

The Path to Resilience

What if Failure was the Key?

Emilie TRAN and François BARNOUIN



Figure 1: Game first view

Abstract

This game aims to challenge the common fear of failure by encouraging players to view setbacks as essential learning opportunities. Set within a dynamic environment, the game features a virtual human that plays a central role in guiding the player through increasingly complex tasks. The VH evolves from a distant figure to a supportive companion, helping the player learn from their mistakes and navigate obstacles. The game's technical framework uses a behavior tree for managing player interactions, room transitions, and VH dialogue trees. There also is a variety of sensors that handle player movement and room progression. The integration of the virtual human allows for a more immersive experience, as the VH's actions, reactions, and dialogue adapt based on the player's choices and progress. By focusing on the idea that failure is a crucial part of success, the game encourages players to embrace challenges, build confidence, and develop a more positive outlook on overcoming difficulties.

1 Previous Work and Motivation

Recent research on failure underscores its complexity in goal pursuit, suggesting that people often avoid failure due to both emotional and cognitive barriers that prevent effective learning. Carlson and Fishbach (2024) [1] identified that failure is perceived as both unpleasant and uninformative, leading individuals to either avoid setting challenging goals or fail to learn from setbacks in goal striving. Emotional barriers, such as the threat to self-esteem, and cognitive barriers, where failure is mistakenly seen as lacking valuable information, make people less inclined to engage with or learn from unsuccessful attempts.

Since people often feel unmotivated or afraid to take on challenges, whether due to a lack of confidence or fear of failure. Our game challenges this mindset by encouraging players to view failure not as a setback, but as a key part of the learning and growth process. By adding a sense of challenge, we create an environment where failures are seen as valuable opportunities to improve and try again. The VH plays a central role in this, guiding the player through their failures and helping them understand that each attempt brings them closer to success. Additionally, the game is designed to be accessible to all ages, requiring no prior knowledge or special skills, so everyone can experience how failure can ultimately lead to progress and achievement.

2 Content

2.1 General Environment

Since the game addresses the challenges of life, it has a dark and immersive atmosphere. The main setting is a large, two-part room that feels like a dungeon due to its rectangular, empty shape and its stone-textured walls, floors, and ceilings in brown tones. The entire game takes place in this single room, which reconfigures itself based on the player's progress. To create a dim indoor lighting effect, we used a "gradient light" with darker, brownish colors. This lighting reinforces the game's moody and somber tone.

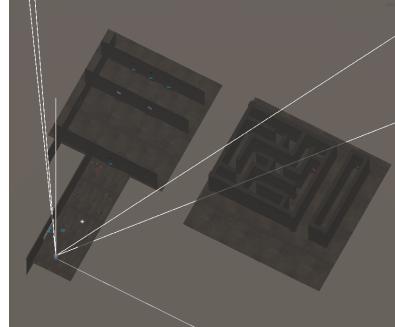


Figure 2: Hand made two-part room

2.2 Character Design

For the character design, we aimed to find an VH (non-playable character) that looks both mischievous and wise. We chose the peasant character from Mixamo [2], as it fit these traits well. We also added to this character eyes in blender to make him more believable.



Figure 3: Virtual Human design

3 Rooms

3.1 Room 1

This room focuses on the role of luck in success and failure, showing that outcomes can often be affected by factors beyond one's control. The player first explores the game environment, discovering the corridors, the ambiance, and meeting the VH. There are three doors, and the player must choose the correct one to proceed. The VH may help or mislead the player by suggesting the wrong door. There are unlimited attempts, but the correct door changes with each try.

3.2 Room 2

Room 2: This room represents the confusion that arises when someone lacks clear objectives or guidance, illustrating the challenge of finding the right path with little direction. The room is mostly empty, containing only one exit door, a chest, a window, and the VH. The VH provides clues that may be misleading or helpful.

3.3 Room 3

This room highlights the importance of self-assessment and setting realistic expectations. Here, the player must estimate the time needed to reach the next door. The VH, positioned in the hallway, interacts with the player and times the attempt, with no right or wrong answers. If the player misjudges, they can retry. The VH's behavior changes depending on whether the player is too fast or too slow.

3.4 Room 4

This room emphasizes the value of persistence and learning from failure, as each attempt brings the player closer to success. The player must solve a riddle with unlimited attempts. The VH provides hints and encouragement through animations and dialogue, which adjust based on the accuracy of the player's guesses.

3.5 Room 5

This room highlights the understanding that success often requires effort and that there are no easy shortcuts. Here, the VH is friendly and shares a story that might reflect the player's own journey. If the player tries to skip the conversation, the VH expresses disappointment. The player faces a choice between two doors, one with a shortcut sign and one with a maze sign. The VH is blocking the path for the maze. If the player selects the maze, they enter a complex labyrinth with navigation signs. End Room: This final room presents a report on the player's journey, including attempts made and key lessons learned.

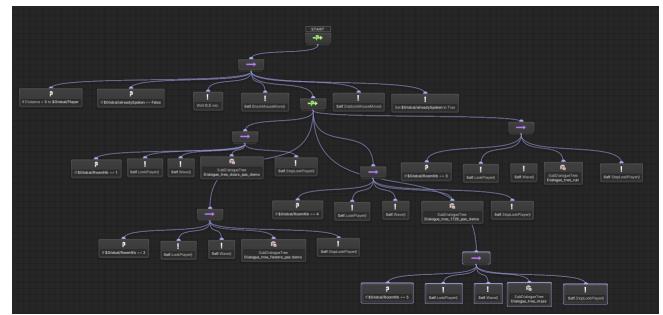
4 Implementation

4.1 General

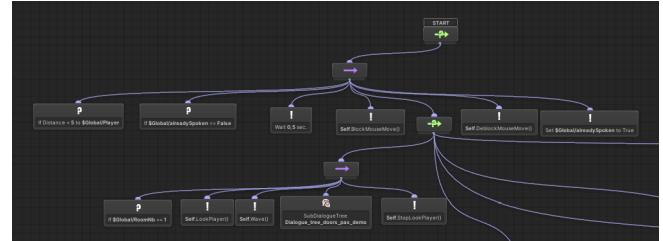
The game is structured around a global behavior tree that manages the flow of interactions and dialogues based on the room the player is currently in. A primary script oversees success conditions, updating variables in the blackboard that track player progress. The VH's animations are managed by a separate script that activates specific animations using boolean states, while another script handles transitions between rooms. Some rooms may also have unique scripts to accommodate specific gameplay mechanics.

To facilitate room transitions, we used various types of sensors that detect the player's position and automatically teleport them when they reach a specific point. This teleportation is done using the "Late_Update" Unity function because we need to be sure that it will be done after every other movement. When the player is teleported, the system checks for victory conditions, allowing the room to change if the player has succeeded. These sensors are selectively activated or deactivated based on the room number, ensuring that only relevant sensors are active to control progression smoothly and avoid accidental teleports or transitions.

During dialogues with the VH, the player's FPS controller is temporarily disabled to keep the player's focus on the interaction. Both the player and the VH automatically turn to face each other, ensuring clear visibility of the VH's gestures, eyes and animations. This alignment aims to enhance the player's immersion. It also makes the VH movements and reactions more noticeable and helps the player interpret cues, such as gestures indicating truthfulness or deception.



(a) General tree



(b) Room 1 branch.

Figure 4: Behavior tree examples

4.2 Key features

4.2.1 Lie Detection

In rooms where the VH might lie (Rooms 1 and 2), a script sets a random "truth" or "lie" variable in the behavior tree. It determines whether the VH gives honest or misleading information. The VH's gestures, like hand movements, eye direction, or way of speaking, provide subtle cues that the player can interpret to detect lies. When the VH shakes their head while affirming statements like "This door is the one," or when they roll their eyes and avoid the player's gaze, he is lying. Alternatively, when the VH nods while giving advice, it signals that he is telling the truth.

4.2.2 Input and Output Handling

In rooms where the player needs to provide input, such as Room 3 (estimating his time) and Room 4 (answering the riddle). When needed, a boolean is set and the update function of a script listens for keyboard inputs, stores them in a string variable and displays it on the screen using a Text UI for clarity. Once the player has validated his input (by pressing enter), a script processes the input, setting blackboard variables based on the responses, which then trigger corresponding animations or dialogue sequences in the VH. The script also checks if the player wrote letters instead of numbers. If so, it triggers a dialogue that is made as less out of place as possible to inform the player only digits are accepted.

4.2.3 Interactive Animations

The VH's animations are dynamically linked to the player's actions and responses. For example, in Room 4, the VH's reactions change based on how close the player's answer is to the correct solution. Similarly, in Room 3, the VH's body language and dialogue adjust according to whether the player was too fast or too slow. This system



Figure 5: Input display

of responsive animations helps create a more interactive experience by making the VH feel more reactive to the player's performance.

4.2.4 Looped Dialogue with Conditional Exit

In Room 4, the VH engages the player in a looped dialogue sequence designed to encourage problem-solving and persistence. This dialogue cannot be exited by any action other than finding the correct solution to the riddle. This feature is meant to keep players engaged in the challenge and make them learn through repeated attempts.

5 Additional features

5.1 Sounds

The game has a calm and mysterious background music that fits the overall theme, creating a focused mood without being too energetic to immerse the player. To amplify this mood we added a slight fog in the game. When the VH speaks, there's a sound effect that adds life to the character and makes the dialogue more dynamic/life-alike. We used three types of sounds: one for short phrases and two for longer ones, switching between them if two long phrases come one after the other. The guards also have their own sound: an encouraging shout. Originally, it was a childlike cry[sound], but we changed the pitch to make it deeper and more fitting for the guards.

5.2 Guards

The previous mentioned change creates a contrast with the beginning of the game, where the guards are initially perceived as watching over the player in a more intimidating way. As the game progresses, their encouraging shouts and animations reveal a shift in their role, showing that they are not observers but supporters of the player's journey. This shift in behavior reflects the player's advancement in the game, acting like a game progression indicator: at every room cleared, an additional guard will root for you. Each guard has a designated awareness zone and will shout encouragement when the player enters it, ensuring their feedback is responsive to the player's movements.

5.3 'Lessons to be learned' sentences

At the end of each room, a sentence appears on a whiteboard initially empty in the corridor, displaying the moral lesson of the room the player just completed, as well as the previous ones. This feature helps reinforce the lessons learned throughout the game, allowing

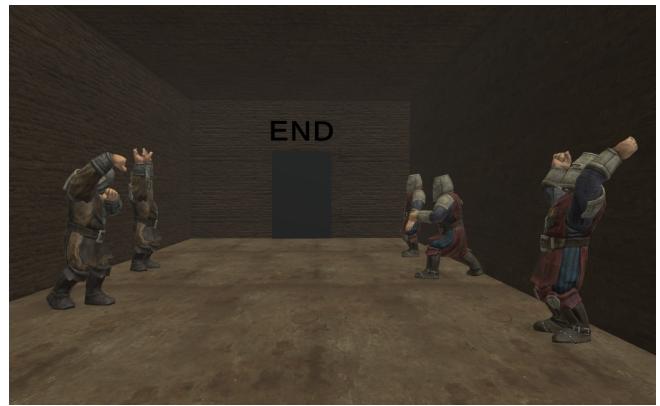


Figure 6: Shift in guard behavior

the player to reflect on their progress and growth. It aims to serve as a reminder of the key themes and encourages the player to keep in mind the valuable lessons learned during their journey.

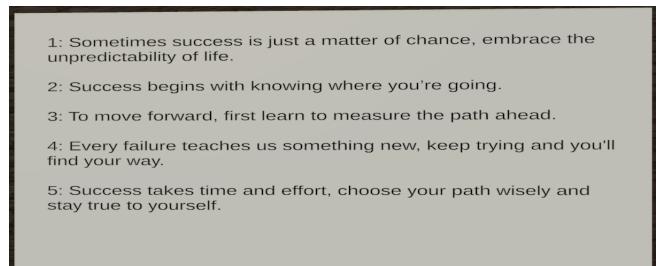


Figure 7: In-game whiteboard

6 Solutions

Room nb	Solution
1	"take this door"/saying no with head/eyes rolling up = lying
2	take the window
3	5500ms if you go straight
4	1729 (Hardy-Ramanujan number)
5	remember the reversed maze sign and listen to the whole story

7 Fun facts

Room 1: The correct door is chosen randomly each time, but there's a hint hidden in the VH's dialogue. The VH will always mention a door that's one number higher than the correct door. For example, if the VH mentions Door 2, then Door 1 is actually the correct choice.

Room 2: By just following along the left wall, players can accidentally solve the room without talking to the VH or even noticing there's a chest to find.

Room 3: Room 3: Initially, the time was measured in seconds using a floating-point number, but we discovered that the input for the decimal point (".") wasn't working correctly. This led us to a new approach: measuring the time in milliseconds instead but without telling the player until the third attempt.

Room 4: Enthusiastic mathematicians might be able to solve the riddle on their very first try.

Room 5: The position of the choices changes each attempt, so impatient players can't just click through the dialogue quickly (there

is no shortcut!). The maze solution is given above the door, but it's displayed in reverse!

8 Conclusion and Future Work

Room nb	Lessons
1	"Sometimes success is just a matter of chance, embrace the unpredictability of life."
2	"Success begins with knowing where you're going"
3	"To move forward, first learn to measure the path ahead."
4	"Every failure teaches us something new, keep trying and you'll find your way."
5	"Success takes time and effort; choose your path wisely and stay true to yourself."
End	"Failure was the key to your success..."

As the game progresses, the player's relationship with the VH evolves. Initially, the VH may seem distant and deceptive, but over time, he becomes more like a companion, sharing their own story and offering honest guidance. We plan to add more rooms, animations, and emotional depth to the VH in future versions, as well as enhancing replayability.

References

- [1] Carlson, A. and Fishbach, A. (2024). Learning from Failure: A Psychological Perspective.
- [2] Adobe Mixamo. (n.d.). Available from: <https://www.mixamo.com>