

No Death, No Consequences? Immortality's Impact on Gaming Morality

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Does immortality in video games affect player behavior, decision-making, and morals? This study examines whether players' moral choices differ when their character is mortal versus immortal. This was investigated using a 2D platform game developed for the purpose of this research, where players were faced with moral dilemma's in a mortal level and an immortal level [10]. In total, 36 participants played this game in both mortal and immortal modes. The results showed that there was no significant difference between the number of moral decisions made when mortal or immortal. Therefore, it seems immortality had no effect on a player's overall moral behavior. However, players took longer to decide on immoral actions, suggesting more hesitation and carefulness. Moreover, questionnaire results revealed that players reasoned their choices but figured the consequences of their choices did not have a big impact on the game play. Further research can investigate the potential impact of immortality on a player's morals by using dilemma's that show more relevance to the game.

Additional Key Words and Phrases: Video game, 2D platform game, mortality, immortality, moral decision-making, MoralBERT

1 Introduction

Video games provide a unique environment for exploring human behavior and decision-making. They offer a controlled yet immersive space where players can be placed in scenarios that may not be feasible or ethical to replicate in real life. Games can simulate different situations. They let players face challenges, make choices, and experience consequences in a safe setting. This can reveal how people think and act in certain situations. Fundamental human needs can help explain these patterns in behavior.

Part of this research is based on *Maslow's hierarchy of needs*. This psychological theory categorizes human needs into five levels. These levels can be seen in Figure 1. They include physiological needs, safety needs, love and belongingness, esteem, and self-actualization. Physiological needs refer to the basic requirements for survival, such as food, water, and shelter. Safety needs involve security and protection, such as personal safety and financial stability. Love and belongingness relate to relationships, intimacy, and social connections. Esteem involves feeling good about oneself, being appreciated by others, and achieving goals. Self-actualization means reaching one's full potential and growing as a person [9]. Figure 1 shows a pyramid with the most fundamental needs at the base and the self-fulfilling needs at the top. The foundational needs should typically be met before higher-level needs can be addressed.

In video games, these levels of need can affect how players approach challenges. Mortal gameplay introduces the risk of failure, which mirrors the need for safety in Maslow's hierarchy. On the other hand, immortal gameplay removes

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this risk. Without the fear of failure or harm, players may focus on other needs, such as belonging, esteem, or self-actualization. Understanding how this difference in needs when mortal or immortal affects decision-making can give insights for game design. It can reveal how players make decisions under risk or no risk. Developers can use this to design games that align with intended player behavior. It helps ensure that game mechanics support the goals of the game. For example, it allows developers to create challenges that encourage specific actions or decisions. This makes the game experience more consistent with its intended purpose, whether that is education or entertainment. Furthermore, by studying the effect of presence or absence of risks on moral outlook, knowledge can be gained on how risk changes how players act. This is important for understanding human behavior in games and could potentially provide a baseline for researching behavior in real life.

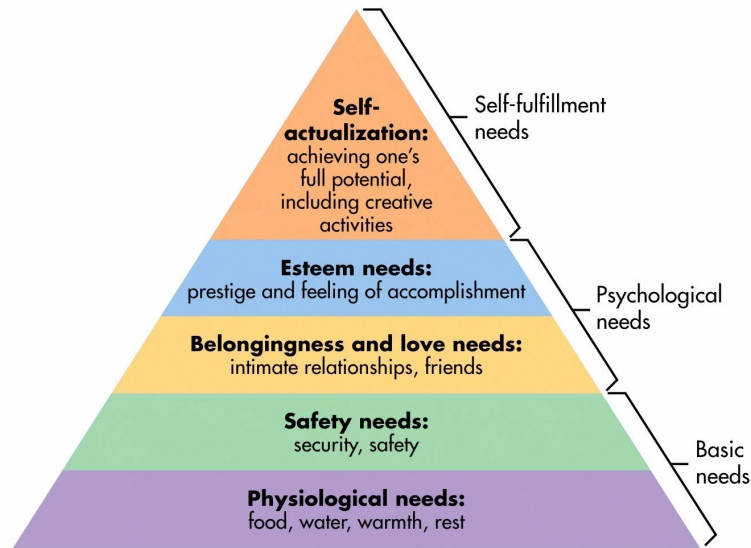


Fig. 1. Maslow's Hierarchy of Needs. This pyramid shows human needs, starting with basic needs for survival (physiological and safety needs) and progressing to self-fulfillment (self-actualization) [9].

This research aims to explore how immortality affects players' behavior and moral choices in video games. The top of the pyramid of Maslow's hierarchy of needs represent the self-fulfillment needs [9], which includes morality. This will be done through a simple 2D-platform game where making decisions is a key component of the game. Player decisions during mortal and immortal gameplay will be compared to answer the following research question: ***How does immortality affect players' behavior, decision-making, and moral outlook in a video game?***

We hypothesize that players will make more moral decisions when they are immortal compared to when they are mortal, as the absence of personal risk encourages more selfless in-game behavior.

This paper gives an overview of relevant work related to the psychology behind decision-making, moral decisions in real-life vs in games, and the influence of game design on moral decision-making in section 2. The methodology (section 3) describes the used terminology, the experimental setup, and the execution of this research. In section 4, the results of the findings are presented. This is then further interpreted in the discussion (section 5). In section 6, conclusions are drawn, and ideas for further research are suggested in section 7.

2 Related work

Research on moral decision-making in video games connects psychological theories, game mechanics, and player experiences. This section discusses existing research on the psychology of decision-making, morality in games, and how mechanics like mortality and time pressure affect choices. It also discusses the role of games in encouraging moral reflection and learning.

2.1 Psychology Behind (Moral) Decision-Making

Studies in psychology provide insights into how people make moral decisions in different contexts. The dual-process model of moral judgement explains that responses to moral dilemmas result from a competition between cognitive reasoning and emotional responses [3]. Emotional responses often lead to quick, intuitive decisions. Cognitive reasoning takes more time. Time pressure can increase reliance on emotions, making utilitarian choices less likely in some cases. However, a study by Del Popolo Cristaldi et al. suggests that time pressure does not always reduce decisions that focus on the greater good but is influenced by individual traits like impulsivity and reward sensitivity [3].

Risk-taking is part of decision-making in uncertain situations where the possible positive and negative outcomes are known. A study by de-Juan-Ripoll et al. (2018) found that traits like impulsivity and sensation seeking make people more likely to take risks. On the other hand, skills like emotion regulation and executive control help them evaluate situations better and avoid unnecessary risks [4]. Both studies show that decision-making is shaped by cognitive and emotional factors. Individual traits determine whether people rely more on quick emotional responses or slower reasoning [4][3].

This gives insights into how players might make choices in games with and without mortality mechanics. In mortal gameplay, risks are present and may increase reliance on emotions. In immortal gameplay, risks are removed, which may encourage cognitive reasoning. Understanding this difference can explain how risk changes player behavior and decision-making. Our research tries to explore what taking away all risks in a game, does to players' moral or immortal decision-making. For example, players might make the immoral decision if that means they obtain an item to defend themselves in the game when mortal. Additionally, players might behave more morally when they know there is no risk for them to die when immortal. In the first case the player actively decides to reduce risk, and in the second case the risk is already removed beforehand.

2.2 From Real Life to Video Games

People use different ways to make moral decisions in real life. Martin et al. (2021) explain two main approaches. Utilitarian decisions aim to help the most people or reduce harm. Deontological decisions follow strict rules, even if the outcome helps fewer people. The trolley problem, for example, is a moral dilemma where a runaway trolley is heading toward five people tied to the tracks. You can pull a lever to divert the trolley onto another track. This would save the five people but kill one person on the other track. The utilitarian decision would be to save five lives by sacrificing one.

The deontologist decision would be to avoid causing harm altogether, which would result in the death of five people [7].

Games can show these moral ideas in action. In *Papers, Please*, players face tough decisions, like choosing between helping their family or being fair to others. Cabellos et al. (2022) found that such games make players think about moral problems. However, many games focus on goals like winning. This can distract players from deeper moral reflection. Players who spend more time in these games are more likely to notice and think about the moral issues [2]. Games provide a way to explore morality safely. They let players try different approaches to tough choices without real-world consequences. However, how well do these in-game decisions reflect the people's real-life morals?

2.3 Morality and Ethical Choices in Video Games

Research has shown that players often bring their real-life moral intuitions into the virtual worlds of video games. For example, studies on decision making in the game *Detroit: Become Human* found that players use their personal moral values when making in-game decisions [1][16]. Players align their choices with their own sense of right and wrong, particularly during their first playthrough. However, players often move away from their moral values in later playthroughs as they explore alternative narratives in the games [16].

A review study on violent video games suggests that moral disengagement affects how players make decisions. In games like *Call of Duty: Modern Warfare 2* and *Fallout 3*, players face moral challenges. These include harming civilians or sacrificing others. Players often justify their actions by thinking, "It's just a game", or blaming in-game characters. These excuses help them enjoy the game [13].

This is different from the findings of the studies looking into the game *Detroit: Become Human*. The difference might come from how the games present moral choices. Narrative-driven games encourage emotional engagement and reflection. Violent games focus more on action and gameplay, making it easier for players to disconnect from their morals.

2.4 The Influence of Design on Moral Decision-Making in Games

How choices are shown can affect if players' decisions in games match their real-world morals. The study by Ryan et al. in 2023 on morality meters shows that players think more about their choices when the feedback on their moral decisions feels natural. This feedback evaluates if the players' in-game choices are considered good or bad. Intuitive meters seem to match expected moral norms, while counter-intuitive meters reduce their moral decisions [12].

Research on human-machine interfaces adds to this. Small design changes can influence decisions. This includes, for instance, how quickly a prompt appears or the effort needed to choose an option. These changes can push players toward choices shaped by the interface rather than their own values. When the presentation is unclear or overly complicated, players are less likely to rely on their morals [6]. Clear and intuitive design helps players stay connected to their own moral beliefs.

The discussed related work shows that moral decision-making in video games can be shaped by psychological traits, game mechanics, and how choices are presented. Players' real-world moral principles can be reflected in their in-game decisions. However, features like mortality and feedback systems can influence their in-game decisions.

These findings are incorporated in our research methodology. This is done by keeping the game design straightforward and ensuring that all decisions (moral vs immoral) require equal effort to make. By exploring the effects of taking away or including risk, we aim to gain insights on changes in players' moral outlooks. We examine how players make moral choices under mortal and immortal gameplay.

3 Methodology

3.1 Terminology

Beforehand, for the explicitness of the research, we define some terms in the very beginning:

- **Immortality:** immortality in games can take different forms. In this context it means a state where players cannot be harmed or killed during gameplay.
- **Mortality:** during the game used for this study, mortal means that the player is able to take damage and lose lives. Players start with three hearts/lives. When all lives are lost, the player dies and respawns at the previous checkpoint.
- **Moral vs immoral choice:** the moral choices are decisions that align with socially accepted ethical standards. Immoral choices are decisions seen as selfish and violates ethical standards. Every decision a player faces consists of a moral option and an immoral option defined by us. The player not explicitly know that this is the case.
- **Moral outlook:** in this research, moral outlook refers to the tendency of players to make moral choices.

3.2 Game Design and Game Versions

We developed a simple 2D platform game for the computer in Unity. The game consists of four versions and eight sub-versions [10]. Each version (1, 2, 3, 4) is divided into two sub-versions: mortal (1.1, 2.1, 3.1, 4.1) and immortal (1.2, 2.2, 3.2, 4.2). Each player first plays the corresponding moral subversion, and then the immoral one. The purpose of having four main versions is to ensure every player encounters all six unique decision rooms across different playthroughs. The versions also ensure that each decision room is played an equal number of times under mortal and immortal conditions. Furthermore, by changing the order of the rooms, we try to reduce the likelihood that players will notice patterns or guess the focus of the study.

Each subversion contains eight rooms arranged in the same structure. This includes a start room, three decision rooms, three normal rooms, and a finish room:

- **Start room:** this room provides players with instructions on how to play the game. The instructions explain the basic controls and keybindings to play the game. In the immortal sub-versions, this room includes a glowing apple that players have to interact with to gain immortality (Figure 2). It is designed this way to make the goal of the research more unclear to the players. Immortality is a non-optional step to ensure all players experience the intended mechanic. Once the apple has been picked up by the player, a message saying the player became immortal pops up, and the door to the next room opens.
- **Decision rooms:** these rooms are where players are presented with decisions that lead to two options (one moral and one immoral). Each decision is clearly defined with a short dialogue beforehand. An example of this can be seen in Figure 4. When there is a choice to be made, an icon pops up that shows the player there is a dialogue they can open (Figure 5). Players can not go into the next room until they make a choice. The

placement of these rooms alternated with normal rooms to reduce the focus on decision-making and keep a balanced gameplay experience.

- **Normal rooms:** these rooms include obstacles, enemies, or platforming challenges to maintain player engagement and disguise the primary focus of the game. It is designed in a way to make them engaging but not overly difficult.
- **Finish room:** this room marks the end of the game. It provides a visual indication that the subversion is completed.



Fig. 2. Screenshot of a player trying to obtain the immortality apple.

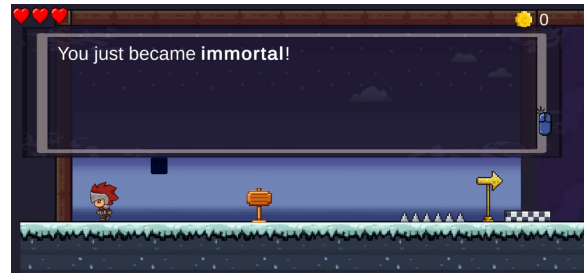


Fig. 3. Screenshot showing the player becoming immortal.



Fig. 4. Example of an in-game decision dialogue.



Fig. 5. Example of an interaction icon indicating there is a dialogue available.

In total, 6 different decision rooms are created. These rooms are referred to as the cage room, coin room, fire room, fireball room, food room, or shoes room. All these room contain different dialogues with different decisions to be made:

- **Cage room:** there are two cages in this room. A person is trapped in a cage, but the other cage contains a sword. Players are only able to open one cage by pulling the lever. They can either obtain a sword or free someone.
- **Coin room:** during the game, players can collect coins. In this room, they are given the option to donate money to a poor villager and his sister, or to keep the money for themselves. Players' are not informed that they can't use the coins for anything. Neither decisions advantages or disadvantages the player.
- **Fire room:** players are faced with the dilemma to save someone from the fire or to continue walking and reduce their own risk. Players are not informed of the fact that they will obtain the ability of fire resistance when helping the character.

- **Fireball room:** players encounter a girl practicing her magic. They are offered the chance to take over fire magic from a girl by killing her, or they can wish her luck during training. Both options allow the player to obtain this magic ability, but it is phrased in a way that it seems they can only obtain the ability by killing the girl.
- **Food room:** here, players stumble upon a starving villager, whose cookie just got stolen. After grabbing the cookie, players can decide to eat it or to give it back. By eating it the players will gain an extra heart/life, but they are not informed of this.
- **Shoes room:** there is a soldier with unique boots located in this room. The soldier mentions these boots make you able to jump higher. Players can decide to steal the boots, or they can simply compliment the shoes.

As mentioned above, some decision rooms provide rewards for moral actions, while others do not. This variability reflects real-life scenarios. In reality, doing the right thing is not always rewarded. With this we also hope for the game to remain unpredictable to users. This encourages decision-making rather than pattern recognition.

The four different game versions of this game have the following room orders:

- **Version 1:**
 - 1.1 (Mortal): Fireball Room, Coin Room, Fire Room
 - 1.2 (Immortal): Cage Room, Shoes Room, Food Room
- **Version 2:**
 - 2.1 (Mortal): Fireball Room, Food Room, Shoes Room
 - 2.2 (Immortal): Cage Room, Fire Room, Coin Room
- **Version 3:**
 - 3.1 (Mortal): Cage Room, Food Room, Coin Room
 - 3.2 (Immortal): Fireball Room, Fire Room, Shoes Room
- **Version 4:**
 - 4.1 (Mortal): Cage Room, Fire Room, Shoes Room
 - 4.2 (Immortal): Fireball Room, Food Room, Coin Room

3.3 Participants

In total, 36 players participated in this research. To ensure an even distribution across versions, each version is assigned to 9 players. The participants came from different backgrounds and different age-ranges. However, the majority consisted of university students in their twenties and thirties. To further reduce any potential biases, different levels of gaming experience across the participants were taken into account. The participants were categorized into three subgroups:

- **Casual players:** who play no video games or have casually played one or two video games
- **Mild players:** who have played several video games, but have not played video games that are similar to the RPG platformer game used in this research
- **Hard-core players:** who have played video games similar to the RPG role playing theme in this research, or are very familiar to all types video games.

3.4 Data Collection and Analyses

3.4.1 Quatative Data: Decision Logs

During gameplay, every decision that is made by the players gets logged in separate *.txt* files for each player and subversion. These logs include the decision room, the choice made, the time taken to make the decision, and timestamps for opening the decision dialogue.

In order to be able to analyze these results, the different decisions were manually labeled by us as moral or immoral for each different choice. Table 1 shows the decision rooms and their respective choices labeled as moral or immoral.

Table 1. All different rooms with corresponding possible decisions and their labels.

| Room Name | Choice | Label |
|--------------|-------------------------|---------|
| CageRoom | Freed the human | Moral |
| CageRoom | Got the sword | Immoral |
| Coinroom | Donated money | Moral |
| Coinroom | Kept the money | Immoral |
| FireRoom | Helped the villager | Moral |
| FireRoom | Let them die | Immoral |
| FireballRoom | Let her live | Moral |
| FireballRoom | Killed her | Immoral |
| FoodRoom | Gave them the cookie | Moral |
| FoodRoom | Ate the cookie yourself | Immoral |
| ShoesRoom | Complemented his shoes | Moral |
| ShoesRoom | Stole his shoes | Immoral |

To quantize the results and use regression scores to represent the moral outlook, several methods were taken to interpret the data collected from participants. We firstly calculated the correlation with the chi-square independence test using data from the decision logs. This was followed by making moral decision comparisons during mortal vs immortal gameplay. After that, we compared the results from the game log and the choices the participants claimed in the questionnaire to calculate the choice consistency rate across the participants with and without immortality.

3.4.2 Qualitative Data: Questionnaire

Furthermore, after completing the game, the participants had to fill in an anonymous questionnaire in Qualtrics (A). There were four different questionnaire versions to ensure it matched the choice orders of the corresponding game version the participant played. The first question asked participants to guess the purpose of the research to determine if they understood the study's focus and if this influenced their decisions. An additional question collected data on gaming experience. This was a question on what the person's favorite games are or if they don't play at all. Participants also reflected on their in-game decisions, explaining their reasoning, rating how they felt about each choice (1 = guilty, 5 = proud), and indicating how much thought they put into their decisions (1 = made immediately, 5 = hard to decide). This helps gain qualitative insights on the quantitative results of the decision logs.

Previous studies have demonstrated the legitimacy of using language models for morality labeling. Roy et al. [11] employed few-shot learning on morality frames using in-context learning techniques, while Preniqi et al. [8] implemented a fine-tuned BERT model to assign moral scores to contextual inputs.

Conventional language models often ignore the sequence of context due to architecture constraint, but with attention mechanism language models can now grasp sequential data even if in long distances [14]. Bidirectional Encoder Representations from Transformers, or BERT, is a pre-trained large language model that takes advantage of attention mechanism inside transformer’s architecture with the only encoder part, especially good at classification tasks[5]. Additionally, BERT models are good 0-shot and few-shot learners, making it useful for transfer learning onto small datasets [15].

The BERT language model takes raw text as input and first tokenizes it into word tokens for further processing. These word tokens are then mapped to their corresponding embeddings using an embedding matrix. Subsequently, the transformer encoder layers calculate the relationships between the tokens, capturing contextual meaning. The input tokens are treated as vectors, and the output is a set of probabilities representing the most relevant vectors from the distribution. This is achieved using the softmax function to generalize over the embedding matrix. The base BERT model consists of 12 stacked transformer layers.

This motivated us to employ MoralBERT to perform moral score labeling for the textual reasoning behind the choices made by our players. MoralBERT is a fine-tuned version of BERT with additional training for moral classification tasks. It outputs ten probabilities, each representing the likelihood of the input sentence corresponding to a specific moral class. These probabilities are referred to as moral scores in our research.

In our research, we use 0-shot learning on MoralBERT since our data is neither sufficient to train a customized model nor for fine-tuning while the performance of BERT models always tends to be enough satisfactory regardless of further optimization[11]. For analyzing moral scores, we simplified the original ten categories from MoralBERT into five paired comparisons of positive and negative moralities. These pairs are:

- Case vs Harm
- Fairness vs Cheating
- Loyalty vs Betrayal
- Authority vs Subversion
- Purity vs Degradation

In each pair, the first trait represents positive morality while the second represents negative morality. To quantize moral outlook change we calculate the average change rate of positive and negative moral scores among all players based on choice reasons’ context.

4 Results

4.1 Significance Chi-Square Test

The total amount of moral decisions compared to immoral decisions were tracked for playing as an immortal and as a mortal character. Table 2 shows that mortals choose 86 moral choices and 22 immoral choices, the same applies for immortals. Mortal and immortal had the same number of moral and immoral choices. A chi-square independence test was performed to test if these two categorical values are related to each other. The p-value is 1.0, which means that morality does not depend on being mortal or immortal.

Table 2. Contingency table for the significance Chi-Square test.

| | Mortal | Immortal |
|---------|--------|----------|
| Moral | 86 | 86 |
| Immoral | 22 | 22 |

4.1.1 Decision Comparisons

To further investigate patterns in player decision-making, the number of moral and immoral decisions was counted for each room as both an immortal character and a mortal character. These results are presented in Figure 6. The figure shows that, across all rooms, players predominantly chose moral decisions. However, in the Fireball Room, Cage Room, and Shoes Room, the immoral option was selected more frequently than in any other rooms in the game. In most cases, immortality did not significantly influence the decisions made. Interestingly, in the Fireball Room, players chose the moral and immoral options equally when playing as an immortal character.

Additionally, the time it took players to make decisions in each room was measured for both the immortal and mortal games. The average decision times are shown in Figure 7. Notably, players took longer to select the immoral option as an immortal character compared to the moral option. In contrast, as mortal characters, players generally took longer to choose the moral option.

In most rooms, players spent more time making immoral decisions as an immortal character than as a mortal character, except in the Fireball Room. In the Fireball Room, players took an average of 13.6 seconds to choose the immoral option as a mortal character, making it the longest decision time recorded.

Lastly, the behavioral changes for each player were analyzed. The number of moral and immoral decisions made by each player as a mortal character was compared to the number of moral and immoral decisions they made as an immortal character. The behavioral change was then distinguished into five categories: players showed no change in decision behavior, the player made one more moral choice as an immortal character compared to when they were mortal, the player made two more moral choices, the player made one more immoral choice, or the player made two more immoral choices. These results are presented in Figure 8. Most players were consistent in their choices, meaning that their moral/immoral choices as a mortal character were equal to the moral/immoral choices made as an immortal character. According to this figure, seven participants made more moral decisions when playing as an immortal character, while eight participants made more immoral decisions as an immortal character.

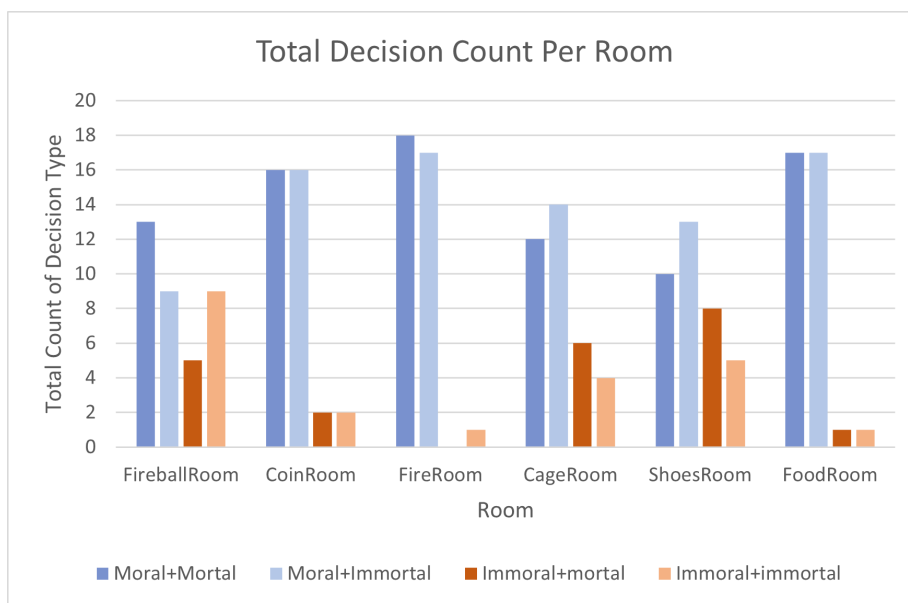


Fig. 6. The total number of decisions made for moral and immoral choices in each room for the mortal and immortal games. The blue shades correspond to the moral choice options, and the red shades to the immoral. For both colors, the lighter shades represent the decisions made in the immortal games. It can be seen that the moral options have the overhand in the game, and for both the immortal as mortal game mostly moral decisions were chosen.

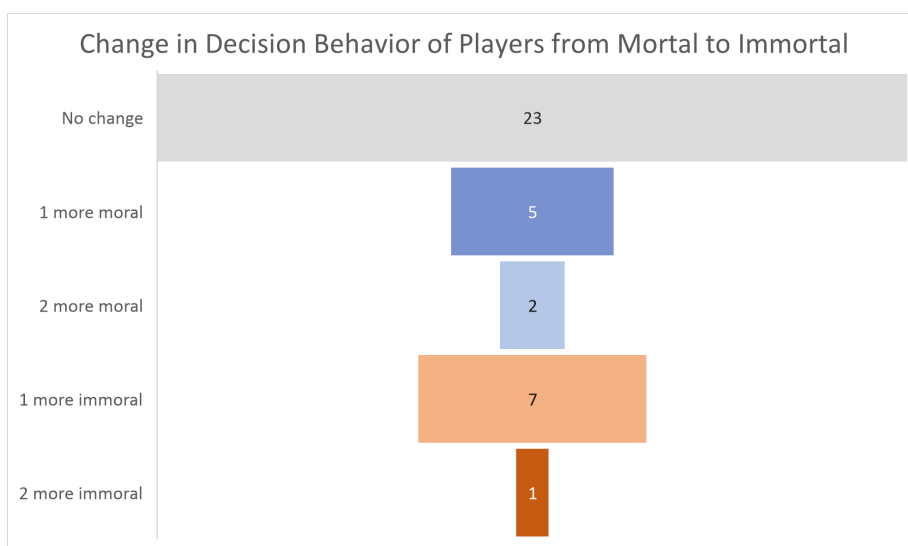


Fig. 8. The change in behavior of players are tracked, where the change is categorized in five different parts: a player made one more moral decision in the immortal game compared to the mortal game, two more moral decisions, one more immoral decision, two more immoral decisions, or there was no change in the behavior. It can be noted that most players did not change their morel choices when playing as an immortal.

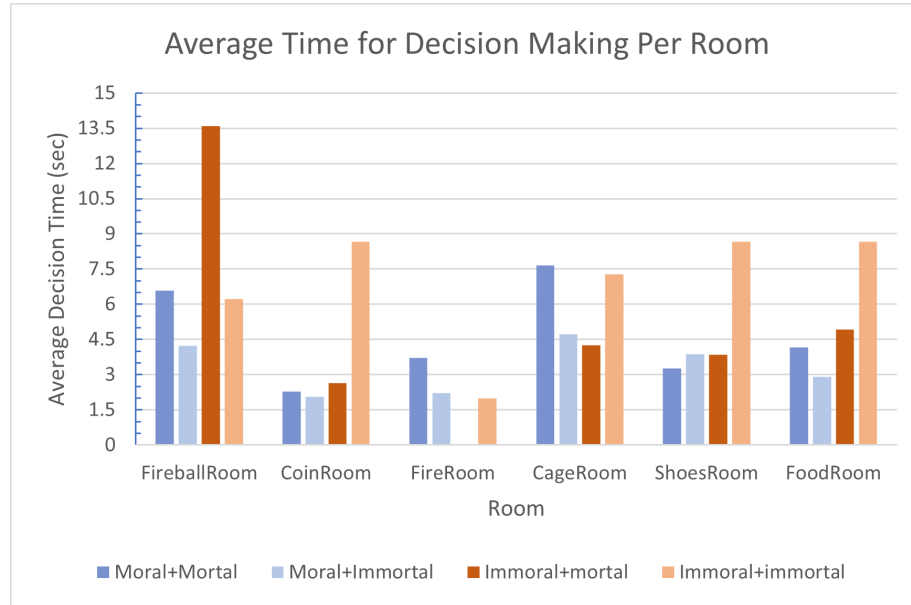


Fig. 7. Average time it took to make the decision related to each room, for the mortal game and immortal game. In the blue shades the moral choices are represented, where the lighter shade corresponds to the immortal games. The red shades show the average time for making the immoral choices, with the lighter shade relating to the immortal games. Overall, it can be noted that it takes a bit longer for players to choose the immoral option.

4.2 Questionnaire Results

4.2.1 Decision-making Reasoning

Interesting behavior patterns were observed during the experiments, where participants were most interested in the immoral options of the Fireball room, Cage Room, and Shoes room compared to the immoral options in the other rooms. To gain more insights in their reasoning behind this, their responses to the questionnaire were analyzed. Moreover, the participants who changed their moral outlook behavior to choosing more immoral options while playing as an immortal were further analyzed in the questionnaire results too. A few interesting responses can be seen in Table 3

| Room | Choice | Mortal/Immortal | Reason |
|---------------|-----------------------------|-----------------|---|
| Shoes Room | Stole his shoes | Mortal | "I thought it would give me powers" |
| Shoes Room | Stole his shoes | Immortal | "I wanted to jump higher" |
| Shoes Room | Stole his shoes | Immortal | "He was too cocky about his shoes" |
| Shoes Room | Complimented his shoes | Immortal | "He said the shoes are his life I dont want to take that away..." |
| Cage Room | Got the sword | Mortal | "To fight potential enemies and protect myself " |
| Cage Room | Free the human | Immortal | "Because I was immortal I probably didn't need the sword " |
| Cage Room | Got the sword | Immortal | "More power" |
| Fireball Room | Kill her to take her powers | Immortal | "I want the fire powers" |
| Fireball Room | Kill her to take her powers | Immortal | "I want the fire powers" |
| Fireball Room | Let her live | Immortal | "There didn't seem a need for me to have a spell when you are already immortal" |
| Fireball Room | Let her live | Mortal | "Killing people that don't try to kill me makes me feel bad" |
| Fireball Room | Kill her | Mortal | "In a game I always want more power." |
| Coin Room | Donated money | Mortal | "I did not think money was important to me in the game so there would be no reason not to give it" |
| Coin Room | Donated money | Immortal | "i wasn't sure if i could use the money to buy something" |
| Fire Room | Help the villager | Immortal | "They needed help and i was not at risk anyways" |
| Fire Room | Help the villager | Mortal | "It seemed like the more adventurous option that might give a boost as well " |
| Food Room | Gave them the cookie | Immortal | "It was theirs and they need it" |
| Food Room | Eat the cookie | Mortal | "self matter " |

Table 3. Several examples of questionnaire responses from participants. In the questionnaire, participants were asked to give the reason behind their decision. The reasoning is given in the most right column, with the corresponding room in the most left column and the choice that was taken in the the second column, and in the third column if the participant made this decision as a mortal or immortal.

4.2.2 Choice Consistency

To further analyze the decision-making reasoning of participants, the fairness of their questionnaire responses needs to be considered. In Figure 9 is the choice consistency rate, which shows how many honest players there are in all the six rooms.

Since the questionnaire was filled in after an approximate 10-minute game play, a forgetting rate of 10% is taken into account. Generally, participants tend to answer honestly in coin room and fire room, and for the rest four rooms players occasionally choose another answer against what they did in the game, the fireball room players demonstrating the lowest rate at 80.6%. When we look at the results by versions, version two has the lowest consistency rate at nearly 50% and so for cage room. Possible reason might be that in version two fireball room and cage room are the first two rooms the player would enter while are with significant choices of life-saving that overwhelmed the players, resulting in a massive regret.

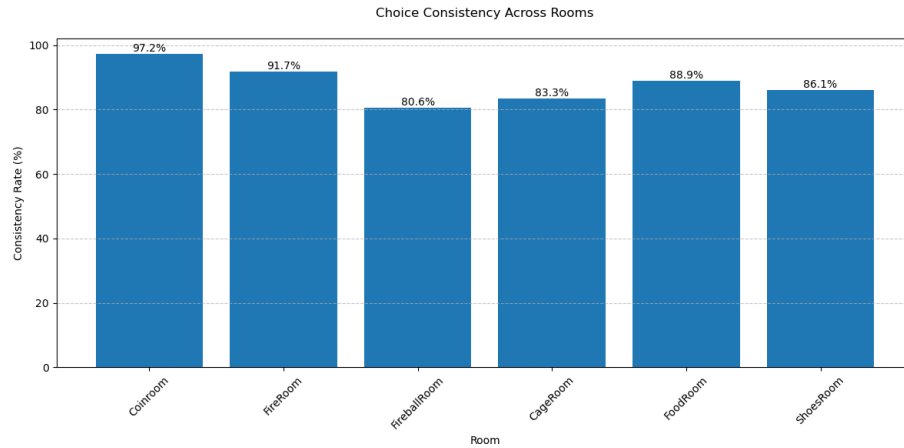


Fig. 9. General Consistency Rate

4.2.3 Moral Outlook Change

Figure 10 shows the moral score change of all players before and after the immortality game play, with an error bar representing the shift range.

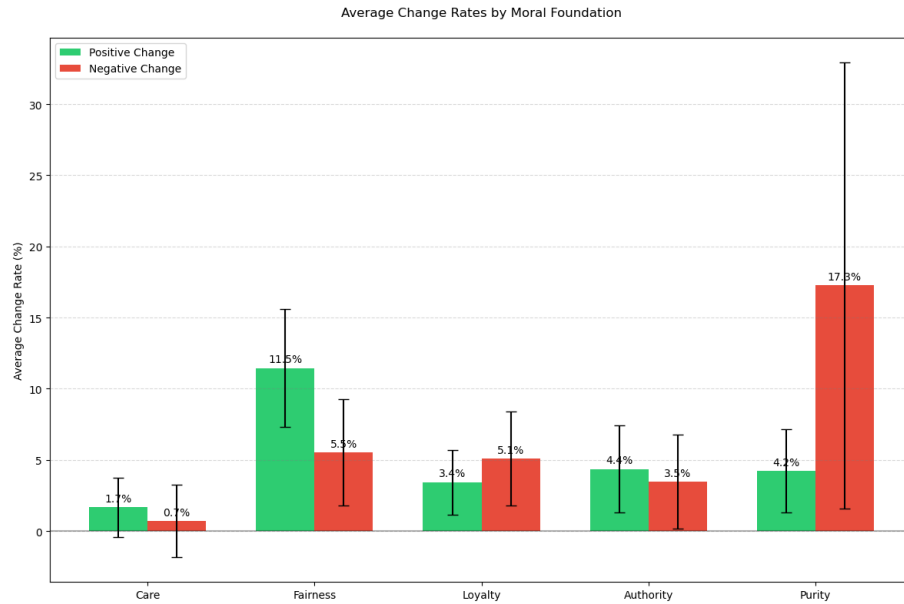


Fig. 10. Moral Score Change

Care, loyalty and authority have the change rate lower than 10%, indicating that the game fails to effectively change the moral outlook of the players. For fairness the positive moral change is 11.5%, a bit higher than 10%, but the shift range is 3.7%, which means for some players their fairness moral score stay unaffected while the others are a little bit influenced up to 15%.

An anomaly shows in negative purity. While positive purity changes fall within expected ranges, negative purity (degradation) shows an unusually high change rate of 17.3% with a wide shift range of 15.1%. However, this outlier can be attributed to underlying data biases in MoralBERT’s training. The Twitter and Reddit corpora used for training contain much fewer examples for purity/degradation compared to other moral classes, but always have higher moral scores. Additionally, the crowd-sourced annotation process introduced systematic biases in class labeling. The Facebook Vaccination Posts dataset, the third dataset used in MoralBERT training, is not public and we pay no further attention to this.

After addressing these methodological limitations and data biases, the degradation and negative purity results were classified as unexpected deviations from the overall trends, warranting further investigation.

In addition, the results were analyzed for all three player groups. Participants were divided into three subgroups: casual players, mild players, and hard-core players. The moral changes observed in casual players were consistent with those seen in both mild and hard-core players. Detailed results are shown in Table 4.

Table 4. Change Rate Group Comparison

| Moral Class | Casual | Mild | Hard-core |
|--------------------|---------------|-------------|------------------|
| Positive Care | 1.8% | 1.5% | 1.7% |
| Negative Care | 0.9% | 0.8% | 0.6% |
| Positive Fairness | 11.8% | 10.9% | 11.5% |
| Negative Fairness | 5.1 | 5.6% | 5.2% |
| Positive Loyalty | 3.6% | 3.1% | 3.4% |
| Negative Loyalty | 5.4% | 5.2% | 5.0% |
| Positive Authority | 4.7% | 4.2% | 4.3% |
| Negative Authority | 3.1% | 3.3% | 3.4% |
| Positive Purity | 4.5% | 4.1% | 4.2% |
| Negative Purity | 17.8% | 17.1% | 17.3% |

According to this table, casual players tend to score slightly higher, while mild players generally score the lowest. However, as a whole, the three groups perform close to the average, with no major differences observed. This indicates that the moral decision-making patterns are relatively consistent, regardless of the players’ gaming experience or engagement level. This suggests that player type may not strongly influence moral behavior in the game.

5 Discussion

As the results section suggests, immortality appears to have no significant influence on the moral outlook of players regarding decision-making. Players are more often to choose the moral option, for reasons to help others, or that the game does not give them enough reason to choose the bad option. However, various elements within the game may have influenced these results and shaped the players’ decisions.

For this research, participants were asked to play the game twice. Despite the different versions of the game, participants might have realized the game’s simplicity after their first playthrough. This familiarity could have impacted their choices in the second level, where they played as immortal characters. For instance, after completing the first level, some participants noticed that the coins held no significant purpose in the game. As a result, they were less motivated

to keep the coins for themselves when given the option to donate money.

In addition, participants began to understand the idea behind this game, recognizing they were being tested on their moral choices. Consequently, it is possible that people restrained themselves by consistently choosing the moral options, or selecting the immoral option for purely for entertainment rather than considering the context of the game.

Furthermore, players noted that the "mortality" level still felt somewhat immortal, as they were respawned in the nearest room after their character died. This mechanic also influenced participants' behavior, as many began playing more morally after realizing that their character could respawn.

The reasoning behind the participants' choices gives further insights into the effect of the game to the players' behavior. In most cases the immoral option was chosen less frequently as an immortal in each room, indicating the immortal relevance for the players. However, in the Fireball room, participants chose the immoral option more often as an immortal than the moral option as an immortal. When analyzing the questionnaire, it became clear that people wanted the fireball magic despite being immortal. Similarly, in the Cage room and Shoes room, the immoral option were also chosen more often compared to the Coin room, Fire room, and Food room. The Fireball room, Cage room, and Shoes room are the rooms that can provide the player with a power, making it more alluring to choose the immoral path. This suggests that players are more likely to go for the immoral option when the consequence gives them a some kind of power.

According to the questionnaire, participants did think their decisions through, making them consider the consequences of their actions. Some participants did not choose the immoral options while being immortal because they noticed that they did not need the power. Participants' reasoning often reflected a balance between personal ethics and gameplay logic. Many avoided immoral options when they didn't see a practical benefit. This shows that the game's design, especially the low stakes, had somewhat an impact on how players made their choices, implying the potential of the influence of immortality in games. However, as there is no significant difference observed, it is interesting to investigate this further to focus deeper on moral dilemma's that are more significant to the game.

The time taken before making a decision suggests that participants are taking longer to choose the immoral option. This possibly shows that players are more hesitant or careful when going for an option that has a bad consequence for others.

Lastly, moral scores obtained from the questionnaire responses show that most participants maintained their moral outlook throughout the game. There were only minimal changes in most traits. Traits like fairness showed a slight positive shift. This means players slightly improved in treating others fairly. On the other hand, there was a clear negative change in purity. However, as mentioned in the results, this outlier can possibly be explained by underlying data biases in MoralBERT's training. Overall, participants' moral reasoning remained relatively stable. This indicates that players tend to carry their existing moral values into the game, even when removing the risk of their character getting harmed.

Furthermore, Players with different levels of gaming experience (casual, mild, and hard-core), show similar patterns in their moral choices. This suggests that familiarity with games or expertise in the genre does not have a strong influence on in-game moral behavior.

6 Conclusions

In response to the research question, "How does immortality affect players' behavior, decision-making, and moral outlook in a video game?", the results suggest that immortality does not significantly change players' behavior, moral outlook and decision-making. However, it does affect the game behavior in several aspects, as the players have revealed in their responses to the questionnaire. Some participants did realize there was no need of powers when being immortal. This shows more potential to the hypothesis that immortality motivates players to take the moral path. Thus, the findings of this study did not support our hypothesis. Contrary to our expectations, players did not make more moral decisions when immortal compared to when mortal. This suggests that the removal of personal risk does not necessarily lead to more selfless behavior in video games.

The results from the game decision logs suggest that immortality in video games doesn't change the moral outlook of the players. There is no significant difference between the number of moral decisions and immoral decisions made when mortal or immortal. However, certain gameplay elements influenced decision-making, such as that respawning during the mortal gameplay reduced risks for the players.

Additionally, the longer decision times for immoral choices suggest players are more hesitant or deliberate when considering actions with negative consequences for others. The qualitative results indicate that players largely maintain their moral outlook regardless of immortality. There were some changes in traits such as fairness and purity, but overall morality seemed to remain stable across players.

Finally, there seems to be no effect on the moral outlook of players when they are immortal in a video game. Though, due to limitations of this study, the results are inconclusive. Therefore, no connections can be drawn to real-life behavior. Overall, it can be concluded that according to the results found in this study immortality did not significantly change players' decision behavior to choose the moral path, but it did show more careful decision making in regards of time and reasoning.

7 Future Work

The analysis of these results came to interesting insights that there did not seem to be a significant effect of immortality on moral decisions. However, the reasoning behind the participants' choices suggests that immortality may still have influenced their in-game behavior. Potential biases in our game design could have influenced their behavior that motivated them to go for the moral options or immoral options despite the relevance of the choice they were faced with. This hypothesis can be further investigated in future research where moral decisions can be tested in professional games where choices have more impact on the gameplay.

Additionally, the game developed for this research could be refined to better align with the study's objectives. For example, we could introduce a storyline that encourages players to form stronger emotional connections with NPCs. To create a more pronounced distinction between the mortal and immortal gameplay elements, the game could be designed so that neither the player nor any NPC can respawn after dying. This would force players to restart entirely upon failure, amplifying the stakes and highlighting the impact of mortality on decision-making.

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A Appendix

A.1 Questionnaire

Introduction

Thank you for participating in this survey and playing our game! This survey will take approximately 5 minutes to complete. All responses will be anonymous and used solely for research purposes. There are no right or wrong answers—we are interested in your honest opinions and personal experiences.

Part1

What do you think the idea is behind this research?

How closely do the decisions you made in the game reflect what you would have done in real life?

1 2 3 4 5

1 means not at all, 5 means very much.

Fig. 11. Page 1 of the questionnaire

1 2 3 4 5

○ ○ ○ ○ ○

Favorite video game?

| | | |
|---|--|---|
| <input type="checkbox"/> All of the Legend of Zelda | <input type="checkbox"/> Pokémon | <input type="checkbox"/> Persona 5 |
| <input type="checkbox"/> Baldur's Gate 3 | <input type="checkbox"/> Animal Crossing | <input type="checkbox"/> Sims |
| <input type="checkbox"/> The Witcher 3 | <input type="checkbox"/> Stardew Valley | <input type="checkbox"/> I don't play games |
| <input type="checkbox"/> This War of Mine | <input type="checkbox"/> Minecraft | <input type="checkbox"/> Other |
| | | <input type="text"/> |

Mortal

Level 1 you had to complete as a **mortal** character. The following questions correspond to each room where you had to make an important decision.

fire magic

Fig. 12. Page 2 of the questionnaire

Room 1: You were offered the chance to take over **fire magic** from a girl, but by killing her. What did you choose?

- ☐ Let her live
- ☐ Killed her

Why did you choose this?

How did you feel when making this decision?

1 2 3 4 5

1 means guilty, 5 means proud.

○ ○ ○ ○ ○

How well did you think this decision through?

1 2 3 4 5

1 means made the decision right away, 5 means had a hard time choosing.

○ ○ ○ ○ ○

Fig. 13. Page 3 of the questionnaire

donate money

Room 2: You were giving the option to **donate money** to a poor villager and his sister. What did you choose?

- ☐ Donated money
- ☐ Kept the money

Why did you choose this?

How did you feel when making this decision?

1 2 3 4 5

1 means guilty, 5 means proud.

○ ○ ○ ○ ○

How well did you think this decision through?

1 2 3 4 5

1 means made the decision right away, 5 means had a hard time choosing.

Fig. 14. Page 4 of the questionnaire

1 2 3 4 5

☐ ☐ ☐ ☐ ☐

save someone from the fire

Room 3: You were faced with the dilemma to **save someone from the fire** or save yourself. What did you choose?

- ☐ Helped the villager
☐ Let them die

Why did you choose this?

How did you feel when making this decision?

1 2 3 4 5

1 means guilty, 5 means proud.

☐ ☐ ☐ ☐ ☐

Fig. 15. Page 5 of the questionnaire

How did you feel when making this decision?

1 2 3 4 5

1 means guilty, 5 means proud.

☐ ☐ ☐ ☐ ☐

How well did you think this decision through?

1 2 3 4 5

1 means made the decision right away, 5 means had a hard time choosing.

☐ ☐ ☐ ☐ ☐

boots

Room 2: You came across a soldier with pretty **boots**. What did you choose?

- ☐ Complimented his shoes
☐ Stole his shoes

Fig. 17. Page 7 of the questionnaire

How well did you think this decision through?

1 2 3 4 5

1 means made the decision right away, 5 means had a hard time choosing.

☐ ☐ ☐ ☐ ☐

Immortal

In level 2 your character was **immortal**. The following questions correspond to the rooms where you had to make important decisions.

cage

Room 1: A poor human was trapped in a **cage**, but the other cage had a sword. What did you choose?

- ☐ Freed the human
☐ Got the sword

Why did you choose this?

Fig. 16. Page 6 of the questionnaire

Why did you choose this?

How did you feel when making this decision?

1 2 3 4 5

1 means guilty, 5 means proud.

☐ ☐ ☐ ☐ ☐

How well did you think this decision through?

1 2 3 4 5

1 means made the decision right away, 5 means had a hard time choosing.

☐ ☐ ☐ ☐ ☐

starving villager

Room 3: You stumbled upon a **starving villager**, whose cookie just got stolen. What did you choose?

- ☐ Gave them the cookie
☐ Ate the cookie yourself

Fig. 18. Page 8 of the questionnaire

Why did you choose this?

How did you feel when making this decision?

1

2

3

4

5

1 means guilty, 5 means proud.

☐

☐

☐

☐

☐

How well did you think this decision through?

1

2

3

4

5

1 means made the decision right away, 5 means had a hard time choosing.

☐

☐

☐

☐

☐

Powered by Qualtrics

Fig. 19. Page 9 of the questionnaire