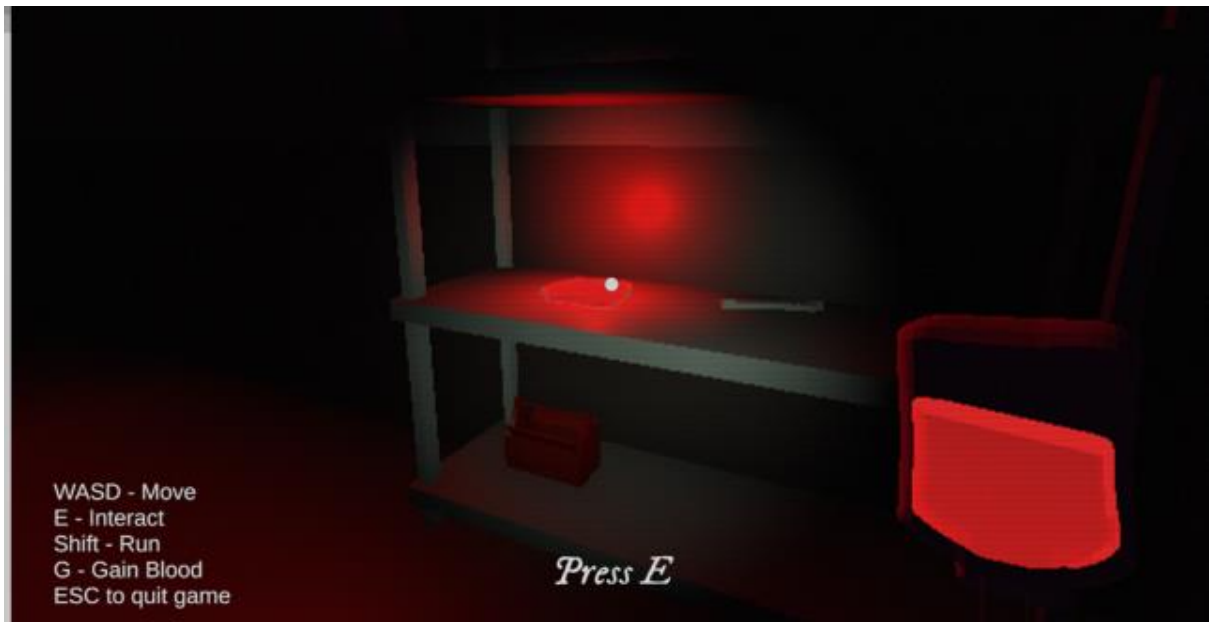
These mechanics often coalesce sequences, meaning the player has to play with them in mind. For example, in the first chase sequence, the player needs to activate three terminals, while evading a monster. In scenarios one and three, the player must also watch the diminishing Blood Gauge.

PICTURE 16. Room with a blood bag sitting on a table amidst a carcass.

5.2.1 Resource management

The primary resource in the game is blood. The player's blood amount is displayed in the right-hand corner within the Blood Gauge object, which resembles a blood bag. This blood diminishes over time and can be reduced to zero due to passive blood loss as well as by taking damage from enemies during chase sequences. Blood can be obtained by collecting blood bags, each giving approximately 20% of the total blood held within the Blood Gauge.

Blood bags can be found littered throughout the stage, often placed before a chase sequence to give players who explore the stage a better chance at surviving the encounter, after a chase sequence so that the player can recover and also in exploratory sections so that the player can recover from passive blood loss. Thus exploring the stage and keeping the Blood Gauge filled is an essential aspect of the game.



PICTURE 17. A blood bag that can be found on a metal shelf.

5.2.2 Chase sequence

Besides surviving the continuous blood loss, players must contest with a cohort of enemies present in the game's chase sequence sections. The enemies function somewhat simplistically, constantly moving toward the player's current position. In the first chase sequence, the player is chased by only one monster,

while in the final chase sequence, the player must contend with five (PICTURE 17).

During early feedback sessions, players expressed that it was difficult to perceive when the monster was near, thus creating the need for sound effects. In the current iteration, the closer a monster is, the louder its sound effects become. Also, the general consensus with early playtests was that the enemies had the same speed in the final chase sequence, causing them to clump up. This issue was solved by slightly making some enemies slower and some faster.

In each scenario, the chase sequences function similarly. Other than in scenario three, where the player does not have the ability to sprint, which necessitated slowing down enemy speeds slightly.

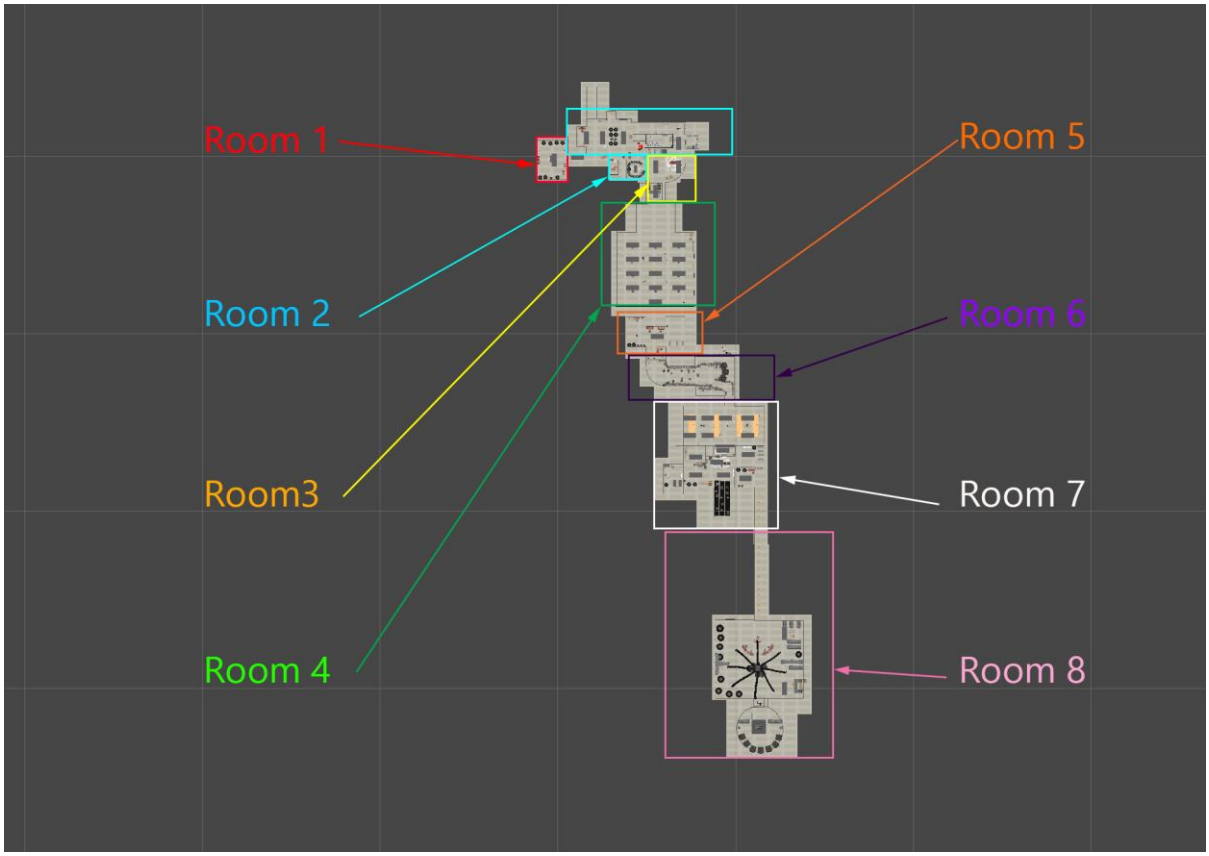
PICTURE 18. The player being chased by a monster.

5.3 Game Environment

The stage is split into eight rooms, each with a designated purpose (PICTURE 18). Each is split into one of four categories: safe room, set piece, exploratory sections, and chase sequence. The rooms appear as follows:

- Room one is a safe room and the starting location of the game.

- Room two is the first exploratory section. There are two scares and a few blood bags that can be found by exploring.
- Room three is an exploratory section that serves as a transition to the first chase sequence.
- Room four is the first chase sequence, where the player must interact with three different terminals to open the exit doorway while evading a monster.
- Room five is a safe room that is intended to be a place where the player can recover after the first chase sequence.
- Room six is a set piece intended to create an atmosphere and some visual flair to the experience.
- Room seven is the final and most extensive exploratory section of the game.
- Room 8 is the final chase sequence, where the player must contend with five enemies while the door to the elevator slowly opens over time. Once the player reaches the elevator and presses the terminal inside, they have completed the game.



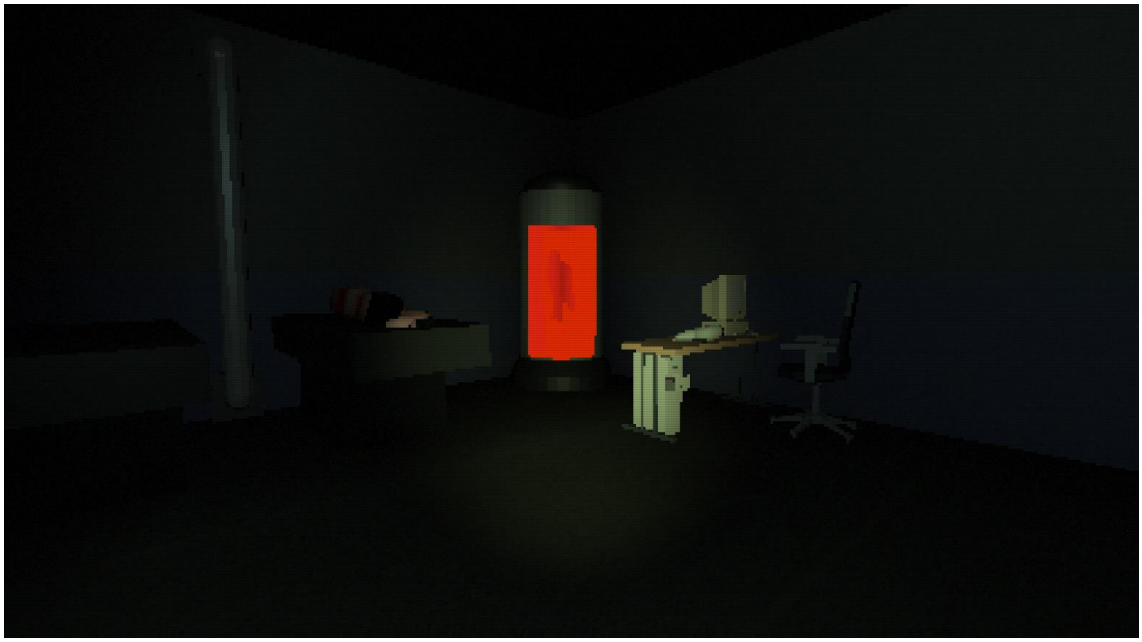
PICTURE 19. Blood Loss map.

5.3.1 Safe rooms

The key characteristics of safe rooms are that they contain a spawn point, at least one blood bag, and complete safety from enemies. There are two safe rooms found in the stage: Room 1, the initial safe room where the player becomes accustomed to the controls and functionality of the blood bags and door controls, and Room 5, the room directly after the first chase sequence, where the player can decompress and restock blood, if necessary, before moving on.

5.3.2 Exploratory section rooms

Exploratory sections are rooms intended to be spaces where the player can gather resources while building tension and atmosphere through environmental storytelling and ambient sounds that can be heard throughout the sections. So for example a room that has blood splattered across the floor with desks and shelves strewn, as if a stampede had come through or the slow methodical ticking of a clock in a long dark hallway. These rooms often have more than one blood pack, a key card, or a terminal and feature glimpses of enemies in the form of scares (PICTURE 19).



PICTURE 20. Image of a room where a key card can be found.

These scares are often triggered when the trigger intersects with the player's line of sight, showing a short animation of the monster twitching followed by a piercing string sound effect.

5.3.3 Chase sequences rooms

In chase sequence rooms, the player is tasked to evade enemies while completing a task (PICTURE 20). The rooms themselves are designed to be a lot more spacious than the exploratory rooms to give the player space to maneuver. There is at least one blood bag in each chase sequence room, so the player can recover a little blood, so they do not perish due to passive blood loss.

The player must interact with at least one terminal in each chase sequence. In the first chase sequence, to open the exit door, the player must interact with three terminals scattered around the room, while in the final chase sequence, interacting with the terminal triggers the chase sequence and slowly opens the door to the elevator.

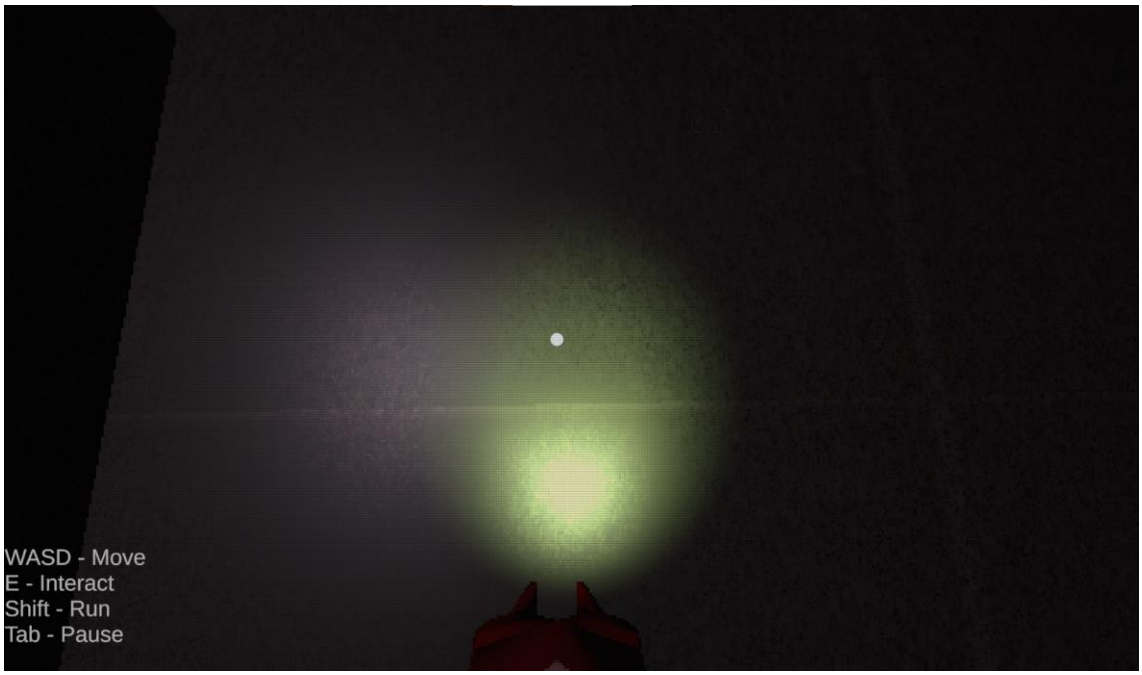
PICTURE 21. Enemy chasing player in the first chase sequence.

5.4 World Building

The game occurs in a laboratory of sorts with furniture that looks like they were from the 70s. The walls are lined with vats, occupied by human-like experiments, each suspended in a mysterious red liquid. The player wakes up in a

room with a surgical table and a few vacant vats, from which a trail of red liquid leads out of the room. Upon the surgical table lies a blood bag. The player may notice that a similar bag is attached to them, and that it is slowly diminishing. This is where the horror begins.

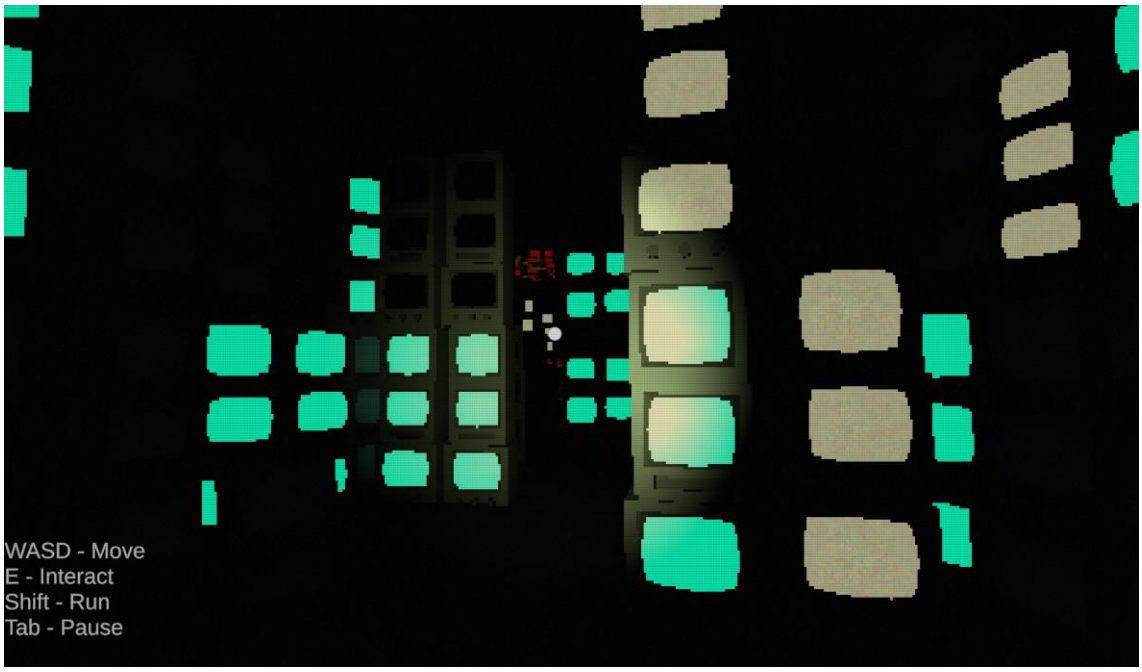
The game's plot centres around an escaped experiment, who has been able to break out of captivity due to a malfunction in the laboratory. Other, more developed and menacing monsters have also escaped, some of which hunt the player during certain sections of the game. The player can find out that they are, in fact, one of the experiments simply by looking down, which would expose the character's torso, which looks eerily similar to the other experiments suspended in the vats found throughout the stage.



PICTURE 21. Character torso.

As the player explores the level, they may notice that many areas look like the have been left in a hurry. Papers are strewn across the floors, tables have been knocked over, and blood can be found splattered across the floor in many areas. The player occasionally comes across other vats that are vacant. Some have been opened, while others seem to have been violently broken out of. In Room 2, the player can find one such vat lying on its side with a pool of blood at its base. This is intended to be the origin of the monster the player encounters during the first chase sequence.

Some areas hint towards the domain of some of the monsters the player encounters during the final chase sequence. Room 6, for example, is filled to the brim with televisions, seemingly coming out of the walls and floors. At the end of the room is a collage of televisions, looping a video of the monsters twitching menacingly. The TV-head monster also makes an appearance as a jump scare, hidden amongst the rows of televisions. This is the room intended to be the domain of said TV-headed monster, which has slowly begun to spread as the televisions slowly manifest in the surrounding areas.



PICTURE 22. Room 6 TV corridor.

5.5 Audio design

The audio aspects of the game consist of an ambient track that plays throughout the exploratory and safe room sections, a chase sequence track that plays during both of the two chase sequences and a variety of sound effects such as ticking clocks, heavy breathing, tv static, terminal interaction sound effects and an item interaction sound.

The composer of the chase sequence and ambient tracks, Olli Heinonen, gave insight into creating a more fluid transition between the tracks by implementing a stinger, which plays as the player transitions between chase sequence rooms

and safe rooms. According to early playtesters, this change decreased the jarring ending of the chase sequences, creating a more uninterrupted experience.

6 PLAYTEST

The objective of the playtest sessions was to gauge how resource management and the removal of specific mechanics affect the feeling of tension experienced by players and how their behaviour changes.

6.1 Setup

The playtest was conducted online over two weeks, and participants could complete it independently at any point during the period. The twelve participants were split into three groups of four, each having a specified scenario to complete. A build of the game prototype was provided to the participants through Google Drive, and a link to a survey, which they were prompted to fill out after completing the session. APPENDIX 1.

In Scenario one, the player loses blood over time and must keep this blood loss in mind when traversing the stage. The idea behind this mechanic is to gauge whether a continuously diminishing resource affects the tension players feel during play while also gauging whether players are motivated to explore more of the stage in search of more blood.

In Scenario two, the player does not passively lose blood and has no Blood Gauge to indicate their blood level. In this scenario, the player can only die from damage received from enemies. The player has three hitpoints, after the depletion of which the player perishes.

This scenario is intended for gathering contrasting data for scenario one, to see whether or not the players feeling of tension is affected by the diminishing resource and whether, without said diminishing resource, they have more time to explore the stage and take in the ambiance.

Scenario three was intended to gauge how removing the ability to sprint affects the players feeling of tension, whether or not the intensity of the blood loss mechanic increased, and whether or not being able to move as fast affected the amount of the stage the player explored.

6.2 Information about participants

The survey participants consisted of students, industry professionals, and a few participants with little experience playing games. Generally, the majority of participants spent around 10 – 16 hours a week playing games, while the entirety of the sample played anywhere between two to more than sixteen hours a week playing video games (FIGURE 1.).

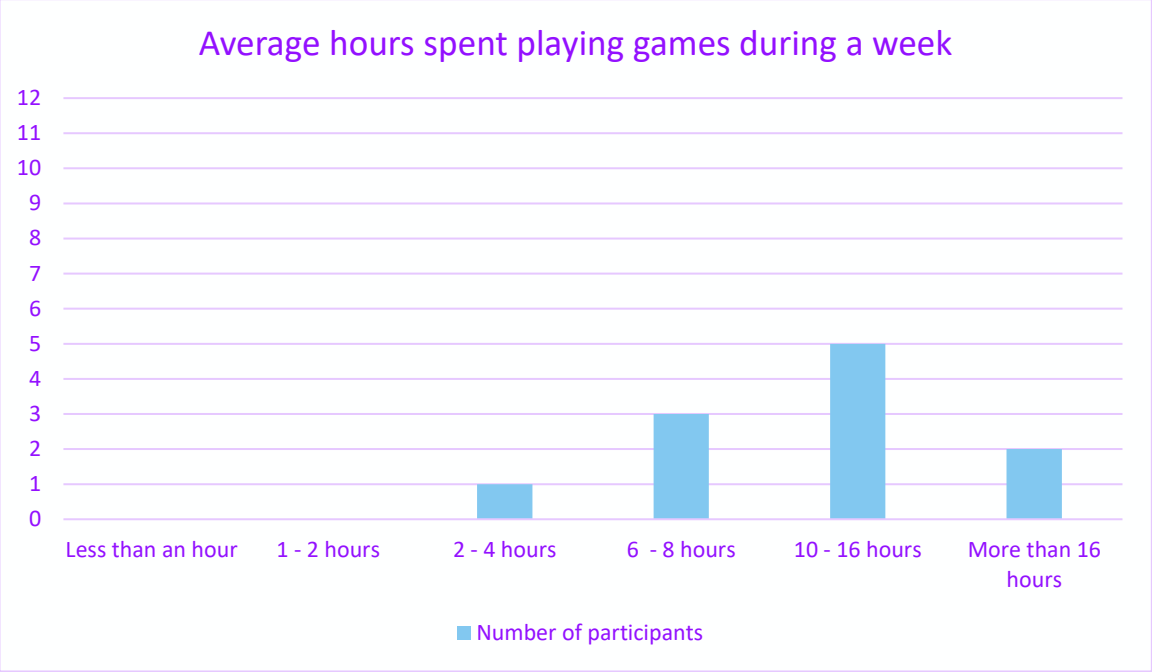


FIGURE 1. Average hours spent playing games during a week

As for how familiar playtesters were with the horror genre, the sample group was relatively evenly split between those familiar and those less so, with the majority being at least familiar with games in the genre (FIGURE 2). Most participants cited enjoying games in the Amnesia, Resident Evil, Silent Hill, Dead Space, Five Nights at Freddies series, and games like SOMA, Inside, and Little Nightmares.

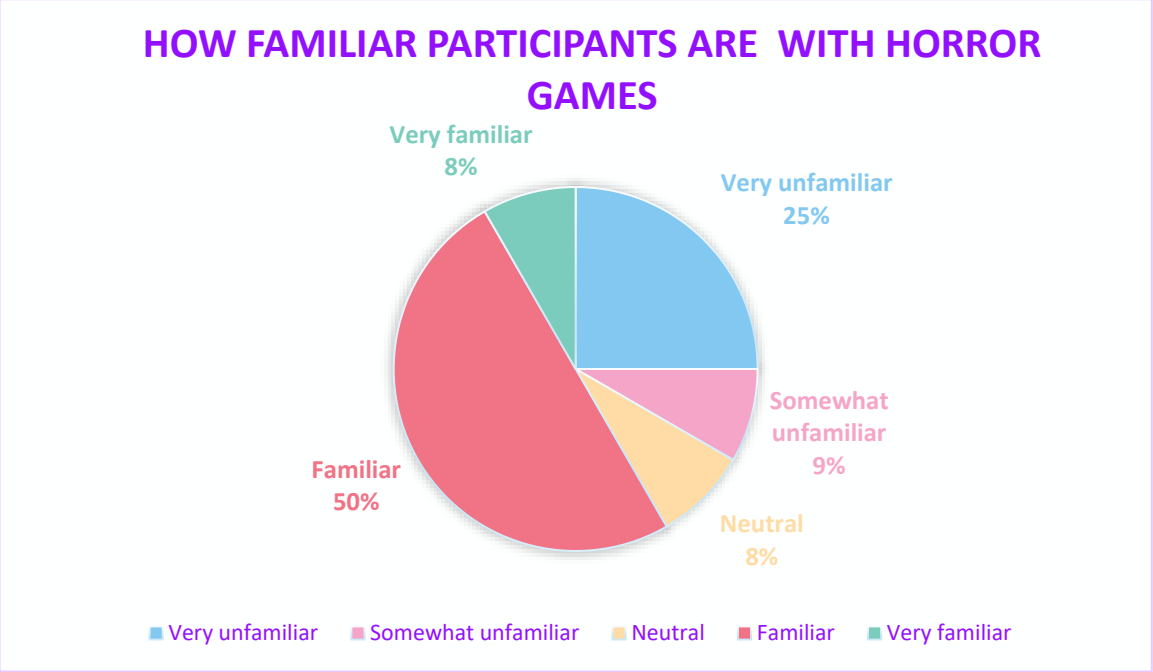


FIGURE 2. How familiar are participants with horror games?

6.2.1 Exploration

Regarding the exploration of the stage, the playtesters in scenarios one and two explore the most, but due to different reasons. The players in scenario one explored the stage due to the nature of the blood loss mechanic, needing to explore out of necessity to keep their Blood Gauge filled. Playtesters in scenario two could explore at their own pace due to not being under any pressure, thus leading them to explore slightly more than their counterparts in scenario one (FIGURE 3).

As for scenario three, a playtester noted that they felt like they did not have time to explore due to passive blood loss and its intensity, meaning that they had to focus on finding a blood bag and promptly moving on (FIGURE 3).

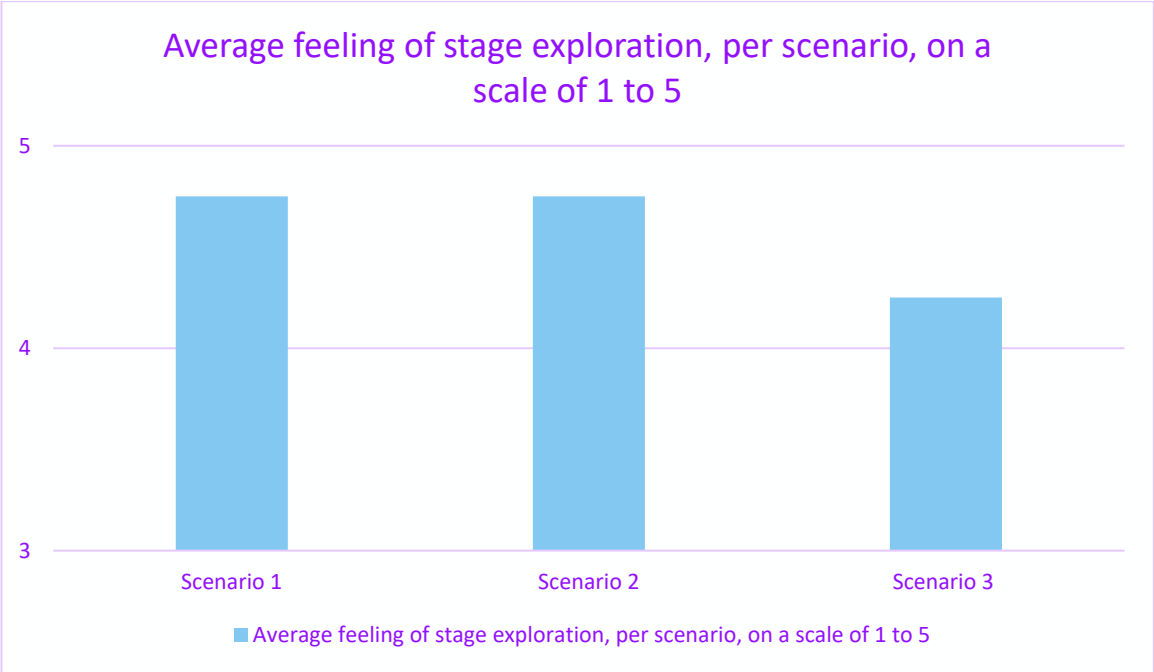


FIGURE 3. The average feeling of stage exploration, per scenario, on a scale of one to five.

6.2.2 Sense of tension

As for the sense of tension, the feeling of tension experienced by players was fairly even, with players in scenario two reportedly feeling less tension than in the other two scenarios (FIGURE 4). Players reported that it mainly stemmed from the blood loss mechanic, the chase sequences, and the general ambience throughout the stage.

Unanimously, players in scenario one cited that the primary source of tension and anxiety was the blood loss mechanic, describing that the initial perception of the continuous blood loss caught them by surprise and prompted them to rethink their approach to the game.

Conversely, players in scenario two cited the chase sequences and the general atmosphere and environment as having caused the most tension, particularly the first encounter with the enemy as well as room 6, which featured a TV maze and a jumpscare.

In scenario three, the sources of tension were a balanced mix of the atmospheric environment, the chase sequences, specifically the first chase sequence and

the sound effect of the monster breathing, and finally, the blood loss mechanic and the anxiety related to finding more blood around the stage.

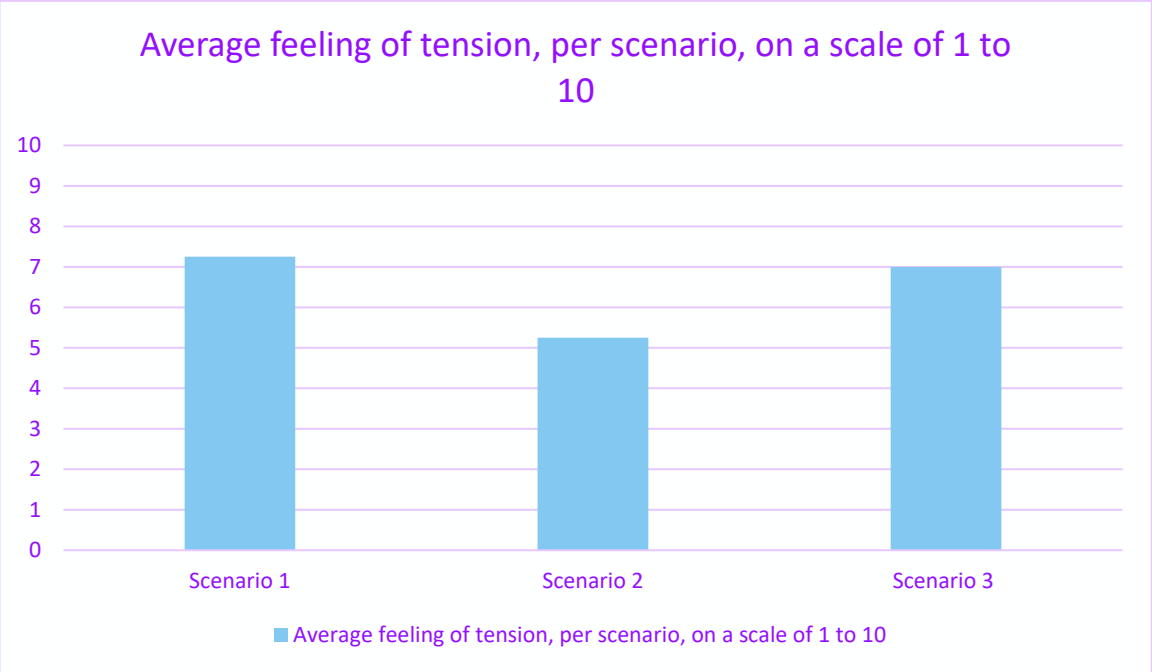


FIGURE 4. The average feeling of tension, per scenario, on a scale of 1 to 10.

As for difficulty, the results indicate the perceived difficulty was similar between scenarios, while scenario one was perceived as marginally more difficult by playtesters (FIGURE 5). Across scenarios one and three, many players cited the loss of blood being the primary source of difficulty, while across all scenarios, the chase sequences were cited as the primary source of friction during play.

Some players expressed that some of the difficulty in the game derived from confusion relating to the final chase sequence, where they did not know that the exit door leading to the elevator was opening, thus spending more time than necessary focusing on the enemies in the chase sequence.

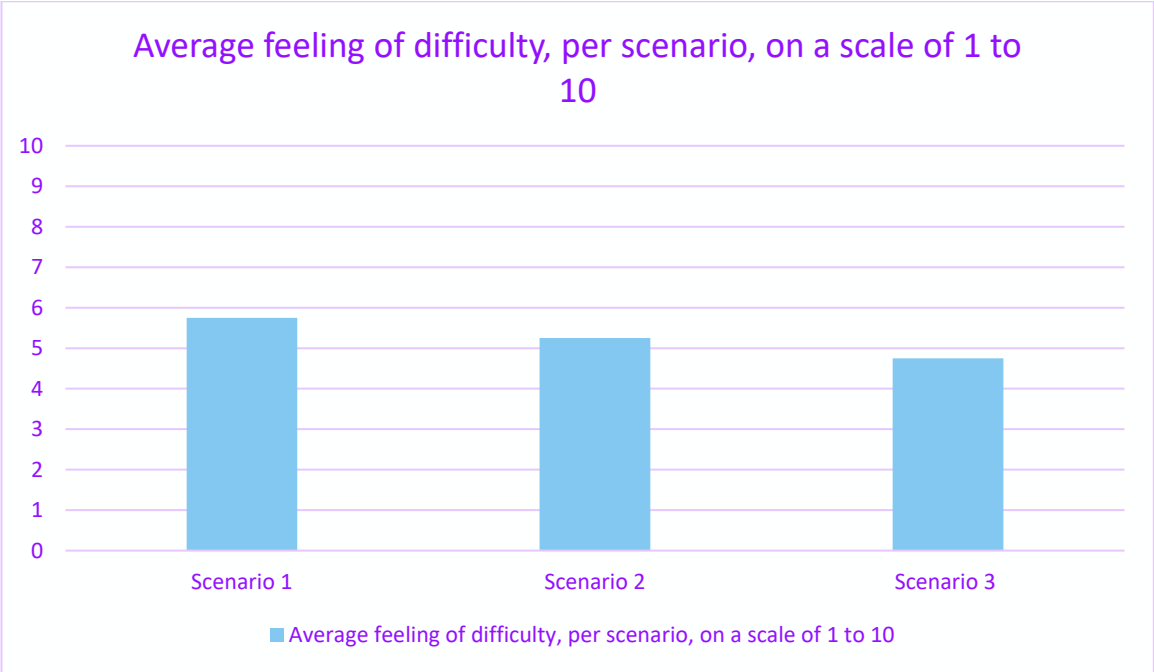


FIGURE 5. Average feeling of difficulty, per scenario, on a scale of 1 to 10

7 DISCUSSION

The findings related to applying these methods and techniques to a playable prototype are somewhat inconclusive with the data gathered from the playtest sessions. However, they point to the possibility that having a diminishing resource affects a player's perceived feeling of tension, while not having a diminishing resource lets the player immerse themselves more intently in the experience. As for the effects of removing the player's ability to sprint, it is unclear if it impacted the player's agency or their perceived feeling of tension.

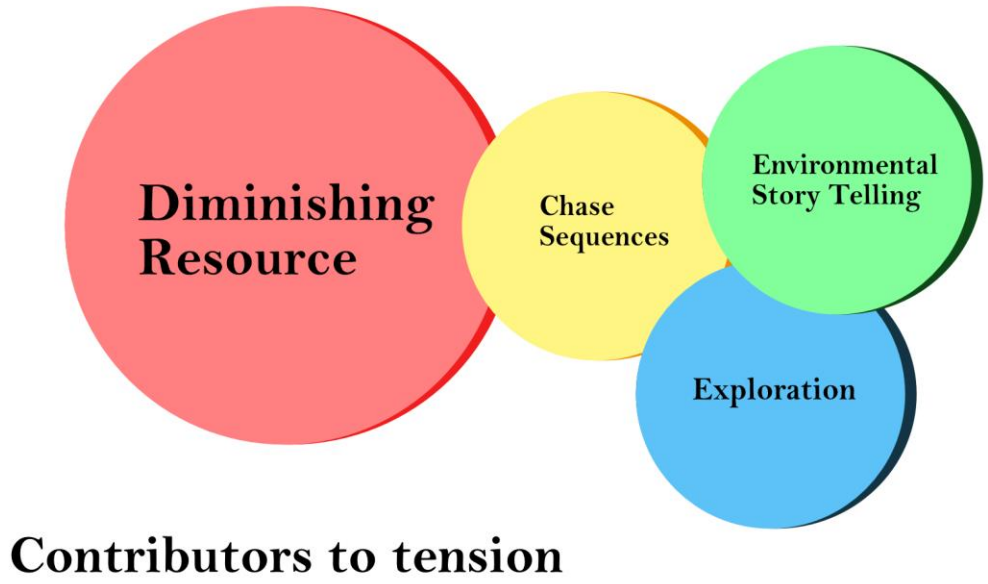


FIGURE 6. Areas that contributed to the building of tension and how they intersect.

When examining the results regarding the impact a diminishing resource has on the overall gameplay experience, it is clear that players feel that it ultimately diminishes the impact of the overall feeling of tension from other areas. The focus of the experience ultimately becomes surviving, which leaves little room for meaningful exploration other than to hunt down blood bags to replenish their Blood Gauge. While the diminishing resource was noted to have made the chase sequences more intense, it was rarely mentioned that it affected the other areas of the game. The other aspects tended to intersect and enforce each other when the Blood Gauge was unavailable in Scenarios two and three (FIGURE 6).

In Scenario One and Three, due to the pressure of blood loss mechanic, players often missed details that were present in the stage. The numerous jump scares were not mentioned at all by either of the two groups and the few hidden rooms were seldom found, in contrast to the players in Scenario Two who mentioned these elements a few times in the survey. This indicates that when implementing a time pressure based mechanic, it may not be worth spending additional resources on location based events or scares if the player will just walk past them, because they are under pressure.

8 CONCLUSION

The study found that there are numerous methods and techniques that games in the survival horror genre have effectively employed to keep players on their toes, which can be repurposed in a game prototype. Whether it be with intense chase sequences, the vulnerability of having enough resources to contend with enemy cohorts, or the unsettling ways environmental storytelling can enhance the themes and motifs of isolation, weakness, and fear of death.

In addition, tension could be created using the gameplay elements implemented in the Blood Loss game prototype. If the game were to be developed further, a decision would have to be made, whether the developer would like to pursue a more atmospheric and exploratory approach or continue creating a more adrenaline-filled experience using the blood loss mechanic. It is crucial to analyze whether or not these elements and mechanics cannibalize each other and whether they are causing a reduction in the potential tension they could create if implemented separately rather than in conjunction with each other. Having a diminishing resource that threatens the player's life is an effective way to create tension, even though it ultimately reduces the impact of other elements such as environmental storytelling, exploration, and general atmosphere.

In this thesis, mainly resource management, exploration, environmental storytelling, and chase sequences were explored, yet there are plenty of other avenues to explore when discussing how to create tension with game and level design. The study lightly touched on the subject of manipulating player agency, yet it is one of the more exciting areas that should be explored more thoroughly.

The findings in this study highlight the importance of playtesting gameplay mechanics early on to determine how they affect player mentality, how their approach changes relating to the mechanics they are subjected to, and can be used as a jumping-off point to creating a similar survival horror game prototype.

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APPENDICES

Appendix 1. Playtest survey

1. How many hours do you spend playing games in a week? *

Mark only one oval.

- ◯ Less than an hour
- ◯ 1 - 2 hours
- ◯ 2 - 4 hours
- ◯ 6 - 8 hours
- ◯ 10 - 16 hours
- ◯ More than 16 hours

2. How familiar are you with horror games? *

Mark only one oval.

- ◯ Very unfamiliar, I rarely play them
- ◯ Somewhat unfamiliar, I have played one or two
- ◯ Neutral, I am aware of games in the genre and have played some
- ◯ Familiar, I have played many
- ◯ Very familiar, I have routinely played horror games

3. What are some of your favourite horror games if any? *

4. On a scale of 1 to 10, how difficult did the game feel? *

Mark only one oval.

Really Easy

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

6 ◯

7 ◯

8 ◯

9 ◯

10 ◯

Almost Impossible

5. What moment stood out the most during the demo? *

6. On a scale of 1 to 10, how tense, anxious or stressed did you feel throughout the demo? *

Mark only one oval.

Relaxed

1 ◯
2 ◯
3 ◯
4 ◯
5 ◯
6 ◯
7 ◯
8 ◯
9 ◯
10 ◯

Very anxious

7. Describe in a few sentences, what felt the most tense, scary or surprising during the demo. *

8. How much of the stage did you feel like you explored? *

Mark only one oval.

Did not explore much

1 ◯
2 ◯
3 ◯
4 ◯
5 ◯

Explored most of the stage

9. At any point during the game, did you feel like you were low on health. Explain shortly. *

10. If you had a magic wand and could change, add or remove anything from the game, what would you do? *

11. Free comment