

The power of thoughtful in-game food design

Exploring player perception, user experience, and engagement.

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Master's Thesis
June 2025

Word Count: 18766

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ABSTRACT

With the rise of food waste, health issues, and the need for sustainable eating habits, the way food is represented in digital media has become relevant for our society, now more than ever. However, while attention has been frequently directed at traditional and social media, limited research has investigated how food is depicted—and experienced—within the context of digital games. Considering that games are currently increasing in popularity within our society, understanding how food is represented and perceived in said environments might be crucial. For this reason, this thesis explores the question: How do players perceive in-game food representations?

To find the answer, this study employs a qualitative research design based on four focus group sessions. Participants played a selection of food-centred games and subsequently participated in group discussions. The collected data was transcribed and analysed through thematic analysis.

Four overarching dimensions of food representations in digital games were explored throughout the focus groups: visual, auditory, tactile, and symbolic. Each dimension refers to a specific characteristic of in-game representations. This approach allows for a deep understanding of what users might feel to be highly relevant characteristics of games, providing an insightful exploration of player's perceptions and experiences of in-game food representations.

The analysis revealed patterns across each dimension. Visual findings showed that realism, detail clarity, and balanced colour vibrancy enhanced immersion, though mismatched expectations between visual appearance and gameplay mechanics disrupted engagement. Auditory results demonstrated that congruent (i.e., realistic) sounds supported believability, while repetitive audio effects and poor action-sound alignment undermined enjoyment, highlighting the need for customizable audio controls. Game mechanics revealed that realistic cooking gestures and responsive interactions significantly increased satisfaction, with gameplay variety proving essential to sustained engagement. Symbolic associations emerged primarily through cultural recognition and nostalgic memories, though these connections remained strongly personal and their evocation was not consistent.

This research contributes to game-based food studies, showing that in-game food representations could have play a role in influencing player experience. The study suggests that in-game food, if thoughtfully designed, could serve as a mean to promote both sustainable and healthy food practices. Last, this thesis underlines the importance of treating in-game food representations as more than a secondary feature, as it requires a deep understanding of what its role is in shaping players' perceptions. Therefore, since digital games can be leveraged more thoughtfully in both design and food-related discourses, it creates ground for future research to better explore how in-game representations can be rightfully designed.

KEYWORDS: *Food Representations, Perception, Digital Games, Focus Groups, sustainable food, healthy food*

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1. Introduction

This master thesis aims at exploring and understanding the perception players have of representation of food in food-centered digital games. “Food is culture, food is health—and most important, food is community. It plays a huge role in all of our lives, not just chefs, farmers, and movers and shakers in the food industry, but everyone” (Salyer, 2020, para. 2). These are a few of the words said by Chef Massimo Bottura at the World Economic Forum’s Bold Actions for Food as a Force for Good underlining how food plays a crucial role in defining the wellbeing of our society. Indeed, there is a palpable relation between dietary habits and health, as well as between food consumption and environmental stability. As a matter of fact, the rise of food consumption trends has been accompanied by both an increase of health-related issues (Kearney, 2010, p. 2805) and a dangerous increase of fresh food waste, which amounted to more than 59 million tons in 2022 in the European Union alone (Eurostat, 2024, para. 3).

Thus, it is clear that inappropriate food consumption is a danger that needs to be tackled. With the European Commission setting targets to diminish food waste by 50 percent per capita by 2030 (Gaeta, 2018), and with the unification of Nobel and World Food prizes winners to address global food needs (McFetridge, 2025), it is evident that the importance of food-related issues reached universal recognition. Nonetheless, while a few researchers tried to identify suitable tools for the promotion of food consumption habits (Hawkes, 2009, p. 1; Druschba and Shakeri, 2023, p. 1), a consensus over which method is the most suitable seems to be missing, but to reach such consensus it might be necessary to first understand the potential and the capabilities of each specific medium.

Thus, following a reasoning that will be defined in the next Chapter, this research aims at expanding the comprehension of both potential and capabilities of food-centered digital games, and it does so by providing an answer to the following question:

How do users of food-centered digital games perceive in-game food representations?

1.1 Scientific relevance—Food and gaming

Despite the growing presence of food representations in media such as Instagram and TikTok, as well as the growing interest in the persuasive power of digital games, the interconnection between digital games and in-game food representations is still lacking a deep comprehension, as outlined by Bas et al. (2018) throughout their research on persuasive game design. In fact, while it is true that food representations in general—especially in relation to media—have received attention by scholars (e.g. Andilolo and Ranteallo, 2016; Calnan et al., 2014; Dickinson, 2013), more in-

depth analyses are still needed to fully comprehend the relationship between food and gaming (Joelsson et al., 2023, p. 19) and to analyse the impact of in-game food on players (Dam, 2023, para. 15).

The vast majority of academic studies related to persuasive gaming hardly ever linked the research with food studies (e.g., Ante et al., 2014; Bsa et al., 2018; Hodgins, 2023; Männikkö, 2017), and the same lack of linkage can be seen from academic food studies towards persuasive gaming (e.g., Andilolo and Ranteallo, 2016; Hawkes, 2009; Manikonda, and Mejova, 2023). I was only able to identify a study with a similar object of study, made by Chow et al. (2020) on game's effects on children's eating behaviour (2020). The study, however, did not adopt a focus of in-game food representation specifically, but rather on the games as a whole—as shown in their methodology section (Chow et al., 2020, p.3). Moreover, they explored children's behaviour specifically.

In contrast, this study aims to collect adult's perceptions on food representation, which have not been explored so far. Moreover, while it was still demonstrated that game-based approaches do have the potential to change eating behaviours by many scholars (Asit et al., 2013, p. 7; Carr and Hayes, 2015, p. 52; Chow et al., 2020, p. 10; De La Hera, 2019, p. 99), a thorough investigation of said scholars' research highlighted the lack of an essential study approach: cross-players interactions during data collection. As a matter of fact, the few studies that did explore persuasive gaming in relation to food studies based their research on either the interaction of players with games (Asit et al., 2013, p. 8) or academic papers (Chow et al., 2020, p. 2). However, this study—thanks to the employment of focus groups—surfaces players' perceptions and experiences not only from the players themselves—avoiding conjectures based on assumed information—but also from how players interact with each other during the data collection. An approach that gives more depth and breath to the data (Krueger and Morgan, 1993, p. 16). Thus, the analysis of the information collected for this research will be reflecting as accurately as possible what some users perceive when playing.

Thanks to said data collection approach, this research creates stable ground for future explorations of digital games as communication channels. Such foundations are needed in today's game-centered academic context, since it has been proven that digital game's communication possess manipulatory capabilities (Asit et al., 2013, p.7). Moreover, it has been shown that this persuasive power lies not only in standard communication but in many other different characteristics as well—as De La Hera's framework suggests (2019 p. 104)—which further highlighting the importance having stable foundations through the analysis of players' perception of

in-game food, which could potentially lead to a better understanding of how to design in-game food representations.

Such a necessity is stressed also by the power exerted by visuals on user perception and engagement (Tindale, 2024, para. 1). In fact, it has been acknowledged that the way a certain content is represented within digital contexts does play a role in influencing user engagement and experience (Mohamed, 2025, p. 1434). In-game features such as interactivity, aesthetics, and sound have been—as a matter of fact—shown to directly influence user experience, immersion, and even psychological responses (Crutzen et al., 2016, p. 17; Alves and Roque, 2011, p. 364; Crawford, 2000, p. 10).

Still, the specific characteristics of in-game food representations that this research is based on will be thoroughly explored in the following chapter. Nonetheless, it is already noticeable that neglecting this type of in-game feature would be unwise, as poorly designed representations could potentially sabotage the level of engagement felt by users (Tindale, 2024, para. 2), ultimately limiting the game's impact on users' behaviour.

Thus, this research will deepen the understanding of this importance, with the aim of highlighting the relevance of in-game items design. While exploring said significance, this thesis will employ the perception of in-game food representation as central research subject, addressing the aforementioned gap regarding food in gaming contexts.

1.2 Social relevance—Gaming for food consumption changes

As the transition to young adulthood appears to be the period during which individuals are more likely to engage in unhealthy behaviours (Frech, 2012, p. 3), focusing on promoting healthy habits to people between ages 18-25—which has been identified as the age range in which the transition to adulthood occurs (Frech, 2012, p. 3)—might be one of the most suitable courses of action. However, in order to start walking in that direction, we first need to comprehend people in the 18-25 age range. Specifically, how they face communication channels with persuasive capabilities, such as digital games.

With this age range taken into consideration, a specific type of activity through which habits can be promoted takes the spotlight: gaming. Two primary reasons lead to this choice. First, gaming is considered to be a highly popular activity among young adults (Arnaez et al., 2018, p. 1; Männikkö, 2017, p. 17), leading to an ever increasing number of digital game users every year (Duarte, 2025, para. 7). Second, this medium proved to be a powerful persuasive tool, as it presents numerous design strategies that can be employed to render it a strong persuasive channel (Antle et

al., 2014, p. 183). Thus, considering such persuasive power, understanding how to better design games's structure is imperative for optimizing habit promotion.

Nevertheless, to further comprehend the implications of gaming in fostering sustainable consumption habits, the role of food in modern media needs a clear definition. As witnessed during the past years, food-related trends on visual media—intended as information in the form of visual representations (Visual Media Co, 2021, para. 2)—experienced a drastic rise (Chevy, 2024, para. 1; Cosenza, 2023, para. 5), and is currently showing no signs of deceleration (Reinoso, 2025, para. 1). Moreover, it has been reported that a large segment of Gen Z—the generation that is now part of the 18-25 age range—collects food-related information digitally (French, 2024, para. 5), which highlights the importance of focusing on digital communication channels, such as digital games.

In conclusion, the explored information implies that leveraging digital media, and digital games specifically, would be an ideal move to tackle food consumption issues, as it would be one of the most direct ways to connect with the generation who is currently facing the highest risk of developing unhealthy habits. However, the relationship between food and digital games has yet to be defined.

1.3 Chapters' Overview

With the topics of this research explained, it is of importance for the reading of this document to outline how it is structured. This segment of the first Chapter serves precisely that purpose, clarifying that this paper is constructed as follows.

As a start, the first Chapter prepared the reader for the comprehension of the next segments, introducing the fundamentals that will be used to thoroughly discuss the treated topics, and underlining the details that led to the choice of both the starting point and the procedures.

Building on the introduction, Chapter two explores how—or if—past researchers have studied the representation of food in media, persuasive gaming, in-game representations, and the interconnections between these concepts, analysing the role representations have in shaping user perception and experience.

Chapter three presents the methodology chosen to complete this research, analysing in detail every step of the research process. The aim of this Chapter is to elucidate as transparently as possible the decisions made regarding the collection of the data and its analysis, explaining the reason that led to those decisions and the possible biased that might have influenced the research.

Chapter four displays concise report of the focus groups sessions—which will be fully reported in the Appendix—and the thematic analyses that took place, explaining how the

discussions were analysed and which underlying themes were identified. In addition, a brief segment is dedicated for the interpretation of each theme, leaving the role of explaining said interpretation in detail to the following Chapter.

As mentioned, Chapter five contains the discussion of the results. Such discussion reports thoroughly how the identified themes were interpreted, reaching a judgement related to how users of food-centered digital games perceive in-game food representations. The work of past researchers is mentioned as support for each interpretation, strengthening the final judgment.

Last, Chapter six will close the paper, drawing a conclusion on the research, identifying the limitations of both research and researcher, and indicating possible directions for future analyses. Naturally, the last Chapter will be followed by both bibliography and Appendix.

2. Theoretical framework

For the sake of expanding the reader comprehension on what has already been discovered about the topics that will be addressed, this chapter focuses on the theories, frameworks, and assumptions on which this thesis is built. The chapter is divided into four main sections. The first segment explores articles concerning the study of the representation of food in (social) media context, alongside its relevance in today's digital trends. The second segment introduces the concept of persuasive gaming, explaining why it is of importance for this study. The third section expands the notion of in-game representations, focusing on the dimensions that can be directly connected to in-game food representations. The fourth, and last, section draws from its preceding segments, exploring how the three concepts interconnect when analyzed through this study's scope.

2.1 Food representation in public media

As stated in the introduction of this paper, the past few years witnessed a drastic spread of food-related trends on social media (Chevy, 2024, para. 1; Cosenza, 2023, para. 5), showing a stable growth that, as of now, does not give away signs of deceleration (Reinoso, 2025, para. 1). Nonetheless, it would be of interest for this research to understand what has been recorded and analysed so far in regard to the relationship between food and media, what information about such relationship is currently missing, and the importance of addressing said gap.

2.1.1 Healthy eating habits in media

In 2023, Cao et al. analysed the panorama of the topics related to healthy eating through a literature review on articles published throughout the last two decades (i.e., from 2002 to 2021). They found that “the field of healthy eating is attractive and promising” (Cao et al., 2023, p. 7) with an exhibition of constant growth of the body of literature during the years, with Europe—amongst other developed continents—being seen as one of the first places who showed the presence of nutritional issues (Cao et al., 2023, p. 8) as well as “the most significant contributor to the field of healthy eating research” (Cao et al., 2023, p. 7). While this data might not be directly related to social media, the interconnection between the two concepts is easily explainable. In fact, the concept of ‘healthy’ in relation to food on the internet showed a constant rise from 2006 until now (Google Trends, 2025), depicting a growth that can be connected—albeit with poor evidence—with what Cao et al. signaled about healthy eating-topics.

The conclusions presented by these studies are accompanied by many others, such as online news networks and journals delineating sustainability and health as rising priorities for consumers

(Penna, 2025, para. 7; Innova Market Insights, 2024, para. 8). In fact, according to food expert Francesca Della Penna, the growth of the plant-based food market can be seen as indicator of sustainability becoming a new way of living (Penna, 2025, para. 8-10). In addition, the rise of flexitarianism—described as a reduction of meat consumption without its complete exclusion from the diet (Bogueva and Marinova, 2022, p. 173; Conniff et al., 2021, p. 1049)—can also provide evidence for these food-related trends, and provide another interpretation key for how players approach—and, therefore, perceive—food-centered digital games.

2.1.2 *Food-related sustainability in media*

While exploring healthy eating habits in relation to social media, the previous sub-chapter mentioned *sustainability* as one of the rising priorities for consumers. It is useful to note that such topic is indeed of interest to people. In fact, Appleton et al (2023) showed that people are interested in changing their eating habits to include sustainable practices (Appleton et al., 2023, p. 6), while highlight that previous studies showed people's desire for information on this topic (Appleton et al., 2023, p. 7), implying the importance users give to information channels. However, since their study was limited to British soil, this research might bring a new perspective to the topic, thanks to its inclusion of a diverse sample of participants—as sub-chapter 3.2 will report.

With that in mind, it would be useful to explore how social media content approaches the representation of food-related sustainability. However, academic research is currently lacking direct exploration of said type of content. In fact, scholars tend to focus on content that *discusses* sustainability rather than *depicting* it (e.g., Hoppe and Königslöw, 2023), on content with a broader view (e.g., food, climate) rather than a narrower one (e.g., sustainable food practices) (e.g., Berg et al., 2016), or on exploring media-influenced behaviours (e.g., increasing fish consumption) rather than social media content (e.g., Scarpato and Simeone, 2020). This lack of research on food-related sustainability content highlights a gap that needs to be addressed in order to better understand how positive habits can be effectively promoted through social media. To a certain extent, this research will start filling this gap thanks to the analysis of players' comments on in-game food representations. However, since this study focuses on players' perception rather than the content itself, a good portion of the underlined gap will remain unexplored.

2.1.3 *Which media have been explored by food studies*

Multiple, if not all, communication channels have been touched by academic food studies at least once. Some scholars utilised the notion of social media as an environment composed of many,

equally relevant channels (e.g., Hoppe and Königslöw, 2023; Scarpato and Simeone, 2020). In contrast, others utilised specific media as research environment—such as Instagram (e.g., Berg et al., 2016) or Facebook (e.g., Kidd et al., 2020). In general, we can confidently state that public media (both digital and traditional) have been of interest for food studies many times thanks to their persuasive capabilities.

However, as outlined before, a vast number of those studies tend not to focus on the content itself (i.e., how food is represented), but rather on the information related to said content (e.g., users' feedback) or content that discusses food rather than actively showing it. Therefore, there is an important lack of information in the matter of food representations within social media, and while it is true that social media trends can change in a matter of weeks, filling such a gap would almost certainly ensure that content designers know which directions should be avoided when creating food-centered content. In conclusion, by researching how players' perceive in-game food representations, this research will start creating a viewpoint from which food-centered social media content can be explored.

2.2 In-game food representations and user experience

Al-Shamaileh and Sutcliffe (2023) demonstrated that user experience—and, therefore, the reception of the game's content and mechanics—is mainly predictable through two concepts: usability and pleasure (p.1). The first has been assigned different definitions, all of which depend on the point of view of the analysis (Bevan et al., 1991, p. 1), while the latter is defined as a concept that integrates joy, liking, and enjoyment simultaneously (Katz, 2005, p. 1). Subsequently, for the sake of this research, it should be explained how the two concepts are interconnected with each other, as well as how they impact this research.

2.2.1 Interconnecting usability and pleasure

Many industries prefer a product-focused approach to the definition of usability. ISO, for instance, defines usability as a collection of attributes influenced by the effort users need for interacting with the product (ISO, 1991, p. 3), focusing on both the product and the user. Others prefer a different approach. One of them is Ken Eason, who stated that usability is “the degree to which users are able to use the system with the skills, knowledge, stereotypes and experience they can bring to bear” (Bevan et al., 1991, p.2), showcasing a definition oriented more on the interaction itself. This research, however, bases its concepts on the notion of usability as encompassing all these views. In fact, in the realm of game design, developers should focus on

creating an experience both fun and accessible to players (Desurvire and Wiberg, 2015, p. 169), implying a focus on both the user experience and the usability of the product itself. Thus, pleasure could likely become a strong indicator of a product's quality, as it integrates both liking and enjoyment (Katz, 2005, p. 1), which are characteristics that are directly linked to user experience (Cho et al., 2012, p. 1485).

For this reason, the analysis focused on in-game food's characteristics that are strictly linked to both the composition of the food itself as well as the games' features that influence user experience. Thus, the research used the concept of "playability" to explore the collected data. Similarly to usability, playability refers to the quality of a game "in terms of rules, mechanics, goals and design" (Padilla-Zea et al., 2012, p. 1034), while a more extensive definition of it includes also features such as personalization, responsiveness, storytelling, pace, intricacy, and realism (Usability-First 2009). However, since it was decided to focus on players' perception of in-game representations specifically, rather than said representations' interconnections with games' narrative, it was decided to limit the focus of the research on features such as *interactivity*, intended as the player's possibility to generate causes and observe the outcomes (Crawford, 2000, p. 10), *aesthetics*, intended as the interaction between graphics and animations (Shneiderman, 2004, p. 50), and *sound*, intended as audio effects that contribute to the purpose of the application (Alves and Roque, 2011, p. 364). Nonetheless, it was decided to encode "abstract" characteristics such as storytelling in the concept of *symbols*, intended as channels to convey a story to the player (Grönlund and Kalami, 2013, p. 5). This choice was made because storytelling is considered as one of the fundamentals of game design (Padilla-Zea et al., 2012, p. 1034), but considering the complexity of the correlation between in-game food representation and proper storytelling, it was deemed that this correlation would need a research on its own.

With these choices in consideration, a framework was designed to direct the attention of the analysis on specific theoretical pillars. The framework was constructed around both the aforementioned features, as well as the persuasive dimensions of digital games proposed by De La Hera (2019, p. 104): *Visual Persuasion*, *Sonic Persuasion*, and *Haptic Persuasion*. Each dimension can be linked to the aforementioned video game features with the exception of *Symbolism*, whose integration was decided due to the importance of storytelling elements in video games (Padilla-Zea et al., 2012, p. 1034). In this instance, the three persuasive dimensions serve primarily as background actors who support the role of each framework pillar.

2.2.2 Visual properties

First, the importance of visual properties has been shown by Sevener (2003), who stated that visual aspects of a product, especially ‘form’, can stimulate product pleasure (Sevener, 2003, p. 150), influencing users’ perception of products. Thus, it is possible for item representations to directly influence playability, which implies that food aesthetics do play a relevant role in shaping users’ opinions of games and *gamified* products. Furthermore, research demonstrated that the relation between “visual aesthetics and emotional aspects of user experience [has] to be studied further” (Mahlke, 2008, p. 4). However, most researchers address aesthetics in terms of how the product itself (i.e., the device and/or the game as a whole) is designed rather than how the content is represented. Thus, this research focuses on perception of food representations specifically rather than the design of either the game or the device.

In addition, according to the results of a survey portrayed by Sepúlveda (2020), players showed a tendency to prefer a realistic visual style (i.e., a style that tries to be as similar as possible to reality) over an abstract style (i.e., a minimalistic style) or a stylised one (i.e., a visual style that resembles cartoons) (Sepúlveda, 2020, p. 30). It is a research that not only connects to the definition of playability, but also creates a suitable starting point to determine a possible outcome of this research. Therefore, this research explores how players experienced in-game visual representations of food, and if they feel it had an impact on their immersion and engagement. However, since the research by Sepúlveda (2020) focuses on specific video games that do not have connection with food or alimentation (Sepúlveda, 2020, p. 23), by analysing data from food-centered digital games, this study will explore a slightly different research area and might show a fairly different result.

2.2.3 Auditory properties

While often overlooked, the integration of a *sound* design alongside visual elements plays a critical role in many areas (Alves and Roque, 2011, p. 364; Lins, 2013, para. 1; Shneiderman, 2004, p. 50; Team EMB, 2024, para. 1), including the creation of an immersive and engaging experience (Shneiderman, 2004, p. 50; Team EMB, 2024, para. 30-34). In fact, sound effects (i.e., audio cues related to environmental noises, players’ actions, user interface sounds, etc.) can be leveraged to create in the user a strong sense of immersion within the game environment, as well as evoking emotions and, therefore, psychological effects that contribute to the overall immersion and engagement (Shneiderman, 2004, p. 50; Team EMB, 2024, para. 34).

Furthermore, auditory feedback can have a meaningful impact on the overall user experience. As the lack of an anticipated sound is till a sound (Zlobin, 2024, para. 11) the user might experience this absence as detrimental to their immersion. Thus, by researching how users

perceive auditory feedback of in-game food representations, this study explores if players perceived sound as impactful on their immersion and engagement.

2.2.4 *Symbolic properties*

The notion of symbolism as the representation of ideas is a concept widely utilised in many instances. As it presents a strong connection with visual aspects of any medium, it is presumable that symbols do play a role in conveying a message or an idea. However, while it is true that games can employ symbolism as a powerful storytelling tool (Grönlund and Kalami, 2013, p. 5), due to the gameplay-based nature of games it is possible that signs and symbols may be overlooked during game design (Grönlund and Kalami, 2013, p. 9). Thus, while an accurately designed symbolic system can evoke mental efforts and meanings, it is also true that the misinterpretation of symbolism, or its poor quality, can ruin the feeling of immersion, negatively impacting the user experience and engagement. Therefore, this study explores how players perceived the symbolic representation connected to in-game food, and if users felt an impact on their immersion and engagement connected to symbolism.

2.2.5 *Interactivity*

As the term interactivity refers to the possibility of changing the cause, and therefore the outcome, of an action (Crawford, 2000, p. 10), in this instance it does not refer explicitly to the representation of items within a game, but to the feedback and outcome users feel when interacting with said items. It should also be noted that Avila (2020) referred to interactivity with the term *tactile*, referring to the direct interaction of the user with the game elements through a device (p. 3). Deepening the understanding of the term itself and expanding the point of view of the analysis.

There is a clear link between users' interaction with in-game items and their experience with the game, as it has been proven that direct interaction has an effect on a psychological level—e.g., increase of perceived ownership (Peck and Shu, 2009, p. 444). Moreover, as suggested during the exploration of the dimension of haptic persuasion (i.e., persuasion caused by how players perform within the game's boundaries), it is still possible to provide an illusory feeling of haptic (i.e., non-verbal) feedback (De La Hera, 2019, p. 118). Following these understandings, the researched perceptions are heavily interconnected with both haptic feedback as well as how players felt the tactile interaction with in-game food representation effects their immersion and engagement.

In summary, there is a multitude of elements that construct the broader notion of representation. Nonetheless, each component plays a role in strengthening user immersion and

engagement. However, two main complications emerge from this section. First, the lack of official academic research on the subject of in-game representation, and on their specific components, forced a small portion of the theoretical framework to be based on online article and blogs which, although published on renowned websites, creates an unstable theoretical base. Second, much, if not all, of the previous research do not concern food-related contexts. Thus, this study's results not only could present slight—or even considerable—differences from the predictions, but will also be able to fill the research gaps just mentioned.

2.3 Persuasive gaming on the perception of in-game food representations

With the concept of games as one-to-many communication tools, it is now of relevance for the study to explore in detail the persuasive power of said tools. Many studies, in fact, have analysed how games can impact players, expanding the understanding of what causes these effects as well as whether specific game features can influence or not the persuasiveness of said game. Therefore, this section centers the discussion around the concept of persuasion, which is explored with the aim of understanding its interconnection with digital games.

2.3.1 Persuasion

With the term persuasion, society refers to the act of changing other people's behaviours. Specifically, it is intended as a message—or communication in general—utilized to influence beliefs, values, or attitudes of other people (Crano, 2015, p. 941; Dainton, 2005, p.104; DellaVigna and Gentzkow, 2009, p. 4). As such, it implies the existence of an agent (i.e., the sender) with the intention of influencing beliefs and behaviours, and a receiver whose beliefs and behaviour can be influenced (Dainton, 2005, p. 104; DellaVigna and Gentzkow, 2009, p. 4). As such, its connection with games could be perceived as straightforward and simple. However, a specific issue renders persuasion an intricate notion: the absence of a tactic that can be deemed universal (O'Keffe, 2004, p. 36).

This absence is due to the nature of persuasion itself. In fact, as mentioned before in relation to games' effects on players, persuasion can produce a plethora of different effects (O'Keffe, 2004, p. 36), thanks to the presence of multiple factors (e.g., storytelling, narrative, in-game items, characters, etc.) that under different conditions lead to contrasting outcomes (O'Keffe, 2004, p. 36). Thus, its relationship with digital games is a complex matter, as games themselves present a plethora of features that can elicit contradictory reactions in players (Squire, 2003, p. 2), framing the combination of the two notions as a multifaced concept. Therefore, this research aims at

exploring this interconnection by focusing on one specific component of food-based digital games: food representations. By narrowing the scope of this research, it is predicted that the level of complexity of the research itself might be lowered, rendering the comprehension of the theoretical context less demanding.

2.3.2 *Persuasive dimensions of games*

Through the lens of digital games as persuasive tools, multiple persuasive dimensions have been identified by recent research (De La Hera, 2017, p. 32).

The term persuasive dimensions refers to game-related features that can be leveraged to convey messages (De La Hera, 2019, pp. 103-104). De la Hera's (2019, p. 103) theoretical model on persuasive dimensions in digital games identifies a total of 11 dimensions, distributed between three levels of persuasion. Specifically, 4 are related to the level of (1) *The signs* (i.e., the results of the associations between the form a sign takes and the concept it represents), 3 are related to the level of (2) *The system* (i.e., the structure that establishes relationship between the signs), and 4 are related to the level of (3) *The context* (i.e., the environment in which the player interacts with the signs) (De La Hera, 2019, pp. 100-104). Moreover, all the dimensions associated to the second and third level can be seen as interconnected with game components and features (i.e., narrative, cinematic, procedural, linguistic, haptic, sonic, and visual). However, considering the focus of this research on in-game representations rather than food-based games as a whole, only the dimensions of visual persuasion, sonic persuasion, and haptic persuasion (De La Hera, 2019, p. 104) will be considered.

Visual persuasion, as suggested by its name, refers to the capability of in-game visuals to deliver a meaningful message (De La Hera, 2019, p. 109). This type of persuasion is based on four persuasive capabilities that Jens E. Kjeldsen (2012, pp. 240-241) attributes to visuals, and that are reported in the book written by Teresa De La Hera (2019, p. 110): presence (i.e., making the player aware of a signal that is related to the game's message), realism (i.e., framing something as an unquestionable truth), immediacy (i.e., being recognized and comprehended instantly), and semantic condensation (i.e., condensing multiple ideas, thoughts or contents into a single picture). However, visuals can be polysemous, including multiple interpretations simultaneously (Bartes, 1977, p. 37). Thus, it could become necessary for the game designer to actively direct players towards the intended interpretation of the sign (De La Hera, 2019, p. 113). Yet, as visuals can be utilised within object design (De La Hera, 2019, p. 110), the potential of in-game food

representations as message-conveying tools remains. Thus, this study will focus on user perception of possible connotations of in-game food representations.

Sonic persuasion is centred on sound as the conveyer of the message. Thus, it is centred on what Chion (2012) refers to as semantic listening, a form of listening that employs language or code for the interpretation of the message (Chion, 2012, p. 2). Such centration implies a connection with the notions of reduced listening (i.e., gathering informations from the characteristics of a sound) and casual listening (i.e, concentrating on the source of the sound) (Chion, 1994, p. 28). Moreover, while it is true that in-game sounds are designed by a the owner of the game and can be used for many different features (De La Hera, 2019, p. 114), it is also correct to state that their emergence is mostly player-driven, due to the interactive nature of digital games (De La Hera, 2019, p. 113). Therefore, it is possible to facilitate semantic listening by directing player attention to sound effects through the ideation of specific in-game actions (De La Hera, 2019, p. 116). Consequently, this study will explore how players perceive sounds produced by their interaction with in-game food.

Haptic persuasion revolves around nonverbal communication, and players' construction of meaning through their performances (De La Hera, 2019, p. 116). While this dimension involves touch specifically, it is also based on the idea of players' mental performance as something that is capable of creating new signs or reshaping existing ones (De La Hera, 2019, p. 116). Thus, despite the absence of direct touch of players with in-game food, this concept is till viable for this study. However, the persuasiveness of this dimension lies as much on players' input as on the system's feedback, implying that games should be designed by considering how players can give input and receive feedback (De La Hera, 2019, p. 117). Naturally, the evolution of technology facilitated the implementation of numerous haptic features in recent digital games. Modern technologies, such as smartphones and virtual reality devices, increased the methods through which digital games can provide haptic feedback (Orozco et al., 2012, p. 11). However, a large chunk of said technologies is accompanied by high budget demands. Nonetheless, it is still possible for digital games to create a response in the game that "generates [...] an illusion of haptic feedback" (De La Hera, 2019, p. 118). Yet, as previously mentioned, the performance of players is necessary for the reception of the message and its interpretation (De La Hera, 2019, p. 116). Therefore, this research investigates how players interact with in-game food representation, how they perceived haptic feedback (if they perceived it), as well as how players feel those interactions are connected to their engagement.

In summary, digital games present multiple tools that can be merged to convey specific messages. However, both their implementation and how player perform inside games have a heavy impact on the perception of the message, as well as the impacts said message have on user

behaviour. Therefore, following the suggestion made by Bas et al. (2018, p. 52), it is of relevance for game designers to comprehend the real impact of in-game item representations.

2.3.3 Games as mass communication channels

Still, games can also be intended as a one-to-many communication channel, besides being tools with persuasive capabilities. As a start, it should be noted that digital games are indeed capable of conveying messages, as shown by multiple studies (Asit et al., 2013, p.8; Haglund, 2011, p. 18; De La Hera and Gómez-García, 2023, p. 464). Nonetheless, the ‘how’ might be unclear, especially for those who are unfamiliar with this type of medium. Games are storytelling tools (Somerdin, 2016, p. 70). As such, they can leverage the ‘suspension of disbelief’ (i.e., the avoidance of critical thinking in understanding something unreal) in a way that makes players believe in what they are seeing (Somerdin, 2016, p. 72), similarly to how other storytelling perform (e.g., cinema and books). However, what differentiate games from traditional media is the character players’ impersone, through which they can interact with the story (i.e., the avatar). This feature allows the player to actively become the protagonist, further strengthening the perceived fusion between the story and the real life (Somerdin, 2016, p. 73). Thus, the player experiences the story in a way that feels more direct than the fruition of traditional media, making the message easier to receive and interpret. However, like what has been reported for social media, there are limitations to how games affect players set by how the features of said games are designed. In the case of Gaming Disorders (GD), for instance, multiple studies found that games’ structural features do play a role in provoking GD (Hodgins and Saini, 2023, p. 365; Rehbein et al., 2021, p. 278), and amongst such features both graphics and sound are included (Hodgins and Saini, 2023, p. 365). In addition, it has been found that players who enjoy and appreciate a game will show a greater possibility of being impacted by said game (Shliakhovchuck, 2023, p. 7; Jacobs, 2017, p.185), and since game features are directly linked to player enjoyment (Crutzen et al., 2016, p. 17; Caroux et al., 2015, p. 34), an indirect relationship between game features and game persuasiveness can be implied. Therefore, since a game’s design and goals are often decided by the owner of the product (Shivang, 2024, para. 8), a great number of digital games can be seen as one-to-many communication channels.

3. Method

After careful consideration, qualitative research has been chosen as the research approach for this study. A qualitative approach is a perfect fit for exploring people's stories, their perspectives, and the meanings they give to their experiences (Grossoehme, 2014, pp. 109-110), which is exactly the type of information this study is aiming at.

Moreover, considering that the research question focuses solely on analysing and reporting players' perception, the data collection method selected for this study was focus groups, as it permits to easily collect multiple point of views at once while easing the identification of differences in participants' responses (Krueger and Morgan, 1993, p. 15; Morgan, 1996, p. 139). In concrete, it has been decided to employ 4 focus groups to collect the necessary information. As for method for data analysis, thematic analysis was selected to process participants' responses. The following sections will explore both methods, as well as the detailed reasoning behind their selection.

3.1 Sampling

Naturally, before proceeding with the individual focus groups, a double sampling process was followed to sample both games and participants.

Before sampling the participants, it was necessary to select the games that participants would have to play. The games were selected through purposive sampling, a type of sampling procedure that requires the researcher to look for elements—games, in this instance—that present “appropriate and useful information” (Bywaters et al., 2020, 653-654), meaning that—as the name of the sampling procedure suggests—the sampling procedure proceeds with a specific *purpose*. In this specific case, the purpose was selecting games that presented in-game food representations in different styles (i.e., differences in terms of *visual*, *audio*, *haptic*, and *symbolic* design), which is done with a technique called maximum variation—defined as creating a sample that promotes extremes rather than similarities (Marcu et al., 2007, p.8).

Naturally, before getting selected, each game had to showcase specific criteria as well, as this research requires a specific type of content and gameplay. In fact, each game had not only to include food representations, but they also had to put food itself at the core of the game experience. Thus, each game had to clearly include food representations that integrated three of the four properties highlighted in the previous chapter. Specifically, they had to include *Visual* properties (i.e., graphics, animations, visual effects), *Auditory* properties (i.e., sound effects, audio), and *Tactile* properties (i.e., game mechanics, haptic feedback). The fourth category of properties (i.e.,

Symbolic) was not considered part of the criteria during the sampling process due to its strong interconnection with subjectiveness. In fact, as part of the research itself revolve around exploring whether players perceive symbolic meanings from in-game food representations, selecting games that make a marked and explicit use of symbolism would have had a forced and inevitable influence on participants' answers. Nonetheless, by following the aforementioned criteria, three suitable games were selected.

The first game is *Cooking Simulator* (2019), a digital game with real-life physics and realistic graphics meant to embody as accurately as possible the experience of a chef in a well-equipped restaurant kitchen, offering the player more than 140 ingredients and over 80 recipes to choose from. The second game is *Cooking Mama: Let's Cook!: Cookstar* (2021), a game with cartoon-like and simplistic graphics, meant as a relaxing and enjoyable digital cooking experience in which simple instructions must be followed for each step of the meal preparation. The third game is *Cook, Serve, Delicious! 3?!* (2020), a video game in which speed and accuracy accompany a 2D semi-realistic graphic style, making it a mixture of realism and fiction. These three games were chosen due to their aesthetic differences, providing diverse styles of food representations. Unfortunately, they also present differences in terms of actual game experience, which is an issue that may influence how player perceive in-game food representations. However, it was not possible to completely address this issue, as games, just like other entertainment-driven products, are created to provide their own unique style and experience.

In terms of participants, each focus group consisted of six people. They were selected through maximal variation sampling (Flick, 2007, p. 28), which was based on their experience with gaming, interest in food, age, and gender. Specifically, the participants were selected by scouting whether they classified themselves as gamers (intended as users who play digital games on a daily basis), whether they paid specific attention to food-related choices (e.g., calculating macronutrient assumptions, paying close attention to labels, etc.), and by ensuring that each participant was not only part of the age range identified in the *Introduction* Chapter (i.e., from 18 to 25), but also as different as possible from the other participants in terms of gender and cultural background. This decision was made to enhance the diversity within the sample, as maximal variation sampling is a purposive method (i.e., a method for selecting each participant intentionally) intended as a mean to ensure that the sample presents as many differences as possible (Flick, 2007, p. 28). As such, it increased the likelihood of capturing differences in participants responses. For each focus group, the gender, ethnicity, education level, and country of origin of the participants were kept as diverse as possible, albeit with a few limitations. The candidates were recruited via personal contacts and social media.

3.2 Data collection

A total of 4 focus groups were employed to collect the necessary data. Each focus was conducted during April 2025, and they were composed as shown in the following table:

Type of Focus Group	Location and time	Participants	Description of Participants
Offline	Erasmus University Rotterdam – Woudestein Campus, April 10 2025	Marta, Chloé, Elias, Anastasia, Chiara	Marta (23, female, non-gamer, strong interest in food sustainability); Chloé (20, female, casual gamer, moderate attention to food-related choices); Elias (25, male, moderate gamer, strong interest in healthy eating); Anastasia (22, female, non-gamer, strong interest in vegetarianism); Chiara (22, female, strong gamer, heavy interest in veganism)
Online	Google Meet, April 12 2025	Matteo, Laura, Antonio, Maria, Paolo	Matteo (23, male, non-gamer, strong interest in healthy eating); Laura (21, female, moderate gamer, minimal interest in food sustainability); Antonio (22, male, heavy gamer, moderate interest in healthy eating); Maria (24, female, casual gamer, heavy interest in food sustainability); Paolo (19, male, strong gamer, moderate interest in food sustainability)
Online	Google Meet, April 18 2025	Anna, Phoebe, Marina, Khaled, Roberto, Josh, Iririna, Elena	Anna (20, female, non-gamer, moderate attention to healthy eating); Phoebe (23, female, non-gamer, strong attention to food sustainability); Marina (25, female, casual gamer, strong attention to healthy eating);

			<p>Khaled (25, male, non-gamer, minimal attention to healthy eating);</p> <p>Roberto (22, male, strong gamer, minimal attention to food sustainability);</p> <p>Josh (19, male, non-gamer, moderate attention to healthy eating);</p> <p>Irina (24, female, strong gamer, moderate attention to food sustainability);</p> <p>Elena (20, female, moderate gamer, minimal attention to food sustainability)</p>
Online	Google Meet, April 21 2025	Arthur, Radina, George, Alexandra, Dara	<p>Arthur (25, male, strong gamer, minimal attention to healthy eating or sustainability);</p> <p>Radina (19, female, moderate gamer, moderate attention to food sustainability);</p> <p>George (24, male, strong gamer, minimal attention to healthy eating);</p> <p>Alexandra (25, female, casual gamer, moderate attention to food sustainability);</p> <p>Dara (22, female, heavy gamer, strong interest in healthy eating)</p>

All the responses were recorded through the use of OBS Studio, stored in an external hard drive, and transcribed verbatim through the use of Transkriptor (an AI powered transcription software used for interviews) for further analysis.

Defined as a research technique that employs the participation of different individuals in a single group interview (Morgan, 1996, p. 130; Smithson, 2008, p. 357), focus groups are an interviewing method that eases the discovery of differences in participants' responses (Krueger and Morgan, 1993, p. 16). As such, they are a well-suited technique for studies that employ qualitative research (Brennen, 2017, p. 4) and that aim at exploring people's thoughts. Moreover, while there are many definitions that highlight focus groups' suitability for studies such as the one reported in this paper (Smithson, 2008, p. 357), it is of extreme importance to underline one characteristics that render focus groups a special research technique: the interaction.

While it is true that one-to-one interviews can be compared to each other to derive insights or differences (Hannabuss, 1996, p. 23), focus groups quicken this process thanks to the simultaneousness of the process itself (Krueger and Morgan, 1993, p. 16, Morgan, 1996, p. 139). In

fact, thanks to the diversity of focus groups, the advantages brought by interactions within focus groups strongly aids investigating differences (Krueger and Morgan, 1993, p. 15; Morgan, 1996, p. 139). Naturally, the opposite is true as well: interactions within focus groups can assist in proving a consensus between responses (Morgan, 1996, p. 139). Moreover, the reason behind these differences can be explored directly with the respondents themselves (Morgan, 1996, p. 139). However, focus groups' greatest strength, if handled incorrectly, can also become their greatest weakness. In fact, when moderating a group discussion, the researcher could end up disrupting the interaction due to its moderating role (Morgan, 1996, p. 140). To avoid as much as possible such a dilemma, during the group discussions the moderator paid extreme attention to not interrupting interactions between participants, unless said interactions veered towards unrelated topics.

Another weakness that can be easily found in focus groups is the range of topics that can be researched. In fact, considering the need for mutual self-disclosure during focus groups, it is undeniable that it may be extremely difficult to explore certain "overly-sensitive" themes, as some research participants could refuse to explore said topics (Morgan, 1996, p. 140). However, this research did not address topics that participants could have perceived as "overly-sensitive". Thus, this issue did not arise during the course of this study.

Nonetheless, in order to prove the veridicity of those claims, it is of relevance for the reader to have a clear understanding of how the focus groups were actually portrayed. As a broad definition of the procedure, the steps followed by the moderator were the following. First, the participants were asked icebreaker questions to relieve the possible tension. Then, the main topic was slowly reached through "secondary" questions. After the main section (the one relevant for the study) of the focus group ended, a quick debriefing section made exiting the focus groups less abrupt. To make the process more understandable, a moderator guide—a step-by-step explanation of how the discussions were conducted—has been included in the Appendix B, alongside a list of the questions posed during the discussions.

Naturally, considering the aim of this study, it was necessary to ensure that the participants had direct experience with in-game food representation. Thus, before taking part in the focus groups, each participant was asked to play three food-centered digital game for at least 30 minutes each, for a total of 90 minutes of gaming time. The number of games was chosen to ensure variety in representation styles, as well as ensuring a certain level of diversity in terms of game mechanics. The amount of total minutes was chosen after reviewing a study by by Limone et al. (2023) on video game addiction. In fact, the study reports that the majority of regular gamers tend to spend a minimum of 2 hours per day playing video games (Limone et al., 2023, p. 9). However, since the sampling procedure was aimed at recruiting people that do not play games on a daily basis, it was

deemed suitable to request them to play for an amount of time that wouldn't have been felt too unusual, as the major concern was that forcing them to play what they would have probably felt as a not-so-reasonable amount of time would have inevitably rendered the task emotionally draining and harder to complete (Ding and Kuuvas, 2022, p. 408). For each focus group, all the participants were asked to play every game, as a way to expose every participant to the same styles of in-game food representations.

3.3 Data analysis

To analyse participants' responses, thematic analysis (Braun and Clarke, 2008, p. 79) was used as data analysis method Braun and Clarke (2008) define thematic analysis as a method used for the identification, the inspection, and the description of patterns. Moreover, it has been found that thematic analysis is an ideal method for comprehending people's conceptualization of certain phenomena (Joffe, 2011, p. 212), and that it is most appropriate for the analysis of data collected through verbal interviews or focus groups (Joffe, 2011, p. 212). Thus, considering the purpose of this study, and how it was meant to be portrayed, thematic analysis seemed the most appropriate technique.

As researchers state, to construct the report of a thematic analysis a range of steps should be followed, which can vary depending on the intentions of the scholar (Braun and Clarke, 2008, p. 79; Joffe, 2011, p. 216). To maintain a clear and traceable structure, this study followed the six-steps system outlined by Braun and Clarke (2008, p. 86), which will be described in the following paragraphs. The idea behind such a choice was related to the scope of this research: since the aim of the study has been adjusted to make it suitable for a master's thesis, it was deemed unnecessary to reach extreme and complex levels of analysis.

First, the researcher *familiarized* himself with the transcribed data. As indicated by Braun and Clarke (2008, p. 87), the transcripts were thoroughly and repeatedly read to ensure a full comprehension of their depth and breadth (Braun and Clarke, 2008, p. 87). As the analysis has been portrayed by the focus groups' moderator, for each transcript a certain amount of knowledge and notes about possible patterns and differences were already present. Thus, possible interpretations were already starting, and they were promptly noted as suggested by Braun and Clarke (2008, p. 87). Moreover, as the focus groups were held in sequence by the same moderator, it was possible to discuss possible differences and shared points with participants themselves. This opportunity, as shown in the transcripts, permitted the focus groups to partially steer the conversation in order to confirm or reject certain topics. This process paved the way for the second step.

After familiarizing with the data, Atlas.ti was used to integrate to human identified *codes*—i.e., basic elements that can be interpreted in relation to the research topic (Boyatzis, 1998, p. 63; Braun and Clarke, 2008, pp. 87-88)—AI identified codes, the prompt used to indicate Atlas.ti what data to look for and what codes to generate is included in Appendix C. This choice has been made to leverage AI's strength in pattern recognition, reducing the time necessary for the whole data analysis process, while maintaining both a low level of AI's involvement in the actual interpretation process and a high number of possible codes, as Braun and Clarke (2008, p. 88) do suggest to “code for as many potential themes/patterns as possible”. All the polished codes are transcribed in the Appendix A. As this was the first meaningful step towards data interpretation, it has been followed by the identification of polished patterns (Braun and Clarke, 2008, p. 88).

In fact, the third step signaled the starting point for the identification of themes, intended as patterns of meaning within the data (Braun and Clarke, 2008, pp. 88-89; Joffe, 2011, p. 209). Thus, all the codes were thoroughly reviewed, polished (i.e., removed or renamed based on whether they fit both dataset and research question or not), and sorted into broader categories, which served as the first phase for the proper interpretation of the responses. This process was portrayed until a collection of possible themes and sub-themes in which all extracts of data was completed (Braun and Clarke, 2008, p. 90).

The fourth step is limited to the reviewing and polishing of the themes (Braun and Clarke, 2008, p. 91). This step is fundamental to comprehend whether the collection of candidate themes and sub-themes suits the dataset, and to adjust it accordingly if needed. In fact, during the first part of the reviewing process, the researcher made sure again that the initial codes formed a coherent pattern with the themes they were assigned to (Braun and Clarke, 2008, p. 91). During the second part, it was assessed whether the themes suited the dataset, adjusting the code tree when needed (Braun and Clarke, 2008, p. 91).

The fifth step required the creation of names that suited each theme and sub-theme (Braun and Clarke, 2008, p. 92). As such, the researcher defined and refined the themes as indicated by Braun and Clarke (2008, p. 92), in a way that identified the essence of each theme as well as what part of the dataset it captured (Braun and Clarke, 2008, p. 92). As shown in the code tree in the Appendix A, each theme was assigned a specific title that represents what said theme concerns.

During the sixth, and last, step, the final report was produced (Braun and Clarke, 2008, p. 93). Said report will be explored in the *Results* Chapter of this document, in which the code tree will be described in detail, defining each title, how the theme were interpreted, and why said interpretations were made.

3.4 Operationalization

As stated at the beginning of this paper, the question that this research wanted to answer is

How do users of food-centered digital games perceive in-game food representations?

Thus, it is of interest to better comprehend the relationships between the research concepts and what was discussed in the *Theoretical framework* chapter, as well as how they were introduced to focus groups' participants.

First, it should be defined what the researcher is trying to explore with the word "how". In this case, the term "how" is used to refer to *what* is constructed inside the mind of focus groups' participants when interacting with in-game food representations. Thus, the question does not refer to the method through which said representations are collected, but only to what is collected. This specification was made to the participants as well as shown by the moderator guide (Appendix B).

Second, it is of simple comprehension the meaning of "users of food-centered digital games", as the word "users" is used as a synonym for the word "players". However, the concept of "food-centered digital games" may be seen as vague. Digital games—more commonly referred to as video games—are a popular medium used primarily for entertainment (Ritterfeld and Weber, 2005, p. 402). As such, there is a vast number of categories in which games are divided. Said categories are constituted not only by the broad genre of the game, but also by its sub-genre. For instance, a game such as *Super Mario Bros* (a well-known classic in the gaming industry) can be defined as an *Adventure* genre, but also as a *Platformer* (i.e., a sub-genre in which the objective is to move the main character between points in the environment). Thus, it can be easily argued that many different categories of digital games can be identified. One such category is *Cooking* games, which include games that put food at the core of the user experience. This category is what the concept of "food-centered digital games" refers to.

Third, the concept of "how users perceive" should be clearly defined. In a lengthy study, Cutting (1987) explored the history of perception and information to better understand both notions. Starting from the etymology of *information*, Cutting states that to *inform* means "to give a shape within" (1987, p. 62). Thus, information can be seen as data through which an imaginary configuration is built (Cutting, 1987, p. 62). Subsequently, he found that each research assumes that perception is, in part, information measurement (Cutting, 1987, p. 64). Therefore, it can be argued that the primary role perception plays in our minds is retrieving the data needed for said imaginary configurations (Cutting, 1987, p. 64). Therefore, the concept of "how users perceive" is intended as the information of in-game food representation users collect when interacting, viewing, or hearing said representations.

As shown in the moderator guide (Appendix B), these concepts were explained to participants in simple terms. Moreover, the same moderator guide depicts how each property highlighted in the sub-section 2.2 has been explored during the focus groups. Specifically, after asking the participants to discuss both what games they preferred the most and what characteristics they seek when making food-related choices, two questions were posed to explore player's perception on *visual* properties (e.g., graphics, visual design, visual effects), *auditory* properties (e.g., music, audio effects), *haptic* properties (e.g., game mechanics, interactions with food), and *symbolic* properties (e.g., abstract connotations, connection with external ideologies).

One question—as a mean to evaluate the perceived importance of the specific property—was strictly related to whether the participants perceived that the discussed property had an influence on their game preferences. This was meant to build on on the understanding of pleasure as a strong indicator of a product's quality (Katz, 2005, p. 1; Cho et al., 2012, p. 1485)—a concept outlined in chapter 2. In fact, by considering playability—defined, in this instance, as the quality of a game in terms of its design (Padilla-Zea et al., 2012, p. 1034)—as the main concept from which to evaluate participants' game experience, it was thought that questioning participants about whether or not they perceived a specific game property to influence the evaluation of the sampled games would have led to a more in-depth comprehension of which game properties are more likely to be of relevance for game designers.

The other question—in order to give a clear and explicit answer to the research question—was a direct elicitation of participants' perceptions of the property. This question was based on the framework constructed on the persuasive dimensions proposed by De La Hera (2019, p. 104), and was aimed at validating both the viewpoint from which this research was constructed, as well as developing a suitable answer for this study's research question.

Last, the participants were asked to mentally review the games they played, and comment which features (if any) they would change in said games. This last question was included as a second mean to better understand what participants valued the most when discussing food-centered games from a enjoyability-centered viewpoint, providing a clear direction for game designers to build food-centered games.

3.5 Ethics

Naturally, conducting focus groups and collecting participants' responses demands to follow rigid ethic-related guidelines. To clear any possible misunderstandings, the participants received a detailed explanation of both aim and procedure of the research. In addition, they were asked to

provide their informed—and revokable—consent to participate in the research, and to have their responses recorded, transcribed, and stored until the analyses reached a satisfactory conclusion. The participants were allowed to withdraw at any time during the research period—including during the focus group session—through the researcher’s contact details that were provided before the beginning of the study (i.e., email address and phone number) or through one-on-one requests. If a participant decided to withdraw after the focus group took place, their recorded responses and the corresponding transcript would have been permanently deleted.

The recordings were stored on a dedicated hard drive used solely for the purpose of this study (i.e., it contained only the recordings of participants’ answers and was not used for unrelated purposes). In the transcripts, in the final report, and in the overview of the participants, their personal information were anonymised to ensure privacy. In addition, their responses were not used outside of this research context, and the recordings were deleted after the analyses reached a satisfactory conclusion. During the analyses, access to the hard drive was restricted only to the researcher and his supervisor, and the same limitation was applied to the transcripts. No audio or textual file was shared with individuals outside of this study context.

3.6 Ensuring credibility, validity, and reliability

To ensure the credibility of this study, the researcher followed Silverman’s (2011) reliability and validity guidelines. First, the *Methodology* chapter included sub-sections to explain in detail the data collection process (sub-section 3.2) and the analysis process (sub-section 3.4) as suggested by Silverman (2011, p. 360). Moreover, in the *Theoretical framework* chapter analytic induction was used during the review of previous literature, generating and testing ideas grounded in the collected data and employable for ensuring a stable theoretical starting point (Silverman, 2011, p. 374).

During and after the analysis process—as stated in the *Results* chapter—the findings were verified through the validation of focus groups’ participants, following the suggestion made by Silverman (2011, p. 371). This was made to ensure that the researchers did not misinterpret what participants stated. Moreover, it was also intended as a way to ensure that the researcher did not steer away from this study’s research goal, guaranteeing that the data was not improperly used and that the researcher examined what he intended to examine. Moreover, the *Results* chapter includes an explanation of the reason that led to the final interpretations of the data, as well as possible different interpretations of said data alongside the reason that led to their rejection. Last, the reader was provided with all the information needed for the correct understanding of the final report, ensuring a clear and credible read.

Naturally, the moderator of this study may have had an impact on the results themselves. The researcher is a 22 years old white Caucasian male with Italian origins and a strong background in culinary arts and nutrition (coming from 5 years of study in an Italian culinary school) alongside a strong expertise in media studies and visual design (from a three-years bachelor's degree in Communication science and a master's degree in Media & Business). In addition, he has developed strong research skills from his master's degree in Media & Business, but his expertise has not reached superb proficiency levels. Thus, his collection and analysis of the data may present flaws or lack of detail.

Moreover, he has been a passionate user of video games since he reached 8 years of age, and was diagnosed with type 1 diabetes in November 2022. Thus, he is interested in both the field of digital games and healthy food consumption, and developed a deep and strong knowledge about said topics. As such, he approached the research with deep beliefs about how players interact and perceive both in-game representations and digital games themselves. However, his international experiences granted him an open mind, which may have reduced the role that said beliefs played in the research. Still, an influence dictated by personal experience and beliefs cannot be deemed completely impossible.

4. Results

In this chapter the results of the analysis are presented to provide an answer to the the following question: *how do players perceive in-game food representations?*

A coding tree (Appendix A) has been created following Braun and Clarke's six-step coding process (2006, p. 86), which contains 4 major themes: *rendering life in a game: the visual layers of in-game food*, *enjoyment through hearing: realism, congruence, and variety on auditory engagement*, *in-game food from a symbolic perspective: cultures and personal symbolisms*, and *food-centered game mechanics on engagement: realism, repetitiveness, and responsiveness*.

This Chapter divides the result based on said themes. The first theme discusses the importance of realistic visual representation and the relevance of clarity, details, colours, and variety have in relation to realism. The second highlights how auditory elements could benefit from pursuing a design that shows coherence with real-life, as well as how its variety—or lack of—was deemed of importance to the players. The third highlights the subjectiveness of symbolism, and how it was seen by the participants. The last theme discusses repetition, realism, and responsiveness of food-centered game mechanics, and the opinions participants shared in regard of said concepts.

4.1 *Rendering life in a game: the visual layers of in-game food*

The thematic analysis finds that participants strongly valued realism in the visual representation of food, particularly when it mirrored real-life shape, colour, and behaviour. For instance, some participants preferred *Cooking Mama: Let's Cook!* due to its relatively realistic style, while others noted that food in *Korean Cooking LessonsLessons* “actually looked like food” compared to other games that resembled “modelling clay”. This finding is a perfect connection to what Sepúlveda (2020) highlighted with his study—i.e., players have a tendency to prefer a visual style that strongly resembles reality (Sepúlveda, 2020, p. 30). Moreover, it strengthens the concept of visual persuasion being capable of evoking realism (De La Hera, 2019, p. 110).

However, while realism was often cited as a positive, other participants suggested that visual properties were not the sole factor influencing preference, and that gameplay could also enhance realism. In addition, many comments pointed to a disconnect between expectation and execution, which broke visual immersion. In multiple occasions the contribution of clarity, detail, colour, and variety to the perceived appeal of food was empathized by participants. For instance, some participants described *Cooking Mama: Let's Cook!*'s food textures as “pixelated,” while others associated immersion with higher visual resolution and richness in detail. These findings are partially connected to what Sevener (2003) discovered in relation to what type of aspects can

stimulate the level of pleasure experienced by the users. In fact, he indicated that visual aspects of a product can indeed stimulate how pleasurable a product feel (Sevener, 2003, p. 150).

Colour played a role as well, defined by some as “brighter” or more “lively”. Although responses showed subjectivity, extreme colour values were generally viewed negatively. Variety in visuals was also appreciated, though often blurred with gameplay diversity. Overall, the findings suggest that a balanced combination of realism, clarity, and visual nuance enhances engagement.

4.1.1 Faithful to real-life: why food should look real

A fairly good portion of the overall participants—17 out of 23—demonstrated a strong interest towards the interconnection between realism and in-game food representations, as previously discovered by Sepúlveda (2020, p. 30). In fact, the very first concrete sub-theme that was identified is strictly related to in-game realism. What was meant by the participants with the word *realism* was how much in-game representations were depicted with a visual style that resembled as closely as possible how the same type of food can be *seen* in real life in terms of shape, colour, and dynamics. For instance, during the first focus group, Chloé—a 20 years old woman for Greece who preferred *Cooking Mama: Let’s Cook!* over the other two games—affirmed: “I think I liked *Cooking Mama* the most because it felt a little bit more realistic compared to the others and the graphics and everything”, which is a detail that was promptly confirmed by other group members when addressing visuals related to *Cooking Mama: Let’s Cook!* (see Figure 4.1).



Figure 4.1. Collage of screenshots from *Cooking Mama: Let’s Cook* depicting ingredients and food preparation.

During the second focus group this topic was raised as well, with Antonio—a 22 years old male from Italy—affirming that “the food in [*Korean Cooking Lessons*] actually looked like food. The

rest, in my opinion, looked like modelling clay. It didn't really draw me in.", which was confirmed by Paolo when discussing how food is represented in *Korean Cooking Lessons* (see Figure 4.2).



Figure 4.2. Dishes presented and prepared within *Korean Cooking Lessons*.

The other groups had more than similar responses. Nonetheless, while Roberto—a 22 years old male from Italy, who participated in the third group—did mention that he preferred *Cooking Mama: Let's Cook!* because, amongst other reasons: “between the three of them [*Cooking Mama: Let's Cook!*] was the one a little bit more realistic and it was fun to play.”, when asked whether he thought that realism influenced his game preference, he responded “Not really, but it adds up.”, suggesting that, although realism does play a part in the overall food-centered game experience, it may not be the main enhancer of the experience itself.

These responses, and those of many other participants, underlined the importance of realism when it comes to cooking-related content, at least when it comes to digital games. Many of them, in fact, mentioned that realism did play a part in their overall game experience, as it was frequently—and explicitly—mentioned that realism was part of the reason why a game was preferred over the others by at least 14 participants. It can be therefore implied that, when designing the visual properties of in-game food representations, realism is a characteristic that should be integrated and valued.

However, an important detail should be noted. While discussing realism, some participants—around 9 out of the 23—specified that the feeling was primarily connected to the gameplay rather than the visual style. For instance, during the first focus group, while talking about *Cooking Mama: Let's Cook!* Marta—a 23 years old from Italy—mentioned:

“I think maybe for me it was more realistic because we had more options to choose in what cooking, let's say recipees. But [...] I don't think it's the most realistic

portray of food. [...] I think it was the most realistic because of the variety of things you could do.”

Moreover, as mentioned before, Roberto highlighted this concern as well when saying that realism “adds up” to the overall experience, with other participants affirming that realism was felt more in relation to the gameplay rather than the visuals, adding more depth to the interpretation of Roberto’s response. Nonetheless, even though gameplay might have played the primary role in simulating reality, these responses do deepen the understanding of the interconnection between visuals and user experience. In fact, while it is true that realism remains an important characteristic, it seems that there is no perceived protagonist when it comes to influencing game enjoyment. Thus, it can be implied that a correct balance between the design elements would be preferred over a full focus on realism/fiction.

Adding to that, two connected concepts were found when discussing visuals and realism: expectations and faithfulness. Many participants—around 9 out of the 23—talked about how the texture of the food or the visual effects related to it were neither matching what they expected nor faithfully representing real food. In fact, during the fourth focus group, Phoebe—a 23 years old woman from Athens—discussed how the grinded meat in *Cooking Mama: Let’s Cook!* looked unappealing (see Figure 4.3), mentioning that

“it’s a combination of how the meat didn’t really act real. [...] when [the meat] comes out of the grinder, it still comes out in a cylinder shape and usually gravity, right? So because that didn’t happen, I felt kind of awkward about it.”



Figure 4.3. Mincing meat in *Cooking Mama: Let's Cook!*.

While, at a first glance, Phoebe's sentence might look like it refers to game mechanics due to her mentioning the food not *acting* real, the sentence itself is indeed related to visuals. In fact, in that specific section of *Cooking Mama: Let's Cook!*, the only action asked by the player is to operate the grinder. Thus, what that action produces (i.e., the grinded meat) and how it behaves and looks does not depend on how the player interacted with the grinder. Thus, the unappealing cylinder-shaped meat and its lack of a realistic gravity-influenced behaviour depends exclusively on how the visuals of the game and the animation were designed.

4.1.2 Clarity, details, colours and variety on visual style

Realism was frequently mentioned by participants alongside other recurring elements: clarity of the models, detail level, colours, and visual variety. While they do seem to lack a common thread, all four elements seem to be highly interconnected by a necessary collaboration in order to craft a satisfying and enjoyable visual style.

During the first focus group—and during the following groups as well—the concept of clarity of *Cooking Mama: Let's Cook!*'s textures was raised.

While *Sushi Roll 3D* was described as depicting food in a “smooth”—although unrealistic—way (see Figure 4.4), and *Korean Cooking Lessons* was discussed as portraying food in a simple—yet comprehensible—manner, *Cooking Mama: Let's Cook!* was not only described as overwhelming and overstimulating, but it was also mentioned as using low-quality textures that were missing in details and clarity.



Figure 4.4. Final phase of food preparation in *Sushi Roll 3D*.

For instance, in the second focus group Laura—a 21 years old woman from Italy—mentioned that “visually speaking, *Cooking Mama* was definitely overloaded with pop-ups and tried to make the food look realistic, but it came out pixelated.”

While other participant did mention, although not with this level of explicitness, the low quality of *Cooking Mama: Let's Cook!*'s textures (see Figure 4.5), Laura's response perfectly highlights what the lack of clarity and details translates into: a pixelated texture that makes it hard to discern what is being looked at. Indeed, when observed even for a brief period of time, the depictions of food in *Cooking Mama: Let's Cook!* do seem to lack clarity, which is something that was perceived as having a negative impact on participants' game experience. However, the issue did not seem to stop at the texture quality alone.



Figure 4.5. Hamburger dish in *Cooking Mama: Let's Cook!*.

In fact, many participants—around 11 out of 23—mentioned that the detail level had an impact on their game experience as well. For instance, during the third focus group Khaled—a 25 years old man from the Middle East—mentioned that “*Cooking Mama* was a bit not HD. However, *Sushi Roll* had high definition in comparison. So you can actually get immersed.” In addition, when asked if he was referring to the interconnection between immersion and the detail level, he nodded, answering affirmatively to the question and commenting that “There's more details in *Sushi Roll* when there's a lack of details in [*Cooking Mama: Let's Cook!*].”

During the fourth group session, George—a 24 years old man from Australia—mentioned a similar concept while affirming “I know that the games to get me are not built to have the Ghibly-level kind of food scene.” referring to the high quality and detail level of Ghibly animated films. Therefore, it is possible to highlight that the participants find the amount of details very important when the games' content concerns food, as their absence would most likely hinder their experience.

Colours found a similar level of influence. Their intensity, in particular, seemed to make food itself look appealing for some participants. For example, Irina commented: “I think [*Sushi Roll 3D*] is just brighter, so it just feels more lively. [...] since it was so bright and colourful, it just

looked like [the food] would taste quite nice.”. However, hers was not the only comment concerning colours, as Antonio mentioned the influence of colours on evoking appeal when discussing *Korean Cooking Lessons*: “The lettuce [...], looked like it had been sitting out for a couple of days, but out of all the options, that was the one I felt the least bad about.”, hinting at how the colour of the lettuce in *Korean Cooking Lessons* (see Figure 4.6) made the food itself look quite unappetizing.



Figure 4.6. Cutting lettuce in *Korean Cooking Lessons*.

However, it is also possible to see how his and Irina’s answer underline a problem when talking about colours specifically: subjectivity. In fact, it seems that, when discussing visuals, not all responses were on equal ground. Nonetheless, one characteristic seems to be certain: both extremes (i.e., extra colourful and super dull) are less likely to evoke positive responses. Contrarily, it is more likely for one of said extremities to evoke negative feelings. Therefore, it seems quite logical to maintain a balance between the two rather than moving to one or the other.

Still, one feature has been commented positively by everyone: variety. Although many participants—around 9 out of 23—were primarily referring to gameplay variety, many others were also discussing it when referring to visuals. One participant summarized perfectly this concept. When talking about the influence of visuals on appeal, Arthur—a 25 years old man from the United Kingdom—mentioned “I think *Cooking Mama*, the food out of all of them, looks like the nicest. Maybe it’s the most varied with different recipes.” which underlines the possible importance of variety. However, he affirmed immediately after that “I felt like it was more like the gameplay and thinking about one that I would actually play rather than which one makes me the hungriest.”, affirming, therefore, that it is very likely that variety does play a part in the game experience, but it is mainly perceived in terms of gameplay rather than visuals.

Yet, as mentioned at the start of the sub-section, it is fairly evident that a balance between these characteristics must be found in order to evoke a positive game experience, as it has been

discovered that visual aspects of the content could indeed stimulate players' perceived enjoyment of the game—similarly to what Sevener (2003) highlighted in his study (Sevener, 2003, p. 150).

4.2 *Enjoyment through hearing: realism, congruence, and variety*

The thematic analysis revealed that, much like visuals, auditory realism contributes significantly to game enjoyability. Participants frequently linked positive experiences to food-related sounds that mirrored real-life cooking noises. Sounds that were perceived as more “textured” or congruent with expected actions, especially in *Korean Cooking Lessons* and *Cooking Mama: Let's Cook!*, were generally favoured over those in *Sushi Roll 3D*, which was often described as unrealistic or off-putting. However, many participants—around 12 out of 23—appreciated *Sushi Roll 3D*'s audio for its soothing ASMR qualities, despite its lack of realism. This contrast highlights that while stylistic choices may enhance relaxation, a lack of congruence between action and sound can disrupt immersion—especially in food-centered gameplay. This finding contributes to what Zlobin (2024) found about how the lack of a sound that is anticipated by players' is still felt as a sound that hinders immersion (Zlobin, 2024, para. 11).

Excessive and unnecessary sound effects in *Cooking Mama: Let's Cook!* were frequently criticised for overwhelming the experience, even though a few participants found them engaging. Overall, participants seemed to favour a well-balanced auditory design that blends stylisation with believable food sounds.

Variety also emerged as a critical aspect of auditory appeal. Repetitive audio effects—particularly in *Cooking Mama: Let's Cook!*—were widely noted and often described as diminishing realism. Although other games shared similar limitations, participants consistently expressed a desire for greater variation in food-related soundscapes. Additionally, background music was a polarising element, as some participants appreciated its calming presence, while others preferred silence. This split highlights the importance of customizable audio settings—further highlighting the notion of personalization enhancing playability (Usability-first, 2009). The ability to independently mute music and effects was framed as essential for user enjoyment, reinforcing that flexibility and player control are integral to designing accessible and satisfying game audio.

4.2.1 *Hearing food: the importance of congruence and realism*

Similarly to what has been found in regard to visuals, realism plays a part also on the auditory side. Specifically, there is an interconnection between game enjoyability and sounds that demonstrate a connection with real-life cooking noises. During the second focus group, both

Paolo—a 19 years old Italian man—and Antonio mentioned realism in connection with audio. The first, right after harshly criticizing the audio effect from *Sushi Roll 3D*, affirmed that “With the Korean Cooking game [...] you could hear [...] something that gave a sense of texture. Not perfectly realistic, but more believable than anything else.”. The same concept was mentioned and confirmed by Paolo, who mentioned that “At least in the Korean Cooking game and Cooking Mama, the sounds [...] were somewhat aligned with what you were seeing on screen. Similar to what you’d hear in real life.” addressing how the inclusion of semi-realistic audio that is congruent with real-life cooking sounds did have a positive impact on his evaluation.

Still, this mismatch did not impact everyone. In fact, during the fourth focus group, Radina—a 19 years old woman from Eastern Europe—commented *Sushi Roll 3D*’s audio by affirming “It had nothing to do with the way any of these actions sound in real life. But then again, I don’t mind it.”. However, she followed that comment with “*Korean Cooking Lessons* had kind of like the best of both worlds [referring to both *Sushi Roll 3D* and *Cooking Mama: Let’s Cook!*], nice design and feasible enough.”, underlining once more that, even though this topic is still deeply rooted in subjectiveness, it is still possible that a good balance between a “real” and “fake” audio design would be the safest approach for a game designer. However, it is still not completely clear what the perfect balance is, as while Radina mentioned *Korean Cooking Lessons* as having the best balance, during the same session the same compliment was made to *Cooking Mama: Let’s Cook!* by Arthur. Still, the majority of the participants agreed on criticizing *Cooking Mama: Let’s Cook!* for its overwhelming audio, born from an excessive use of unnecessary sound effects (e.g., music, ticking clock, “sparkle-like” sounds) which, although appreciated by Matteo, were considered annoying by most participants. Thus, it is probable that *Korean Cooking Lessons* does indeed show a better balance compared to *Cooking Mama: Let’s Cook!*.

Last, there is one interesting detail regarding realism, which it is strictly related to *Sushi Roll 3D*. In fact, it was demonstrated in many instances that its audio was widely criticized for being unrealistic. However, many participants did commend it for being “soothing” or “satisfying”, characteristics that are most likely linked to the game’s ASMR nature. Thus, while being complimented for the overall audio style, the food-related sound effects were criticized for their lack of realism. This detail might spark some confusion due to the conflicting comments. However, it highlights once more the perceived importance of accompanying in-game food with realistic depictions, both in terms of audio and visuals.

4.2.2 Variety and background music, two sides of the enjoyability coin

Since realism seems to be such an important detail, it might be intuitive that variety plays a strong part as well. However, since one does not necessarily lead to the other, it is best to explicitly mention this characteristic.

In fact, while *Cooking Mama: Let's Cook!* was criticized in many instances for its overwhelming audio, it was also criticized by almost everyone for the repetitiveness of the audio effects, which were not aligned with the game's visual variety. For instance, Antonio criticized the game because he felt that "It doesn't matter what you're mixing, whether it's tuna or eggs, it always sounds the same, which is a bit creepy." Irina experience a similar feeling, reporting that "[*Cooking Mama: Let's Cook!*] was really repetitive."

However, the other games were also criticized for their repetitiveness. For instance, Arthur mentioned "I didn't notice [*Cooking Mama: Let's Cook!*] reusing sounds as much as I did in the other games." highlighting that, although he did recognize *Cooking Mama: Let's Cook!*'s repetitiveness, he did feel like the other two games were more repetitive.

In general, every session demonstrated that variety is valued not only on the visual side, but on the auditory side as well. This underlines the importance of being able to accompany realism with variety—two characteristics that seem to go hand in hand in multiple occasions. However, it seems that one other detail was found important for many participants: music.

In fact, many participants deemed suitable to mention music when discussing the audio design of the games. Although not strictly connected to food, it cannot be argued that music does play an important role in the overall game experience, which is why it is briefly being mentioned in this segment. Some speakers mentioned that they preferred not having background music activated, like Phoebe who said that she valued *Sushi Roll 3D* higher than the other in terms of audio because "[*Sushi Roll 3D*] didn't have actually background music in comparison to the other ones.", while others mentioned that they prefer having some sort of background music while playing, like Josh who mentioned that "these mobile games are to be relaxing [...] So if you have bits of music in there, it will ease out your mind a little bit."

This discrepancy underline one specific feature that seems to be essential to enhance the game experience: the possibility to mute the game audio and music *separately*. In fact, many participants mentioned that they preferred playing the games with both audio and music turned off, while others preferred to mute just one of the two. This highlights that the focus, especially when creating features that may have a direct impact on the user experience, should be designed with the player's freedom of choice in mind. Therefore, adjusting the game's volume, although it may sound obvious, is an essential feature that a game should include in order to improve the game's enjoyability.

4.3 Symbolism and in-game food perspective: cultures and memories

The thematic analysis indicates that symbolic associations with in-game food were most commonly rooted in cultural references and personal memories. When prompted about symbolism, participants frequently interpreted visual elements through the lens of cultural familiarity. Dishes resembling rice bowls, kimchi, or sashimi (see Figure 4.2) led many to connect the games—particularly *Korean Cooking Lessons*—with Asian cuisine, while others noted links to Mediterranean traditions through ingredients such as garlic or cooking gestures like kneading meat.

Although a variety of cultures were acknowledged, participants often appeared uncertain or hesitant when trying to assign deeper symbolic meaning, suggesting that food representations in these games were not deliberately designed to evoke symbolic reflection.

In contrast, personal connections—particularly those tied to nostalgia and memory—emerged more vividly. Participants described how certain visuals, sounds, or actions triggered recollections of family routines, childhood experiences, or past jobs. Games like *Cooking Mama: Let's Cook!* were often associated with early gaming memories, leading some to describe a nostalgic attachment that heightened enjoyment, even if the specific cause was unclear. Moreover, personal reactions extended to cravings or emotional responses based on prior knowledge or imagined tastes.

However, these symbolic connections remained largely weak and individualised, rarely touching on broader ideological or religious symbolism—even among participants with distinct dietary values. As such, the influence of symbolic representation on overall game experience appears limited, and—unless purposefully and clearly embedded within the game's design—symbolism is unlikely to elicit strong or consistent interpretive responses from players. This can be partially connected to the fact that the sampled games do not seem to be purposefully leveraging symbolism. In fact, as highlighted by Grönlund and Kalami (2013), symbols may be overlooked during game design (Grönlund and Kalami, 2013, p. 9) and, therefore, have a very low chance of being perceived by players.

4.3.1 Dishes and ingredients on evoking cultural associations

When prompted about symbolism, most of the participants—20 out of 23—found that the main concept they found relatable was culture. In fact, by looking at food depictions, the majority of the speakers mentioned to feel a somewhat strong connection to Asian cuisine. For instance, Laura commented

“from my point of view, they’re nearly all Asian dishes.” George confirmed it as well by affirming “That is a rice bowl there, and the topping is, it does look sort of like noodley, but it’s not noodle, it’s rice, you know? So that is a cultural significance on it.” hinting at how rice and noodles reminded him of Asian cuisine. The majority of the participants seem to share this sensation when looking at the image presented during the focus group (see Figure 4.7).



Figure 4.7. Collage that includes various dishes from all three games. From the left: *Cooking Mama: Let’s Cook!*, *Korean Cooking Lessons*, and *Sushi Roll 3D*. The image was utilised during the focus group (see Appendix B).

In general, many answers were connected to Japanese, Chinese, or Korean cuisine—or Asian cuisine in general. However, other participants found a correlation with Mediterranean cuisine as well through specific ingredients. Marina, for example, mentioned that she found garlic to be evoking feelings related to her own culture (i.e., Italian). Similarly, Chloé mentioned that the action of kneading the meat with other ingredients made her think of Greece. Thus, many cultures were identified through complete dishes, singular ingredients, or cooking processes. However, as mentioned before, many, if not all, participants found associating food with symbolic meanings rather difficult. From an external perspective, when faced with the questions related to symbolism, it was somewhat clear that some participants were almost forcing themselves to pinpoint possible associations, which is why, in multiple occasions, the participants were reminded that not finding a symbolic connection was also a perfectly suitable response.

4.3.2 *In-game food on evoking personal connections and nostalgia*

When talking about “personal” connections, I primarily refer to either nostalgia or past memories. In fact, when prompted about symbolism, around 8 participants found it easier to relate in-game food with their personal background.

For instance, Marina—a 25 years old woman from Italy—found a personal connection with garlic (see Figure 4.8), highlighting that “garlic has always been something that [...] I’ve always had like growing up as well.”.



Figure 4.8. Peeling garlic in *Korean Cooking Lessons*.

Similarly, Josh expressed the same type of response in regard to bibimbap—a Korean dish (see Figure 4.9)—by commenting that “it just brings back personal memories. [...] what my dad, my mom used to do was just to put everything [...] in a bowl. [...] this does bring back those memories.”.



Figure 4.9. Bibimbap in *Korean Cooking Lessons*.

To certain extent, therefore, many of the participants that did find a symbolic connection with food—around 21 out of 23—found one in the form of personal meanings and/or feelings. In fact, according to what was reported by some participants, when memories about their past was elicited thanks to in-game food—or thanks to the game itself—they were often accompanied by a sense of nostalgia. For instance, Dara—a 22 years old woman from Asia—affirmed: “I kind of like

the aesthetic of *Cooking Mama* because I think it has to do with nostalgia.” and other participants mentioned such a connection as well.

However, it was difficult to pinpoint the specific feature that did evoke such a feeling. In fact, while some referenced aesthetics—like Dara—others were referring to the game itself, or even the specific game mechanics. Therefore, it still cannot be explained in a clear way *how* such feelings can be evoked through game design, as the subjectiveness of such an event is extremely difficult to measure and generalize.

Moreover, not every response was about having *directly* experienced something. In fact, a small number of participants—around 4 out of 23—mentioned that they remember that the game itself made them feel like craving certain types of food in the past. Irina, for instance, expressed this concept by affirming “I’ve never actually tried this food before [referring to *Cooking Mama: Let’s Cook!*], but I have all these memories of me playing this game and really wanting to try it.”

Others connected the food with their past work experience, such as Anna, a 20 years old Italian woman who mentioned that “before doing my erasmus, I used to work in a sushi restaurant. So sashimi was always under my nose. So that’s just a core memory of what I used to do before leaving my country.”. Some other participants also found a connection with their personal knowledge about certain recipes. Phoebe was one of them: “it also creates some kind of like, almost like fake anger. I’m like, why are you doing that? Why didn’t you add this.”.

Therefore, it can be said that, on a generic level, many “weak” symbolic connections were found, but none of them were in regard to strong religious or ideologic concepts, even though a few participants were active vegans and vegetarians. It can be implied, therefore, that games that do not integrate explicit symbolic meanings to their in-game food representations will unlikely evoke symbolic meanings in their audience. Moreover, even if they did evoke such feelings, their (perceived) influence on the game experience will probably be close to zero.

4.4 *Food-centered game mechanics: realism, repetitiveness, and responsiveness*

The thematic analysis shows that, as with visuals and audio, tactile realism significantly shapes players’ enjoyment in food-centered games. Participants consistently expressed a preference for mechanics that mimicked real-life cooking actions, with games like *Cooking Mama: Let’s Cook!* praised for making users “feel like [they’re] doing something”. This creates a strong connection to the cause-and-effect relationship mentioned by Crawford (200, p. 10), since players had a positive influence from the feeling of their action having an effect within the game.

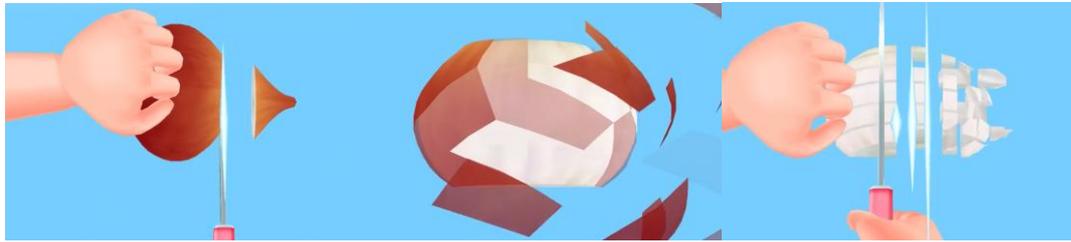
Conversely, mechanics in *Sushi Roll 3D* were frequently criticised as unrealistic and disconnected from real-life gestures, leading to frustration and disengagement, implying how direct interaction with in-game elements food can have an effect on a psychological level—as indicated by Peck and Shu (2009, p. 444). Moreover, interaction depth played a crucial role: games offering a wider variety of cooking steps or task types were perceived as more entertaining and realistic. This was particularly evident when comparing repetitive tapping actions in *Sushi Roll 3D* with the step-based tasks in *Cooking Mama: Let's Cook!*, which participants described as more dynamic and engaging. Repetitiveness was frequently positioned in direct opposition to realism and enjoyment, with several comments indicating that low task variety diminished immersion and reduced long-term interest in the game. This can be considered as building De La Hera's idea of players' mental performance as being capable of creating new signs (De La Hera, 2019, p. 116). In fact, games' repetitiveness could be seen as something that strongly limits the creation of “new signs”, thus rendering the gameplay predictable and, therefore, boring. This, albeit with some limitations, can be considered as building on the idea that usability can predict user experience (Al-Shamaileh and Sutcliffe, 2023, p. 1).

Beyond realism and variety, participants highlighted responsiveness as a further dimension of tactile experience. Input delays or misaligned movements were repeatedly linked to irritation and a lack of user-friendliness. Participants noted that poorly timed feedback—such as in *Sushi Roll 3D* or *Korean Cooking Lessons*—negatively impacted playability, reinforcing the idea that tactile elements are essential for sustained engagement. However, as in previous sections, the data suggests that balance is key. While realism, variety, and responsiveness can enhance gameplay, their effectiveness ultimately depends on the careful calibration of all elements rather than isolated optimisation, otherwise playability would greatly suffer the consequences of the imbalance (Padilla-Zea et al., 2012, p. 1034).

4.4.1 *Realism and repetitiveness of food-centered interactions*

Similarly to the discussions born from both visuals and auditory properties, those rooted in tactile properties also demonstrated a strong interest towards realism. Moreover, as briefly mentioned in the SubSection dedicated to visual realism, it seems that game mechanics are also a very important area in which realism is highly valued. In fact, during the first focus group Marta clearly mentioned this importance by affirming “The process of *Cooking Mama* is of course the best one because it's the most real one.” (see Figures 4.10, 4.11, 4.12), which was further confirmed by Josh—a 19 years old Asian man—who said

“The association with the real cooking action is what I really appreciate about these [games].”.



Figures 4.10, 4.11, 4.12. Different phases of preparing onions in *Cooking Mama: Let's Cook!*.

The opposite (i.e., annoyance from lack of realism) was reported as well, by participants such as Roberto: “I really hated the rolling sushi [...] Definitely not realistic. [...] I really, really, that annoyed me quite a bit. Yeah.”, and Irina—a 24 years old woman from Eastern Europe—who added “that’s why I didn’t like [*Sushi Roll 3D*] as much [...]. Like everything you did in that game was not what you do in real life at all.” after reviewing a video clip of *Sushi Roll 3D*’s gameplay (see Figure 4.13). Thus, it can be argued that realism is still perceived as playing an important role in influencing players’ game experience, at least when food is strongly involved in the gameplay.



Figure 4.13. Preparing sushi in *Sushi Roll 3D*.

However, it seemed that realism did not surface from how the mechanic itself requires the player to interact with the food, but it also comes from the amount of cooking actions. In fact, in many instances the participants mentioned the appreciation they felt towards the variety of cooking-

realated actions offered by *Cooking Mama: Let's Cook!*. For example, Elias—a 25 years old German man—praised the game by commenting that

“That made it more entertaining in the end. [...] because there were some other tasks you can do, some other moves that you can do. And with the sushi one or the other one, it was just the tapping stuff. And it was very boring after time.”

Anastasia—a 22 years old woman from Greece—did the same by affirming “I also like the variety, because I actually felt like you were doing different stuff.”. The same type of responses were shared during the third and fourth focus groups as well.

Still, *variety* was not ment only in terms of amount of broader tasks to do. In fact, some participants—around 9—expressed their appreciation of game variety in regard to the number of steps included in the individual recipe rather than the diversity of generic missions. Irina, for instance, complimented *Cooking Mama: Let's Cook!* because

“since there was no sound this time [the participants were shown interaction-focused clips without audio], a lot of things stood out more. [...] I felt like for Cooking Mama, there were so many more steps and so much more movement”.

This might be highly related to repetitiveness. In many instances participants discussed variety as opposed to repetitiveness, highlighting the first as a positive characteristic and the latter as a negative one. Specifically, they described variety as enhancing engagement, and repetitiveness as hindering game enjoyment and engagement. For instance, Matteo—a 23 years old Italian man—affirmed “in Sushi Roll, nothing really made me want to keep playing. After the first minute, it was all the same.”, while Irina affirmed “for Cooking Mama there were so many more steps [...] so it felt much more engaging.” Nevertheless, hindering engagement was not the only downside mentioned by participants. During the second focus group, for instance, Laura mentioned “I found Cooking Mama more engaging in terms of mechanics too. [...] you had multiple steps, which made it slightly more realistic.”, hinting at how repetitiveness influenced their perception of realism while playing the games.

Considering what has been reported in multiple occasions in connection to realism, repetitiveness shows itself as a strong negative trait of food-centered games (or even digital games in general). As such, it seems that designing games in a way that makes it possible to include as much variety as

possible—both in terms of tasks and interactive instances—would lead to a positive game experience.

4.4.2 *Responsive vs unresponsive game mechanics: timing on enjoyment*

However, variety and realism were not the only characteristics to be perceived as having an impact on participants' game experience. As a matter of fact, participants were addressing game mechanics as what they actually are: interaction-focused features made to enhance playability. As such, they considered game mechanics as a great player in game enjoyment in many instances, and when discussing which specific characteristic of the gameplay were perceived as positive, a few group members found themselves mentioning how the responsiveness of the device (i.e., the time delay from when a button in real life is pressed and an in-game action starts) or in-game commands evoked annoyance and a sense of distress. For instance, Matteo, when talking about *Sushi Roll 3D*'s gameplay, stated that “it didn't respond properly to my commands. [...] That annoyed me”.

Elena—a 20 years old Greek woman—made a similar remark in regard to *Korean Cooking Lessons*, by affirming “sometimes you couldn't even synchronize your movement with a carrot. It was not user-friendly at all.”. These quotes underline the relevance of how responsive game mechanics are, and how their presence/absence has an important impact on the enjoyment of a game. However, as stated in multiple occasions throughout this Chapter, it seems that responsiveness alone does not suffice for the development of a suitable gameplay. In fact, just like in the cases of visual and auditory properties, what must be followed by the game designer is balance rather than perfection. As it is not possible to satisfy each subjective viewpoint simultaneously, the final goal, when developing a game, should be knowing what is the right amount for each ingredient included in the game development process.

5. Conclusion

The results of this study have shown that players' perceive in-game food representations as an element that can have a big influence on their game experience. The focus groups' participants, as a matter of fact, outlined in multiple occasions that the way in-game food representations were designed drastically shifted their approach to the games, as well as whether they felt enjoyment, frustration, or even hunger. Building on these remarks—and on many others—this research discovered that (some) players value in-game food representations as more than mere content, but also as a strong way for food-centered games to propose an engaging experience. Thus, to give a clear answer to the research question, it can be said that players perceive in-game food representations as an element with a multitude of characteristics that directly influence their game experience. In this instance, thanks to the framework adopted by the researcher, said characteristics fall under the four categories of *visual* properties, *auditory* properties, *haptic* properties, and *symbolic* properties, and were highlighted by the four themes identified through the data analysis.

The first theme revealed that visual elements such as colour intensity, realism, and visual quality were perceived as impactful on the player's engagement, as participants frequently associated appealing visuals with higher levels of immersion and satisfaction. However, while a preference for realism was observed, it was not uniformly positive. For some participants, unrealistic representations of foods triggered more positive reactions than realistic representations, indicating that realism alone does not guarantee a positive user experience.

The second theme demonstrated that sound played a significant—but context-dependent role—in shaping the gaming experience. Sounds that were subtle, congruent with the gameplay, or enhanced immersion were generally appreciated. In contrast, repetitive or poorly integrated sounds were seen as intrusive, often distracting players from the gameplay and lowering their enjoyment. While audio effects were rarely discussed in depth unless prompted, it became evident that their presence—or lack of—was perceived as relevant for the game experience.

In relation to the third theme, participants' responses to tactile impressions were shaped largely by perceived interactivity and the “physical-like” cues provided by the game. Although these tactile responses were simulated rather than real, many players described that on-screen actions, such as stirring or chopping, were capable of stimulating a feeling of interaction with in-game food. These impressions were amplified when the game provided feedback that mirrored physical movement or cooking actions. Games that lacked this feedback were often described as less satisfying, suggesting that even simulated tactile engagement can be of high importance for players.

The final theme concerned the symbolic meanings attributed to food. This dimension appeared less consciously processed and was characterised by personal, emotional, and cultural associations. While a few participants articulated clear symbolic interpretations without prompting, several others needed a clear external stimulation to provide clear symbolic connections. In general, however, said connections described how food reminded participants of family meals, personal traditions, or cultural identities. These associations often emerged as brief impressions rather than deliberate reflections, which could indicate that symbolic meaning is present but not always consciously acknowledged. Moreover, many participants expressed uncertainty or discomfort when asked to analyse symbolic content, suggesting that game design does not typically encourage reflection on deeper meanings.

5.1. Theoretical implications

This study's exploration of in-game food representations provides new insights into how game features intersect with food-related experiences. As shown in the *Theoretical Framework* chapter, the vast majority of previous research has examined food in media and persuasive gaming separately. This thesis bridges that gap by focusing on the convergence of the two.

Findings suggest that players do not perceive food items in digital games as just aesthetic or narrative devices, but also as active components in shaping their engagement, adding players' direct feedback on what Crutzen et al. (2016) found in their study (Crutzen et al., 2016, p. 17). In particular, the multisensory nature of food design—its visual, auditory, and interactive dimensions—contributes meaningfully to perceived player enjoyment and emotional response. This finding fits the framework previously identified in relation to games' persuasive dimensions highlighted by De La Hera (2019, p. 104), indicating that said framework can indeed present a suitable starting point for understanding how to reach an effective persuasive design. However, symbolic potential remains underutilised, offering space for future studies to explore food as a tool for cultural or behavioural messaging.

In fact, the results demonstrate that games are more than passive channels: they are interactive, multisensory environments where even minor elements like food can become relevant for the player in terms of both message-delivery and game enjoyment. These results strengthen not only the concept of games as a active communication channels (Asit et al., 2013, p.8; Haglund, 2011, p. 18), but also the idea that specific game features can be linked to users' game experience (Crutzen et al., 2016, p. 17; Caroux et al., 2015, p. 34). Therefore, by discovering that specific

elements (i.e., in-game food representation) are perceived by players as having an impact on their experience, this study has deepened the notion of games as a persuasive mean.

Considering what responses have been collected through the focus groups, this research shows that food in games is not just about playing—it can be about memory, emotion, and even culture. As such, since these psychological effects can contribute greatly to player engagement (Shneiderman, 2004, p. 50; Team EMB, 2024, para. 34), it can be implied that food can indeed be capable of becoming a mean to enhance the experience of games' playerbase.

As digital games continue to evolve, understanding how in-game elements shape human perception might be becoming increasingly relevant as well. In-game food, though overlooked, represents one of the many design elements that have the potential to enhance engagement and foster meaningful experiences, and this research provides a significant step toward illuminating said potential.

5.2 Social implications

The results of this study highlight a range of social implications concerning the relationship between food, gaming, and user engagement. In an era marked by increased attention to food-related issues—ranging from sustainability and health to cultural identity—the role of digital environments in shaping perceptions and behaviours surrounding food deserves further recognition. This study suggests that in-game food representations, while not always thoughtfully designed, can influence emotional responses, trigger cravings, and evoke memories or cultural connections. These findings point to a broader potential for digital games to participate in shaping public opinion around food.

Specifically, this research explores how a correct communication between young adulthood and food-centred games could provide a path towards the adoption of healthy eating habits. As previous studies discussed, individuals aged 18-25 do present a high risk of developing unhealthy consumption habits, and considering the high level engagement with gaming demonstrated by that age group, integrating intentional and thoughtfully designed food elements in games may offer an accessible and low-barrier channel for the promotion of healthier behaviours. However, as those outcomes were not directly measured in this thesis, it is still not possible to correctly assess the extent to which food-centered games can modify eating habits.

Moreover, the findings raise questions concerning the concept of “representational responsibility”. As more than a few participants highlighted that food was often depicted without

paying attention to the cultural dissonance or their educational potential, it is possible to consider thoughtful food design a contributor to greater cultural—and behavioural—sensitivity.

5.3 *Limitations and suggestions for future research*

Obvious limitations of this study include the modest size of the sample of games. In fact, including more than three games would have probably led to a higher diversity in responses, and, consequently, to a more in-depth answer to the research question. As such, addressing this limitation would require future scholars to increase the number of sampled games, while still ensuring that they maintain notable and explicit differences in in-game food design and/or food-related game mechanics.

Another limitation is the short exposure period, which may have constrained the depth of some reflections. In fact, while some participants may dislike the idea of playing games for a prolonged period of time, ensuring playing times that exceed the 30-minutes mark employed by this research would ensure better results. A second way to increase the exposure period would be asking participants to play the same games on multiple days could become a positive addition to the games' exposure period, which would still increase exposure to the games while ensuring that playing times are not perceived as excessive by participants.

In addition, the focus on cooking-centered games could also be intended as a limit. In fact, it might hinder the understanding of whether participants' responses refer solely to food within food-centered contexts or to in-game food in general. While it is true that qualitative studies are not meant to propose a generalizable result, it is also true that this limitation can indicate a direction for future research to follow. In fact, future research could expand upon this work by analysing how food is used in genres such as RPGs, adventure games, or survival titles, where its meaning and function may differ.

The lack of explicit symbolism in in-game food representations is also a limit to this research, especially if considering the framework adopted. As a matter of fact, focus group interactions outlined how only a few participants identified external associations spontaneously, which hindered the exploration of *symbolic* properties. To address this issue, future research could sample games that include explicit symbolism within their gameplay or their content in general. In addition, investigating long-term player interaction or cross-cultural variations could also enhance the comprehension of how symbolic and emotional associations with food evolve over time and help identifying the right games for the sampling procedure.

At last—although it is intrinsically connected to all qualitative approaches—a limit of this research is the lack of evidence to prove that the perceived influence of in-game food representations is a reality and not just a subjective sensation. In fact, researching only players' perception limits the exploration of the actual behavioural impact of in-game food representations. To address this limit, future research could adopt interdisciplinary collaborations with behavioural science or nutrition fields to explore—with a quantitative approach—the potential of using game-based food representations as tools for promoting sustainable and/or healthy consumption habits.

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Appendix A – Coding Tree

Themes	Sub-themes	Codes
Rendering life in a game: the visual layers of in-game food	Faithful to real-life: why food should look real	Appeal through pleasant visual style
		Expectations of gameplay-visuals connection
		Grossed-out from unreal sushi preparation
		Pixelation hinders realism
		Realistic details are preferred
		Visual style evoking feelings of looking at fake food
		Awkwardness from unrealism
		Unappealing meat presentation from unreal meat texture
		Weirdly-depicted gravity hinders appeal
		Unrealistic visuals hinder enjoyment
		Contradiction between colour and intended message of freshness
		Exaggerately-creative visual design hinders appeal
		Felt replicability from visual design
		Lack of proper animation stops craving sensations
	Realism with food seen as important in games	
	Unappeal can be born from unrealism	
	Unrealistic visuals are an obstacle to game enjoyment	
	Clarity, details, colours and variety in creating a satisfactory visual style	Attention to detail would be preferred
		Cartoony feel through simple visual style
		Chaotic game menu hinders game experience
Intrusive pop-ups hinder game experience		
Irritation from confused visual elements		
Low graphic quality leads to an easy identification of an unrealistic representation		
Messy visuals can be annoying		
Odd colours hinder appeal		

		Clarity of visual cues on game enjoyment
		Brightness on liveliness
		Effects of aesthetics matching game vibes
		High definition increases immersion
		Smoother animations on enjoyability
		Repetitiveness is annoying
		Variety creates appeal
Enjoyment through hearing: realism, congruence, and variety on auditory engagement	Hearing food: the importance of congruence and realism	Unrealistic game audio can hinder player experience and game enjoyability
		Immersion through realistic sound
		Preference of sounds congruent with reality
		Realistic sounds on improving game experience
		Audio-interaction harmony has a positive effect on game experience
		Audio-visual harmony has a positive effect on game experience
		Sound-induced realism is appreciated
		Authenticity of sound effects is appreciated
		Believability through sounds improves game experience
		Blocky sounds evoke awkwardness
		Plastic-like sounds are annoying
		Positive experience from realistic audio effects
		Sound-evoked detachment from realism hinders game experience
		Unexpected sounds can be off-putting
		Unsettling difference between real sounds and game audio
		Variety and background music, two sides of the enjoyability coin
	Overwhelming audio hinders enjoyability	

		<p>Repetitiveness hinders enjoyability</p> <p>Varied audio enhances game enjoyability</p> <p>Audio clarity has a positive effect on game experience</p> <p>Enjoyability through lack of audio</p> <p>Music-induced distraction hinders enjoyability</p> <p>Repetitive music has a negative effect on game experience</p> <p>Background music feels annoying</p> <p>Lack of audio variety hinders game experience</p> <p>Overwhelming music can be seen as better than bland or non-existent music</p> <p>Importance of subjectivity in sound preferences</p>
<p>In-game food from a symbolic perspective: personal symbolisms prevail over ideologies and religious connections</p>	<p>Dishes and ingredients on evoking cultural associations</p>	<p>Cooking styles have cultural implications</p>
		<p>Gameplay experience evokes a cultural connection</p>
		<p>Food is considered a cultural indicator</p>
		<p>Three games seen as a connection to Asian cuisine</p>
		<p>Cooking is seen as cultural appreciation and exploration</p>
		<p>Cooking games have cultural implications</p>
		<p>Cooking as an appreciation of cultural differences</p>
		<p>Cooking process seen as an inadequate representation of the cuisine</p>
		<p>Confusion from unfaithful changes of ingredients</p>
		<p>Food is a universal concept</p>
	<p>In-game food on evoking personal connections and nostalgic feelings</p>	<p>Gameplay experience evokes childhood memories</p>
		<p>Food is seen as a symbol of belonging</p>
		<p>The game evokes personal memories</p>
		<p>Cooking is considered as a core memory evoker</p>

		Cooking process reminds of family habits
		Cooking process reminds of the personal history
		Cooking game evokes feelings of comfort
		Soups evoke memories of warmth and coziness
		Limited engagement born from recalling the past
		Nostalgia evoked by cooking processes
<i>Food-centered game mechanics on engagement: realism, repetitiveness, and responsiveness</i>	Realism and repetitiveness of food-centered interactions on enjoying the game	Gameplay experience can be ruined by repetitiveness
		Authenticity is expected in simulators rather than mobile games
		Immersion through feasibility of the recipee
		Lack of depth has an impact on game enjoyment
		Simplicity of recipee shown through gameplay
		Variety of cooking process in games perceived as “technical” gameplay
		Complexity of the cooking process impacts game enjoyment
		Annoyance from lack of variety of usable elements
		Being in control of repetitions feels positive
		Diversity in interaction mechanics has a positive effect on game enjoyment
		Enjoyment evoked by recipee variety
		Expectations of cooking process vs gameplay
		Interaction loop feels negative
		Drawback of limited interactions
	Specificity in required actions can have a positive effect on engagement	
Responsive vs unresponsive game	A functioning and functional gameplay is essential for game experience	

	mechanics: the importance of timing on enjoyment	Annoyance caused by specific small and unresponsive mechanics
		Feeling an annoying lack of control when placing toppings
		Frequent disruptions hinder game enjoyment
		Frustration from unclear mechanics
		Lack of proper control is displeasing
		Lack of synchronization hinders user-friendliness
		Fatigue induced by interruptions and unresponsiveness
		Satisfaction from responsive gameplay
		Playing on a touchscreen feels frustrating
		Responsiveness of gameplay influences game experience

Appendix B – Moderator guide

The participants were informed about the meanings of the concepts this study was aiming to explore. Specifically, they were told the following informations:

- When asking the “how”, the question refers to every perception that you can recall about the in-game food representations.
- When we talk about your perceptions, we refer to the feelings, sensations, and thoughts you can recall about the food representations.
- When we talk about “food-centered games” we talk about video games that have food at the core of the game experience.

After the participants were informed about the research topics, each focus groups followed a specific step-by-step questioning process, which was structured the following way:

- *Icebreaker – Food-related activity*: a short Menti session was organized to understand what participants value the most when deciding which food to buy and consume. The group had 30 seconds to provide their answer through Menti. After the cronometer hit the 30 seconds mark, participants’ answer were utilized as the starting point for a short discussion (2-3 minutes) on what seemed to be food’s most influential element and why. The aims of this section were two: fostering an inclusive atmosphere in which every group member felt welcomed to share their opinion and be heard by everyone, and understanding the starting view of each participant in terms of which food-related element feels most relevant during food-related choices.
- *Transition Question* (40-60 seconds per person): each participant was asked what game they preferred the most, and to use said game as the main reference when providing their answers. This very short phase signaled the start of the core segment of the focus group sessions.
- *Key or Content Questions* (approximately 45-50 minutes): this set of open-ended questions had a focus on the real aim of the focus group (i.e., collecting data related to participants’ perception of in-game food representations). For each representation-related feature (i.e., visual, audio, symbol, interaction) 2 questions were posed after showing either short video clips or screenshots to compare the games. The questions were constructed with the aim of giving participants as much room as possible for a detailed explanation of their point of

view. The number of questions was decided in order to leave enough room for each participant to elaborate their answer, without feeling the pressure of time.

- *Debrief/Concluding Questions* (60-90 seconds): this set of questions was posed to acknowledge the discussion that took place while also returning to a general level of dialogue, departing from the possible intensity and intimacy of the focus group session. The aim was to exit the discussion safely, ensuring that every participant was feeling comfortable in processing the focus group session while unloading their feelings.

Questions

1. *Icebreaker – Food-related activity*

- 1.1. The participants are asked to participate in a short Menti session in which they are asked what are the main element (e.g., smell, taste, visual aspects, etc.) that influences their food choices. To answer the question, they have a maximum of 30 seconds.
- 1.2. The results of the Menti session will be noted down and used as a starting point for a short group discussion on food consumption (e.g., what participants consider important when preparing meals, buying food, etc.).

2. *Introductory/Transition questions*

- 2.1. Amongst the three games you played, which one do you consider your favourite?
- 2.2. During the focus group session, each participant is asked to answer the questions considering their preferred game as the main information source for their responses.

3. *Core/Content questions*

For each topic of the core segment (i.e., visuals, symbol, audio, interaction), screenshots and video clips of the games will be compared to help participants in recalling what they experienced when playing each game.

- 3.1. (Visual-centered) After showing screenshots that compare the visuals of each game (*Figure 2*), the participants are asked “how the visual depictions of in-game food

influenced the choice they made when selecting their preferred game”.



Figure 1

- 3.2.(Visual-centered) After showing short video clips that compare food-related visual effects employed by each game, participants are asked “which visual effect made in-game food appear more appealing to them”.
- 3.3.(Audio-centered) After showing short video clips that compare the audio effects used by each game, participants are asked “how the sounds associated with food (e.g., chopping, sizzling, cooking) have influenced their choice when selecting their preferred game”.
- 3.4.(Audio-centered) After showing short video clips that compare the audio effects used by each game, participants are asked “what food category included in their preferred game is perceived as the most appealing in terms of sound”
- 3.5.(Symbol-centered) After showing screenshots that compare visual food representations of each game (*Figure 2*), participants are asked “if certain types of food seemed to represent something more than just game elements (e.g., cultural, religious)”.
- 3.6.(Symbol-centered) Considering their answer, participants are asked “if the presence/lack of symbolism in the games had an influence in the attractiveness of in-game food and in their game preference”.
- 3.7.(Interaction-centered) After showing short video clips that compare the main game mechanics of each game, participants are asked “if said game mechanics had a positive or negative influence on their game experience, and if they influenced the choice they made when selecting their preferred game”.
- 3.8.(Interaction-centred) After they answer, participants are asked “if pace, task complexity, required cooking-related actions (e.g., quick swipes, clicking, etc.), dissimilarity of said

actions with reality, and playing time had a positive or negative influence on their engagement, and if said elements played a role when choosing their preferred game”

4. *Reflection/Debrief question*

4.1. What aspects of the food representations do you think were most important for your overall experience?

4.2. If you could redesign the food elements of the game, what would you change or improve?

Appendix C – Atlas.ti prompt

The thematic analysis is employed to answer the following research question: how do players perceive in-game food representations?

Codes should capture player perceptions organized under four main property categories:

1. AUDITORY PROPERTIES

Participant responses about:

- Sound effects when consuming food (chewing, gulping, sizzling)
- Background audio during food-related scenes (restaurant ambiance, kitchen sounds)
- Musical cues or themes associated with food moments
- Voice acting related to food dialogue
- Audio feedback for food-related actions

2. VISUAL PROPERTIES

Participant responses about:

- Food appearance, colors, textures, and visual design
- Animation quality of food items or eating actions
- User interface elements related to food (menus, inventory icons)
- Visual effects (steam, sparkles, glowing items)
- Art style and aesthetic choices for food representation
- Realism vs. stylization comments

3. SYMBOLIC PROPERTIES

Participant responses about:

- Cultural meanings and associations with specific foods
- Food as status symbols or achievement markers
- Narrative significance of food in storytelling
- Social and cultural contexts of food consumption

- Food representing character traits or world-building
- Metaphorical or symbolic interpretations

4. HAPTIC (GAME MECHANICS) PROPERTIES

Participant responses about:

- Gameplay mechanics involving food (crafting, cooking, eating)
- Control schemes and player interactions with food systems
- Feedback mechanisms (health restoration, buffs, debuffs)
- Difficulty and complexity of food-related tasks
- Integration of food mechanics with overall gameplay
- Player agency and choice in food-related decisions

Coding Guidelines

When Creating Codes:

1. Be specific but flexible - Create codes that are descriptive enough to be meaningful but broad enough to capture variations
2. Capture both positive and negative perceptions - Include codes for criticism, praise, and neutral observations