Player Agency, Decision-Making, and Morality in Cinematic Choice-Based Adventure Games

by

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Author's Declaration

This thesis consists of material all of which I authored or co-authored: see Statement of Contributions included in the thesis.

This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Statement of Contributions

Association for Computing Machinery (ACM) Publications

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This dissertation to some extent consists of work done in collaboration with other authors. The following list describes the parts in the dissertation of which Karina Arrambide has been a sole author and the parts that are the result of collaborations mainly towards published or working papers, in which Karina Arrambide has been the first and corresponding author.

The collaborative work presented in the thesis is included in published papers or will be included in working papers for future submissions, which are as follows:

- **Chapter 3: A Series of Interesting Choices: A Scoping Review of Agency and Decision-Making in Cinematic Choice-Based Adventure Games**

  Arrambide, K., Harley, D., Yoon, J., Rogers, K., Nacke, L. (2022). A Series of Interesting Choices: A Scoping Review of Agency and Decision-Making in Interactive Story Games (*paper under review — CHI PLAY '22)*

- **Chapter 4: Choice vs. Story Impact: A Thematic Analysis of "Until Dawn"**

  Arrambide, K. (2019). Interactive Narratives in Games: Understanding Player Agency and Experience. CHI PLAY '19 Extended Abstracts: Extended Abstracts of the

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Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts, 1-5. https://doi.org/10.1145/3341215.3356334 (*published paper)*

Arrambide, K., Yoon, J., Rogers, K., Nacke, L. (2022). Choice vs. Story Impact: A Thematic Analysis of *Until Dawn* (*working paper)*

- **Chapter 5: "I Don't Want To Shoot The Android": Players Translate Real-Life Moral Intuitions to In-Game Decisions in *Detroit: Become Human***

  Arrambide, K., Yoon, J., MacArthur, C., Rogers, K., Luz, A., Nacke, L. (2021). "I Don't Want To Shoot The Android": Players Translate Real-Life Moral Intuitions to In-Game Decisions in *Detroit: Become Human* (*to appear in Proceedings of ACM CHI '22: ACM Conference on Human Factors in Computing Systems. https://doi.org/10.1145/3491102.3502019*)

Note that descriptions of working papers, including their titles, are subject to change in the future.

Project Contributions

Chapter 3: A Series of Interesting Choices: A Scoping Review of Agency and Decision-Making in Interactive Story Games
This research started as an exploration to understand core concepts found in interactive narrative games such as player agency and decision-making. As a first author of this paper, I proposed an initial literature review of previous work on player agency and decision-making. This project was then presented as a publication proposal to my supervisor Lennart E. Nacke. The literature review then evolved into a scoping review. Along with John Yoon and Katja Rogers, we initially queried diverse databases to understand the current state of key concepts. In the second iteration of this review, I queried, organized and updated the included literature review that is presented in this thesis. Daniel Harley, who has extensive experience with interactive narrative games, joined during the second iteration of the paper and helped with the structure, research questions, and contributions of the paper. Lennart E. Nacke advised and collaborated with writing and revisions for the paper.

Chapter 4: Choice vs. Story Impact: A Thematic Analysis of "Until Dawn"
This research started as an investigation into the effect of player agency in cinematic choice-based adventure games (CCAG)s. I also investigated how sense of agency can be increased by evaluating the decision-making mechanics developed for these types of games when testing different conditions. As a first author of this research, I started by exploring different games that would fit the category of CCAGs. Once the game was selected, I

designed the user study and recruited the participants. I then collected the data with the assistance of an undergraduate student (Joyce Liu). After data collection was completed, I started working on the hybrid reflexive/codebook thematic analysis. I initially coded the qualitative data and provided other two researchers (John Yoon and Katja Rogers) with the initial codebook. Collaboratively, we iterated the codebook and analyzed the interview data. We then discussed and developed the themes that are presented in the Results section of Chapter 4. Lennart E. Nacke acted as supervisor for the project and collaborated with writing and revisions for the manuscript.

Chapter 5: "I Don't Want To Shoot The Android": Players Translate Real-Life Moral Intuitions to In-Game Decisions in *Detroit: Become Human*

This research was inspired by findings from Chapter 4 related to moral choices and the portrayal of morality in CCAGs. I first explored the concept of morality in games and investigated games that presented moral dilemmas as a decision-making mechanic. After selecting the game, I designed the user study and developed the tasks for the testing sessions. I recruited the participants and collected the data for the study. After data collection was completed, I analyzed the interview data as a single coder by using a reflective thematic analysis approach. I then developed and defined the themes that are reported in the Results section of Chapter 5. Katja Rogers then analyzed and provided revisions for the developed themes. John Yoon and Lennart E. Nacke collaborated with literature review, writing, and revisions for the paper. Cayley MacArthur and Alessandra Luz collaborated with statistical analysis of the Moral Foundations Questionnaire (MFQ30) results and provided feedback for the final version of the manuscript.

Abstract

Cinematic choice-based adventure games (CCAGs) offer examples of complex decision-making and player agency through plot construction and player choices. These games are a perfect example and opportunity to explore players' decision-making processes that impact the game narrative. These story-driven games normally focus on advancing the narrative, allowing players to experience the story from different contexts based on their decisions.

There has been an increase in the popularity of these games and more complex mechanics are implemented, allowing the player to partake in the decision-making process of the narrative. Research in the human-computer interaction and games user research fields has indicated that player agency represents a core concept that affects how players experience a game. However, there is a lack of empirical research investigating the implementation of agency, decision-making, choice, and morality in CCAGs. This gap provides an opportunity to first understand diverse conceptualizations and theoretical analysis on these core concepts. As a result of this gap, my thesis presents a theoretical analysis and empirical research on player agency, decision-making, choice, and morality in games.

In my thesis, I address the main research question: (1) What can be learned from previous theoretical and empirical work on CCAGs to identify research gaps that can help understand how elements such as player agency, decision-making, and morality are being implemented in these games, and how these elements affect player experience?

To further clarify these main research question, my thesis is divided in three main chapters where I address the following research questions:

Chapter 3

RQ1. How are the key factors of CCAGs (agency, decision-making, choice, meaningfulness) conceptualized across disciplines?

RQ2. How might we apply these cross-disciplinary perspectives to study player experience in CCAGs?

Chapter 4

RQ3. How does the decision-making process in CCAGs affect agency and experience?

RQ4. How does player agency and sense of control over the decisions influence the motivation for players to make a decision within a CCAG?

RQ5. How is agency perceived based on different conditions, such as playing the game (i.e., exerting agency) vs. watching gameplay (i.e., agency exerted by another person)?

Chapter 5

RQ6. How do players' real-life morality translate to in-game decisions, specifically in CCAGs?

RQ7. Are moral decisions influenced by players' connection with game characters?

RQ8. How does Moral Foundations Theory (MFT) explain players' morality based on the relevance of specific moral foundations?

To address these research questions, I conducted a scoping review investigating key factors in interactive narrative games (chapter 3), a hybrid thematic analysis on player agency and decision-making analyzing a commercial game (chapter 4), and finally a reflexive thematic analysis on morality and moral foundations analyzing a commercial game as well (chapter 5).

The user studies presented in this research were conducted in a pre-pandemic environment (chapter 4) and pandemic environment (chapter 5). The first user study was conducted in a laboratory setting while the latter was conducted remotely. A remote study presented challenges when conducting semi-structured interviews with the participants. These challenges and limitations are discussed in chapter 5. Although challenges were present, both studies provided the opportunity to contribute insights on player agency and morality in CCAGs.

At the same time, opportunities for future work and to further expand the investigation into player agency, decision-making, choice, and morality in story-driven games were identified. Chapter 3 evidenced the lack of empirical research on player agency and new opportunities to expand this knowledge.

Overall, my thesis focuses on understanding concepts found in games, specifically in CCAGs. I present an analysis of player agency, decision-making, choice, meaningfulness, and morality in games. In the first part of this dissertation, I present a theoretical understanding of these key concepts. The second part of this thesis presents empirical research on these concepts and the investigation of morality in games.

This thesis can be of great benefit to game developers and designers because it provides an in-depth investigation that can help improve CCAGs while increasing player experience. Chapter 3 provides preliminary guidelines to expand on empirical research on key concepts such as agency and decision-making. Subsequent findings in chapter 4 and chapter 5 provide an understanding into perceived agency and moral dilemmas in games, which can help optimize mechanics behind player choices.

Acknowledgements

Thank you to the people that supported my PhD journey and believed in my research. Thank you to my supervisor, colleagues, and university friends. Thank you to the people that participated and contributed to this research. Special thanks to my husband, family, and friends.

Dedication

This thesis is dedicated to my husband who was always there to support me. Thank you for the words of encouragement during challenging times. This work is also dedicated to my parents and sister, I could not have done this without you. Thank you Finn and Jack for your companionship and for being there to to brighten my day.

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List of Abbreviations

ACM Association for Computing Machinery 22–24, 26, 33, 37

CCAG cinematic choice-based adventure games v–viii, 2–7, 9–11, 15–19, 26, 30, 32–42, 44, 46, 47, 49, 52, 56, 57, 59, 61–67, 69–71, 74, 81, 83, 86–93

FPS first-person shooter 87

GUR games user research 3, 5, 7, 93

HCI human-computer interaction 2, 3, 7, 8, 18–20, 22, 35, 93

IT Information Technology 8

JSTOR Journal Storage 22, 23, 26, 37

LION Literature Online 22, 26, 37

MFQ Moral Foundations Questionnaire 68

MFQ30 Moral Foundations Questionnaire vi, xviii, 5, 7, 65, 69, 71, 73, 75, 82, 87, 88, 91, 114, 115

MFT Moral Foundations Theory 7, 13, 67, 69, 73, 89, 91

MLA Modern Language Association 22, 26

NPC non-playable character 68, 71, 79, 80, 85, 86

PS4 PlayStation 4 46, 48, 69, 70, 74

PX player experience 18, 19, 33–35

QTE quick-time events 2, 48, 55, 70

SDT Self-Determination Theory 67

Chapter 1

Introduction

The industry of video games is one that has shown an exponential growth in the past decade. The first attempts at creating video games began in the 1950s and 1960s when simple games along with simulations were created by computer scientists. The game *Spacewar!*, developed in 1961 by a group of students at the Massachusetts Institute of Technology (MIT) is considered the first computer video game, and it gained popularity because the source code was shared between institutions to allow other people to experience a new form of social interaction [68].

Since then, many different game genres and experiences have been created, and the video games industry has only increased in both revenue and popularity. According to *NewZoo* [203], the industry achieved a 19.6% growth in 2020, equivalent to $174.9 billion USD. Even during the COVID-19 pandemic, video games trends accelerated as people looked for new activities while staying at home and limiting social interaction. Video games became an avenue for entertainment, online socializing, and interaction between family and friends.

There is a diversity in terms of game genres and playing styles. One of the game genres that has gained popularity in the past years (chapter 3) is the interactive narrative games or interactive storytelling games. Called by different names such as interactive fiction, playable stories, or even interactive cinema, the interactive story game is characterized by its focus on the primary mechanic of allowing players to choose how to advance the narrative based on their decisions.

After investigating these different definitions and names, the following concepts reflect the focus of my thesis. Ryan [154] argues that these games are characterized by providing the ability to players to decide over the game narrative based on their decisions. It is

common that this type of games do not focus on the gameplay mechanics and interactions per se, but they focus on the narrative allowing players to interact with it. Interactive narrative games characterize by situating the player as a subordinate to the narrative, where an objective of "beating the game" is not the central core of the game, but rather it is allowing the player to experience the narrative from different perspectives based on selected choices. Moreover, in the work by Riedl and Bulitko [146] they contend that these games allow users or players to influence the narrative through their actions. Players should feel immersed in the game world, and their actions should impact the narrative with evident consequences. These meaningful choices allow players to weigh their options and select a specific alternative with evident outcomes.

The literature review uncovered that authors provide many definitions when talking about interactive narrative games. In my thesis, I use the concept of CCAG. CCAGs differentiate from text-based forms of interactive story games by drawing attention to their visual storytelling. The term was coined by Murray [131], and argues that "these games consist of emotionally-charged and dramatically contextualized player choices rather than strategic or skill-based challenges".

In the past decade, CCAGs have risen in popularity as a subgenre of interactive narrative games. Some examples include titles such as Quantic Dream's *Heavy Rain* [51] (2010), Telltale's *The Walking Dead* series [188] (2012), and Square Enix's *Life is Strange* [49]. These games focus on the visual and cinematic storytelling aspects, implementing player choice as the core mechanic of interaction. Players would normally have to choose an option through dialogue in the game, and occasionally react to quick-time events (QTE)s [131].

Based on the core mechanics of CCAGs, games that fall under this category may offer the basis for understanding key concepts such as player agency, decision-making, and morality. These games also provide an opportunity to understand the relationship between key terms and how they affect player experience.

Given the rise of popularity in these games and the increasing complexity of interactive story games, research in this topic has exponentially grown from a scientific and academic perspective (chapter 3). Research from a human-computer interaction (HCI) perspective is not the exception. Because the concepts of narrative and interactive narratives are a mainstay focus both in the HCI field and humanities, research in this area should be widely explored given the multidisciplinary approach of HCI. However, even though this area is considered multidisciplinary, the present thesis focuses in the field of games and player agency within a CCAG context.

Research in the area of CCAGs from a game studies perspective has been a pivotal point to understand a medium that combines both narrative and ludo-interactive elements.

Advancement in game studies research opens up the possibility to defy conventional classifications of narrative from a multidisciplinary perspective, and the opportunity to create new avenues for storytelling in games.

However, one of the main discourses that I found during my investigation is the ability of these games to actually provide players with agency. Do they react to players' decisions in a way that increases agency and sense of control? Or the mechanic implemented in these games only provide an "illusion of choice". As previously mentioned, the popularity of these games have increased in the past decade, and player agency should be a major focus to improve their experience. What are players telling us about these games? Do they actually feel in control? Or do they feel that their actions are inconsequential?

Based on the literature review and research (Chapter 3), player agency is crucial and the core of a meaningful player experience. Although there has been previous exploration into the topic, there is a lack of empirical research, presenting an opportunity to expand the work on a relatively new topic. CCAGs implement technological and graphical advances in terms of branching paths and different endings based on players' decisions. As a games user researcher, this is important for my thesis because my research uncovered elements that are impactful to players' experience, such as agency, decision-making, morality, and meaningfulness of these decisions. Through this research, it was my objective to understand players' needs that can inform future design implications. Additionally, understanding how decision-making processes are framed in CCAGs is crucial because this will influence agency and meaningfulness of those decisions, affecting how players experience CCAGs.

This thesis presents my contributions to the fields of HCI and games user research (GUR) throughout the course of my doctoral studies. The main focus of my research is to understand CCAGs, specifically core concepts such as player agency, decision-making, choice, and moral intuitions when making decisions. My research focuses on the investigation of literature review related to CCAGs and user research to understand player agency and morality analyzing commercial games. The aim is to understand the impact of player agency over decision-making and barriers to improve player experience in these types of games. Additionally, understanding how morality is translated from real-life scenarios to in-game decisions provides a contribution into the elements that could affect player agency and engagement.

The first section of this thesis presents an investigation of previous literature and research into player agency, decision-making, choice, and meaningfulness in CCAGs. In Chapter 3, I present a thorough scoping review of key concepts like agency and decision-making/choice. CCAGs offer instances of complex decision-making and player agency. However, the cross-disciplinary history of these concepts presents challenges for research examining player

experience in these contexts. A challenge is present when trying to understand key concepts applied to CCAGs, especially when competing and complex ideas are discussed in the queried STEM and humanities databases. As such, providing an understanding of agency is imperative and the scoping review presents contributions that help to address the gap of knowledge to understand how agency affects player experience.

The search identified $N = 764$ records in the selected databases. Following the PRISMA guidelines and the inclusion of manually curated manuscripts, $n = 67$ publications from 2000–2021 were selected, matching the eligibility criteria. The review shows an increase in relevant publications over the last ten years, including increased attention to critical concepts like agency, decision-making, choice, and meaningfulness. Finally, the contributions in this chapter provide opportunities to examine future work of player experience in CCAGs, especially when a lack of empirical validation might affect how agency is interpreted and implemented. The main contribution is to provide novel insights to expand the research of the concept of agency in CCAGs, investigating different conceptualizations and interpretations.

Once core concepts of CCAGs were investigated, I conducted a user study with a commercial game. In Chapter 4, I provide an exploration of how agency is important for meaningful player experiences. In CCAGs, players choose how to progress in their narrative, allowing them to better experience the game's story's emotional impact. However, we know little about the relationship between their in-game decisions and how they experience agency. A qualitative study using the game *Until Dawn* [177] was conducted to address this research gap. Concepts such as player choice and decision-making are discussed in detail, providing the foundations on which the user study was designed and conducted.

Moreover, understanding how decision-making mechanics are implemented in this game provide insights into how agency is affected. Players experienced an interactive or non-interactive condition in which they completed a segment of the game. Their experience was analyzed through a hybrid reflexive/codebook thematic analysis, and the results prompt a discussion about how making choices in a game affects player agency. The findings show that perceived agency is tied to immersion and the desire for an emotional response when engaging in gameplay. To maximize player agency perception, decision-making mechanics should have a distinct cause-and-effect relation for player choice inputs. Additionally, it was found that emotional and moral choices also affect player agency.

This analysis can help to understand how players define agency and its importance when creating positive experiences. This chapter provides contributions that can be beneficial to game designers and developers to implement decision-making mechanics that afford increased agency to players.

Based on the findings on Chapter 4, I then designed and conducted a study to further analyze how players translate emotional states when making decisions (Chapter 5). Specifically, I looked into moral decisions and how players translate their real-life morality to in-game decisions. To achieve this, I conducted a user study to uncover specific moral foundations behind players' decisions.

Examining decision-making in these games illuminates whether players mobilize their real-life morality to make in-game decisions and what impact this has in both the game world and real-life. Using mixed-methods consisting of semi-structured interviews and the MFQ30, data from 19 participants who played the game *Detroit: Become Human* [52] were collected. The analysis focus on how participants applied their real-life morals toward in-game decisions using thematic analysis of the interviews and the MFQ30 results. Qualitative findings indicate that participants mobilize their moral intuitions to make in-game decisions and how much participants cared about their game characters influenced their choices.

The contributions rely on understanding the importance that players give to morality and how game designers and developers can benefit from these findings to create engaging moral dilemmas in games. Results indicate that the majority of players translate their real-life morality to games. Moreover, they care for playable and non-playable characters, and try to make decisions that would not affect their interactions and relationships with those characters.

The main contribution of this thesis is to provide an understanding of concepts such as player agency, decision-making, choice, and morality in CCAGs. Conceptual foundations for these key factors stem not only from previous academic research, but also from qualitative data from players that experienced CCAGs that implement these concepts. Based on previous research (chapter 3), these elements are important to create a meaningful and positive player experience, and it is imperative to understand how they can be applied in future work.

1.1 General Research Questions

The main inspiration for my thesis is to contribute to the field of GUR by providing an understanding of core concepts that affect player agency and experience. Although previous research on player agency exists, the lack of empirical evidence creates an opportunity to validate and understand previous conceptualizations from different perspectives.

This work discusses concepts present in games such as player agency, decision-making, choice, meaningfulness, and morality. Below I present the research questions (RQ) that

inspired my research, and how addressing these questions contributes novel insights, findings and recommendations to improve player experience through agency, decision-making mechanics, and the implementation of engaging moral dilemmas in games.

In chapter 3, I address the following research questions:

RQ1. How are the key factors of CCAGs (agency, decision-making, choice, meaningfulness) conceptualized across disciplines? Chapter 3 presents a scoping review that provides an exploration of diverse conceptualizations of agency in games applied to different contexts. Previous work was queried and investigated to provide a thorough analysis of the state of core concepts such as agency, decision-making, choice, and meaningfulness in games, specifically in CCAGs.

RQ2. How might we apply these cross-disciplinary perspectives to study player experience in CCAGs? Chapter 3 also presents findings and suggestions to expand empirical evidence on player agency from different perspectives. It also provides insights into how player agency can be further analyzed in CCAGs.

Based on the findings and insights in chapter 3, chapter 4, addresses the following research questions:

RQ3. How does the decision-making process in CCAGs affect agency and experience? In Chapter 4, I present a user study that explores how players make decisions in CCAGs and the way these processes affect their perceived agency.

RQ4. How does player agency and sense of control over the decisions influence the motivation for players to make a decision within a CCAG? Chapter 4 also provides an analysis of the motivations behind making decisions in CCAG, and the importance of experiencing impactful consequences to those decisions.

RQ5. How is agency perceived based on different conditions, such as playing the game (i.e., exerting agency) vs. watching gameplay (i.e., agency exerted by another person)? Chapter 4 also investigates how agency is perceived by players when they are able to make decisions in the game as opposed to watching some other person make decisions.

Based on the findings and insights relating to morality and how players translate their real-life moral values to in-game decisions in chapter 4, chapter 5, addresses the following research questions:

RQ6. How do players' real-life morality translate to in-game decisions, specifically in CCAGs? Chapter 5 analyzes if players translate real-life morality to games and how they make decisions based on their moral values.

RQ7. Are moral decisions influenced by players' connection with game characters? In Chapter 5, I also analyze the connection between players and game characters, and how this connection might influence players' decisions.

RQ8. How does Moral Foundations Theory (MFT) explain players' morality based on the relevance of specific moral foundations? Finally, in Chapter 5, I discuss the implementation of the MFQ30 to further explore players' morality, specifically to understand which moral foundations are representative for players.

1.2 Scope of the Research

My research focuses on understanding how HCI methodologies can be applied to GUR, and how these findings can further improve the state of HCI in games. I contribute to the literature on GUR, HCI, and games. This research can provide an opportunity to further discuss future avenues of understanding player agency and novel ways to improve player experience.

From a theoretical standpoint, I provide a scoping review of core concepts to lay the foundations that will help understand different perspectives and the current state of player agency and decision-making in CCAGs. As empirical research, my work provides user studies that help understand players when analyzing these theories and core concepts. While theoretical research on player agency is extensive, I provide empirical research to further emphasize the importance of these concepts. Moreover, I also provide an understanding of emotional states behind players' decisions, not only from their game experience but also from their morality.

1.3 Positionality Statement

This research is based on my interest and inspiration into improving player experience, and my own personal interests in games as a popular medium. This section provides an overview of how my identity is situated and the effect of my identity on this research. This might help readers to better understand my work, specifically how the research was conducted and how the findings are reported throughout this manuscript. I am a Latina, cisgendered woman from a middle-class family located in Mexico. I was born and raised in Mexico, where the exposure to games was minimum and normally believed to be a male-dominated activity. This inequality sparked my interest in technology, specifically in games. I did not

have the chance to interact with other cultures and races during the time I was living in Mexico. During this time, I completed a bachelor's degree in Information Technology (IT), a field that is normally male-dominated as well in Mexico.

I had the opportunity to enroll in a Master's degree in my late 20s, which gave me the opportunity to expand my knowledge not only in IT, but to also explore other technologies and mediums such as games. Given my previous interest in games, this led me to focus my career on user research in games.

My past experience allowed me to combine different perspectives and methodologies when designing and conducting my projects. I am mainly interested in understanding users from a qualitative standpoint, which might be reflected in the way I analyze and present my findings. I believe being a woman researching games might be a factor that could influence how some participants reflected on their responses. This might have also affected the interaction between myself and the participants.

My research gave me the opportunity not only to expand my knowledge about games, but to also understand different perspectives that stem from a variety of cultural and moral backgrounds. Future experiences might re-shape my positionality and my understanding about the field. I welcome these future experiences as they will offer rich opportunities to improve my skills as an academic and researcher.

1.4 Method

Throughout my thesis, I use different methodologies normally applied in HCI research. The background work in Chapter 2 discusses in detail core concepts of my research and how previous investigations inform my dissertation.

My thesis implements a number of methods to investigate player agency, decision-making, choice, and morality in games. These methods include the use of contextual observations, semi-structured interviews, use of validated questionnaires, in-person laboratory user studies, remote user studies, and systematic (scoping) reviews. Each chapter in this thesis explains in detail the applied methods, and the limitations and findings that stemmed from their implementation.

1.5 Contributions

My research contributes both to an understanding and exploration of core concepts found in CCAGs, detailed findings and novel insights, and how these insights can be applied to the design and development of more engaging CCAGs that improve player experience. The main contributions of my research are listed below:

C1. Insights and understanding of core concepts such as player agency, decision-making, choice, and meaningfulness. By conducting a scoping review, it was possible to identify novel insights that can create opportunities to further examine player experience in CCAGs. Furthermore, this contribution expands research of CCAGs, increasing the knowledge of the impact of CCAGs elements and interpretation of the investigated terms (Chapter 3).

C2. Preliminary recommendations to support future empirical studies on player agency and CCAGs. These recommendations provide an overview of future work to expand empirical research on player agency, providing a bridge between the conceptualizations and interpretations of the explored core concepts 3).

C3. Understanding participants' perception of agency and motivation to make decisions in CCAGs. A user study examining how participants perceive agency in different conditions provided useful insights that can help improve motivation to make decisions that affect and impact perceived agency (Chapter 4).

C4. Uncovering how participants translate real-life morality to CCAGs and the impact of game characters on their moral choices. The conducted user study provided insights into the way participants translate their real-life morality to in-game decisions, and the importance of moral foundations in CCAGs (Chapter 5).

C5. Design considerations to improve player agency, create novel decision-making mechanics, and implement moral dilemmas in games. Contributions from C1-C4 help bridge theoretical research with empirical research on player agency, decision-making, choice, and morality in CCAGs. These findings and insights provide design considerations and implications for game designers and developers to create engaging experiences for players (Chapters 3-5).

Chapter 2

Background & Related Work

The present thesis contains research on concepts found in games, specifically concepts that relate to player research and experience. In this chapter, I introduce a brief overview of the literature on CCAGs and player agency. For an in-depth look of other core concepts of my thesis like agency in games, decision-making, choice, and meaningfulness, I refer the reader to Chapter 3. In chapter 4, I present a user study where concepts such as player agency and decision-making are investigated. Finally, chapter 5 presents research on morality and moral foundations in CCAGs. Additionally, each of these chapters provide a subsection with a detailed analysis of literature review and background work.

2.1 Player Agency and Meaningful Play

Murray's seminal work *Hamlet on the Holodeck* first published in 1997, is referenced by many publications and presented initial discussions and perspectives on the concept of interactive narratives [128]. Therein, the concept of interactive narrative is described as a system in which users can explore different narratives, providing flexibility to the story being told [128].

Furthermore, Murray discusses three key aspects that are present and contribute to enjoyment in an interactive narrative ("the aesthetics of the medium"): immersion, transformation, and agency. As stated by Murray in her book, "we seek the same feeling from a psychologically immersive experience that we do from a plunge in the ocean or swimming pool: the sensation of being surrounded by a completely other reality, as different as water is from air, that takes over all of our attention, our whole perceptual

apparatus" [128]. Murray argues that as immersion is increased in a specific environment, active behaviors are heightened. Initial definitions of agency are provided by Murray as "the satisfying power to take meaningful action and see the results of our decisions and choices" [128].

An example in modern interactive story games (in my thesis defined as CCAGs) that I believe fits Murray's concept is the decision-making mechanic in *Detroit: Become Human* [52] (see Figure 2.1) Through this mechanic, the player is asked to make a decision to advance the game's narrative. Based on the players' choices, the narrative will provide different branching paths, exploring different stories and consequences. Moreover, additional examples like *The Sims* [112] were used by Kway and Mitchell [101] to portray the application of agency in games, further described as the enjoyment players feel when they have control over the environment and are able to experience the consequences of their decisions [128].

The concept of agency has since been widely researched and discussed in academia and the gaming industry [61, 56, 171, 161], alongside related concepts such as effectance [95]. Agency is described as a fundamental part of CCAGs, and provides players with an enjoyable experience that elicits a sense of control.

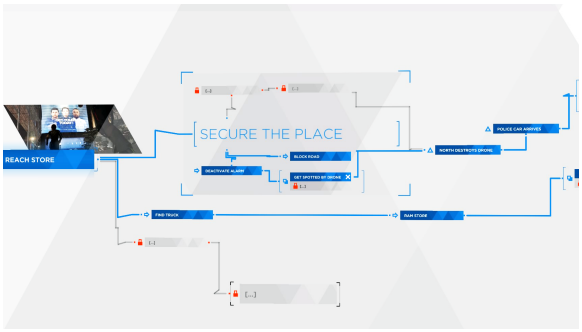
Based on the initial definition provided by Murray [128], Ryan investigated the concepts of immersion and agency in the book *Narrative as Virtual Reality* [156], concluding that digital games provide a suitable environment that combines both immersion and agency.

A competing definition of agency in digital games was presented in Church's fundamental game design essay *Formal Abstract Design Tools*. Instead of calling it "agency," Church presents the concept as an "intention" with a "perceivable consequence" [39]. The latter was then defined as "a clear reaction from the game world to the action of the player". Church's definition is similar to the concept of agency, allowing players to have control of a digital environment and affecting the state of the game world. However, players will only feel a higher sense of agency when they can observe that their decisions have actual consequences and the outcomes are visible within the narrative, further substantiating the connection between interactivity and agency.

In a similar vein, Salen and Zimmerman [92] discuss the concept of "meaningful play" as the action taken by the players within the system, and the consequences of these actions in creating emergent and immersive narratives.

To fully understand the focus of my thesis, key definitions should be described in detail, providing a deeper explanation of the relationship between a CCAG and the main concepts discussed in this dissertation. In a CCAG, players are presented with choices that have an impact over the outcome and progress of the narrative. It is then imperative to define the concept of decision-making and choice from this specific perspective.

(a) Detroit: Become Human presents the player with different options to advance in the storyline.



(b) Players are able to view their branching path based on their choices at the end of each chapter.

Figure 2.1: Screenshots from Detroit: Become Human [52] showcasing the decision-making mechanic used by players to advance in the story, and information about players' branching paths based on their choices.

2.2 Decision-Making and Choice

In the work by Domsch [48], the elements that form a choice are discussed, from a standpoint where players are fully aware of a conscious decision, meaning that player choice is present within the narrative. Domsch expands on the work by Salen and Zimmmerman [48], anatomising a choice in five distinct aspects:

1. Previous moment before the player was presented with a choice within the narrative.
2. Mechanic used in the game to portray a choice to the player.
3. Moment where the player makes a choice.
4. The result of the choice and the effect on future choices and narrative.
5. The style in which the game presents the effect of the player's choice and the implications in the narrative.

Based on the anatomy of a choice, Domsch [48] also mentions the importance of valuable information conveyed to the player after making a choice. The degree of information will impact the player's agency, thus affecting how meaningful a decision will be within the narrative context. Indeed, all choices present interactivity within the game; however, not

all choices will elicit the same level of agency. Choices made arbitrarily or based on a low degree of information will not convey the same sense of agency as opposed to choices based on a high degree of information.

2.3 The Narrative Paradox

With the development of interactive narratives came the challenge of effectively affording and delivering agency to the user. The conflict between eliciting a high degree of agency and providing the author or game designer with the means to compose narratives within immersive environments has been termed the *narrative paradox* [27].

As the game provides an increasingly immersive scenario with many opportunities for the player to control the virtual world, this greatly impacts authorial control. Many authors claim that if more freedom and control is given to the player to affect the narrative, it will be more difficult to preserve the quality of the story [8, 106, 151, 27]. Similarly, Costikyan has described agency and narrative as directly conflicting factors: "games require a degree of player agency but stories require a degree of linearity, and these two factors are in direct conflict" [41].

2.4 Morality in Games

Investigating morality in games can be a complex topic. Morality can be seen as a set of rules that dictate our behavior and indicate how players make decisions when presented with moral dilemmas [86]. When a player is faced with a difficult moral dilemma, but the consequences of their choices are not going to significantly influence the story, it can be hard for a player to make a true moral decision [136].

Sicart discusses how ethical gameplay challenges or asks players to reflect on their choices from a moral perspective when experiencing these moral dilemmas in games. In this thesis, I explore how real-life morals and values can impact in-game decisions. This exploration stems from the work of Haidt and Joseph [73] on moral foundations. The Moral Foundations Theory (MFT) refers to five moral foundations: harm/care, fairness/reciprocity, ingroup/loyalty, authority/respect, and purity/sanctity.

I explore work from Joeckel et al. [86] and their study on a person's alignment to specific moral values when making in-game decisions. Their work emphasizes that players would uphold their real-life morality when presented with a morality-violating scenario. Moreover,

I investigate the role of moral dilemmas and their impact on players' decision-making processes. The work by Boyan et al. [20] indicated that players would follow their real-life morality even when they are presented with the opportunity to violate their morals in a game.

There are several studies that have investigated the role of morality when researching different types of game genres. In chapter 5, I present a study that analyzes the role of morality when the core mechanic of the game is decision-making and moral dilemmas are an integral part of the narrative.

Chapter 3

A Series of Interesting Choices: A Scoping Review of Agency and Decision-Making in Cinematic Choice-Based Adventure Games

Stories engage. Interactive digital narratives provide a participatory form of storytelling. Over the past decade, the cinematic choice-based adventure game CCAG has become an increasingly popular subgenre of interactive digital narratives. Examples include critically acclaimed titles such as Quantic Dream's *Heavy Rain* [51] (2010), Telltale's *The Walking Dead* series [188] (2012), Square Enix's *Life is Strange* [49] (2015), Supermassive Games' *Until Dawn* [177] (2015), and Quantic Dream's *Detroit: Become Human* [52] (2018). These games rely on visual, cinematic storytelling combined with player choice as the primary form of interaction, most often through choosing dialogue options and reacting to quick-time events [131]. The ability to shape the story outcome through choice is often said to contribute to a sense of player agency [129].

Part of the existing challenge for researching storytelling in digital games is that key ideas and concepts related to CCAGs are discussed with competing or changing definitions. For example, Cole and Gillies [40] note that although expanding definitions of agency over time have been important, the result is that agency has become "an overly broad and muddier concept." Another challenge is the complex history of research into storytelling in digital games, with important concepts scattered across areas of interest that might seem similar to an outside observer, including "interactive fiction [125], or "participatory

novels," "interactive storytelling [140]," "programmed fiction [3]," "playable stories [154]," "ergodic literature [1]," "interactive cinema [194]," or "interactive digital narrative [98]". Synthesizing perspectives across different research areas remains challenging because these terms can represent different forms of storytelling, making it difficult to assess how key concepts are understood or applied within changing contexts. Despite previous research on interactive digital narratives and the increasing popularity of CCAGs, we know little about how *decision-making* and a sense of *agency* might affect player experience.

To address this gap of knowledge, a scoping review of the literature that draws from guidelines for systematic reviews like the PRISMA[1] Protocol [124] was conducted to guide the procedure where applicable. The rationale behind this review was that if we are to fully understand player experience in CCAGs, a necessary first step must be a cross-disciplinary scoping narrative review to assess *how researchers conceptualize the core characteristics of these games: player choice and player agency.* To learn from the rich history of storytelling research, this review was targeted purposefully broad, querying seven databases that represent different disciplines (e.g., Scopus, ACM, LION, and JSTOR among others). The main goals were to review the current perspectives around the concept of player agency and choice (RQ1) and to provide preliminary considerations for examinations of player experience in CCAGs (RQ2).

To achieve these goals, two researchers and myself searched the full text of research papers in seven different databases in February 2020 for the terms "interactive," "narrative," "agency," "games," "narrative/storytelling," "decision/choice," excluding the terms "pedagogy," "learning," "education." The search yielded 764 matches and I removed six duplicates. The researchers and myself performed the review of search results screening titles and abstracts first for exclusion of publications that were not about interactive story games, decision-making in games, and player agency. All results were independently screened by two raters with a third rater acting as a tie-breaker for disagreements. The screening excluded 691 records resulting in 67 studies in total that were tagged as theoretical or empirical work. For the synthesis method, I reviewed all the selected papers by keywords, using clusters of agency types, decision-making or choices, and meaningfulness. First, the spreadsheet with the search results was consulted to group the selected papers by database based on the eligibility criteria. Second, keywords were searched for each paper to categorize the research in one or more of the clusters. An overview table (see Table 3.1) was then created to highlight the categorization of the selected papers. This table was created with the objective of offering a better understanding of the current state of theoretical and empirical investigations for agency, decision-making, choices, and meaningfulness. The latter concept

[1]The PRISMA statement and documents are available online at http://prisma-statement.org

emerged as a common thread to understanding agency, interaction, and decision-making in CCAGs.

Because key terms such as agency have become complex and sometimes provide indefinite conceptualizations, the objective of this scoping review is to shine a light on depictions from different perspectives. This research can help understand the current state of agency, decision-making, and meaningfulness in CCAGs. Through this understanding, this work can provide the foundation to define these concepts in the context of CCAGs.

In the analysis, the contributions focus on insights into opportunities for future examinations of player experience in CCAGs. Although choice and agency have received increasing attention over the last 20 years, the relationship between the two remains primarily theoretical rather than empirically validated. The conclusion is that most of the examined literature lacks empirical approaches to measure effects of decision-making on player experience. With the increasing complexity of interactive narratives and interactive media, we need to further our understanding of player agency beyond emotional and perceived agency. This chapter contributes new insight into the expanding research of CCAGs and increases the knowledge of the overall impact of CCAGs through understanding different conceptualizations and interpretations of the investigated terms.

3.1 Background

3.1.1 Choice and Agency

Choice has been a key factor of interactive story games since the beginning. In *Colossal Cave Adventure* [43], often described as the first example of interactive fiction, the player's one-word or two-word commands can be conceptualized as choices with direct impact on the narrative: choosing how to navigate the environment, or choosing when to collect or use objects situates the player at the centre of the narrative. Early theoretical work on interactive narratives linked choice and action to a sense of agency. In Laurel's [103] early work, including her book *Computers as Theatre* [104], agency is described as "the power to take action"; in Murray [128]'s influential book *Hamlet on the Holodeck*, a sense of agency is linked to enjoyment—becoming a defining characteristic of the medium alongside immersion and transformation.

For Murray, the sense of agency is an "aesthetic pleasure" that "goes beyond both participation and activity" [128]. Though popular, Murray's definition of agency was not universally accepted (see e.g., Poremba [141]) and over the next twenty years, as interactive

story games expanded in their complexity and scope, definitions of agency also expanded. These new definitions complicated how the term is understood and used today [40], yet the term remains an aspirational quality in game design. In the 2016 update to *Hamlet on the Holodeck*, Murray [129] notes that the ability to act becomes dramatic agency when it is linked to story. For Murray, this is one of the most important aspects of design: "dramatic agency should be the goal of design for interactive narrative in any form" [129].

3.1.2 Choice and Agency in CCAGs

Applying Murray [129]'s definitions presents opportunities to analyze *agency* in any digital game and *dramatic agency* in any digital story game, yet important differences between the variety of games that use storytelling and dramatic agency raise questions about how to analyze differences in how players experience agency. Over the last fifteen years, there appears to have been an increase in interactive story games that rely on player choice and decision-making as key components of gameplay. In some cases, complex dialogue choices and moral dilemmas are one important mechanic among many (e.g., Bioware's *Mass Effect 2* [13] or Bethesda's *Fallout 4* [176]), while in others these complex choices are the core game mechanic (e.g., Telltale's *The Walking Dead* series [188]).

A recent term for these games is the *Cinematic Choice-Based Adventure Game (CCAG)*, a term that distinguishes these games from text-based forms of interactive story games by drawing attention to their visual storytelling. The term was coined by John Murray in his dissertation [131], which also appears to be among the few examples of examinations of player experience in this subgenre of interactive story games. The term CCAG is apt, but it is not yet widely used. Current assessments of the impact of choice and agency in CCAGs are more often found in critical examinations of video games as texts (e.g., Smethurst and Craps [169] and Stang [173]). While critical examinations contribute theoretical understandings of choice and agency, empirical assessments of the interplay between choice and agency in these games appears less common.

3.1.3 Choice and Agency in HCI

While player experience (PX) has become an increasingly important measure to assess user experience in video games [132, 2, 50], the relationship between PX and choice in story games is less understood. However, player choice and agency are frequently discussed as important factors of interactive story games in HCI. Important redefinitions and overviews, including work by Tanenbaum and Tanenbaum [184] and Harrell and Zhu [78] offered

foundations for future work. For example, later work in HCI brings these notions of agency and narrative choice to tangible and embodied interactive narratives [76].

Examinations of how players *experience* agency has received less attention, but more recent work is beginning to address this gap. Gupta et al. [70] offer a rare glimpse at differences in agentic experience, identifying three separate interaction styles in their analysis of a novel tangible story installation. Though not necessarily comparable in approach, recent work suggests an even wider range of differences in subjective experience and understandings of agency. Motivated by a lack of research on how players experience agency, Carstensdottir et al. [32] present a qualitative study in which $N = 28$ participants describe and rate their sense of agency in narrative games they had played. The authors' analysis offers 17 factors with multiple overlaps that could shape a player's sense of agency, emphasizing the need for measures that can adequately capture the complexity of the concept.

Given the core mechanics of CCAGs, games that fall under that category may offer a compelling foundation for understandings of the relationship between player experience, agency, and choice. Yet the decades of choice-based storytelling and multiple theorizations of choice and agency across many contexts suggest that an important first step is to provide a cross-disciplinary overview to assess how the core characteristics of these games are conceptualized and how those characteristics might impact PX.

3.2 Approach

To gain a better understanding of the state of the field on CCAGs, a multi-database literature review was conducted. The scoping review tries to answer the following research questions:

RQ1 How are the key factors of CCAGs (agency, decision-making, choice, meaningfulness) conceptualized across disciplines?

RQ2 How might we apply these cross-disciplinary perspectives to study player experience in CCAGs?

The process is described in more detail below. For the literature review, the search strategy yielded an initial pool of $N = 764$ papers and articles published in different databases (e.g., Scopus, ACM, JSTOR among others) from 2000–2021 to parallel the rise of popular CCAGs. The focus is on understanding the current perspectives about the concept

of player agency, decision-making and choice, and meaningfulness from diverse disciplines (e.g., STEM and humanities) to provide a foundation for future examinations of player experience. Following this process, literature and research related to interactive narratives was included, integrating mechanics applied in different contexts, theoretical frameworks, and empirical research. Research that was not representative of digital games (e.g., board games) was excluded to maintain a consistent approach between the results included in the literature review.

3.2.1 Methodology

This review is positioned as a scoping review [4, 178], which is a review type with the goal to "explore and define conceptual and logistic boundaries around a particular topic" [178]. There is some debate regarding whether a scoping review counts as systematic or not. For example, Arksey and O'Malley [4] see scoping reviews as addressing a broader topic than a systematic review and not requiring a quality assessment stage. In contrast, Kitchenham et al. [93] portrayed mapping studies (a term often used synonymously with scoping review [138]) as a *type* of systematic review.

Following Sutton et al. [178]'s assertion that "all review types should be "systematic'," the aim was to draw on systematic approaches as much as possible, particularly for the review stages in which relevant publications are identified. For example, this review drew on recommendations of the PRISMA protocol [124] when possible. The PRISMA protocol provides a structure for reporting systematic reviews and meta-analyses. It mainly focuses on the report of randomized trials, although it can also be used in more general reviews [124].

In accordance with PRISMA, a flow diagram to visualize the search procedure for relevant and eligible publications is presented in Figure 3.1. This consisted of initial *identification* of potentially relevant publications, manual *screening* thereof, and then assessment of publications for *eligibility* to maintain a clear focus on the topic of research. The resulting *included* papers are then synthesized through a stage of "charting the data" [4] to categorize examinations of interactive story games across both theoretical and empirical approaches, and develop reflections towards applying these perspectives to study the player experience of choice-based games in future work.

Given the multidisciplinary focus of this work, different databases were searched, including those that cover HCI, the humanities, and the social sciences. These databases will be discussed in more detail in the following section. The results were tabulated and shared in a spreadsheet, highlighting data such as the source database, type of publication (i.e., conference paper or article), publication year, type of research (i.e., empirical or theoretical), and the relevance to this research. Particularly because there were multiple databases used across disciplines, this methodology structured the search across them all reliably and as systematically as possible.

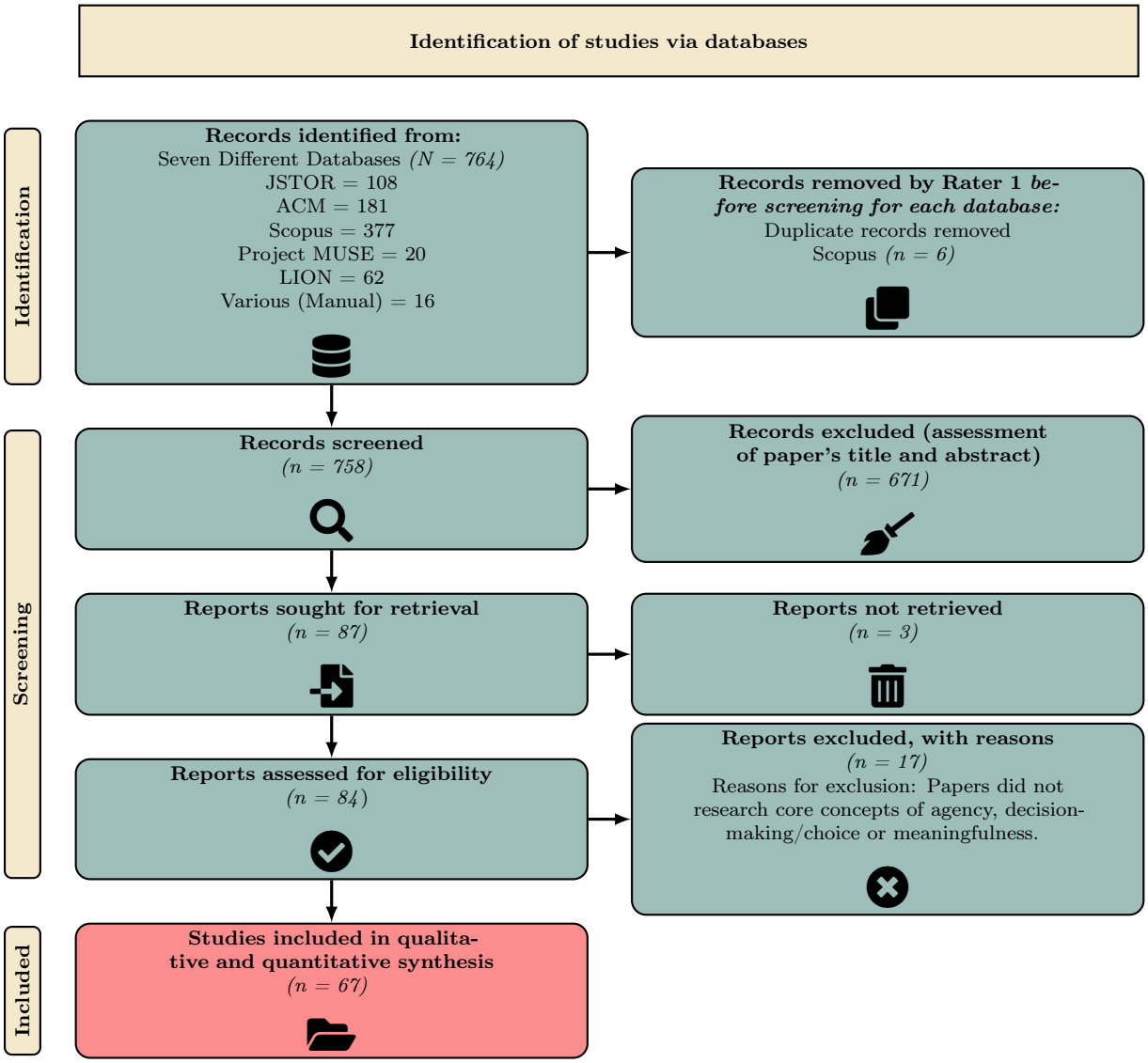


Figure 3.1: Number of results at each stage of the review, as represented in a PRISMA flow diagram.

3.2.2 Information Sources

The databases used for this review were an attempt to reflect the interdisciplinary nature of the topic. The databases were Scopus, Association for Computing Machinery (ACM), Journal Storage (JSTOR), Project MUSE, Literature Online (LION), Communication & Mass Media Complete, and the Modern Language Association (MLA) International Bibliography.

ACM was chosen because HCI and games-related content would be mostly found in that specific database. Scopus indexes a considerable number of additional databases (see [54]), thus it provides a more extensive breadth of coverage for STEM areas of research. Project MUSE, LION, JSTOR, Communication & Mass Media Complete, and the MLA International Bibliography were chosen because they represent a wide breadth of humanities research coverage. They are also the five databases recommended for use in English research by the academic institution. However, Project MUSE, Communication & Mass Media Complete, and the MLA International Bibliography did not produce any results that matched the search criteria.

Several librarians at the academic institution were consulted, who concluded that this list of databases can be considered exhaustive. Finally, publications that are relevant to the research but they were not indexed by the initial search in the databases were manually included. Sixteen ($n = 16$) hand-curated papers were included that focus on research of core concepts such as agency, decision-making, choice, and meaningfulness in choice-based story games.

3.2.3 Search

The search strategy was the same for all databases, and was discussed and refined in joint iterative work by the research team. Initial searches gave a high number of results related to educational games and learning through games, which are not the focus of this work because the investigation is focused on agency for choice-based story games. In addition, searches returned literature on learning games that approached interaction as a method for participatory learning, and not in terms of player agency. Hence, the search was modified to exclude results based on the keywords *pedagogy*, *learning*, and *education*.

The final search string (with stylistic changes depending on the individual database's required syntax) used for the search conducted in February 2020 was:

```
(ALL (interactive) AND ALL (narrative) AND ALL (agency) AND ALL (games) AND
ALL (narrative OR storytelling) AND ALL (decision OR choice) AND NOT ALL
(pedagogy) AND NOT ALL (learning) AND NOT ALL (education)
```

The keywords *narrative* or *storytelling* were both used to account for results that may be conceptually relevant but might choose one terminology over the other. The terms *decision* or

choice were both used for the same reason. The search string was applied to the full text rather than just the title and abstract because JSTOR includes abstracts on only 10 percent of their results, so the full text would give the most complete and consistent results across databases. Further, depending on the database, the search string was extended to include only research publications (e.g., `AND DOCTYPE (ar OR cp)` for Scopus); alternatively, this filter was applied through checking the appropriate box on the user interface's search engine (e.g., ACM).

3.2.4 Eligibility Criteria

To limit the final results to only those relevant to the research questions, strict eligibility criteria were applied in the assessment of search results for inclusion in the corpus.

Inclusion Criteria The following eligibility criteria were applied for paper inclusion:

- *The publication has to discuss player agency or decision-making specifically in the context of choice-based story games.* This did not have to be mentioned explicitly by those terms (e.g., papers could also describe dilemmas or choices).
- *The publication has to be peer-reviewed, written in English, and published since 2000.* Unpublished work (i.e., grey literature) was excluded in the hopes of ensuring a higher degree of consistency through the peer review process. The language criteria were applied as this is the language spoken by all of the researchers involved in the screening process. The time limit was chosen to cover more than two decades of research in the field.

Exclusion Criteria The exclusion criteria were as follows:

- *Not directly about choice-based story games*: Literature on interactive narratives in other media than games, such as interactive theatre, were excluded. Also, publications on games that were strictly ludic or narratives without interactive components were excluded.
- *Not directly related to agency or decision-making in choice-based story games*: Even if a publication explored choice-based story games, it was excluded if agency and decision-making were not central concepts in the work (e.g., the terms were only mentioned in passing).

By applying these criteria, only publications that specifically dealt with player agency, choice, and the decision-making process in choice-based story games were included. During the pre-screening phase, I identified any duplicates for each database and removed them.

Screening and Eligibility Assessment Procedure The raters scanned papers by the title and abstract first for the initial screening. I scanned $n = 371$, rater 2 scanned $n = 190$, and rater 3 scanned $n = 181$. If it was not clear that the publication met the exclusion criteria based on the title and abstract alone, then the whole publication was examined to reach a decision on whether it should be included or excluded as part of the eligibility assessment.

The search results from each database were screened and assessed for eligibility by the raters. I reviewed results from Scopus, the second rater reviewed the humanities databases, and the third rater reviewed ACM. Any disputes would have been resolved through a majority vote, but no conflicting decisions were present between raters during the assessment process.

Rater 2 was a graduate student with approximately five years of experience in the fields of English literature and digital media, and *Rater 3* was a graduate student with little previous experience in the subject of choice-based story games, but extensive experience in games research.

3.2.5 Data Collection Process and Synthesis

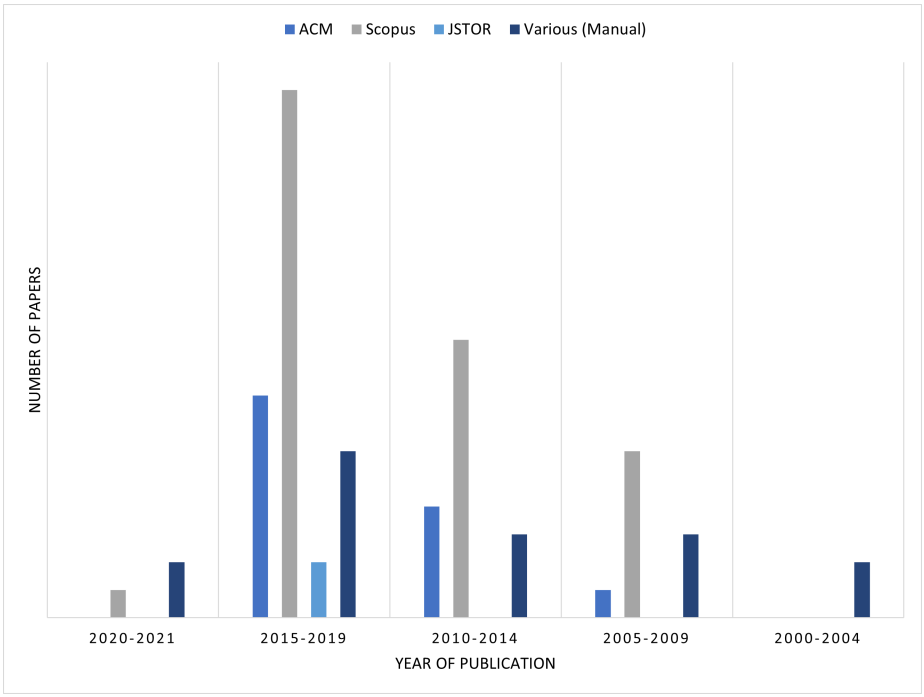
All publications from search results were listed in a spreadsheet, separated by database. Because there is no specific method of synthesis prescribed for scoping reviews, I initially read and summarized all the resulting publications and subsequently conducted an informal thematic clustering approach to develop common themes throughout the presented findings. This was then discussed with the rest of the researchers to develop further nuances.

An example of the synthesis process can be found in Table 3.1. This table presents an overview of how key concepts in the papers were categorized. The process started by distinguishing between publications that reported findings discussing theoretical or empirical research. The publications were then categorized by their relevance to different aspects of player agency, decision-making, choice, and meaningfulness. Because these topics overlap, the categorizations are not meant to offer definitive distinctions between papers, but rather to present a range of relevant themes and perspectives. This foundation allowed for the exploration of how concepts like agency are applied in different contexts (e.g., players perceived agency when eliciting specific emotions), and to begin to assess different approaches across theoretical and empirical research.

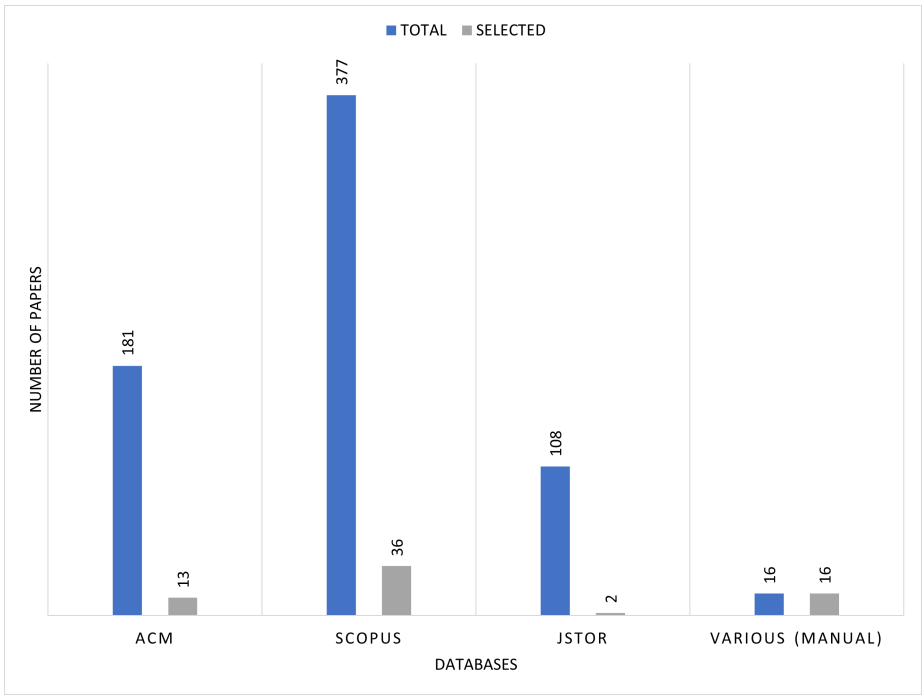
In the following section, a summary of the results is presented.

3.3 Results

The search across all databases resulted in $N = 764$ unique publications. Of these results, $n = 671$ publications were discarded because they did not meet the inclusion criteria as described in the section on publication selection. As shown in Figure 3.2b, that initial search in the ACM database



(a)



(b)

Figure 3.2: These two plots show a) the distribution of the selected publications across different time ranges in each database, and b) the total initial papers resulting from the search process, and the number of selected papers fitting our criteria.

had $n = 181$ results, of which 7.1% $(n = 13)$ were selected. For Scopus, the search resulted in $n = 377$ publications with 9.5% $(n = 36)$ publications selected. The initial search did not turn up any results for the Communication & Mass Media Complete and the MLA International Bibliography databases. Project MUSE returned $n = 20$ results while LION had $n = 62$, but none of these were selected (e.g., returning results on film criticism, literature, and folklore). JSTOR had $n = 108$ results of which 1.8% $(n = 2)$ were selected. A manual search of relevant publications in the selected and additional databases (e.g., ResearchGate) was conducted resulting in $n = 16$ selected results. Out of $n = 190$ total results originating from the humanities databases, 1.05% $(n = 2)$ items were selected. For the non-humanities databases (ACM, Scopus and additional databases from manual search), of the total $n = 574$ total papers, 11.3% $(n = 65)$ were selected.

The most common reason for exclusion was when the keywords were not a central focus of the publication based on the paper's title and abstract. Examples include contributions on the role of haptics, literature, or art practices. Similarly, publications focused on other domains were excluded, including contributions on virtual reality, interactive theatre, or interactive television. Of the remaining results, publications that featured player agency, decision-making, and meaningfulness were included. A small number of duplicates were also excluded $(n = 6)$ from Scopus. Of the publications assessed for eligibility $(n = 84)$, $n = 17$ were excluded as their investigation was not relevant to the research, with an additional $n = 3$ excluded because the papers were not in English. The final total included $n = 67$ selected papers.

The majority of relevant studies are from 2015–2020, showing a steep increase over time (see also Figure 3.2a). It is believed that some databases provided a low number of results because while there is research on CCAGs and agency, these terms were not necessarily linked to player action, choice, and/or decision-making. Based on the search criteria, results from ACM and Scopus were more represented in this review. Noticeable gaps in the search based on cited work in the included papers led to the manual inclusion of additional work. The limitations of this approach are discuss in section 3.5.

Theoretical vs. Empirical Publications The first top-level categorization that was conducted on the results was to distinguish between theoretical $(n = 39)$ and empirical $(n = 28)$ works (i.e., containing user studies or empirical evidence) to examine existing research related to CCAGs, agency, and choice. In the following sections, a report of the findings highlighting a selection of the papers that were reviewed is presented, portraying a sense of the breadth of work in this space. Table 3.1 presents an overview of how the selected papers were categorized. While it is recognized that the review presented here is not exhaustive, these results offer a snapshot of how the core characteristics of CCAGs and other choice-based story games have been examined in the last two decades.

	THEORETICAL	EMPIRICAL
Agency	[9], [15], [17], [30], [34], [35], [44], [45], [55], [57], [62], [65], [77], [78], [97], [100], [101], [105], [107], [108], [110], [127], [129], [143], [155], [163], [182], [184], [185], [186], [190], [196]	[7], [26], [31] [32], [47], [36], [66], [67], [56], [70], [74], [75], [85], [94], [102], [109], [111], [114], [120], [139], [148], [150], [160], [174]
Decision-Making/Choice	[9], [15], [17], [35], [37], [44], [45], [57], [62], [77], [100], [101], [105], [107], [110], [129], [133], [155], [170], [172], [182], [183], [184], [185], [186], [187], [190]	[7], [16], [26], [31], [32], [47], [56], [66], [75], [70], [85], [94], [102], [111], [120], [122], [123], [144], [148], [150], [160], [174]
Meaningfulness	[9], [17], [35], [44], [45], [78], [92], [101], [105], [107], [133], [182], [184], [183], [185], [186], [196]	[16], [26], [31], [32], [47], [66], [70], [74], [75], [109], [102], [150],[160]

Table 3.1: Categorizations of key terms across selected papers

3.3.1 Findings in Theoretical Results

Agency

While Janet Murray's definition of agency ("the satisfying power to take meaningful action and see the results of our decisions and choices" [128]) is referenced in some of the earliest papers in this review (e.g., Mateas [108]) as well as the latest papers (e.g., Carstensdottir et al. [32]), it is primarily as a touchstone for expanded understandings of agency across different storytelling domains. For example, in the development of storytelling systems, Mateas [108] strives to bridge Murray's work with Brenda Laurel's theorizations [103] to propose ways to "maximize" dramatic agency in AI supported narratives. In theoretical work, Tanenbaum and Tanenbaum [185, 184] reframe the concept of agency as a "commitment to meaning" to emphasize the reference to meaning in Murray's definition rather than the reference to action. In the following, some of the ways that conceptualizations of agency have evolved over time is reported. Table 3.2 provides a selection of some of the key definitions.

In systems-oriented and design research, the conflict between eliciting a high degree of agency and providing the author or game designer with the means to compose narratives within immersive environments has been termed a *narrative paradox* [27]. As the game provides an increasingly immersive scenario with many opportunities for the player to control the virtual world, authorial

control is affected. Several researchers claim that if more freedom and control is given to the player to affect the narrative, it will be more difficult to preserve the quality of the story [8, 106, 151, 27]. This reflects perspectives in game design: Costikyan has described agency and narrative as directly conflicting factors: "games require a degree of player agency but stories require a degree of linearity, and these two factors are in direct conflict" [41]. This is also a central problem in interactive storytelling systems, which strive to manage the narrative according to player action (e.g., Riedl and Bulitko [146, 145]). McEvoy and King [114] present a prototype Drama Management system to allow players to make real-time decisions in a 3D environment. They implemented a player model that allows for personalized branching in the game world, arguing that it can elicit a higher sense of agency in players. Similarly, Gjøl et al. [65] emphasize the importance of system affordances, which they argue is integral towards facilitating agency.

In analytical and theoretical work, expanded definitions of agency are motivated by the increasing complexity of narrative games. Bizzocchi and Tanenbaum [15] present the concept of "bounded agency" to examine ways that players might experience a sense of agency within the constraints of the game and its narrative. Kway and Mitchell [101] explore the application of Weir's concept of *emotional agency* to understand the effect of players' decisions when they are attached to different emotions within the narrative, even when the consequences of their actions have no major impact in the story world (i.e., result in the same ending regardless of players' choices made along the branching paths of narrative). This leads to a discussion of local agency (affecting individual moments) and global agency (affecting the overarching story), which is drawn from Mateas and Stern [109]. These types of distinctions raise questions about how agency is felt and experienced even in cases where the outcome of the story does not change. Day and Zhu [44] propose *theoretical agency* (describing how agency is afforded by design) and *perceived agency* (describing how agency is felt). They argue that design elements can be categorized as "agency informing techniques" to help identify how opportunities for agentic experiences are communicated to players (e.g., binary choices, choice manipulation, or user interface cues).

Decision-Making and Choice

References to decision-making and choice in the results (n=27 papers) offer a range of perspectives that in some cases can overlap with other categories. For example, Day and Zhu [44]'s "agency informing techniques" present different types of choices, as does work by Mawhorter et al. [110], identifying a variety of choice types and possible effects. In both cases, discussions of agency and meaningfulness are intertwined with the discussion of choice types. Theoretical work examining decision-making and choice includes examples of close reading to assess the impact of choices as well as examples that theorize about the morality and impact of in-game choices.

Tan and Mitchell [182] present an analysis of irreversible choices to differentiate between types of irreversibility and their possible impact on user experience. Tavinor [187] presents an analysis of *BioShock* [19], discussing the types of choice in the game suggesting that there is a pseudo-freedom

TYPE OF AGENCY	AGENCY APPROACH
Agency *Murray, J. (1997) [128]*	*"The satisfying power to take meaningful action and see the results of our decisions and choices."*
Agency *Mateas, M. (2002) [108]*	*"A player will experience agency when there is a balance between the material and formal constraints. When the actions motivated by the formal constraints (affordances) via dramatic probability in the plot are commensurate with the material constraints (affordances) made available from the levels of spectacle, pattern, language and thought, then the player will experience agency."*
Agency Scope *Harrell, D., and Zhu, J. (2009) [78]*	*"Results of either user or system actions may have immediate and local impact (e.g. turning a character left or right) or longer term and less immediately apparent results (e.g., a series of actions may determine narrative structure itself."*
Agency *Wardrip-Fruin, N., et al. (2009) [196]*	*"A phenomenon, involving both the game and the player, one that occurs when the actions players desire are among those they can take (and vice versa) as supported by an underlying computational model."*
Agency *Tanenbaum, K., and Tanenbaum, T. (2010) [184]*	*"When play and story intersect, agency is better understood as commitment to meaning instead of a desire to act freely."*
Meaningful Agency *Domínguez, I. (2016) [47]*	Provide the player with meaningful actionable choices in the interactive narrative.
Inconsequential Agency *Nay, J. and Zagal, J. (2017) [133]*	Players should be given the opportunity to experiment with inconsequential choices, creating a sense of agency that does not rely on a branching narrative.
Perceived Agency *Kway, L., and Mitchell, A. (2018) [102]*	*"A player's sense of perceived agency can then be viewed as their ability and willingness to partake in meaningful expression of the playable character's personality traits within constraints, which results in the creation of a unique playable character that is theirs alone."*

Table 3.2: A sample of *'Agency'* definitions between 2000-2020.

of decision-making in games, wherein hard limitations on what is possible inherently exist. The morality of decisions in *BioShock* also raise questions about the purpose and ethics of choice in games. For example, Sicart [166] argues that rather than presenting users with finite and solvable dilemmas, games can be more aesthetically satisfying by offering morally grey and thus ethically challenging choices.

To support future analytical work, Murray [129] proposes the development of a *coding schema* to present open resources to understand players' behaviours and to aid in the creation of narratives that elicit a particular emotion to players. This coding schema takes into consideration elements such as story, decision selection, and game design. Their aim is to assess opportunities and player's decisions, analyze specific aspects of the narrative during a decision-making moment, and explore affective responses by players in CCAGs.

Meaningfulness

Theoretical research on the players' agency and choices with interactive story games is often associated with the concept of *meaningfulness*. As Table 3.2 shows, meaningfulness is incorporated into definitions of agency. Salen and Zimmerman [92] argue that "meaningful play occurs when the relationships between actions and outcomes in a game are both discernable and integrated into the larger context of the game". For Tanenbaum and Tanenbaum [185, 184], meaning is in the relationship between design and the players' expressed intentions. Similarly, for Harper [77] the "meaningfulness" that users perceive through actions is improved with the design of systems that respond effectively to those actions. Harper's work aims to explore the relationship between textual and emergent narrative representations, focusing on participatory agency to create emergent narratives. A related consideration is how understandings of choice and meaning might interrelate to create conditions for player engagement [105].

3.3.2 Findings in Empirical Results

The search yielded ($n = 28$) results that focused on empirical research. In the following subsections, an overview of some of the studies discussed in these publications is provided. As in the previous section, the focus is on agency, decision-making, choice, and meaningfulness.

Player Agency

Strategies to measure and manipulate the factors that are said to lead to player agency are a key concern of empirical studies focusing on agency. The goal in these cases is to increase agency or ensure a high degree of agency. For example, Fendt et al. [56] present a study with $n = 79$

participants in which half of the participants are provided text-based feedback after making a choice. The authors report that immediate feedback creates a higher sense of agency.

Similarly, Cardona et al. [31] examine players' sense of agency with added visualizations of the consequences of their actions and the effects on the environment. Participants in the study $n = 88$ reported a higher sense of agency with decisions that were visualized as having a meaningfully different outcome compared to decisions that players do not interpret as meaningfully different.

The mechanics that shape player action are also said to affect a sense of agency. Kleinman et al. [94] evaluated the impact of three different types of rewinding mechanics (restricted rewind, unrestricted rewind, and external rewind) on player agency. The authors tested a custom made game with $n = 60$ participants and concluded that rewind mechanics have no negative impact on player engagement.

Decision-making and choice

Studies that focus on decision-making and choice focus on factors such as differences in choice, differences in choice delivery, and differences in experience. In the latter category, Roth and Koenitz [150] evaluated Netflix's *Black Mirror: Bandersnatch* [33] (arguably a mix between a game and an "interactive movie" with game elements [116]) investigating aspects such as agency, meaningfulness, enjoyment and overall perceived experience. Their user study evaluated $n = 32$ participants, reporting low scores for immersion and flow, but relatively high scores based on the ability to affect local and global outcomes (termed *effectance* here).

In systems-oriented work, choice-based frameworks have been developed to create automated choice structures related to possible narrative outcomes. For example, Mawhorter et al. [111] created a system that implements three different types of choice: obvious choices (a clear correct choice), relaxed choices (low stakes), and dilemmas (high stakes). A user study with $n = 90$ participants suggested that the system is successful at presenting choices that are perceived as obvious, or as having low or high stakes.

Other systems-oriented work demonstrates a focus on modeling how players might make choices in interactive narratives. Rivera-Villicana et al. [148] present a Belief-Desire-Intention model of agency to predict player behaviour. Testing the system through qualitative and quantitative analysis with $n = 23$ participants showed that despite creating player profiles, "simulating the behaviour of specific players is a very complex task".

Meaningfulness

Although meaningfulness is a recurring theme across several empirical papers, it is less often the direct focus of study for choice-based games. Iten et al. [84] provide a relatively rare example,

presenting an examination of meaningful choices across two studies, one qualitative $n = 27$ and the other quantitative $n = 192$. Taken together, the studies suggest that players are likely to rate choices as meaningful when there are social or moral characteristics, and when there are perceived consequences to their choices.

3.3.3 Summary of Results

The review of literature examining agency, choices, decision-making and meaningfulness, demonstrates a variety of approaches, conceptualizations, and frameworks. The reviewed work crosses disciplinary boundaries and several areas of interest ranging from player modelling, to irreversible choices, to moral dilemmas. While both theoretical and empirical literature seems to suggest that the player's sense of agency increases when the impact of their choices are a) made evident and b) shown to be meaningful, many questions remain.

For example, while publications note that players report an increase in agency when they feel as though their choices have real impact on the game and storyworld, the publications increasingly elucidate how those choices or sense of agency are mediated: through elements such as meaning, emotional affect, immediate feedback on player decisions, and perceived control. The interrelationship between the key terms appears to present further challenges: isolating one factor can be at the expense of another. A common theme across the work is an emphasis on the complexity of these terms and the challenges that they pose for theoretical and analytical work, as well as for empirical studies and systems design.

Agency to create meaningful experiences. After analyzing diverse perspectives and definitions regarding agency (see Table 3.2), it is possible to identify how this concept might overlap in the context of CCAGs. Overall, agency can be translated into taking meaningful action, witnessing the results or impact (i.e., short term or long term) of the decisions and choices. The system then must respond according to these choices. Agency can also refer to the players' desires translated to actions and how the system can support these actions. Furthermore, the system should provide meaningful and actionable choices to the player so they can feel in control. In another vein, players should also be allowed to experiment with choices and see the consequences of these actions to test if the system responds accordingly. Moreover, the fact that players are able to take control of their actions, means that in a way they are imprinting their personality onto the game character, which may increase the meaningfulness of their choices in a specific scenario.

Decision-making and choice informed by players' characteristics. From the literature review, it was possible to uncover definitions for different types of choices that can be implemented in CCAGs. Understanding how these choices are framed could impact players' actions. For example, irreversible choices might affect how players experience the game. Moreover, presenting the player with moral dilemmas can also affect how choices are perceived, thus creating a challenging decision-making process for the player. Taking into consideration different elements such as story,

narrative, dilemmas, it might be possible to pinpoint specific characteristics that can inform the implementation of specific choices in CCAGs.

3.4 Literature Review Implications

This review evaluated publications from 2000–2021. Findings indicate a sharp increase in research into choice and agency in CCAGs, with an emphasis on theoretical interpretations and definitions of agency. Given that the majority of the selected publications were chosen from the ACM and Scopus databases, this review demonstrates that academic debates on agency in games are not relegated to a single discipline or field of study. Overall, however, the results show a lack of research specifically examining the effect of agency and choice on player experience, as well as opportunities for more empirical studies with participants.

In this section, the implications of these findings are discussed, first with attention to key concepts (agency, decision-making, choice, meaningfulness), followed by a brief discussion of the implications of these findings for the study of player experience in CCAGs. It can be suggested that the differences in interpretation across scholarship present opportunities for future empirical work. Past research highlights the ways that story games present a complex interaction space, but more work is needed to uncover the ways that players interpret, navigate, and understand the key characteristics of those spaces.

3.4.1 Commitments to Agency

This review shows a variety of definitions of agency demonstrating the expanding conceptualizations noted by previous work [40]. The presented analysis refrains from providing yet another definition here, instead emphasizing the range and nuances of these interpretations. The notion that agency is the result of an interplay between a subjective feeling of self-directed action and the formal characteristic of the game might be applied to several interpretations, but subtle distinctions between definitions help to show that there is currently no "correct" or "accepted" definition that is consistently applied. Moreover, while similarities can suggest common ground, they also raise questions about what might be taken for granted across conceptualizations: a sense of agency seems to be consistently framed as a desirable outcome despite little empirical evidence to justify the claim. However, if we begin by accepting that a sense of agency is important in CCAGs, how might we apply these conceptualizations to a study of player experience?

One key challenge in adopting a definition for a PX study is that individual differences in conceptualizations can change the possible measures of agency. For example, notions that agency can (and should) be increased (e.g., Harrell and Zhu [78]) can also imply that it can be decreased, or that it can start at different levels, or that it might fluctuate. This further suggests that it

can be conceptualized as a spectrum of subjective experiences with no clear indication of what is a sufficient or appropriate degree of agency. Links to additional subjective characteristics in these definitions appears to be an apparent effort to identify alternate factors as substitutes to measure a sense of agency. Note that some empirical studies emphasize meaning and emotion: "meaningful actionable choices" [47], "meaningful expression" [102], or "emotional impact" [201]. However, an implied spectrum of agentic experiences still does not necessarily help explain how, when, or why these experiences might occur, nor does it necessarily explain when the focus should be on individual storytelling moments, or specific mechanics, or more holistic analyses.

Differences in the ways that players are conceptualized within definitions can also change possible measures. For example, Tanenbaum and Tanenbaum [185] conceptualize the player as an active participant in their experience of agency. The analysis in this sense would be how a player's "commitment to meaning" in different contexts can lead to a pleasurable sense of agency, focusing more on the process than the outcome. How might PX measures change in these circumstances, given the possible distinctions between player-oriented vs systems-oriented models, or process-oriented vs outcome-oriented models? As Carstensdottir et al. [32] show, the ways that players conceptualize these terms necessarily affects players' interpretations. In their study, their interview protocol dictated that they would only provide a definition of agency if the participant said they did not know what it was, or if they explicitly asked for it. The result is illustrative of the many possible interpretations of the term, demonstrating that players' perspectives on agency add an additional layer of complexity.

3.4.2 Decision-Making, Choice, and Meaningfulness

The reviewed papers help to show some of the ways that discussions of decision-making, choice, and meaningfulness parallel those of agency. While perhaps not as theoretically rich as the definitions and conceptualizations of agency, the reviewed work highlights the complexity of these terms. As before, differences in what authors mean by *decisions*, *choice*, and *meaningfulness*, suggest that applying these terms to develop PX measures will require specific reference to source material to unpack the implications of a given orientation.

Again, differences in focus will change possible measures. For example, Mawhorter et al. [110] helpfully document many possible choices, but the impact of those differences remains theoretical. Given that CCAGs employ a variety of choices with varying degrees of narrative significance, applying a framework of choice types will entail identifying measures that can appropriately reflect that variety. Similarly, applying Day and Zhu's [44] framework of Agency Informing Techniques, which documents the mechanics and visualizations that make players aware of choices, might require identifying and assessing the impact of how choices are presented. While these examples show an expanding variety of considerations, they also show that individual frameworks may offer a specificity that limits attention to other possible areas of interest. For example, within a mechanics-oriented approach, how do other elements like storytelling, dialogue, or cinematography

contribute to players' decisions? Or, within an approach that focuses on narrative design, what commitments and expectations does the player bring to the experience? How might we account for the personalizing factors of a player's experience? For example, Carstensdottir et al. [32] point to aspects like personal preferences, genre expectations, and the ways that individual differences can lead to different experiences of the same moment of choice-based storytelling.

As suggested in the previous subsection, linking decision-making and choice to meaningfulness is both an opportunity to connect these terms to agency and to begin articulating emotional and subjective measures. However, identifying the possible overlaps and interrelationships between these terms remains a challenge. Without adequate foundations, notions of meaningfulness are as abstract, fluid, and aspirational as those of agency. As suggested in the related work, studies in HCI outside the scope of this review are beginning to outline the contours of how these terms might interrelate. In their analysis of a narrative installation, Gupta and Tanenbaum [70] identify three types of players exhibiting types of agentic experience: story supporters, meaning makers, and story controllers. The player types in this case are related to how those players ascribe a sense of meaning to achieve a personalized form of agentic experience. In this case, situating the analysis from the perspective of the player helps to emphasize the many possible experiences despite the same formal characteristics of the game.

3.4.3 Towards an Examination of Player Experience in CCAGs

Although this work was motivated by a more targeted interest in CCAGs, the review suggests that there is a need for more empirical studies examining the nuances and specificity of agency, meaning, choice, and decision-making in interactive story games. Based on this work, the following preliminary recommendations to help support future empirical studies are offered:

- **Identify a theoretical orientation.** Because a conceptualization can imply specific commitments to the ways that key terms are understood, articulate those commitments whenever possible or appropriate.
- **Identify how and why measures are chosen.** Describe how the measures relate to the theoretical orientation to help to solidify the approach.
- **Contextualize the relationship between story, mechanics, and subjective experiences.** Key factors like decision-making and choice represent parts of a complex interplay of factors within and beyond the game. Identify which factors are deemed important for the study and why.
- **Prioritize players.** While the experiences of players are not always a primary focus in examinations of story games, PX offers a specific examination of the player. Recruit demographically and experientially diverse participants to ensure an appropriate breadth of perspectives that attends to a range of subjective experiences.

- **Identify the objective of the study.** Different types of narratives can be found in CCAGs. Identifying the objective of the research might help pinpoint how specific key concepts are found within a specific narrative. For example, if the research is aimed at understanding the impact of moral dilemmas, then understanding how agency is exerted by players in this specific scenario could help inform how ethical choices should be portrayed in the game.
- **Players' characteristics could inform how specific choices are implemented.** In section 3.3, it was discussed that different types of choices could be implemented in a game. When analyzing how these choices affect agency, we also have to consider characteristics such as story, narrative as well as personality and traits of the game characters that might impact how players make choices.

3.5 Limitations and Future Work

This methodology has some limitations worth addressing. First, the research scope was limited to a set of key terms within examinations of interactive story games. The motivating interest in CCAGs precluded examinations of interactive narratives in other domains, meaning that more work is needed to assess overlaps in the findings in related areas such as virtual reality and installation-based work. The databases and screening criteria present shortcomings, affecting the publications that were indexed and selected. Despite the cross-disciplinary approach, the chosen databases do not cover the full range of publications on this topic, and it is possible that other publications may examine similar phenomena using different terms. The inclusion of manually searched publications was an attempt to address these shortcomings, which in some cases were exacerbated by inconsistencies in the databases. As just one example, Bizzocchi and Tanenbaum [15]'s work matched the search criteria and is available in the Scopus database, but did not show up in the search.

The synthesis method presents limitations. Although all raters were involved during the initial screening and categorization for eligible publications, subsequent analysis and validations of the selected papers were conducted by myself. This creates bias in the synthesis method and findings. Moreover, the reporting does not cover all the papers that were reviewed. This is in line with the goals of a scoping review, which does not seek to aggregate evidence across selected papers, and does not seek to determine the merits of the evidence reviewed. However, this also means that there are individual selected papers that are not specifically featured or analyzed in depth. Given that the review covers two decades, although an exhaustive approach is not possible, the overview offers insight into the broad complexity of this research area. As suggested in the recommendations, this can offer a starting point towards more deliberate articulations of the commitments that theoretical foundations may bring.

3.6 Conclusion

To examine perspectives on player agency, decision-making, choice, and meaningfulness in CCAGs, a scoping review of publications contained within the ACM, Scopus, JSTOR, Project MUSE, LION, and Communication & Mass Media Complete databases from 2000–2021 was conducted. Hand-curated papers that cover research from 2021 were also included. Based on the search criteria, ACM and Scopus databases contained the highest number of relevant publications, and the review demonstrates an increase in publications across disciplines and areas of interest focusing on the key terms. The contribution of this chapter is focused on insights from the cross-disciplinary review, showing that an outcome of this rich history of theoretical and empirical work is an array of definitions and conceptualizations that are complementary in some cases, and competing in others. The review suggests that there are opportunities to empirically examine the complex and interrelated factors that underpin agency, decision-making, choice, and meaningfulness. To support this work, this chapter concludes with preliminary recommendations for future studies that strive to understand these facets of player experience in CCAGs.

3.7 Summary

In this chapter, I explored and investigated different perspectives and conceptualizations on player agency, decision-making, choice and meaningfulness. To address the gap of providing an understanding of these core concepts, a scoping review was conducted where different databases were queried. Throughout this exploration, it was possible to analyze the results and provide valuable insights for game developers and designers that can help improve player experience. I provide insights from a cross-disciplinary perspective, evidencing the complex state of theoretical and empirical work that surround these core concepts. Moreover, this chapter illuminated the existence of opportunities to expand empirical research to better understand factors that might impact these concepts.

3.7.1 Chapter Contribution

The purpose of this chapter was to address the following research questions:

RQ1. How are the key factors of CCAGs (agency, decision-making, choice, meaningfulness) conceptualized across disciplines? To answer this question, I explored and analyzed related work to understand the connection between key factors and their multidisciplinary definitions. The outcome of this review is **C1. Insights and understanding of core concepts such as player agency, decision-making, choice, and meaningfulness.** The findings evidenced the complexity of the investigated concepts and the lack of empirical research to better understand competing or diverging definitions.

RQ2. How might we apply these cross-disciplinary perspectives to study player experience in CCAGs? The results provided insights into the need for more empirical research to validate these cross-disciplinary perspectives. This chapter contributes **C2. Preliminary recommendations to support future empirical studies on player agency and CCAGs.** These recommendations can help facilitate future research to better understand factors that influence agency, decision-making, choice, and meaningfulness.

3.7.2 Context in the Thesis

This chapter serves as the foundation to understand core concepts mentioned throughout this thesis. The research paints a picture of varied definitions and conceptualizations for CCAGs. In this chapter, I conducted a scoping review to understand current research on core concepts such as player agency, decision-making, choice, and meaningfulness. This scoping review expands on previous knowledge on the impact of agency in CCAGs and diverse conceptualizations of key terms. First, it is necessary to define these concepts to comprehend their application in empirical research that is later presented in subsequent chapters. As defined by Murray [131], "these games consist of emotionally-charged and dramatically contextualized player choices rather than strategic or skill-based challenges".

The research in this chapter allowed me to identify the challenges that stemmed from the exploration of different concepts and definitions for CCAGs. I also identified a gap in the literature relating to empirical research to provide suggestions and guidance to study CCAGs. Although diverse authors provide conceptualizations, many questions remain in terms of their application. Thus, this chapter inspired me to expand on the empirical research to provide a clearer perspective into the investigation of CCAGs and specific concepts such as agency and decision-making.

I also discovered that players might translate these key concepts differently, specifically when talking about player agency. In the following chapter, I present the contributions from a user study that stemmed from the lack of empirical research, and I try to address the challenges presented in this chapter.

Based on the theoretical research on agency and decision-making that stemmed from this scoping review, the following chapter describes how players perceive and define these concepts. I also expand on the importance of evident consequences to their decisions and how players describe feeling in control of the game's narrative based on their decision-making processes.

Chapter 4

Choice vs. Story Impact: A Thematic Analysis of "Until Dawn"

In Chapter 4, we learned that there are many conceptualizations and definitions of player agency and decision-making. However, the scoping review results suggest that there are opportunities to expand empirical research to understand how key terms can be explored in the context of CCAG)s. Chapter 4 also indicated that players might conceptualize these terms differently based on their experience. An example of how players interpret these concepts is provided by Carstensdottir et al. [32], where results indicate that player's perspectives on agency would have an effect on how they would define and interpret the concept of agency.

To address these challenges, I conducted a user study to understand how players perceive core concepts found in CCAGs. In this chapter, I present my contributions to expand empirical research in the field.

Player agency is at the core of a meaningful player experience. Meaningful player choices—those that feel important and valuable—create this agency. In this thesis *player choice* is considered as any moment within a game where a player can choose between multiple possible and equally-valid options. This might either be a skill-related choice (e.g., stealth versus combat options) or a preference-related choice (e.g., being friendly or hostile to a non-player character in a dialogue tree of a CCAG). To achieve meaningful player agency, decision-making in a game cannot be arbitrary. Players need to feel that they can weigh their choices to achieve a distinguishable outcome (e.g., there can be no obvious best choice). The choices should not be trivial but rather have a logical effect on the game's narrative.

The question of the competing importance of a game's narrative and a player's agency has been longstanding (e.g., a debate around narratology vs. ludology [58, 137, 195] emerged in Game Studies in the early 2000s). While narratives usually have a linear progression or fixed event

sequence, the agency associated with play necessitates a degree of freedom in player choice—often complicating linear storytelling. CCAGs—which are considered in this thesis as games primarily focused on traversing through divergent multilinear player story branches—are thus ideal for studying player agency. Whatever narrative choices are made, they are self-validated by them following a player's preference (i.e., there are no 'wrong' choices because they reflect what the player wanted).

Players often make distinct choices to let themselves and their characters experience either a positive or negative emotional journey. This is often an illusion of choice with the emotional experience of the player in mind (and the constraint that developers cannot provide unlimited freedom of choice in games). Depending on how well developers can conceal the limitations of choice available, players can feel strong agency in these CCAGs despite knowing that they do not have complete control over the outcome of their decisions.

To understand this player agency, it is important to analyze how interactive story games implement decision-making mechanics designed to increase players' agency and sense of control, and provide a narrative consequence to their decision as a reward to players. However, this agency can be affected in different conditions, such as playing the game actively versus watching someone else being in control of the game. Thus, we have to ask ourselves how agency is perceived through decision-making and its importance as a vehicle to address the human need of making choices (i.e., self-determination theory and human need for competence, autonomy, and relatedness [46]). Knowing how player agency and decision-making in CCAGs work provides valuable guidance for game developers to develop smarter and engaging game narratives, while not incurring unnecessary complexity or size.

Interactive narratives—more specifically: CCAGs in the context of the present thesis—are focused on player agency and operate at the level of decisions that modify the direction and the outcome of the game's story. Klimmt et al. [95] posit that an interactive narrative elicits a higher sense of agency and the experience for the player is deemed as more enjoyable compared to a non-narrative scenario.

The key question is about player agency: how can CCAGs account for and successfully integrate player agency compared to non choice-based story games? Can they give players enough choice to make them feel like their actions matter in the game? And how are players exercising their narrative agency in CCAGs? What game mechanics or elements are the most conducive—or not—to eliciting the sense of agency?

To understand what makes a CCAG interesting for players—specifically for engagement and sense of control—a study focusing on the aspects of decision-making moments experienced by the player along with their effect on player agency was designed. I conducted a between-participants interview-based user study to explore how players of a story-driven game (*Supermassive Games*'s *"Until Dawn"* [177]) perceive different interactivity levels (i.e., playing vs. watching). The thematic analysis of the interviews presents how CCAGs based on player's decision-making impact the sense

and perception of agency in players, and evaluates players' behaviours and emotions when making narrative choices during gameplay.

The findings indicate that players that experienced the interactive condition perceived agency through the decision-making mechanic in the game, even though the majority indicated that they do not think their decisions affected the outcome of the game story in the end.

This study has found that in all conditions, player agency was bound to the perception of a noticeable impact on the narrative, thus highlighting the importance of not making player's inputs (seem) superfluous. The mechanics implemented in the game to experience player agency through decision-making represent an important element that affects the level of agency. This can be affected by the number of choices presented in each decision-making moment. Moreover, emotional and moral choices can also influence player agency. Understanding the impact of these findings can aid in the development of novel mechanics in CCAGs to increase player agency and thus improve the experience.

4.1 Background and Related Work

CCAGs have seen an increase in popularity in recent years (e.g., Detroit Become Human [52]), resulting in positive reviews and favourable comments towards the style of narrative and game mechanics [119]. Thus, the goal of this chapter is to understand if these games indeed facilitate player agency and give the player authorship over the narrative. The aim is to reveal elements of the decision-making process and their roles in CCAGs—as opposed to fixed or linear narratives.

CCAG is defined in this thesis as: *An experience in which players are given a decision-making mechanic within the game narrative with the objective of (1) exerting agency and (2) choosing the direction and the outcome of the story.* This means that the player is presented with key decision-making opportunities at narrative forks in a CCAG and is required to make a choice. It is important to clarify that the goal of this research focuses on the concept of *interaction* which modifies the story and outcomes of the narrative based on player's choices. Although all games present a form of interaction, for the purpose of this thesis, the focus is on interaction as a form of modifying the narrative as consequences of player's decisions, and it is highlighted that interaction does not refer to interactivity oriented towards cosmetic or character changes or upgrades.

To better understand the work on this thesis, it is important to follow a specific definition for the following terms and how they connect with the presented findings:

- Player agency: we posit that is created by meaningful player choices where decision-making processes allow players to weigh their choices and select a specific alternative with evident outcomes. This term connects to the findings as the core concept for this research and through the impact it has on player experience.

- Interactivity: we refer to interactivity as the mechanic that players use to make their choices and the medium to exercise agency. The findings indicate that different interactivity levels have an impact on player agency and it affects how players experience a CCAG.

Meaningful player agency can relate to the framework presented by Mekler and Hornbæk [117]: a meaningful choice should include components such as connectedness, purpose, coherence, resonance, and significance. The connection between the player and the world is meaningful when core goals and objectives are presented with a comprehension of self-experience. This experience should resonate with the player through value and significance, making it feel important and valuable.

Within the scholarship around CCAGs, the viability of user agency and storytelling coming together in a meaningful way has frequently been contested. Narrative scholars have long noted that up to a certain extent, all narratives are considered to be interactive. Within the realm of traditional media, the process of storytelling does not call for a completely passive reader, but the opposite as the reader must exercise some form of interpretive agency to make sense of the story [152] and reader agency in the form of interpretation itself is necessary in the act of storytelling [192]. However, the role and function of user agency has become a contentious issue in interactive narratives in digital media, with multiple competing conceptions of agency.

In what is termed "ergodic literature" [1], Aarseth argues that an ergodic text is one which requires nontrivial effort by the reader to traverse the text. Under this perspective, a novel or a video game which demands the full attention of its user are both considered to be interactive as they require active participation by the user, either through reading or playing respectively. Furthermore, ergodism collapses the distinction between reader and player [1]: for interactive narratives, especially CCAGs like *"Until Dawn"*, there is no difference between uncovering and advancing its story and making narrative decisions. However, rather than relying on the broader interpretation-as-interaction view of agency, others have taken a more direct approach to agency by describing it as the user's ability for "receiving immediate, direct feedback on one's action, and or influencing the game world" [95] with a clear emphasis on the user's ability to control aspects of the narrative [121].

This affective perspective of agency has taken root in the discourse surrounding digital forms of narrative, especially in games, because in video games the user's experience is inextricably tied to their investment and involvement with the game's diegetic content [194]. This involvement presupposes a kind of agency because the "player has to respond to events in a manner that affects what happens on screen" and requires "sustained work" not usually associated with other narrative formats [194]. While others have argued that all narratives require some form of interaction, Veale [194] specifically notes that games as a medium require decision-making. Here, the player of an interactive narrative, by exercising narrative agency, wrestles with the narrative not just to interpret it but to also assert the user's own bid for narrative control [1], a mode of agency exemplified by decision-making in CCAGs like *"Until Dawn"*.

Woolgar et al. take this conception of agency even further with the notion of "configuration", which places the user and software in a dynamic and mutual relationship with the other [204]. Since then, this feedback model of interactivity has been taken up by others who claim that a "genuinely interactive system involves not only choice, but also a two-sided effort that creates a feedback loop" [157, 153] or as a "cyclic process between two or more active agents in which each agent alternately listens, thinks and speaks – a conversation of sorts" [42]. This conception of agency has been championed by Juul who has suggested that "if you cannot influence the game state in any way (as opposed to being unable to influence it in the right way), you are not playing a game" [88, 89]. Just as the agency of the user affects change in the computer system, in true interaction, the behaviour of the computer ought to alter the global state of the mind of the user as well.

Based on this view of agency, the literature about interactive narratives has been divided. Some researchers have expressed doubts about the true extent of agency and decision-making in interactive narratives, arguing that no matter how strongly a player may be involved in the unfolding of a narrative, they are ultimately powerless to affect change in the narrative [1]. Others have echoed this view claiming that the "player has no true agency" and is "not able to form any intentions within the dramatic world that actually matter" [167] since even if narrative choices are presented, the player is forced down a set number of paths preset in the game thus forcing the user to be more of a passive *reader* than an active *player* [88].

Juul has gone so far as to claim that a truly interactive narrative is impossible because one "cannot have interactivity and narration at the same time" [89] contending that when the interactive narrative is telling its story, it cannot also provide the user with gameplay simultaneously.

However, others see this forced alternation between the narrative and ludic components as a *(perhaps inadvertent)* design mechanic which allows the players to co-narrate by handing over part of the narrative agency to the player [189]. Scholars like Sharp [162] have shared this optimistic outlook on interactivity, seeing it as a way for users to exercise agency and even become a coauthor of the narrative.

In narrative games, the very gameplay itself generates a space for player interaction such that the experience of playing a game becomes the "coauthored output by the author or artist and the reader or viewer" [162] such that the act of choosing between two narrative options can be seen as an act which empowers player agency. By letting the narrative symbiotically grow out of its potential for interaction [157, 153], an interactive narrative can still have a story worth playing while avoiding the pitfall of prioritizing game mechanics at the cost of narrative cohesion in games [202].

Those who believe that interactivity is in some form at least partially possible have put forth various models of interactivity in narratives. What these models have in common is that they place the players' narrative agency and the game's ability to tell its story at odds with each other, where if there is more of one there is less of the other.

Thue et al. [191] indicate that decisions in interactive storytelling are divided in three levels:

1. At the highest level, decisions made by the player are directly related to how the sequence of the events are presented in the interactive narrative.
2. At the medium level, time and place of decision-making opportunities are structured. These decision-making opportunities should keep players engaged with the story.
3. At the lower level, behaviours for the characters in the interactive narrative should be determined.

Aarseth [1] has identified three main positions of human-machine collaboration when dealing with a machine for producing a narrative which are analogous to the one above:

1. Pre-processing, in which the machine is programmed, configured, and loaded by the human.
2. Co-processing, in which the machine and the human produce text in tandem.
3. Post-processing, in which the human selects some of the machine's effusions and exclude others.

Ryan goes into more depth and divides the level of interactivity in storytelling into four levels [157, 153]:

1. Peripheral Interactivity.
2. Interactivity Affecting Narrative Discourse and the Presentation of the Story.
3. Interactivity Creating Variations in a Predefined Story.
4. Real-time Story Generation.

In the first level, the story exists prior to user interaction but as the levels go on, more of the story become dynamically created through the interaction between the user and the system [157, 153] and a CCAG like *"Until Dawn"* would be in *level 3* as the player is forced to create a unique narrative by choosing between the options given by the game itself.

The work presented by Riedl and Stern [147] discusses the idea that an interactive narrative should consist of a logical narrative promoting a heightened sense of agency. Additional research by Riedl and Stern [147], describes the details of a system that implements narrative control and credible elements when combined promotes a higher sense of agency to the user. Riedl and Stern also mention that simulation is an important element in interactive narratives as it provides a more realistic environment and continuous interaction that might create a higher immersive experience

for the player. Their work tries to provide an experience in which the player feels in control of the situation and at the same time allows actions that affect the outcome of the story, because as mentioned earlier, the sense of control and consequential impact are key to feelings of agency.

El-Nasr [53] has presented research on developing a system that presents a narrative shaped after a player's personality. The focus of this research is to improve engagement of interactive narratives by implementing diverse dramatic techniques that are related to areas of acting, directing, and writing. The work presented by Thue et al. [191] also follows the research by El-Nasr [53], but the narrative is modelled after a player's playing style instead of player's personality.

Bizzocchi and Tanenbaum [15] have taken a more narrative design focused approach to interactive storytelling through a case study of *BioWare's "Mass Effect 2"* [13]. Using the traditional literary approach of close reading, a detailed observation and analysis of a text, the design of the game narrative was analyzed. Using factors that contribute to the overall narrative experience like narrative arc, storyworld, character, emotion, and the narrativized interface, is how *"Mass Effect 2"* successfully strikes a balance between player agency and the game's effort to tell its own story.

The implementation and use of interactive narratives is not a novel approach to storytelling and by no means an advent of digital media (e.g. *"Choose Your Own Adventure"* books). However, the introduction of new technologies, such as complex branching narratives and replay value through different chapters in the game, allows for the research of contemporary and modern approaches regarding storytelling and narratives.

An example of these novel approaches is the survival horror narrative-driven video game developed by *Supermassive Games' "Until Dawn"*. The game periodically presents the player a choice between two alternatives which will influence how the story unfolds from that point on. Because the player is given limited time to choose in some of the decisions presented within the narrative, with not choosing either alternative being a "third" selection as well, the game forces the player to partake in the decision-making process of its storytelling.

Even though *"Until Dawn"* presents limited content implemented as actual gameplay and is mostly a storytelling tool, it operates superbly as an instance of how interactive narratives are presented in games, and at the same time presents mechanics that lets the player change the story based on the player's own choices. Understanding the elements that impact player agency might also assist in the development and design of better experiences in games.

4.2 Research Questions and Experiment

The research by Klimmt et al. [95] posits that an interactive narrative will elicit superior agency than a non-interactive one, thus creating a higher satisfying experience for the player. Building on previous related work and with the objective of understanding agency as a result of player choice, the present thesis is focused on answering the following research questions:

RQ3 How does the decision-making process in CCAGs affect agency and experience?

RQ4 How does player agency and sense of control over the decisions influence the motivation for players to make a decision within a CCAG?

RQ5 How is agency perceived based on different conditions, such as playing the game (i.e., exerting agency) vs. watching gameplay (i.e., agency exerted by another person)?

4.2.1 Method

The following sections describe in detail the controlled experiment and collected data. The general aim of the conducted controlled experiment was to evaluate participants' perceived agency throughout interactive and non-interactive narrative conditions. Qualitative data were collected through semi-structured interviews to analyze perceived agency in players with the objective of uncovering the effect of decision-making opportunities over player agency, specifically when participants experienced an interactive scenario vs. a scenario where they only watched pre-recorded gameplay.

This kind of study design can be of interest to explore degrees of interactivity in media like *Netflix's: 'Bandersnatch'* or to explore agency in non-interactive viewing-only experiences like *Twitch* or *Let's Play* videos.

4.2.2 Design

The presented research used a between-participants procedure design. The specific game condition participants experienced represents the independent variable, consisting of two levels. One of these consisted of a non-interactive version, in which the participants only passively watched the game unfold, while the second condition consisted of active gameplay (see Figure 4.1):

(A) **Non-interactive condition**: participants acted as spectators and watched pre-recorded gameplay. They were not allowed to interact with the game, thus the decisions they watched were previously chosen by the researchers.

(C) **Interactive condition**: participants acted as actual players and were able to decide over the story and characters' relationships by selecting a specific choice using the PlayStation 4 (PS4) controller.

Participants were assigned to conditions randomly to avoid biased results. Table 4.1 presents the distribution of participants across the experiment design.

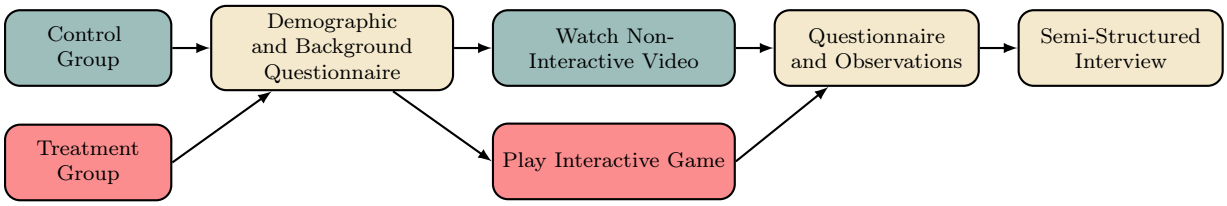


Figure 4.1: The study design for this chapter.

4.2.3 Dependent Variables

Interviews. Data about participant's experience were collected through a post-task semi-structured interview. The interviews allowed to compile qualitative information related to agency, enjoyment, and interest. Some examples of questions asked during the interview were: *Did you feel in control of the situation?* and *Did you feel the decisions changed the outcome of the story?*

4.2.4 Participants

Twenty-two participants were recruited for the experiment. Data from two participants were discarded from the analysis due to technical issues related to the recording equipment, thus data from 20 participants were analyzed. Recruitment was conducted through posters and emails in an academic setting. For ethical considerations, participants were screened to ensure they were at least 18 years old and had no previous experience with the game *"Until Dawn"*. The study received ethical clearance by the corresponding Office of Research Ethics. The sample size was divided as follows:

1. Control Group (Non-Interactive). The control group (13 participants) acted as spectators, watching pre-recorded gameplay and not being part of the decision-making process in the game.

2. Treatment Group (Interactive). The treatment group (7 participants) were allowed to act as actual players. Participants were asked to be part of the decision-making process in the game, affecting the story and relationships between the game characters.

Table 4.1 presents demographic and background information of the participants.

Participants that reported having previous experience with CCAGs mentioned the following examples: *Mass Effect series* (e.g. [13]), *Heavy Rain* [51], *Black Mirror: Bandersnatch* [168], *Dragon Age: Inquisition* [14], and *The Walking Dead* games [188] by *Telltale*.

Variable	Grouping	No. of Participants
Age	18-25	10
	26-30	6
	Older than 30	4
Gender (one-choice input)	Female	5
	Male	15
	Transgender	0
	Non-binary	0
	Other	0
	Prefer not to answer	0
Condition	Non-Interactive	13
	Interactive	7

Table 4.1: Participants' demographics and distribution into the study conditions.

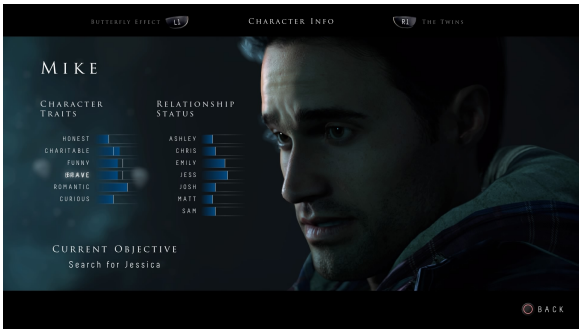
4.2.5 Apparatus

The present research utilized the survival-horror adventure video game *"Until Dawn"* developed by *Supermassive Games* and published by *Sony Computer Entertainment* as a PS4 exclusive. The game is set at a lodge in "Blackwood Mountain", centering around a group of eight teenagers on a weekend holiday. It contains a decision-making mechanic with which players select choices that affect the story and relationships between the game characters. The story in the game is divided into episodes and takes around nine hours to complete a single playthrough. *"Until Dawn"* received favorable reviews [118] highlighting the visuals, decision-making mechanic, characters' acting, and gameplay design.

"Until Dawn" presents two types of decision-making: regular binary choices (selection-based) and binary choices with added time pressure (time-based). The majority of decisions presented in the game are selection based (see Figure 4.2a). Selection-based choices require the player to use the joystick and select a choice for a few seconds to prompt the desired action. Additionally, the game sometimes presents time-based choices as QTEs.

For the experiment's control condition (non-interactive), pre-recorded video of gameplay was presented to the participants, acting as spectators without any interaction with the game. This video was recorded in sets of 15 minutes and later processed to form a 60-minute video. In the experiment, only 50 minutes of the video are presented to the participants, discarding the first 10 minutes, which present an introduction/prologue of the game. We decided to remove the first 10 minutes as it acts as a tutorial to the game. Participants were informed about the content of these 10 minutes through a brief explanation by the researchers. The 50 minutes of gameplay covers the first episode and some portion of the second episode in the game.

(a) The decision-making mechanic asks players to decide how this character should respond.



(b) Players can view characters' personality traits and relationship status when navigating through the menu. The traits only display when a specific character is being played, changing based on players' decisions.

Figure 4.2: Screenshots from *"Until Dawn"* [177] showcasing the decision-making mechanic through which the story progresses, and players' information about playable characters in the game.

For the treatment condition (interactive), participants acted as actual players for 50 minutes, covering at least the first episode of the game. All participants in this condition completed at minimum the first episode of the game.

About 23 decision-making opportunities are presented in the 50-minute duration of the game or video. This applies for the evaluated conditions. The number varies slightly depending on the type of choices that are selected in the game or video, and the experienced condition (see Figure 4.3 for an example of a branching path based on the player's choices).

The video or game was played or watched on a 50" LG Smart TV in one of the laboratory spaces at the academic institution. A camera facing the TV was used to record gameplay video. Observations, questionnaires, and semi-structured interviews were conducted using pen and paper. Interviews were audio recorded using a mobile phone.

4.2.6 Procedure

Participants were given an information sheet and asked to sign a consent form. They were also asked to complete a pre-study questionnaire asking for basic demographic data and previous experience with CCAGs. The researcher explained the task to the participants and also explained that the session was being video recorded. Participants were asked to begin the task. Once the task was completed, the participants were asked to fill out a questionnaire.

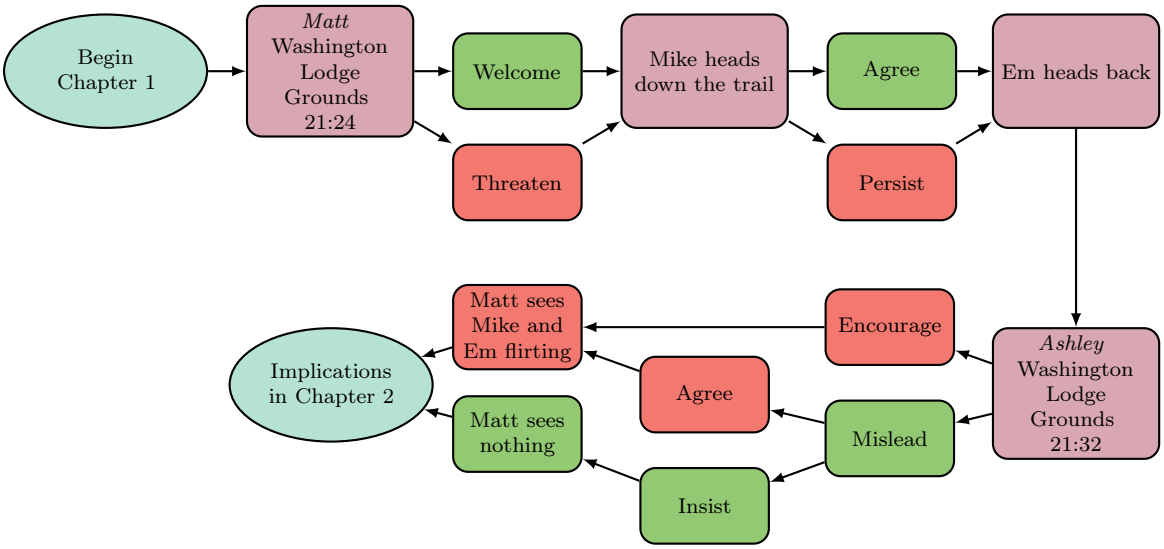


Figure 4.3: Until Dawn Branching Paths example. Different choices and implications in subsequent chapters can be seen in the figure.

Finally, a post-study semi-structured interview with questions about agency, sense of control, interest, and enjoyment was also conducted. These interviews were audio recorded. At the end of the session, the researcher debriefed participants about the purpose of the study, asked for any additional feedback, and provided a monetary remuneration ($10 CAD).

4.3 Results

4.3.1 Thematic Analysis - Overall Approach

In the works by Braun and Clarke [21], they argue that a thematic analysis is considered a suitable method to analyze qualitative data. They posit that a thematic analysis can be used to research a wide range of data to answer specific research questions. To conduct a thematic analysis, a process of analyzing, organizing, describing, and reporting common themes is followed. Braun and Clarke discuss the validity of thematic analysis [21] and argue that insightful findings can be reported when a thorough analysis is performed. To analyze the data collected through the interviews, a process was followed as described by Braun and Clark [21, 135]. However, the process described in this thesis is an adaptation to a hybrid model compared to the one discussed by Braun and Clark [21, 135]. In this hybrid model, we followed a reflexive thematic analysis approach in combination with a codebook developed by the researchers. We believe this hybridization allowed

us to gain a better understanding of the collected data and to improve our findings as a result (rationale provided below). We followed the following analysis procedure:

1. **Phase 1 - Familiarizing with the collected data**. Raw data were collected through audio interviews and records were kept for each participant. While conducting the interviews, it was possible to start identifying common themes mentioned by the participants.

2. **Phase 2 - Generation of initial codes**. As an initial process, a single researcher conducted an analysis of the data and codes were established to identify recurring themes. This was followed by supplementary coding by two additional researchers, including debriefing of the codes among all researchers to discuss and find consensus regarding the generated codes.

3. **Phase 3 - Themes search**. Once the researchers analyzed and triangulated the results, recurring themes were described and integrated into the findings. Researchers also made sure the selected themes were connected and related to similar findings such as how player agency is increased or decreased by the game mechanics.

4. **Phase 4 - Themes review**. Researchers analyzed the selected themes and made appropriate changes when themes appeared to be similar by evaluating the codebook and merging common findings.

5. **Phase 5 - Definition and themes titles**. Researchers decided on the naming and definition for the selected themes.

6. **Phase 6 - Report**. Lastly, the findings are described in detail in the following sections of this chapter.

The interview data were transcribed using the software *Otter*[1], and *Dovetail*[2] was used for data organization. *Dovetail* also allowed the researchers to assign, identify, and analyze common codes in the transcripts. These codes were useful to subsequently identify and describe recurring themes, presented in the following sections.

4.3.2 Hybrid Reflexive/Codebook Thematic Analysis

After an extensive review on the literature about thematic analysis, specifically the work by Braun et al. [21, 24, 23], the data were analyzed with an orientation to a hybrid reflexive/codebook thematic analysis. It is imperative to highlight that thematic analysis is often referred as a single qualitative analysis approach; however, Braun et al. [21, 24, 23] argue that thematic analysis

[1]Otter Voice Meeting Notes: otter.ai
[2]Dovetail: dovetailapp.com

can be described as an *"umbrella"* methodology, of which various orientations can be applied to collected data.

For this chapter, a hybrid reflexive/codebook orientation was chosen. We followed the reflexive thematic analysis approach [21, 24, 23] through an organic inductive coding process, in which codes could evolve to better reflect patterns in the data, and which led to themes. However, we also conducted this process using multiple coders, leading to discussions of iterations of the codes and themes until consensus was reached not only in the form of a map of themes but also a codebook. The latter aspects are more closely oriented towards codebook thematic analysis. We chose this hybrid approach to incorporate and reflect in our analysis the perspectives of the researchers, who between them have diverse backgrounds in terms of discipline (STEM vs. humanities) as well as cultural background and gaming habits. The inclusion of these different perspectives can be considered integral to a comprehensive understanding of agency in CCAGs.

4.3.3 Theme Analysis and Conceptualization

An analysis and definition of the themes conceptualized by the researchers is presented in the following subsections, where each subsection constitutes a developed theme (see Figure 4.4 for an example).

Lack of Choice as Barrier to Agency

Participants that experienced the non-interactive scenario wished they were able to make different decisions than the decisions that were shown in the video as they felt a contradiction/mismatch between the decisions that were made for them and the decisions they would have made. They mostly mentioned that engagement and perceived agency would change if they have the opportunity to modify the shown decisions to explore different outcomes. Some participants reported feeling only in control of small or surface-level situations, and they were unsure if these types of decisions had meaningful effects on the overall outcome of the story as they were not able to see any impact later on in the game. Awareness and attention to the story could also be increased if the opportunity to make decisions is present.

> *"Because I felt there are some cases where I felt the person who was actually making the decisions kind of playing it safe. And I guess that's a good (...) maybe that's a good strategy. I don't know. But I was getting so bored. I was wondering (...) what if you just did the most weird decisions in every situation, that might be more interesting, or just be the most inflammatory, the most unreasonable choices. And that was, sometimes I would think (...) I wish they did the interest thing."*
>
> —🎤 Participant 22

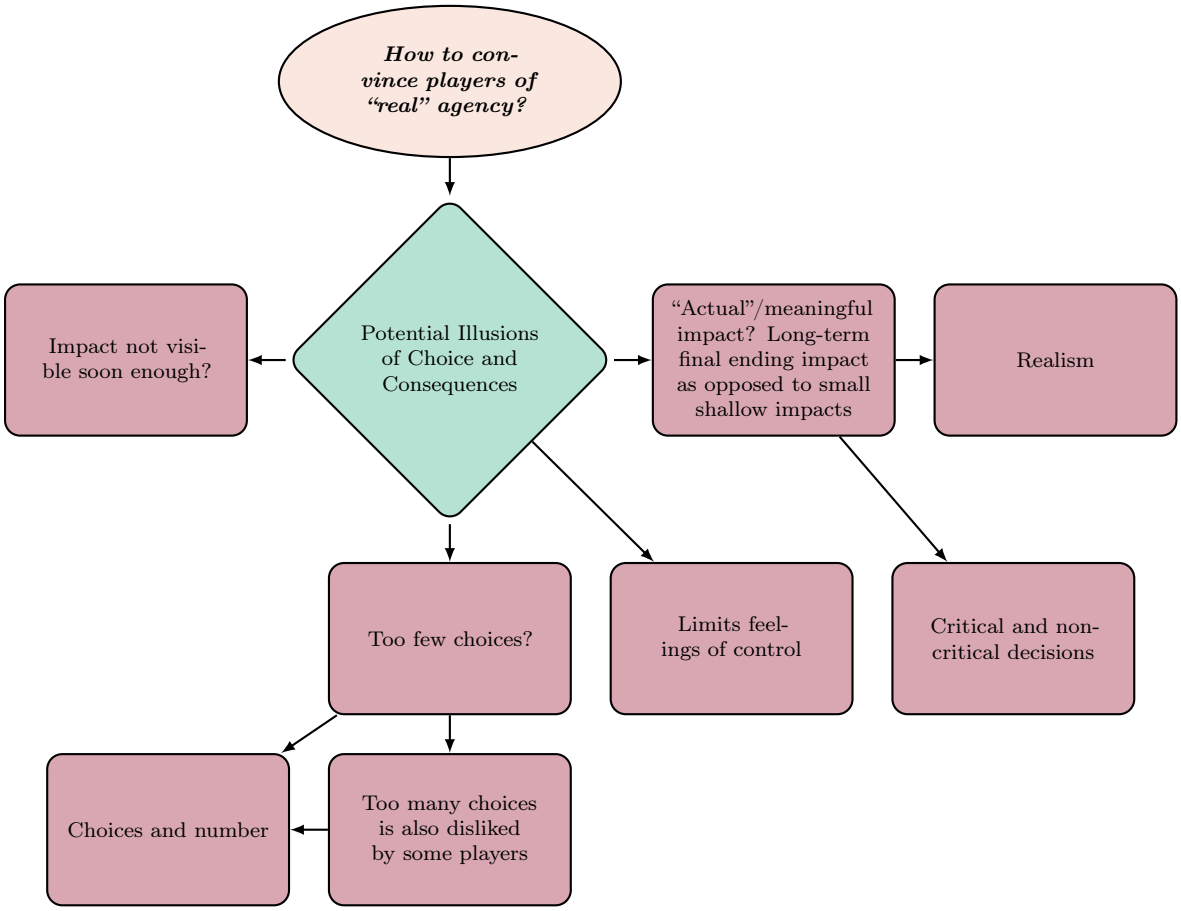


Figure 4.4: An example of an initial theme developed by one of the researchers. The initial theme is represented by the blue figure, connected to codes and findings related to the specific theme.

In the interactive condition, participants stated that the experience differed from games with fixed or linear narratives in terms of being able to somehow modify the story. However, they also mentioned that even when they were able to make decisions, the story seemed to follow an established path, with only small, inconsequential situations affected. Participants felt their agency was less effective because not only were they unable to experience the impact of their decisions, some of the decisions they made were ultimately superfluous and had no real effect on the narrative as a whole.

> *"I wasn't really entirely sure about whether or not my decisions were actually affecting the outcome or just changing certain, certain pieces of dialogue just to make it seem*

like it's different."

—🎤 Participant 11

Participants mentioned that the mechanic of choosing between only two options seemed a little arbitrary. Decision-making opportunities were presented as binary selections, where some participants mentioned the mechanic is convenient in expediting the decision-making process, most other participants mentioned they felt constrained by the limited binary choice, which might affect their experience. Some of the presented choices in the game were correctly perceived to follow a *"positive/negative"* dichotomy. Still, some participants seemed to acknowledge the technical limitations behind extending the dichotomized decision-making mechanic to larger numbers of choices.

> *"Well it was definitely binary either this or that. And that's typically not how most decisions go. I assume it's just because (. . .) if they're allowed infinite options (. . .) the development would be just that much more complex. So they went with the A or B style decision-making strategy."*
>
> —🎤 Participant 08

Lack of Story Impact as Barrier to Agency

Participants in the non-interactive condition did not feel the decisions presented in the video were actually affecting the outcome of the story. They also reported feeling that the decisions did not make a difference overall. It was also mentioned that it was hard to understand if the decisions were actually having an impact even when the game tutorial clearly stated so. However, some participants mentioned that some of the decisions seemed to change the outcome in terms of character interactions and relationships. Participants mentioned that they felt some decisions were presented in critical points in the narrative, but not all of them as they could not see an effect later on in the story.

> *"It's kind of hard for me to say just because I don't know what those what the outcomes of those decisions are yet. So it's hard to like (. . .) to gauge my agency if I don't know what the outcomes are."*
>
> —🎤 Participant 11

Participants in the interactive condition felt that some of the decisions changed the outcome of the story, but not all of them. Participants felt that some of the decisions they had control over were only for trivial or superfluous situations, and even when they had the ability to choose during the decision-making moments supposedly critical to the plot, their decisions seemed to have no permanent impact on the story, shattering the illusion of choice set up by the game. They

mentioned that most of the decisions only changed the interaction between the characters, but regardless of the selected choice, the story unfolded following a fixed plot.

> *"I don't feel (. . .) that the [decisions] actually influenced the outcome or anything (. . .) it might change the situation and instance, but (. . .) I don't think it changes the whole narrative (. . .). And I've experienced that with a lot of narrative games like this, like especially, I think the initial Walking Dead games (. . .) didn't influence much at the end."*
>
> —🎤 Participant 13

Players' Emotional Responses to In-game Decision-Making

Due to the fact that *"Until Dawn"* is a survival-horror game, much of the emotional reactions were elicited by the in-game elements. In the two conditions, participants reported experiencing tense emotions as a result of the eerie music and environment. Some of the scenes in the video made participants feel scared. They also made remarks about the game having a dark and eerie setting. Some participants reported experiencing emotions of alertness and nervousness. The time-pressured QTEs elicited emotions of distress and agitation; this was largely considered a positive experience.

> *"The dark scenarios sometimes might (. . .) trigger or elicit some specific emotions or (. . .) you know being concentrated or like tense. Sometimes I felt (. . .) my muscles were a little bit tense in some specific moments of the video."*
>
> —🎤 Participant 06

However, the binary choice mechanic also elicited negative responses. For the non-interactive conditions, participants mentioned they experienced emotions of annoyance, frustration, and uneasiness because they were unable to make decisions that affected the outcome of the game story, or the relationships between the characters. Participants selected for the interactive condition mentioned that the experiment was an interesting experience. They also mentioned that anxiety was present when selecting a choice as they were not sure if it was the correct one.

> *"I was looking into choices (. . .) and was like, maybe I would have picked the other one (. . .) and then there's some decision to make at the very last second. So say you're looking at the screen, you're like, what will this guy choose? And then you're looking at your decision helping him make the same decision, right? But sometimes unexpected, like, this is not what you want, and then we continue to go on (. . .) so kind of disappointed in a way (. . .)."*
>
> —🎤 Participant 07

Implications for streaming CCAGs

Overall, the non-interactive condition still yielded high engagement and emotional responses to the presented choices, much like a movie might. However it differs from movies in the sense that participants were watching someone else partake in interactive media, which is closer to live streaming websites. This is perhaps less surprising when considering the fact that CCAGs are also well represented on streaming websites like *Twitch.tv*[3]; clearly demonstrates observers' experience enjoyment from watching players make decisions in CCAGs.

> *"I feel like it wasn't as intense as it could have been because I wasn't actually playing the game, just watching a video of someone playing it. So for example, when the jump scares happened, (...) I don't think I was as invested because I was sort of prepared for them because I was focusing on watching and not doing things the game like exploring or interacting with things."*
>
> —🎤 Participant 21

Yet we emphasise that our study shows that this occurs even when *only* watching the gameplay, whereas streaming websites generally afford a higher degree of interaction with the streamers/active players via chat and the camera view of the player. Merely watching the in-game decisions made observers feel tense (due to music or game characters' behaviour), and judge the choices made in the video; further, these moments were pointed out as driving enjoyment.

> *"Yes, I got scared (...) sometimes slightly scared. And yeah, there was like, (...) the emotions that I would say like (...) and some things that happen I would have done differently. So I kind of felt like (...) well, maybe I don't agree."*
>
> —🎤 Participant 12

4.4 Discussion

Based on the conceptualized themes, it was possible to understand the perceived agency participants experienced in the two different conditions.

Agency Through Choices vs. Illusion of Story Impact

As expected, based on previous findings discussed by Klimmt et al. [95], we identify that participants perceived agency was present during the interactive condition. This confirms that those participants'

[3] E.g., https://www.twitch.tv/directory/game/Until%20Dawn/videos/all

active choice-making—as opposed to only watching choice-making in a pre-recorded video—is an important factor in player agency.

However, our analysis of the data highlights the importance of a strong, engaging narrative wherein the impact of player input on the story progression and outcome is apparent. Participants mentioned that they could not see meaningful feedback based on the choices (made by them, or presented in the video). They questioned whether the choices actually impacted the story, or were merely an illusion of meaningful choice. They reported that the game's narrative seemed to be on a predetermined path, making their decisions moot; this seems to create a feeling of ineffective agency. While the participants were still engaged in the experience and described emotional responses to the choices, this could be an element that diminishes perceived agency experienced by players.

This finding is particularly interesting as a reflection on prior work by Fendt et al. [56], who found that an illusion of story impact in the form of simple feedback was enough to create a sense of agency. However, their study used a simple text-based game without audiovisual embellishments, making the results difficult to compare to those from a commercial game with such visual detail as *"Until Dawn"*. Our findings contrast with theirs; it seems that conveying a more convincing impact of player choices is a way that the game could be improved.

Furthermore, our findings appear to corroborate/compliment the work done by Bopp et al. [18]. In what they call "responsibility", a special case of agency where players have to make in-game decisions, players reported positive feelings when they felt they contributed to the story, and negative feelings when they reflected on the consequences of their choices [18]. In both cases, players can see the impact they have on the narrative and respond accordingly. In the non-interactive and interactive conditions of our study, the participants never had a chance to meaningfully affect the narrative, and thus did not feel "responsible" for the narrative. This could explain their diminished perceived agency.

Key findings about fostering a sense of agency in CCAGs can be applied to other forms of interactive media (e.g., exploring how to convey to players that their choices noticeably impact narrative across different media).

Key Choices and Dichotomy

Participants' doubts about story impact were the most relevant to moments of critical decision-making (i.e., key moments which were perceived to have the biggest impact on the narrative). While some of the doubts could be attributed to the fact that participants were only exposed to the beginning of the game's narrative, and thus could not see the long term results of their choices, the effect of this perception on agency is nonetheless important to note. This disconnect, or the lack of a corresponding output in the form of narrative change or progression from their input in the form of making narrative decisions, seems to be one of the primary causes for shattering the illusion of agency for the participants. As pointed out by Iten et al. [84], players having knowledge

of the repercussions of their choice options is crucial to what constitutes a meaningful choice. Even when feedback is immediate, if the choice is non-critical, it may still shatter the illusion of agency. As previously mentioned, when participants are given control over situations which only affect minor character interactions, they also become aware that such inconsequential choices are probably irrelevant to the core narrative at hand.

Further, the dichotomy of choices in the narrative evidently has an effect over the emotions experienced by players, and the disagreement on some of the choices presented in the non-interactive condition. Because there are only two possible choices, participants reported feeling constrained by the scarcity of options. This was particularly noticeable in the non-interactive condition when the video presented a narrative choice that the participant would not have chosen. Here the perception of agency may have been lowered further because the difference between the only two choices was so stark in terms of outcome.

Morality and Role-Playing

Furthermore, it was also evident that the moral aspect in the given choices played an important role within the narrative. The framing of the two choices where normally one is *"positive"* and the other *"negative"*, impacted the type of decisions made by the players, thus affecting their sense of control over the narrative. For example, there is a scene where the player is forced by the game to unnecessarily take aim at an animal as a tutorial mechanism to teach some of the game's controls. Choosing to deliberately miss, would be the "positive" choice, and choosing to shoot it, a clear example of animal cruelty, would be the "negative" choice. Participants in the non-interactive condition who watched their player character shoot the animal reported feelings of anger and disgust. When the game mechanic presents such stark binary choices, where one choice is clearly the "bad" one, it may exacerbate the feelings of ineffectual agency. This result echoes Bopp et al. [18] which found that a lack of agency was a source of negative emotion for both when a player is unable to make the decisions they want and for when they are forced to make decisions they do not want.

Previous research by Tan and Mitchell [182] explores the concept of emotional agency and affection developed by players towards different characters in the narrative. This affection impacted the types of decisions made by the players, specifically for decisions of sentimental significance in relation to specific character traits, or situations where an emotional scenario is present. In addition, as discussed by Domínguez et al. [47], players sometimes base in-game actions and choices not on what they wanted to do or would have done personally, but on how they thought the in-game characters making the choices would behave (i.e., fulfilling a narrative role). This feeling of disconnect is reflected in the results which show that participants felt frustrated when some characters were choosing actions they did not want to.

On the other hand, there were participants who wanted to maximize their decision-making freedom to the point of "breaking" the game. Rather than trying to choose the decision most in

line with their character or the decision they would like to make, some participants wanted to enact decisions not allowed by the game narrative (e.g., deliberately kill specific characters), in part simply to see how the game would respond.

Narrative Paradox

The presented results conclude that the CCAG presented a higher perception of agency and control than the non-interactive one. However, the story plays an important role in enhancing immersion and enjoyment. It is possible that the phenomenon know as *"narrative paradox"* [27] can be present within the analyzed narrative. The concept of narrative paradox posits that a conflict is present between eliciting a higher sense of agency while allowing the authored content to create an immersive environment [27]. In other words, the more agency the game grants the player to make their own choices, the less control the game itself has to create a more structured environment to tell its story, and vice versa. This concept could be in part related to discussed findings about the *"slow-pacing"* of the first chapters of the story, thus participants experienced a lower sense of agency due to the fact that their control over the story was affected by the authored content. Put more plainly, since the game has to set up the story at the start, it must exercise more control over the narrative to do so, and thus the player has a correspondingly lower amount of agency. So that even when given the freedom to choose, the player feels that the story is being told mostly by the game and their own choices have little impact.

In both conditions, there were two common sources of frustration about feeling a lack of agency: the inability to make the choices the participants actually wanted to make, and the inability to see deep and lasting impact on the narrative based on the participants' inputs. In the first issue, participants whose decisions were already made for them and even participants who were assigned the interactive condition, expressed feeling that the game did not allow a full range of choices. In the latter issue, the participants felt a disconnect between their agency (i.e., their choices and inputs into the game), and the products of their agency (i.e., the story changing according to their choices).

The fundamental discrepancy between player input and change in game state was a major barrier to feelings of player agency. However, it would be impractical to have a game that is narratively unbounded as it would be near impossible to account for any and all possible variations of the narrative progression if the player had complete freedom. Thus, to maximize feelings of player agency, it is suggested that the decision-making mechanic should have a definite and noticeable corresponding output for the input of player choice. This does not mean there can be no room for decision-making which is seemingly superfluous or non-critical to the plot, since those moments of interaction may play a role in player immersion and increasing familiarity with the game and its mechanics. However, the decisions critical to the changing or advancement of the plot should clearly show the impact of the player's choice by revealing the consequences right

away or if it is revealed after a delay, make it clear to the player that there is unequivocally a cause-and-effect relationship between their choice and the narrative change.

Engagement Despite Non-Interaction

Finally, the finding that participants in the non-interactive condition still engaged with the story game emotionally is addressed. We believe that this has significant implications for streaming communities such as *Twitch.tv*, as even the mere viewing of decision-making by another player (who was not shown and could not be interacted with) created engagement. This emphasises the importance of decision-making in games even for non-players.

The work by Robinson et al. [149] is an example, wherein the tool *"All The Feels (ATF)"* was developed to analyze the impact of measuring physiological responses from a Twitch streamer, and how it can increase their connection with spectators. *ATF* was implemented in a stream to measure physiological responses such as electrodermal activity (EDA), heart rate (HR), and emotional facial recognition using the tool *Affdex*. Using tools like this may be an interesting way to explore and enhance viewers' experiences with story-driven games as well, by extending gameplay watching to showcase a streamer's biometrics response and emotions in decision-making moments. This could increase spectators' enjoyment, engagement, and sociability, and is a novel avenue that could be explored in the future to provide valuable data about different interactive scenarios. For example, innovative approaches to interactive narratives are already being developed through different media contents (e.g., *Netflix's "Black Mirror: Bandersnatch"* [168]).

4.5 Limitations and Future Work

The conditions can be further explored to include other types of media that also implement an interactive narrative structure (e.g., researching interactive films and compare results within a gaming context). Most of the participants mentioned during the interview process that *"Until Dawn"* can be seen as a film rather than a game—in both interactive and non-interactive scenarios, given the limited options presented as decision-making opportunities. Furthermore, a triangulation of different research methods can be implemented to further extend the analysis of the elements that impact player agency, and improve the experience.

Moreover, content limited to only the first and part of the second chapter of the game was presented to the participants. Consequences to some of the decisions can only be experienced at later chapters in the game, thus this could be a factor that diminished participants' perceived agency. To further validate the presented results, since it would be prohibitively long to play or watch through the entirety of the game in a single session, it would be necessary to conduct a long-term experiment such as a diary study where participants are able to play the game until

completion, or in a condensed version where participants are able to experience the consequences of previous choices. This could affect their sense of agency as they will be able to visualize the consequences of their choices over the narrative in subsequent chapters.

Future work includes the analysis of facial recognition data that will allow to better understand the range of emotions participants experience in an CCAG. Additionally, integrating a playthrough that combines decisions that have both positive and negative consequences as an experiment condition would be beneficial to further understand how agency is affected depending on the played scenario, and likely increase ecological validity compared the presented scenarios in this chapter. Moreover, other types of media could be analyzed to compare similarities and differences, such as researching how streaming content affects players' agency. When actively choosing to watch games on a live stream as an audience member, viewers may feel different about their inability to affect the game's narrative. Additionally, the exploration of different non-interactive conditions, such as game spectatorship modes like *Twitch* or *Let's Play* videos, can provide further insights into specific or related aspects on similar conditions that were tested for this study.

4.6 Conclusion

To understand agency and sense of control, it is necessary to uncover the elements that affect players' experience in a CCAG. This exploration can provide an understanding of the mechanics that elicit a higher sense of agency in this type of game. Although there has been previous research into understanding levels of agency in games, this work investigated the differences between an interactive (actor) and non-interactive (spectator) conditions. This chapter attempts to illuminate insights into increased sense of agency and engagement with the game's narrative.

A study with 20 participants was conducted. Participants were asked to act as spectators by watching pre-recorded gameplay or to act as players by actively playing the game. Semi-structured interviews were conducted and asked participants about their experience with the game depending on the chosen condition.

The main takeaways from the qualitative analysis indicate that participants' sense of agency is increased when they are able to make decisions; however this agency might be affected by the number of choices and the evident consequences to those decisions. Moreover, participants indicated that most of the presented choices in the game do not seem to have a long-term impact over the narrative.

The presented findings in this chapter can help to promote further research and discussion into the field of CCAGs, and its application in gaming contexts.

4.7 Summary

In this chapter, I conducted a user study to understand players' perception of agency while experiencing different conditions in a CCAGs. The conditions that were tested correspond to player exerting agency (i.e., playing the game) as opposed to another person exerting agency (i.e., watching someone else make decisions). Furthermore, I explored players' motivations behind making decisions in games and the impact these decisions have on their experience. I also investigated the importance of presenting evident consequences to player decisions, and that these decisions should have an impact on the game narrative.

4.7.1 Chapter Contribution

The objective of this chapter was to address the following research questions:

RQ3. How does the decision-making process in story-driven games affect agency and experience?

RQ4. How does player agency and sense of control over the decisions influence the motivation for players to make a decision within a story-driven game?

RQ5. How is agency perceived based on different conditions, such as playing the game (i.e., exerting agency) vs. watching gameplay (i.e., agency exerted by another person)?

This chapter contributes C3:

C3. Understanding participants' perception of agency and motivation to make decisions in CCAGs. The analysis presented in this chapter provided useful insights that can help improve motivation to make decisions, thus increasing perceived agency. I provide an exploration to uncover how agency is perceived by players in CCAGs when experiencing different conditions. This study also allowed me to gain an understanding about the importance of player agency when making decisions in a game. Moreover, when players are able to experience the consequence of their decisions over the game narrative, this might impact agency and create a meaningful player experience.

4.7.2 Context in the Thesis

The findings and insights from this chapter informs opportunities for the design of meaningful and engaging experiences in CCAGs. The participants reflected on their experience, and provided knowledge into how they perceive agency. Moreover, this knowledge can be beneficial for game designers and developers to assist in the creation of game mechanics that allows players to

experience increased agency. Participants indicated that it is important to feel their decisions have actual consequences, and that these consequences are made evident in the game narrative.

With the increase in popularity of CCAGs and novel mechanics for decision-making, these findings and insights are important to address the issues and challenges that I presented in this chapter: branching narratives that are different based on players' decisions, evident consequences to their choices, and the ability to provide an environment in which players are able to personalize their experience based on their decisions. At the same time, more empirical research in CCAGs is needed to verify if the presented findings can be translated to other types of narratives (e.g., CCAGs that present science fiction narratives).

When talking about personalized experiences, participants also mentioned the concept of morality and how they make decisions based on their moral intuitions. These findings present the opportunity to understand how player agency and decision-making are affected based on moral values. In the next chapter, I expand the research on morality and if players translate their real-life morals to in-game decisions. I also explore which moral values are more important to players, and how the narrative and realism affect their decision-making processes.

With the knowledge on player agency and decision-making provided in this chapter, and the investigation of morality in the next chapter, I contribute to understanding how different game elements and mechanics affect player experience.

Chapter 5

"I Don't Want To Shoot The Android": Players Translate Real-Life Moral Intuitions to In-Game Decisions in *Detroit: Become Human*

In Chapter 4, I talked about player agency and how moral dilemmas might affect players' decision-making processes. In recent years, morality decision-making has been implemented in CCAGs as a core mechanism to allow players to advance through diverse multilinear paths. Although the integration of moral dilemmas has been researched in other types of media [206], games provide an opportunity for players to become the moral actor [197]. Moral dilemmas can be defined as "a moment of decision making with at least two moral options in conflict as either option A or B but not both can be chosen" [115].

In these games, players are allowed to partake in moral decision-making, but we currently do not know whether they translate their real-life morality into in-game decisions. Moral values are an important aspect of human development and behaviour [87] and games provide an environment where players can exercise moral decision-making in a safe—but simulated—space. Understanding why players make decisions and their reasoning behind those decisions is important because this can provide valuable information for game designers to improve player experience.

Previous work has looked into how players translate real-life morality to in-game decisions [20, 197, 99, 86]. However, these studies have not examined the motivations and reasoning behind players' decision-making processes and have only focused on quantitative analysis. The lack of knowledge on how players perceive morality and make moral judgments poses a challenge to the design of games with the intention of eliciting specific emotions or experiences. Hearing from

players themselves is paramount to understanding their expectations of moral dilemmas in CCAGs. While related work has touched on morality in games, the research has largely focused on simple good vs. evil dichotomies [164] or the use of violence in games [80]. This chapter fills the gaps in current discourse by examining player choice and motivations in more complex and multilinear CCAG environments.

Thus—to better understand how players make moral decisions in games and if they translate their real-life morality to the game world—an investigation into the motivations and perspectives of how players experience morality in games through qualitative means was conducted. More specifically, this chapter focuses on their reasoning behind moral decision-making and if they associated their choices to distinct real-life moral values. Their reasoning can also help explain aspects in the game that affect and motivate their moral choices (e.g., growing attached to a game character). The game *Detroit: Become Human (2018) [52]* developed by *Quantic Dream* was chosen as a stimulus because it provides an excellent example of CCAGs that allows players to modify the story based on their decisions. Moreover, the game continuously presents moral scenarios that affect survival and relationships between game characters.

To understand how player morality is translated from real-life to in-game decisions, a within-participants, interview-based user study in which participants (N=19) were asked to complete two sets of the MFQ30 was conducted. It was anticipated that this would help to identify the moral foundations with the highest salience. Furthermore, participants were interviewed about their experience with the game in general, their experience with a specific chapter in the game, and conducted a thematic analysis of the collected data. Through the thematic analysis, this chapter explores factors that players associate with morality-driven choices and how these factors affect their experience.

The findings suggest that players translate real-life morality to in-game decisions, and that other factors (e.g., connection with characters) also affect their moral choices. It was also found that moral decisions might be affected by external factors, such as real-life social issues (e.g., COVID-19 pandemic), and that relevance of moral foundations is subject to individual perceptions of morality. To our knowledge, this is the first qualitative study that specifically examines a CCAG, where the core mechanic involves decision-making to advance the narrative. This work expands existing knowledge about morality in games, and provides implications on the integration of moral dilemmas in games. This chapter offers insights into players' perception of morality that can be beneficial to game developers and designers to improve player experience. The findings can be used as the basis to develop games that provide emotionally impactful choices which challenge and engage players on a whole new level.

Moreover, this research provides an investigation into the simulated moral dilemma aspect and how users react to these dilemmas. Understanding the impact of these dilemmas not only in games but also in other platforms or systems where decision-making mechanics are implemented could help inform designers and developers to better account for external moral values that users or players may bring into their systems.

5.1 Background Work

Interactive narrative games, specifically CCAGs [131], such as *Detroit: Become Human*, have seen an increase in popularity. The inclusion of moral judgments in entertainment is not something new, as other types of media such as television, have previously included situations where moral judgments are present. The difference between these types of media and video games is that in the former the viewer is only a spectator whereas in a video game, the player becomes an active and moral actor [206, 197]. With the interactivity afforded by games, there has been research focusing on the relationship between morality and the choices offered to the player. The role of player choice becomes important in the discussion of morality in games because moral dilemmas in games can be defined as "a moment of decision making with at least two moral options in conflict as either option A or B but not both can be chosen" [115].

5.1.1 Morality and Decision-Making in Games

Morality can be described as a set of rules that govern a person's behaviour and indicate how decisions are made when a moral dilemma is presented [86]. In cases of player-based moral dilemmas rather than character-based ones, the player's decisions may not be morally relevant if the game leads to similar results regardless of player choice or if the player is motivated by gameplay reasons rather than reflecting on the consequences of their choices [136]. Sicart discusses ethical gameplay as the "ludic experience in which regulation, mediation, or goals require from the player moral reflection beyond the calculation of statistics and possibilities". In other words, ethical gameplay challenges players to reflect on their choices from a moral perspective [165].

Understanding how real-life morality and values impact in-game decisions is important. Literature about approaches to morality has been discussed in the works by Haidt and Joseph [73]. They argue that players' decisions are based on a "gut" reaction rather than a cognitive process that guides their decisions [86]. In the work by Joeckel et al. [86], they study how aligned a person's own moral values are to their in-game decisions. They found that when a moral module is not salient, players would no longer see right or wrong as a moral choice, but rather as a choice that needs to be made to advance the game's narrative. Players would uphold their morality when they are presented with a morality-violating scenario, and they would make a random decision when their morality was not compromised. This decision-making in video games is either moral or amoral (i.e., decisions are made with the gut or simply to advance the game's narrative).

Tamborini et al. [180] suggest that while both chronic and temporary moral intuitions can affect decision-making, accessibility to both prompts players to uphold their moral sensibilities rather than violate them. Krcmar and Cingel [99] found that players used about equal parts of strategic and moral reasoning for their decision-making process, with more experienced players using more moral reasoning than strategy. Krcmar and Cingel claim that *the magic circle* [83]

(i.e., games represent a space separate from real-life and the rules of the real world do not apply to the virtual world, thus players' in-game decisions will not have real-life consequences) is porous because players bring their sense of morality inside the circle. Just as players bring their morality into games, Grizzard et al. [69] suggest violating morality virtually in games can cause the player to become more sensitive to the relevant moral intuitions. Even in the case of adolescents whose moral foundations are not yet fully stabilized, moral violations were less likely when faced with salient moral foundations [87].

Dechering and Bakkes [45] provide an analysis of two CCAGs as case studies (*The Walking Dead [188]* and *Life is Strange [49]*). They argue that ethical agency must be present in the game to allow players to engage with the morality of the narrative. Based on Self-Determination Theory (SDT), moral engagement is dependent on players' control and knowledge of the game state, their relationship to the game characters, and the autonomy to act based on their own morality. Moreover, to increase moral engagement, the game should provide ethical agency, meaning that players must be confident that their actions are meaningful.

5.1.2 Moral Foundations Theory

Haidt and Joseph [73] identified five sets of moral evolutionary intuitions. These foundations are present since birth and are later shaped by socialization experiences [72]. The MFT was developed based on a large-scale study where five moral foundations were described. These foundations refer to harm/care (e.g., emotional or physical harm), fairness/reciprocity (e.g., considerations of justice, fair treatment, honesty and cheating), ingroup/loyalty (e.g., conflicts of interests between groups, group membership, betrayal), authority/respect (e.g., violation of authority, hierarchies, obedience), and purity/sanctity (e.g., chastity, control of desires).

MFT is intuition-based and serves to understand innate morality, which arguably is the type of intuition used in games [79, 86]. The five modules are not independent of each other. MFT has been used as the theoretical foundation to understand players' morality and reactions to different types of media [20].

5.1.3 Representation of Morality in Games

The inclusion of moral dilemmas in games allows players to interact with the narrative and with other characters in the game. When morality is implemented as an in-game mechanic to advance the narrative and affect characters' interactions, these scenarios follow a black or white dichotomy. Sicart [164] argued when games simplify morality into rudimentary good/bad binaries, they do not empower players as moral agents because their moral choices become merely gameplay ones.

Previous research investigated how players perceive characters in a game and whether they consider them to be social entities rather than objects [80]. This argument would affect moral decision-making and choices made by players. In addition, previous work has investigated how visual attributes of antagonists can influence judgments of character morality [142]. Characters that were perceived as most immoral featured, for example, skin problems, older age, salient clothing, face coverings, tattoos, and weapons representing examples for villainous stereotypes in games.

Boyan et al. [20] analyzed the game *Mass Effect [12]* and the effect morality had on players to follow a heroic or antiheroic path (i.e., following a Paragon or Renegade path). They used the Moral Foundations Questionnaire (MFQ) to assess moral salience of the foundations along with a questionnaire where participants indicated the moral path they would follow in the game. Results suggest that players follow their real-life morality in the game even though they have the opportunity to violate their moral values.

5.1.4 Moral Disengagement

The concept of *Moral Disengagement* is coined by Hartmann and Vorderer [80]. Mediated objects, such as video game characters, can be perceived as social beings. Thus, there is morality attached to interactions with these social entities. Automatic processes allow players to temporarily ignore that these characters do not exist in real-life and forget that the experience is mediated [80]. They discuss the assumption that virtual violence can only be enjoyed by players if there is no cost or there are minimal consequences to their actions, "that is, if it does not violate inner moral standards and cause aversion or dissonance" [80, 10]. Furthermore, moral disengagement plays a role in the enjoyment of violence in games because virtual violence is more pleasurable when it appears to be justified [79].

Klimmt et al. [96] found that violent games facilitate their players' moral disengagement in various ways because violence can reduce the enjoyment of games. Players can have competing reasons for either moral engagement or disengagement. The motivation for eudaimonic play or the desire to explore a game may be at odds with emotional engagement or empathetic connections with the player-controlled character and non-playable character (NPC)s [82].

On the other hand, Smethurst and Craps [169] argue that video games give players the feeling of moral responsibility for their in-game choices. In their study of *The Walking Dead*—a game which also uses a series of branching decision trees—the authors claim that the combination of interactivity, empathy, and complicity afforded to players, have the potential to make them feel responsible for traumatic events they must virtually perpetrate.

Although previous studies have researched moral decisions using different types of game genres [20, 99, 45, 197, 86], this research provides an opportunity to analyze a game where the core mechanic is decision-making and where moral dilemmas are implemented to advance the narrative.

Moreover, this chapter's aim is to address the question on whether real-life morality is followed by players in a digital world environment by providing a qualitative (i.e., semi-structured interviews and MFQ30) analysis.

5.2 Study Design

5.2.1 Research Questions

In the work by Weaver and Lewis [197], they argue that moral decisions in games and moral judgments are largely based on participants' real-life morality. Following up on this notion from previous related work, this chapter focuses on answering the following research questions:

RQ6 How do players' real-life morality translate to in-game decisions, specifically in CCAGs?

RQ7 Are moral decisions influenced by players' connection with game characters?

RQ8 How does MFT explain players' morality based on the salience of specific moral foundations?

5.2.2 Method

To explore if and how players translate their real-life morality to in-game decisions, specifically in a story-driven game like *Detroit: Become Human*, a study was conducted to gain an understanding about moral judgments in video games. This research used a within-participants design. The procedure was the same for all participants. Participants reflected about their past experience with the game and watched pre-recorded gameplay portraying one of the game's chapters. Participants were asked to complete two sets of the MFQ30. Semi-structured interviews were conducted with the participants where they were asked about their real-life morality, how they translate their morality to in-game decisions in story-driven games, and also about experiences with other games that present moral scenarios as part of their narrative. The platform User Interviews[1] and Zoom[2] were used to collect participants' data (see Figure 5.2).

5.2.3 The Game

Detroit: Become Human was developed by *Quantic Dream* and published by *Sony Interactive Entertainment* as a PS4 exclusive in 2018, and then released for Microsoft Windows in 2019.

[1]User Interviews: https://www.userinterviews.com/
[2]Zoom: https://zoom.us/

This game was chosen because it is exemplary of CCAGs and features an environment in which players modify the story based on their decisions, presenting moral dilemmas that affect the game narrative.

The plot of the game centers around three android characters that are controlled by the player:

- **Kara:** escapes her owner to protect Alice, a young girl. Kara defies her programming and becomes a deviant.
- **Connor:** works as a police detective hunting down deviant androids.
- **Markus:** defends other deviant androids and fights for their rights and freedom.

The game implements a decision-making mechanic that allows players to select different choices that affect the story and relationships between the characters. The game story is divided into 32 chapters and takes around 10 hours to complete a single playthrough. The game received favourable reviews from critics in terms of the visuals, story, animation, the impact of choices on the narrative, and voice actors. Some elements that were criticized include the motion controls and some aspects of character's development [119]. The game presents regular choices (selection-based through the PS4 controller) decision-making mechanic, and QTEs. The majority of decisions presented in the game are selection-based (see Figure 5.4a).

5.2.4 The Chapter: *Meet Kamski*

The chapter that participants were asked to watch[3] is called *Meet Kamski*. This chapter was chosen because it provides a moral dilemma example that allows players to reflect on their morality when making a life-or-death decision (in-game statistics show that roughly 80% of players chose to save the android in the chapter, which prompted our investigation into real-life moral tendencies translated to this game).

This chapter served as a memory prompt for the participants and also as a place to reflect on their moral decisions at a pivotal point in the story. Players had to reflect on their moral values and choices when presented with the decision of saving or shooting a game character. Thus, the selection of this chapter was justified because it provides a crucial moral dilemma within the game narrative.

In this chapter, players assume the role of the playable character *Connor*, and make decisions to advance the game narrative. *Connor* is an android that works in the Detroit police department

[3]Given current COVID-19 limitations and restricted use of laboratory space, it was not possible to ask participants to play the game. Technological limitations also constrained options of conducting an online study where participants were able to play the game.

as a detective along with the NPC *Hank*, who portrays the lieutenant. They are both investigating a murder case in which an android attacked and killed a human. In the video that participants watched, *Connor* and *Hank* meet *Kamski*, the owner of the company *Cyberlife* and the creator of the androids. *Kamski* decides to question *Connor* about his loyalty towards androids or humans. He then performs a *Kamski Test* and asks Connor to shoot another android to obtain information that can help advance their murder investigation. If *Connor* decides to shoot the android, *Kamski* will answer one question, otherwise no information will be given (see Figure 5.1 for a complete flowchart of the chapter). In the video shown to the participants, *Connor* spares the android, thus no additional information was obtained to advance the murder investigation.

5.2.5 Participant Recruitment

Participants were selected and recruited using the platform *User Interviews*. A pre-screening questionnaire was conducted to select eligible participants. The pre-screening questionnaire filtered and selected participants. Participants that played the game in the past six months and completed at least 60% of the game were selected. They were also screened to make sure they were at least 18 years of age for ethical considerations. The study received ethical clearance by the corresponding Office of Research Ethics. No other inclusion or exclusion criteria were used. Twenty participants were recruited for the experiment. Data from one participant were discarded from the analysis because of not following the procedure of the study design (i.e., the participant answered both MFQ30 before the interview section). Thus, only data from 19 participants were analyzed. Participants received monetary remuneration in the form of gift cards for their time.

Participants were based in Canada, the US, and the UK when they were interviewed. Ten participants were between the ages of 18-24, one between 25-29, two between 30-34, four between 35-39, one between 40-44, and one participant reported having more than 50 years of age. Nine participants identified as male (47.3%), nine as female (47.3%), and one as non-binary/third gender (5.2%). Ten participants (52.6%) reported having more than 10 years experience playing games, 12 participants (63.1%) mentioned they play games on a daily basis, and 12 participants (63.1%) reported having previous experience with CCAGs. Participants mentioned the following examples of previous experience with CCAGs: *Mass Effect series* (e.g., [13]), *Heavy Rain* [51], *Life is Strange series* (e.g., [49], and *The Walking Dead* games [188] by *Telltale*.

5.2.6 Participant Recruitment Rationale

The objective of this chapter is to present a study to analyze how players reflect on their moral decisions based on their recent experience with the game. To achieve this, participants that have played the game in the past six months were recruited so their playthrough(s) could be easily recalled. While this might affect how they view and experience the pre-recorded video of the

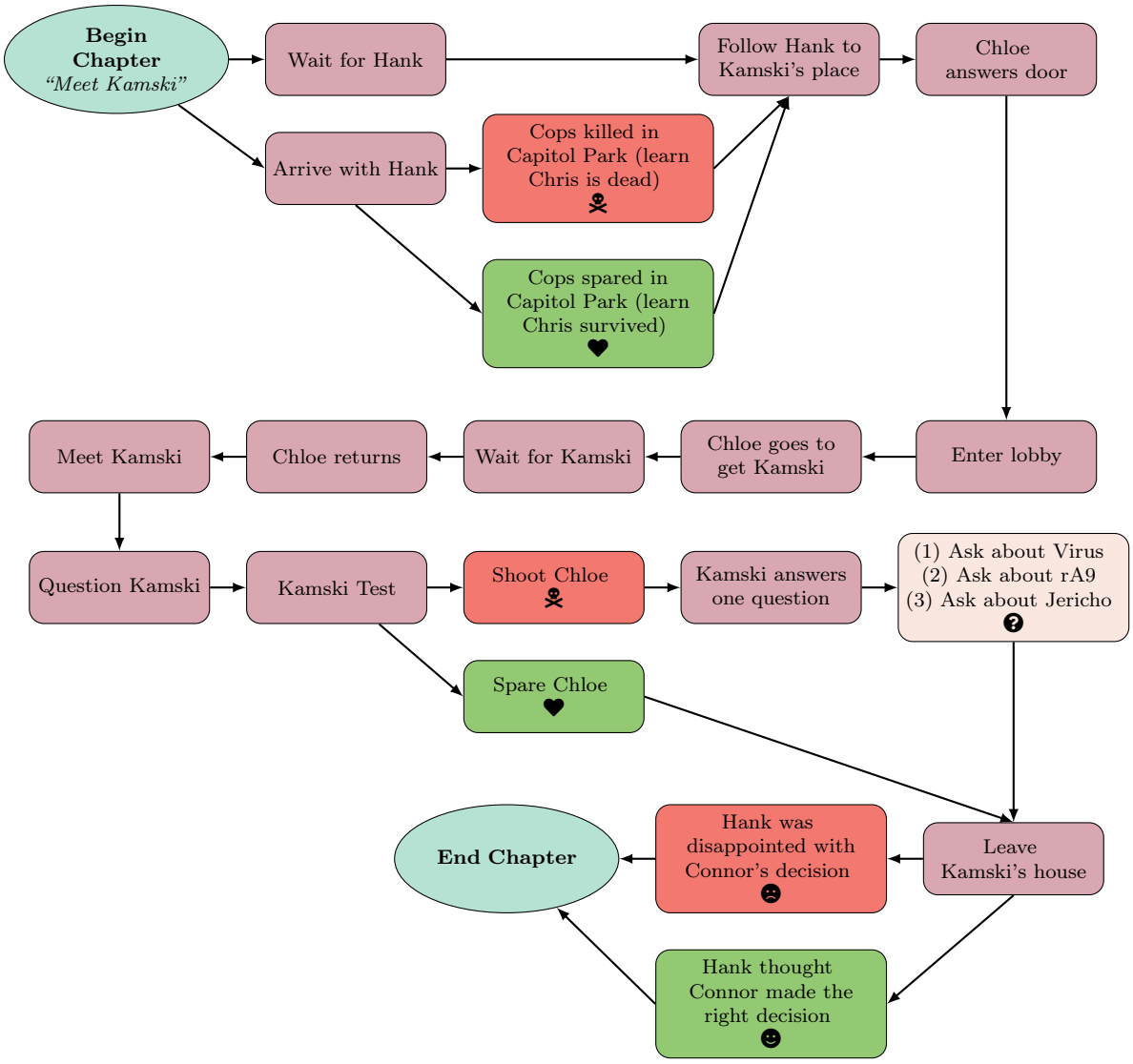


Figure 5.1: Detroit: Become Human *"Meet Kamski"* chapter. Choices made by the player will create different paths that can have implications in subsequent chapters.

specific chapter they were presented with, this limitation does not affect their ability to reflect on in-game decisions based on real-life morality and personal moral values. Moreover, the aim is to understand if participants felt they were translating their morality when they played the game for the first time as opposed to subsequent playthroughs. In the latter case, they might decide to experiment with their choices as described in section 5.5.

Participants that completed at least 60% of the game were recruited, as they would have a better understanding of the story, character development, and connection with the characters which might influence their moral decisions. Additionally, when participants were asked if they recalled the specific chapter they were shown during the study session, they all mentioned having experience with the narrative or playing that chapter. This indeed might affect player agency; nonetheless, as participants already had experience with the game, this limitation does not present a significant constraint regarding participants' recall and reflection on their moral decisions.

Furthermore, there is no reason to believe that using pre-recorded video will negatively affect the methodology. Bentley et al. [11] explored the implementation of cued-recall debrief method to analyze affect when reflecting on the use of a system. The results indicate that this method can provide insights about participants' affective experiences. Moreover, Chung and Gardner [38] discussed the use of a video-cued-slider technique where participants recalled their experiences in a real versus virtual world. The results indicate that this technique can be useful to analyze participants' experiences and can be further studied in other contexts (e.g., analyzing how participants reflect on their morality when presented with pre-recorded video of a game they previously played).

5.2.7 Moral Foundations Questionnaire (MFQ30) Protocol

The MFT has several questionnaires approved for use. For this study, the MFQ30 was applied as the suggested tool to provide a good measurement when analyzing the corresponding items per moral foundation. The MFQ30 is based on five morality dimensions: "harm/care," "fairness/reciprocity," "ingroup/loyalty", "authority/respect," and "purity/sanctity" [73]. The MFQ30 is divided into two parts. The first part is characterized as relevance, and is composed of 18 items that must be answered using a 6-point Likert scale from 0 to 5, where 0 represents that the item is *not at all relevant to the participant's morality* and 5 stands for *the item being extremely relevant when the participant judges what is right and wrong*. The second part of the questionnaire is made of 18 different statements, that must be rated also using a 6-point Likert scale from 0 to 5, where 0 represents strongly disagree and 5 represents strongly agree. The questionnaire was applied twice:

- **Before**. This set was answered before watching pre-recorded gameplay of the chapter *Meet Kamski*. It focused on the perceived real-life morality of the participants.

Figure 5.2: Procedure and experimental design of the study conducted in this chapter.

- **After**. This set was answered based on the perceived morality of the playable character *Connor* after watching the scene in the pre-recorded video in which he spared an android's life.

The platform Qualtrics[4] was used to collect questionnaire data.

5.2.8 Interview Protocol

Qualitative interview data were collected via one-on-one remote semi-structured interviews. Data about participants' previous experience with the game and their experience when watching the video were gathered. The interviews allowed us to collect information about participants' perception of morality, not only about their own, but also about the characters in the game. They also had the opportunity to reflect on how they apply their morality in CCAGs and if they feel they translate their real-life morality to in-game decisions. Examples of the questions asked during the interview are: *How would you describe yourself in terms of morality?*, *Do you follow the same morality in all story driven games and why or why not?* and *Do you feel connected to the game characters and why or why not?*.

5.2.9 Apparatus

The video presented to the participants was pre-recorded from a PS4 and lasts around 11 minutes. This specific chapter was shown to the participants because it includes a scenario in which a morality dilemma is presented and a choice should be selected. The video also served as a memory prompt for the participants' previous experience with the game. Around three decision-making opportunities are presented in the 11-minute duration of the video. These opportunities include dialogue with the characters and sparing/shooting the android.

The video was watched on the participants' own devices (i.e., mobile or PC/laptop). The session was video recorded using the platform *Zoom* and lasted around 60 minutes.

[4]Qualtrics: https://www.qualtrics.com/

5.2.10 Procedure

The platform *User Interviews* was selected because it provides features to conduct online studies, and automates recruitment, screening, and remuneration for participants. Participants were pre-screened and given information about the study before scheduling a session through the platform. During their session, they were given the opportunity to read an information sheet with detailed information about the study and asked to e-sign a consent form. After e-signing the consent form, they were asked to complete a pre-study questionnaire asking for basic demographic data and previous experience with story-driven games. Participants were asked about previous experience with story-driven games because one of the questions during the interview was related to morality applied to similar types of games. The researcher then explained the different tasks to the participants (i.e., MFQ30 and semi-structured interviews) and also reminded the participants that the session was being audio and video recorded.

Participants then were asked to complete the first MFQ30, reflecting on their own morality before watching the video. After completing the questionnaire, participants were sent a link and they were able to watch pre-recorded gameplay of one of the chapters in the game (i.e., *Meet Kamski*). Once participants finished watching the video, the researcher conducted a semi-structured interview with questions about real-life and in-game morality.

Finally, participants were asked to complete a second set of the MFQ30 from the perspective of the playable character they saw in the video (i.e., *Connor*). At the end of the session, the researcher debriefed participants about the objective of the study, asked for any additional feedback, and provided a monetary remuneration ($20 CAD) in the form of gift cards.

5.3 Methods

5.3.1 Thematic Analysis - Overall Approach

For the analysis, a qualitative thematic analysis approach based on the method proposed by Braun and Clarke [21] was followed. This thematic analysis includes the analysis, organization, descriptions, and report of common themes based on the collected data. The process described by Braun and Clarke [21], Nowell et al. [135] to report on the comprehensive analysis of the qualitative data from the interviews was conducted, following a reflexive thematic analysis approach.

1. **Phase 1 - Familiarization with the collected data**. Raw data were gathered through video interviews and records were kept for each participant. During the interview process, it was possible to start identifying common themes mentioned by the participants.
2. **Phase 2 - Initial codes generation**. A single coder conducted an analysis of the data and codes emerged organically to identify recurring themes.

3. **Phase 3 - Themes search**. Once the coder analyzed the results, themes descriptions were generated and integrated into the findings. The coder made sure the generated themes were connected and related to findings such as morality being translated from real-life to in-game decisions.

4. **Phase 4 - Themes review**. The coder analyzed the generated themes and made updates when themes appeared to be similar by merging common findings.

5. **Phase 5 - Themes titles and definitions**. The coder named the themes and provided a definition for each one.

6. **Phase 6 - Report**. Lastly, the findings are reported in detail in the results section of this chapter.

Interview data were transcribed and organized using the software *Dovetail*[5]. This software also allowed the coder to identify and assign codes in the transcripts. Code generation was organic and unstructured, and codes could evolve to better reflect patterns in the collected data.

5.3.2 Reflexive Thematic Analysis

A comprehensive exploration of the literature on thematic analysis was conducted. It is important to emphasize that a thematic analysis is often attributed to a single qualitative analysis approach. However, Braun et al. [21, 24, 23] posit that thematic analysis can be described as an *umbrella* methodology, and several orientations can be applied to the compiled data. The reflexive thematic analysis approach as discussed by Braun et al. [21, 24, 23] was followed.

Braun and Clarke [22], Braun and Victoria [25] posit that "reflexive TA is not about following procedures 'correctly' (or about 'accurate' and 'reliable' coding, or achieving consensus between coders), but about the researcher's reflective and thoughtful engagement with their data and their reflexive and thoughtful engagement with the analytic process". The researcher's analysis should present interpretation and patterns of the data. Based on this discussion, Byrne [29] provides an example of Braun and Clarke's approach to reflexive TA where a single coder analyses the dataset, highlighting that "there should be no expectation that codes or themes interpreted by one researcher may be reproduced by another". Reflexive TA's objective is not to provide 'accurate' or 'reliable' coding, and it is not focused on achieving consensus among multiple researchers or coders [22, 25].

[5]Dovetail: https://dovetailapp.com. Dovetail is a software tool for qualitative data analysis that allows transcribing recordings and analysis of data in a collaborative way.

5.4 Results and Analysis

5.4.1 Theme Analysis and Conceptualization

This section presents the analysis and definition of the conceptualized themes by the coder. Each subsection constitutes a developed theme (see Figure 5.3 for an example).

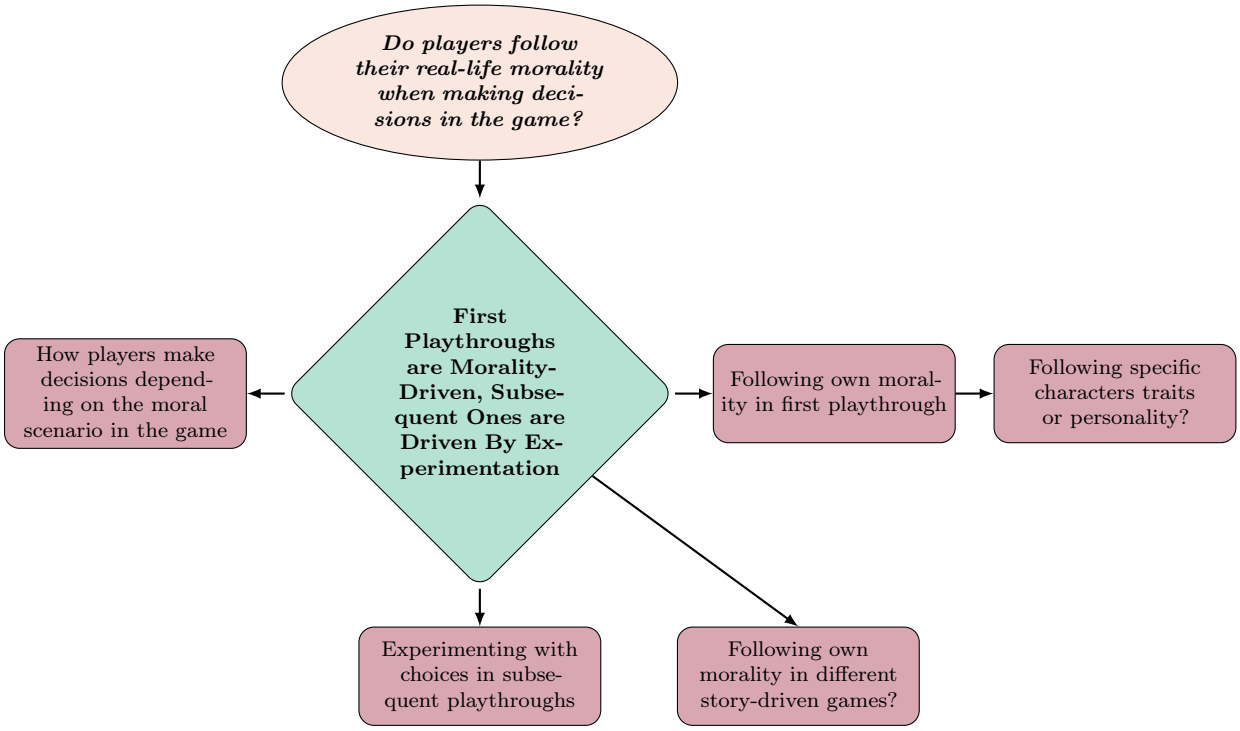
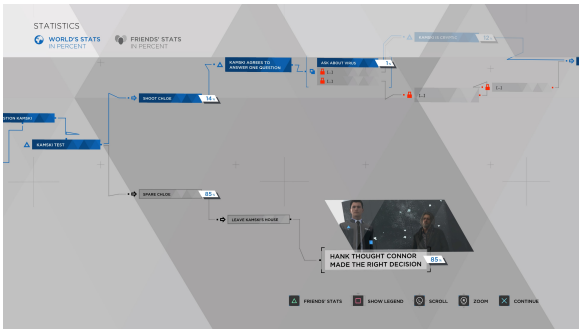


Figure 5.3: An example of an initial theme developed by the coder. The initial theme is represented by the blue figure, connected to codes and findings related to the specific theme.

First Playthroughs are Morality-Driven, Subsequent Ones are Driven By Experimentation

The majority of the participants mentioned that they normally apply their own morality when playing the game for the first time. The reason they prefer to act according to their own morality is because they feel they are imprinting their personality to the game character, so their in-game

(a) The decision-making mechanic in the game asks players to decide whether to shoot or spare the android, a moral decision.



(b) World statistics showcasing players' choice when presented with the decision of shooting or sparing the android. 85% of players decided to spare the android.

Figure 5.4: Screenshots from *Detroit: Become Human* [52] showcasing the decision-making mechanic in the chapter *Meet Kamski* where player's assume the role of *Connor*, and must reflect on their morality to select a choice. The second picture reports on world statistics about a moral decision in the chapter, whether to shoot or spare the android.

decisions are aligned to what they would normally do in real-life. They tend to start experimenting with other choices after the first playthrough to experience different paths in the game. However, their initial experience is aligned with their own moral values.

> *"I would say usually I just go [...] to what I find morally right on a day-to-day basis. I know sometimes people will play games in a completely opposite way of how they would usually react just to see what would happen. Because it is the game [...] you have the ability to choose [...] who you want to be in this game. It is not reality. So there is not really any repercussions for it. But usually, because even if it is just a game, I tried to stay in line with what I believe. Just because otherwise I feel [...] the slightest sense of guilt."*
>
> —🎙 Participant 15

Participants mentioned that it is important to feel that the game is personalized, and this represents a reason they try to follow their own morality when they first experience the game. Participants mentioned that even when they have the chance to select different choices in the game, they tend to follow their own morality regardless of the narrative consequences. They also mentioned that for games that offer a dichotomy choice (i.e., the good vs wrong choice), they tend to follow the good choice because they want to be righteous. However, they also mentioned that morality would depend on the scenario presented in the video, and that morality is nuanced as there is no black or white aspect to it.

> *"[in] the initial playthrough, I just wanted to have a positive impact on any decisions that were being made based on my own personal morals."*
>
> —🎤 Participant 8

On the other hand, when participants mentioned about experimenting with choices, they do it to experience different paths or endings to the game. This might be the case when participants feel the initial choices are not offering traction and they feel the game is blocked (i.e., the narrative is not progressing as they would expect).

Participants also mentioned that the setting of the game influences their own morality. One participant mentioned that if they are playing a fantasy game like *Skyrim* [175] then they would feel like experimenting with the choices to see different consequences. In *Detroit: Become Human* this feels more difficult given the realism of the game and connection with the characters, so they tend to follow a moral path throughout the narrative. Other participants mentioned that sometimes they would experiment with the most negative choices just to see how the game reacts, because there are no real consequences[6]. They would experiment with other choices because they would like to feel a more exciting experience.

> *"And then the second and third times that I am doing it, [...] I go for a specific action set for the different outcomes. [...] So the first time is [...] my personal morals. And then anytime after that, I am feeling for different decisions that I did not make the first time to see how things go."*
>
> —🎤 Participant 17

Let's Not Kill Our Darlings: Moral Decisions are Strongly Affected by Character Connection

When talking about connection with the game characters (e.g., NPCs), participants mentioned that they would normally select choices to build a positive relationship with them. Some participants mentioned that it is important for them to be liked by NPCs. For the game *Detroit: Become Human*, participants mentioned that it was important to also build a positive relationship with the playable characters. Some participants mentioned that they grew attached to the character *Connor* and they would normally select choices in the game that would not harm this character. This was also mentioned for the character *Hank* (i.e., the lieutenant) because it was important for

[6] According to Jesper Juul in his definition of games in his book *Half-Real*, consequences are optional and negotiable. Real-life consequences are completely optional, making games for the most part a safe form of interaction. Game operations and moves must be mostly harmless. In contrast, real weapons result in non-negotiable consequences (e.g., death). The perception of danger and risk in a game fuels their attraction within the conventions. It is an ideal and soft condition within culturally accepted limits. The emotional consequences of games are less controllable [90].

participants that the relationship between both characters was positive and amicable. Participants mentioned that building a relationship with the characters in the game—being the playable characters or NPCs—gives them the opportunity to personalize their experience.

> *"So despite the fact that Hank at first was very against Connor, I was like trying to get on his good side all the time. And it was not always working because I never played the game before, so some decisions made him angry."*
>
> —🎤 Participant 11

Additionally, participants mentioned that it was important to "put themselves in the character shoes" and select empathetic choices that would be beneficial for their characters. When participants interacted with NPCs and their choices were negative or the consequences were not what they were expecting, they would experience emotions like guilt or frustration because they wanted to build a positive relationship with those characters and they wanted those characters to survive in the game. Participants mentioned that the narrative presented in the game allowed them to connect with the characters, thus feeling empathy and building a connection with them.

> *"The major character that did not survive was Luther. And that made me so sad what he did of sacrificing himself for Alice and Kara. And I was so sick. It broke my heart."*
>
> —🎤 Participant 4

When participants were presented with the video of the chapter *Meet Kamski*, 15 of the 19 participants mentioned they decided to spare the android in their first playthrough. The same number of participants decided to side with the androids at the end of the game. Participants mentioned that their decision to spare the android was based on the androids being portrayed as beings with emotions and complex reasoning. Thus, leading to feeling compassionate towards them. This can be a result of the narrative as well, because participants felt that androids had their own personalities and they deserved to be treated with the same rights and freedoms as humans.

> *"So I was trying to put myself in Connor's shoes [...] I did not feel I should have killed the robot. So I did not. [...] I have been doing the playthroughs afterwards and having to kill it [...] is horrible. I would not do that."*
>
> —🎤 Participant 11

"I Don't Want to Feel Guilty" - Participants make Moral Decisions to Avoid Negative Emotions

When participants were asked about their own perception of morality, they would mention that they act morally to be fair and respectful of other people, and not make anyone suffer as a consequence of their decisions.

Some participants mentioned that they would feel emotions like guilt if they do not follow their own morality. In scenarios where players feel the consequences to their choices are going to affect other characters in the game, they prefer to select the good choice to avoid feeling guilty. Some participants also mentioned that when the game is presenting decisions that have impactful consequences, they tend to follow their morality because they feel going against it would elicit negative feelings. They mentioned the example presented in the video as an impactful decision in the game (i.e, shooting or sparing the android).

> *"When, in one of the storylines, you try to escape to Canada [...] there was an option of sacrificing one person. And I could not do it. Like I knew it was a risky move, because I could have lost there and then, but I chose not to sacrifice anyone."*
>
> —🎙 Participant 16

When the game presented scenarios where participants were able to sacrifice another character within the narrative, they reported feeling emotions like guilt. They mentioned that it is difficult to make a decision in a scenario that asked them to sacrifice another character. In this case, they would normally avoid choosing the violent route in the game. Four participants mentioned that they decided to take the pacifist path in the game to avoid any violent confrontation between humans and androids.

> *"And I think that is one of the things that led to like the good ending is [...] the stuff with Markus, I tried to pick the non-violent actions."*
>
> —🎙 Participant 4

Empathetic Moral Decisions Are Driven by Narrative Plight, as well as Emotional and External Realism: This Supersedes Experimentation Only For Some Players

When talking about game design, one participant mentioned that CCAGs give the opportunity to experiment with morality depending on the game context. This allows participants to have personalized experiences based on how the narrative is designed and presented. At the same time, participants mentioned that the realism of the narrative and the characters affect how they apply morality and make decisions in the game. One example is the realism of the androids compared to humans, and the impact this has on players' morality. Participants mentioned that they considered the androids as actual entities with emotions and feelings instead of just being objects in the game world. Additionally, they mentioned that they see the narrative as being realistic in a few years in comparison to other CCAGs where the story can be seen as more science-fiction (e.g., *Mass Effect* series). They also mentioned that some narrative dialogues about social dilemmas can translate to real-life, such as marginalized groups and freedom restrictions.

"That was one of the cool things about this game [...] there was a lot of real world [...] parallels that you could see, you know, just any marginalized group [...] like tugged at your heartstrings. And it made you think [...] I was just hoping [...] people to come together, [...] it was a lot real."

—🎙 Participant 4

Participants mentioned that the game narrative also has an impact on how they make decisions because the characters' paths are interwoven and one choice can have significant consequences in subsequent chapters. This aspect can affect how they translate their real-life morality to make in-game decisions.

"I think it is really interesting how [...] one change and decision can impact everyone's different storylines, because they are all interwoven, which I thought was cool [...] butterfly effect."

—🎙 Participant 19

"Do No Harm" Above Authority-Driven Morality

When participants were asked to complete the first set of the MFQ30, they were subsequently asked about some of their answers during the interview. They mentioned that based on their answers, compassion, fairness and empathy are important aspects in their lives. They felt they translated these aspects to in-game decisions when showing empathy and compassion towards the androids. They also mentioned that based on the game narrative and how different story arcs are presented in the game, they sympathize more with the androids than the humans.

"I [...] rated a lot of the questions about [...] treating other people well, and justice as important. And then I felt like I had maybe a little less relevance or importance assigned to things like [...] being a team or like following authority, and then maybe even less for [...] following maybe religion, or chastity [...] I said those were the lowest and I said the highest was for [...] the way people are treated equally."

—🎙 Participant 10

When they were asked to reflect on their answers in the MFQ30, they would say that in the real world they try to care for people and not harm anyone. Even when the narrative presents the player with the option to sacrifice a character to advance in the game, they would prefer to select another choice as they do not want to harm any of the characters.

When participants were asked about the authority aspect in both the MFQ30 and the game, they mentioned that authority is not as important as caring for people and being fair. They

mentioned that authority is important but is dependent on the situation and the authority figure. One participant mentioned that the concept of justice is important, but not the justice system as it can be unfair to some people. When talking about the game narrative, some participants mentioned that the authority figures in the game (i.e., humans) were portrayed as overpowered.

> *"There was one question too about justice. [...] And I was not sure how to answer that one. And then I put yes, justice is the highest form of morality. But I mean, justice as a concept, not the justice system, which I would argue is got a lot of immorality to it. So I wanted to stop there and actually say [...] I am saying good stuff about justice[...] as a concept."*
>
> —🎤 Participant 7

5.5 Discussion

The results from the analysis provide insights into how players translate real-life morality to in-game decisions. Previous research [20, 87, 197] found that real-life morality has an effect on players' decisions and the relationship with characters. This chapter deepens this analysis by providing findings from a qualitative approach when examining a published game.

In the following subsections, a structured discussion of the perception of morality in games and how these findings can have implications for future design is provided. The presented findings answer the previously established research questions:

RQ6 How do players' real-life morality translate to in-game decisions, specifically in CCAGs?

RQ7 Are moral decisions influenced by players' connection with game characters?

RQ8 How does MFT explain players' morality based on the salience of specific moral foundations?

5.5.1 RQ6 - Real-life Morality translated to In-Game Decisions

The findings indicate that all participants mentioned they follow their own morality at least when playing the game for the first time. From the interview analysis, 12 participants mentioned that they would experiment with the choices in subsequent playthroughs to test game mechanics and experience different paths in the game, thus their understanding of the story might be different compared to the their first playthrough (e.g., Mitchell and McGee [123]). This is a relevant finding given the story and context of *Detroit: Become Human*. The majority of the decision-making moments in the game present a moral dilemma (e.g., siding with humans or androids). Based on world stats from the game (see figure 5.4b), 85% of players around the world decided to spare the

android in the scenario that was presented. This is an important finding because even if players are aware their decisions do not have a real-life impact, they still chose the moral option. This contrasts with the discussion presented by Hartmann et al. [79] when discussing the concept of moral disengagement.

The work by Boyan et al. [20] explored the game *Mass Effect* and asked participants to choose a path between Paragon (moral) or Renegade (immoral). The majority of participants (64.5%) choose the Paragon option, which consolidates the finding that even if players are given the opportunity to act against moral behaviours without consequences in the real world, they still feel their decisions have consequences in the game story. This supports the present study because participants mentioned that they wanted to act morally and have a positive impact on the game story and characters. This counters the concept of moral disengagement [80] that posits players would disconnect from the real world as they are aware the decisions they make in the game have no real-life consequences. These findings can be related to moral dilemmas that can portray realism and situations that are similar in the real world (e.g., marginalization of certain groups).

5.5.2 RQ7 - Participants' Connection with the Game Characters

Findings in the study indicate that participants felt they imprint their personality to characters in the game, and that is why they act morally. Participants mentioned they prefer to act morally to prevent experiencing negative emotions (e.g., guilt). This aligns with previous findings about feelings of guilt when acting immorally in games [79, 197, 69]. These findings can also be a consequence of the connection participants felt with the characters. Participants felt that characters in the game had personality, consciousness, and emotions. This is evidenced by the research of Heberlein and Adolphs [81], Morrison and Ziemke [126], Yee et al. [205] pointing to the fact that players would perceive game characters not as objects but as social entities with morality. As a result of this perception, participants in the study chose the good option to prevent any negative consequences for the characters. It could be the case that game design, visuals, and portrayal of characters are presented in a realistic manner. Thus, participants felt more connected with the characters.

5.5.3 RQ8 - Perception of Moral Foundations for In-Game Decisions

In the research by Tamborini [179], the violation of one or more foundations would influence players' enjoyment, thus also affecting decision-making as a consequence. This is also supported by the research of Joeckel et al. [87] where it is evidenced that moral salience has an effect on in-game decisions for some players. Haidt and Joseph [73] indicate that the harm/care foundation relates to emotional, physical harm, compassion, and empathy, whereas the foundation of fairness/reciprocity

is represented by considerations of unfair treatment and justice. When participants were asked during the interview which moral foundations they consider the most important ones in real-life, they mentioned that harm/care and fairness/reciprocity are the most significant. From the qualitative analysis, comments made by the participants were related to making decisions that would not harm game characters to avoid experiencing negative emotions. They also mentioned feeling compassion and empathy for the androids.

When discussing the moral foundation of fairness/reciprocity, participants would mention that they would like the androids to be treated equally as humans. When participants were talking about authority figures in the game (i.e., humans), they mentioned that humans felt overpowered and that androids were treated unfairly. This finding can relate to the fact that most participants opted to spare the android and to side with the androids at the end of the game.

In the discussion about the remaining foundations, qualitative data indicate that participants do not give the same significance to the rest of the foundations (i.e., ingroup/loyalty, purity/sanctity). However, they mentioned that in the case of the foundation of ingroup/loyalty, they would prefer to build positive relationships with the NPCs. They mentioned the example of *Connor* sparing the android and strengthening his friendship with *Hank*. Even if participants were aware that the android could be replaced by another unit if they decided to shoot it, they would experience feelings of guilt, thus they decided to go against *Connor's* programming of solving the criminal investigation and instead spare the life of the android. Findings from the qualitative analysis indicate that when participants mentioned specific foundations as important in real-life (i.e., harm/care), they would translate their morality to in-game decisions.

5.5.4 Narrative Realism Affecting Morality

Current technological advances in games allow for the creation of realistic visual characters. *Detroit: Become Human* presents physical realistic game characters. However, even if the game allows for a realistic environment, the narrative represented in the game sometimes imitates the real world. Galloway [60] discusses that theoretical issues in games allow connections between the game world and the real world. Realism is then "a reflection of the real world, including social dilemmas, injustice, and personal drama" [60]. Although *Detroit: Become Human* presents a game world that is not consistent with the current reality (i.e., autonomous androids do not exist as portrayed in the game), the moral dilemmas can represent a mimetic representation of social and moral discourses in the real world. For example, players mentioned that representation of marginalized communities and denial of rights for androids are social issues similar to current society and morals. We can see this connection in the real world as social issues experienced by ethnic minorities and marginalized groups exist. Galloway [60] calls this fidelity of context a "congruence requirement", where the social reality of the player connects with the game world and vice versa. This social realism then represents a relationship between the player and the game narrative.

Another interesting finding is how participants responded to questions about fairness in the game. (e.g., whether or not someone was treated differently or their rights were denied). Current events (e.g., the COVID-19 pandemic) may influence how people reflected on their moral values when responding to these questions. It might be the case that in a different context participants might respond differently, thus their moral decisions translated to the game narrative could be influenced by current reality.

5.5.5 Implications of Our Findings in the Design of Morality-Driven Games

The presented results provide a qualitative understanding of representation of moral dilemmas in CCAGs. This study has valuable implications for game designers when creating an engaging experience for players. These implications can inform how a narrative should be created based on players' decision-making to elicit specific emotions. The analysis of the qualitative data indicates that players apply their morality to in-game decisions. Thus, this can also inform designers about which moral foundations are important and which ones should be implemented within a narrative to achieve a specific goal.

Additionally, findings indicate that players enjoy experiences where they can personalize their character based on their own morality. Game designers should consider how they can create a personalized experience based on the representation of moral foundations that improve players' decision-making. This personalized experience also means players are able to connect with playable characters and NPCs in the game, which is important for players.

Other concepts are also worth discussing, such as realism. Findings indicate that along with realism of the game world, the implementation of social scenarios can create a compelling experience. Moral foundations can help create these scenarios where players are able to make decisions based on their morality.

5.6 Limitations and Future Work

Some limitations apply to this chapter's methodology. First, there was only one coder for the reflexive thematic analysis. Thus, the presented results can be biased by the researcher's perspective. The positionality statement section (chapter 1) provides an understanding of how the coder's previous experience and pre-existing knowledge might have influenced the presented analysis. However, as discussed in 5.3.2 the objective of a reflexive TA is not to provide 'accurate' coding or achieve consensus between multiple coders [22, 25].

Another limitation that was encountered for this study is that participants already knew the game and previously played it in the last six months. This could affect their perception of

character's morality and the narrative because they already knew the moral dilemmas that were presented in the game. However, participants being familiar with the gameplay, characters, and narrative, —even if this can be considered a limitation— increases the validity of the findings because participants already had the opportunity to reflect about their morality in the game and in some cases experiment with choices in subsequent playthroughs. Furthermore, a CCAGs that only includes the mechanic of decision-making through the story was analyzed, as opposed to other games where other mechanics are also implemented (e.g., upgrading gear or guns).

Different conditions that include other types of game genres that also present moral situations to players (e.g., first-person shooter (FPS)) can be further explored, and compare the differences between the games. The realism portrayed in the narrative—both for the characters and the story—might have affected how players perceived morality. Some players mentioned that narrative realism can impact their morality, comparing the story in this game with other titles such as the *Mass Effect* series where the setting relies on science fiction aspects.

Another limitation is that participants only experienced limited game content (i.e., the video used in the study only presented one chapter in the game). Although they already had experience with the game, the fact that they may not recall all the chapters can be a limitation in this study.

Current events and social issues might have influenced participants' responses (e.g., COVID-19 pandemic). It would be interesting to compare if future responses are similar and not influenced by these circumstances. A limitation that might have also influenced the responses is that participants were recruited from only English-speaking countries (Canada, the US and the UK), thus race and culture might have also influenced the MFQ30 responses.

The concept of morality in games can be further explored by triangulating different research methods to support the presented findings. By extending the research (e.g., conducting a lab study where participants are able to play the game), it might be possible to uncover additional aspects that players take into account when making moral decisions. Future work includes data analysis implementing other types of validated questionnaires similar to the MFQ30 (e.g., MIME [179]) and the use of a bigger sample size to further validate the findings.

Additionally, integrating participants that have no previous experience with the game can be beneficial to understand how players apply morality specifically in the first playthrough. Moreover, other types of media could be analyzed to compare the results, for example how players perceive morality as spectators rather than making decisions.

5.7 Conclusion

Exploring how people make decisions when presented with moral dilemmas in games is important because it provides an understanding of the way real world morality is translated to in-game decisions. There has been a lack of research into understanding players' perception of morality,

moral judgments, and how moral choices are affected by game elements like realism. This chapter addresses the gap of understanding player's perspectives on morality, and also explores aspects that can affect how players translate real-life morality to games (e.g., social issues in real-life affecting moral choices in games).

A study with 19 participants was conducted. First, they were asked to reflect on their own morality through the MFQ30. Subsequently, participants watched pre-recorded gameplay of one of the chapters in the game where a moral dilemma is presented (i.e., sparing or shooting an android). A semi-structured interview was conducted and asked participants about their experience with the game, morality translated to in-game decisions, and other aspects of morality. Finally, participants responded a second MFQ30 reflecting on the morality of the playable character.

The main takeaways from the qualitative analysis indicate that participants translate their real-life morality to in-game decisions at least for the first playthrough whereas subsequent playthroughs might be driven by experimentation. Moreover, participants indicated that their moral choices are affected by character connection, and they tend to select choices that are beneficial for their characters to avoid experiencing negative feelings such as guilt. Finally, game realism can affect how characters make decisions by reflecting on moral dilemmas that can be present in real-life.

The insights from this chapter can be useful for game designers when implementing moral dilemmas and morality-driven narratives in games. This can spark discussion into new approaches to represent morality in games. This work extends past research into understanding morality in games, and provides a discussion regarding new ways to create meaningful experiences for players.

5.8 Summary

In this chapter, I conducted a remote user study to understand the impact of morality in CCAGs. I questioned and investigated if players translate their real-life morality to in-game decisions, and their motivations when making moral choices in games. Furthermore, I explored the impact of the connection between players and game characters when making moral decisions. I also investigated how the element of realism affected how players make decisions in CCAGs. Finally, I offer an exploration on the implications of the findings to create engaging moral dilemmas and improve player experience.

5.8.1 Chapter Contribution

The objective of this chapter was to address the following research questions:

RQ6. How do players' real-life morality translate to in-game decisions, specifically in CCAGs?

RQ7. Are moral decisions influenced by players' connection with game characters?

RQ8. How does MFT explain players' morality based on the salience of specific moral foundations?

This chapter contributes C4:

C4. Uncovering how participants translate real-life morality to games and the impact of game characters on their moral choices. I provide an understanding and analysis of players' motivations behind moral decisions. Moreover, I explored how players translate real-life morality to in-game decisions, even if they know the game gives them the opportunity to experiment with choices without real-life consequences. The findings in this chapter indicate that players would normally apply their real-life morality to in-game decisions. Moreover, the connection they feel with game characters would impact how they make decisions, indicating that they would make decisions that would not harm the characters.

I also highlight how players interpret the importance of specific moral values or foundations. Players indicated that they normally respect values such as harm/care or fairness/reciprocity. Given the context and story of the game *Detroit: Become Human*, they would like to see the androids treated equally as humans.

5.8.2 Context in the Thesis

This chapter paints a picture of morality in CCAGs and the effect it has on player agency and decision-making. When players are allowed to translate their morality, it is possible to provide a personalized experience. I described that players would translate their morality for the first playthrough, experimenting with other options and branching paths in subsequent playthroughs.

The narrative and realism play an important part, participants mentioned that the realistic narrative in the game would prompt them to choose choices that would not affect other game characters or would elicit negative emotions such as guilt. This can also be a consequence of the connection participants felt with other characters.

Again, more research into CCAGs with different narratives is needed, to understand the effect and role of the narrative on player's decision-making. The insights presented in this chapter can benefit future investigation into how morality and moral dilemmas are presented in CCAGs. The contributions can help game developers and designers to gain an understanding into how to design and implement game mechanics and branching paths based on the importance of specific moral values. These findings can spare further future work and conversation about new approaches, mechanics, and technologies to represent morality in CCAGs.

Chapter 6

Conclusion

In this final chapter, a brief overview of the contributions of this thesis is presented. The scoping review provides a theoretical contribution into understanding core concepts found in CCAGs. I also conducted two users studies which provide empirical contributions to the field. For the empirical contributions, I applied qualitative methodologies such as hybrid thematic analysis and reflexive thematic analysis. This overview addresses the research questions that were discussed in Chapter 1. The research questions are as follows:

RQ1. How are the key factors of CCAGs (agency, decision-making, choice, meaningfulness) conceptualized across disciplines?
In Chapter 3, I presented a scoping review providing a thorough investigation of the core concepts of agency in games from different perspectives and conceptualizations. This review queried diverse databases in both HCI and humanities fields. Furthermore, the analysis also provided an understanding of concepts related to agency such as decision-making and meaningfulness in CCAGs.

RQ2. How might we apply these cross-disciplinary perspectives to study player experience in choice-based story games? To answer this question, Chapter 3 presented suggestions to broaden empirical research on player agency that can help validate previous theoretical investigations. These suggestions also provide valuable insights to increase player experience in CCAGs.

RQ3. How does the decision-making process in story-driven games affect agency and experience? In Chapter 4, I presented a user study that investigated players' decision-making processes and how they perceive agency in CCAGs. This user study also allowed me to uncover the importance of player agency to provide a meaningful player experience.

RQ4. How does player agency and sense of control over the decisions influence the motivation for players to make a decision within a story-driven game? In Chapter

4, I also provided an analysis of players' motivations to make decisions in CCAGs. This analysis also shows the way specific elements, such as experiencing impactful consequences when making decisions affect how players perceive agency.

RQ5. How is agency perceived based on different conditions, such as playing the game (i.e., exerting agency) vs. watching gameplay (i.e., agency exerted by another person)? To answer this question, Chapter 4 investigated the perception of agency when players are allowed to make decisions versus watching another person make decisions in a CCAG. This provided an understanding on the importance of exerting agency as opposed to the experience when watching another person exerting agency.

RQ6. How do players' real-life morality translate to in-game decisions, specifically in CCAGs? In Chapter 5, I provided an exploration on how players translate their real-life morality to in-game decisions in CCAGs. This user study investigated if players would normally follow their real-life morality in games and the motivation behind their decisions.

RQ7. Are moral decisions influenced by players' connection with game characters? In Chapter 5 I also analyzed if the connection between players and game characters affect their decision-making processes in terms of following certain moral values. This also explored which moral values are more impactful for players.

RQ8. How does MFT explain players' morality based on the salience of specific moral foundations? To answer this question, in Chapter 5 I discussed the use of the MFQ30 to expand on the analysis of players' morality. This analysis provided an understanding of the importance of moral foundations and how players interpret these moral values when making decisions in CCAGs.

Different approaches were implemented to address the previous research questions. Chapter 3, 4 and 5 present a thorough explanation of these approaches and their scope in my thesis.

In Chapter 3, I answered the first two research questions, contributing C1 and C2: I expanded on the understanding of the concept of player agency, decision-making, choice, and meaningfulness by conducting a thorough scoping review by querying different databases. This scoping review provided novel insights that can help expand empirical investigation on player agency. Moreover, this analysis provided the opportunity to present preliminary suggestions to conduct empirical studies on player agency and CCAGs. By expanding the empirical research, existing conceptualizations can be further discussed to broaden the knowledge and interpretations of these core concepts.

In Chapter 4, I addressed RQ3, RQ4 and RQ5, contributing C3: I presented a user study that provided an analysis of players' perception of agency. Furthermore, I explored their motivations to make decisions in CCAGs and how different conditions, such as exerting agency versus observing agency can impact their experience.

In Chapter 5, I answered RQ6, RQ7 and RQ8, contributing C4: I explored how players translate real-life morality to in-game decisions by conducting a user study. This analysis provided insights

into morality, connection between players and game characters, and the importance of creating engaging moral dilemmas in CCAGs to improve player experience.

Finally, throughout this thesis, I contributed C5: I presented a detailed analysis and investigation into CCAGs, discussing concepts such as player agency, decision-making, meaningfulness, and morality. Furthermore I provide novel insights and findings that can help spark a discussion of future design considerations to help game developers and designers to create engaging experiences for players.

6.1 Main Takeaways and Call to Action

In this last section of my thesis, I provide an overview of the main takeaways and call to action items of my research.

- **Chapter 3**. There are multiple conceptualizations and definitions related to core concepts in CCAGs. This presents a complex scenario, but also gives the opportunity to expand on empirical research to understand these multi-disciplinary approaches and understand which measures are suitable for specific contexts.
- **Chapter 4**. Participants' sense of agency is increased when they can make decisions; however, this agency might be affected by the number of choices and the evident consequences to those decisions. The findings indicate the importance of a strong, engaging narrative where the impact of player input on the story progression and outcome is apparent. Players questioned whether the choices impacted the story or were merely an illusion of meaningful choice.
- **Chapter 5**. Participants translate their real-life morality to in-game decisions at least for the first playthrough and subsequent playthroughs might be driven by experimentation. Participants indicated that their moral choices are affected by character connection, and they tend to select choices that are beneficial for their characters to avoid experiencing negative feelings. Game realism can affect how characters make decisions by reflecting on moral dilemmas that can be present in real life.

My research evidenced the need to identify specific theoretical concepts in interactive narrative games and propose a clear definition of player agency when talking specifically about CCAGs. Although I tried to provide a definition for CCAGs in my thesis, more research is needed because diverse elements in the game are present when trying to define this concept (e.g., different types of narratives and game realism might influence how this concept should be approached and investigated). Players might translate this concept differently, so it is important to expand the research into how players define and perceive these key terms. Although there is extensive

theoretical research into these key concepts, more empirical research is needed to understand if these theories translate to agency and decision-making mechanics in CCAGs.

More research is needed to understand if the morality findings can be translated to non-interactive narrative scenarios, and the differences between these contexts. It is necessary to investigate and contextualize the relationship between the player, the narrative, game mechanics and other subjective elements that might affect player experience. This is my main contribution, as I found that there is extensive theoretical work on this topic, but I wanted to address the lack of empirical research through my user studies. My research evidenced the need to identify specific theoretical concepts and propose a clear definition of player agency when talking about CCAGs. Players might translate this concept differently, so it's important to expand the research into how players define and perceive these key terms. Although there is extensive theoretical research into these key concepts, more empirical research is needed to understand if these theories translate to agency and decision-making mechanics in CCAGs.

My main contribution to current knowledge is the expansion of empirical research, and this is the gap that I wanted to address through my user studies. The findings presented in this thesis can contribute to both the HCI and GUR fields. Ultimately, the goal of this thesis is to provide evidence on the importance of investigating and understanding players to create enjoyable, engaging, and positive experiences.

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APPENDICES

Appendix A

Supplementary Material for "Until Dawn" User Study

INTERVIEW QUESTIONS

(1) How was your experience?

(2) How did you feel during the game?

(3) Did you feel in control of the situation?

(4) If you made any decisions, how did you feel?

(5) If you did not make any decisions, how did you feel?

(6) Did you feel the decisions changed the outcome of the story?

(7) Did you feel the decisions were presented during critical points in the narrative?

(8) If you can change anything about the game, what would you change?

Figure A.1: *Until Dawn* Interview Questions.

Appendix B

Supplementary Material for "Detroit: Become Human" User Study

B.1 Application of the MFQ30

Cronbach's α reliability test was calculated to verify if the measures were valid for the reporting. Boyan et al. [20]'s research had a sample size of $N = 138$ participants and Tamborini et al. [181] research had $N = 565 people$. The followed approach focused on the qualitative insights. However, the MFQ30 was deployed to verify if these measures would work for smaller sample sizes ($N = 19$).

Previous MFQ research has not used the questionnaire twice with a single participant. Therefore, an innovative approach was tried by changing the existing research protocol. The intention was to be able to measure if the scores differed when filled in with personal values in mind, versus reporting on a playable game character after watching their decision-making process.

B.2 MFQ30 - Results

The quantitative analysis of the MFQ30 responses was started by running the Cronbach's α reliability test to find the values for each of the subscales on both **Before** and **After** questionnaires. The reliable scores are highlighted with *'s in Table B.1. Therefore, it can be concluded that this data collection methodology did not produce reliable results for items other than the Harm and Purity items (at or above the acceptable Cronbach's α threshold of 0.7), for which a *paired t-test* ($n = 19$) was conducted to compare "before" and "after" stimulus exposure results. Unfortunately, for Harm items (*before*: $M = 3.877, SD = 0.666$, *after*: $M = 3.368, SD = 1.208$; $p = 0.138$) and Purity items (*before*: $M = 2.096, SD = 0.868$, *after*: $M = 2.008, SD = 1.144$; $p = 0.720$), the

difference between "before" and "after" scores were not significantly different ($p > 0.05$). Thus, no more further analysis was conducted on these items.

Cronbach's α Scores	**Before**	**After**
Harm	0.684*	0.811*
Fairness	0.251	0.539
In-Group	0.491	0.496
Authority	0.500	0.655*
Purity	0.778*	0.745*

Table B.1: Cronbach's α Scores for each group determined if the data were reliable. Reliable data points are marked with an asterisk*. The MFQ30 items were compared before and after stimulus exposure to the pre-recorded gameplay of the *Meet Kamski* chapter.

The results of this research were focused on the rich qualitative data collected instead. The quantitative analysis is reported for completeness, and open questions remain whether the MFQ30 works for small sample sizes and can be deployed on the same participants twice. This research does not support this.

Semi-structured Interview Questions

1. What aspect(s) affect your decision-making in these types of games?
2. What drove you to make a choice in the game?
3. In terms of casual or trivial situations, would you make the same decisions in real life? Why or why not?
4. If you could change any decision(s), what would you change and why?
5. How would you describe yourself in terms of morality?
6. Do you follow the same morality in different games? Why or why not?
7. How would you describe your relationship with non-playable characters in the game?
8. How would you describe the role of the story in terms of your choices and morality?

Figure B.1: *Detroit: Become Human* Interview Questions.

Moral Foundations Questionnaire

Part 1. When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking? Please rate each statement using this scale:

[0] = not at all relevant (This consideration has nothing to do with my judgments of right and wrong)
[1] = not very relevant
[2] = slightly relevant
[3] = somewhat relevant
[4] = very relevant
[5] = extremely relevant (This is one of the most important factors when I judge right and wrong)

_____Whether or not someone suffered emotionally

_____Whether or not some people were treated differently than others

_____Whether or not someone's action showed love for his or her country

_____Whether or not someone showed a lack of respect for authority

_____Whether or not someone violated standards of purity and decency

_____Whether or not someone was good at math

_____Whether or not someone cared for someone weak or vulnerable

_____Whether or not someone acted unfairly

_____Whether or not someone did something to betray his or her group

_____Whether or not someone conformed to the traditions of society

_____Whether or not someone did something disgusting

_____Whether or not someone was cruel

_____Whether or not someone was denied his or her rights

_____Whether or not someone showed a lack of loyalty

_____Whether or not an action caused chaos or disorder

_____Whether or not someone acted in a way that God would approve of

Part 2. Please read the following sentences and indicate your agreement or disagreement:

[0]	[1]	[2]	[3]	[4]	[5]
Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree

_____Compassion for those who are suffering is the most crucial virtue.

_____When the government makes laws, the number one principle should be ensuring that everyone is treated fairly.

_____I am proud of my country's history.

_____Respect for authority is something all children need to learn.

_____People should not do things that are disgusting, even if no one is harmed.

_____It is better to do good than to do bad.

_____One of the worst things a person could do is hurt a defenseless animal.

_____Justice is the most important requirement for a society.

_____People should be loyal to their family members, even when they have done something wrong.

_____Men and women each have different roles to play in society.

_____I would call some acts wrong on the grounds that they are unnatural.

_____It can never be right to kill a human being.

_____ I think it's morally wrong that rich children inherit a lot of money while poor children inherit nothing.

_____ It is more important to be a team player than to express oneself.

_____ If I were a soldier and disagreed with my commanding officer's orders, I would obey anyway because that is my duty.

_____ Chastity is an important and valuable virtue.

The Moral Foundations Questionnaire (full version, July 2008) by Jesse Graham, Jonathan Haidt, and Brian Nosek.
For more information about Moral Foundations Theory and scoring this form, see: www.MoralFoundations.org

Figure B.2: Moral Foundations Questionnaire (MFQ30).

END