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## **Can You Pet the Dog?**

**Exploring the experiential impact of sociable animal interaction in games**

Faculty of Arts

Department of Game Design

Authors: Frida Björnfot & Sofia Rautiainen

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Supervisor: Jacob Bull

Examiner: Josephine Baird

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## **Abstract**

The feature to “pet” animals in digital games is highly requested by players in online discourse, but there is a lack of research on its utility from a game design perspective. This thesis aims to gain a preliminary understanding of the effects of optional, sociable animal interaction to further inform game design decisions. Using a qualitative mixed methods research design, the possible impacts of sociable virtual animal interactions on the player experience are investigated. Five game-literate participants were observed during gameplay, which included an interactable virtual dog, and interviewed in-depth on their subjective experiences. The findings suggest that the interaction can be moderately beneficial to the player experience, but that it was also found lacking. The feature can offer a break from goal-oriented gameplay and improve players’ sense of agency. It may enhance the emotional value if the player feels a connection to the virtual animal. More life-like behavior and greater gameplay value might enable this connection, thereby making the interaction more desirable and beneficial to the player experience.

**Keywords:** digital game, game design, human-animal interaction, player experience, virtual animals

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## **Can you pet the dog? Exploring the experiential impact of sociable animal interaction in games**

In recent years, online discourse has emerged from video game players requesting the option to “pet” animals in games (Lum, 2019; Wright, 2021). Web pages dedicated to listing games with sociable animal interaction have appeared and an increasing number of games are now offering this type of optional feature (Cooper, n.d.; Miller & Sanfilippo, 2023). This phenomenon implies that sociable interaction with virtual animals is desirable to players, which further motivated this research. Gaining more insight into the topic may help inform game design decisions—such as whether to spend resources on implementing it, and its potential effects on the experience—which could benefit players and developers alike. Therefore, this thesis aims to explore (RQ) *how sociable interaction with a virtual animal can impact the player experience*. The research is guided by the sub-questions of (SQ1) *how* and (SQ2) *why players engage with virtual animals in games*.

Existing research focuses on the psychological impacts of virtual human-animal interaction (Na et al., 2022; Norouzi et al., 2022; Tsai & Kaufman, 2009), virtual pet games (Lin et al., 2017, 2018), and the appearance of virtual animals (Schwind et al., 2018; Sierra Rativa et al., 2020). However, there is a lack of research from a game design perspective on the significance of games offering sociable human-animal interaction. Exploring this may therefore also benefit theorists in the fields of game design and human-animal interaction by combining the two. In the context of this thesis, player experience refers to the subjective experience of the player (Wiemeyer et al., 2016), which can be evaluated through metrics defined by Abeele et al. (2020). The experiential impact of sociable animal interaction is further contextualized by incorporating theory on human-animal interaction and game design. The feature is reflected on humans’ innate attraction to connect with animals (Herzog, 2010) and research on using virtual animals for human benefit. It is further evaluated through

meaningful play (Salen & Zimmerman, 2003), and by opposing goal-oriented play to spontaneous play (Caillois, 2001).

This thesis explores how and why players engage with animals in games and the experiential impact of their interactions through a qualitative mixed methods approach based on gameplay observation and in-depth interviews. The research is based on sociable animal interaction with a virtual dog in the game *House Flipper* (Frozen District, 2018). The five game-literate participants were recruited from Uppsala University's Department of Game Design using the online chat platform Discord. Consequently, their possible bias as game designers may have affected the results. The scope was restricted by the time limit of the degree project course, and therefore the intent was to gain a preliminary understanding of sociable human-animal interaction within game design.

To outline the structure, this thesis starts with the *Background* section to establish a theoretical framework. It offers an overview of publications related to our research, namely player experience, forms of play, virtual human-animal interaction, and animals in games. It is followed by *Methodology*, which describes how we applied a qualitative mixed methods research design in consideration of previous publications, as well as its limitations and ethical considerations. In *Results and discussion*, we present the findings from the methodology and analyze them in relation to the research questions. Finally, the *Conclusion* summarizes the purpose and findings of the study and offers recommendations for future research.

## 2 Background

This section goes through the theoretical framework of this thesis and reviews existing literature on the topic. The first subsection defines player experience and how to measure it. It is followed by different definitions of play, and how play relates to game design and creating meaningful experiences. The third subsection lists research on sociable human-animal interaction in virtual mediums, followed by the representation of animals in games and related ethics. A summary of the main points and themes concludes the background.

### 2.1 Player experience

This thesis focuses on how the *player experience* is affected by sociable animal interaction. Player experience is a concept that utilizes players' emotions and attitudes to improve a game's design, since "games need to be evaluated with a strong focus on the human aspect—the player—in mind" (Wiemeyer et al., 2016, p. 245). Therefore, this thesis explores video game players' subjective experiences. Abeele et al.'s (2020, p. 1) definition of player experience, derived from Wiemeyer et al. (2016), is "the individual, personal experience held by the player during and immediately after the playing of the game." The other aspects of the player experience are observable behaviors such as laughing, and physiological effects, for example on the heart rate (Wiemeyer et al., 2016). This thesis focuses on observable behaviors during gameplay and personal experiences that participants may share in interviews.

A measuring tool developed and validated by Abeele et al. (2020) combines different theories and divides player experience into ten measurable constructs: game design choices determine the *functional consequences*, which are ease of control (intuitiveness of the controls), progress feedback (ability to discern the level of success), audiovisual appeal (appreciation of the audiovisuals), goals and rules (clarity of the objectives), and challenge

(compared to the player's skill level). The ensuing *psychosocial consequences* are the emotional results from playing the game: mastery (sense of skill), curiosity (interest evoked by the game), immersion (cognitive absorption), autonomy (freedom of choice), and meaning (finding value in the game). Although these metrics are designed for survey usage, they are integrated into the data gathering and analysis methods of this thesis to assess how sociable interaction with animals in games affects different facets of the player experience.

## 2.2 Forms of play

As the player experience occurs during and after gameplay (Wiemeyer et al., 2016), *play* is what facilitates it. Therefore theories of play can aid in understanding how sociable animal interaction can affect it. According to Salen and Zimmerman, *meaningful play* is an integral part of game design, referring to “meaningful” as “the emotional and psychological experience of inhabiting a well-designed system of play” (2003, p. 45). They state that “Meaningful play occurs when the relationships between actions and outcomes in a game are both discernable and integrated into the larger context of the game. Creating meaningful play is the goal of successful game design” (Salen & Zimmerman, 2003, p. 45). To paraphrase, meaningful play emerges when the player can observe immediate action feedback and long-term consequences from their choice-making within the game. This thesis examines sociable interaction where animals perceptibly react to player input, as requested by players in online discourse (Lum, 2019; Wright, 2021). This type of interaction provides immediate feedback but is not “integrated into the larger context of the game.” Therefore it does not fulfill Salen and Zimmerman's (2003) full criteria of meaningful play to elevate the player experience.

Other forms of play may be meaningful as an emotional experience regardless of contribution to game progression. Previous theory by Caillois (2001) situates play between two ends of a scale: the goal-oriented, rule-following play *ludus*, as opposed to spontaneous

free play called *paidia*. Furthermore, Caillois (2001) classifies play into four categories: competitive play *agôn*, play of probability *alea* (such as gambling), play-acting called *mimicry* (such as imitation and simulation), and *ilinx*, which means play in pursuit of physical sensation. Caillois (2001) establishes that a game's defining characteristic is that the player spontaneously decides to engage with it, having the initiative to act as they want within the rules for personal delight. Therefore, the desire for optional sociable interactions can be explained in these terms: the virtual animal encounter offers a break from rule-following gameplay by evoking spontaneous play, and a desire to play out a form of *mimicry* to simulate sociable interaction with a live animal—which may bring joy, gratification, or amusement to the player.

According to Salen and Zimmerman (2003), Caillois' play classification is a helpful design tool to understand what experiences distinct game elements offer. They also provide an alternative to Caillois' model, defining three intersecting categories of play. *Gameplay*, like Caillois' (2001) *ludus*, means play by following the rules of a game. *Ludic activities* includes all play activities, including *gameplay*. Lastly, there is *being playful*, which includes playfulness in a non-play context. Salen and Zimmerman combine all categories to define play as “free movement within a more rigid structure” (2003, p. 343). *Ludic activities* and *being playful* differ from Caillois' (2001) *paidia* by also including rule-following play. As Caillois' model can juxtapose optional sociable animal interactions with rule-following gameplay, we found it more suitable for the discussion in this thesis.

In short, meaningful play occurs when player actions have observable short-term and long-term outcomes, forming the player experience (Salen & Zimmerman, 2003). However, the sociable interaction desired by players in online discourse does not fulfill the above criteria. A possible explanation is the emergence of spontaneous play of *mimicry* (Caillois, 2001), which may contribute to the player's emotional experience. If so, and if the interaction

has a desirable impact on the player experience, it could inform game designers on whether to invest in implementing the feature—and how best to do it.

### **2.3 Virtual human-animal interaction**

There is a variety of research on the interactions and relationships between humans and (non-human) animals. Evidence of pet ownership's contribution to human health is inconclusive, but animal companionship has been proven beneficial (McNicholas et al., 2005; Wells, 2009). Petting an animal has been shown to have short-term health benefits to humans and animals alike by lowering their heart rates (Wells, 2009). Evidence of psychological effects is mixed as animals can be beneficial in certain circumstances, but harmful in others (Brooks et al., 2018; Wells, 2009). Live animals also involve dangers and ethical and practical concerns, but studies to find alternatives are showing promising evidence of using animal videos or virtual animals for human benefit (Na et al., 2022; Wells, 2009).

The usage of virtual animals through virtual reality and augmented reality devices is an equally effective alternative to traditional exposure therapy in the treatment of phobias of small animals (Wrzesien et al., 2015). Virtual animals in mixed and augmented reality are also viable for stress management (Na et al., 2022; Norouzi et al., 2022). Na et al. (2022) monitored participants' stress levels before and after interacting with a realistic virtual cat or watching a slideshow of animal pictures. They found that stress was reduced significantly more when interacting with a virtual cat, but the role of interaction in the effect was uncertain. Research by Norouzi et al. (2022) evaluates virtual animals as social support figures. The participants were given a stressful task, while a virtual human, a virtual dog, or no support figure was present. The results show a significant preference for the virtual dog due to its perceived non-judgmental nature. However, only participants who did not have negative views of dogs were recruited. Nevertheless, current evidence shows that virtual animals are

viable for exposure therapy, stress management, and social support. This indicates that virtual animals can be experienced as comforting, which may be significant to the player experience of those who desire sociable interactions with animals they encounter in games.

As humans can experience companionship with pet animals (McNicholas et al., 2005; Wells, 2009), there are also studies on how humans relate to virtual animals. Chesney and Lawson (2007) found that virtual dogs provide companionship, but to a significantly lesser degree than live dogs and cats. Weiss et al. (2009) observed and surveyed people's first reactions to a robotic dog. Children were eager and wanted to interact with the robot dog even with its usability challenges, while adults mainly observed it. Most children believed that the robot dog had emotions, and the vast majority could form an emotional attachment to it; adults did not but they expressed curiosity about the robot dog's functionalities. Weiss et al. (2009) note that the robot dog was continuously surrounded by children, which could have affected the behavior of others. Tsai and Kaufman (2009) examine the effect of a pet game on children's socioemotional development. They found a positive and significant correlation between time spent playing with a virtual dog and higher scores in empathy and attitudes toward humane treatment of animals. Based on these studies, virtual animals in games can offer companionship and affect children's views of animals. Age may also influence how players approach animals in games, as children may be drawn to interaction and prone to attachment, while adults might be more interested in the technical aspects.

Research on what types of players are drawn to pet games (Lin et al., 2017) and players' perceptions and expectations of virtual pets (Lin et al., 2018) show that virtual animals are used as replacements for live animals and for emotional support. In contrast, some players do not play current pet games because they are below their standards (Lin et al., 2018), and some stop playing because of dull gameplay or lack of attachment (Lin et al., 2017). Lin et al. (2017) discern three non-exclusive player types: *pet keeper*, who uses virtual

pets to substitute live animals, *animal teammate*, who desires companionship, and *cool hunter*, who wants to discover and collect animals. Furthermore, these player types have different preferences for gameplay and the animal's appearance. Based on Lin et al.'s (2018) observations and interviews, experience with live animals affects player behavior and expectations, as pet owners attempted to communicate and interact more with the virtual animal. The overall interaction ranged from some players ignoring the animal to some being highly engaged. They also observed a *ghost effect* when the virtual animal did not appear to be aware of the player's prompts, which inhibited immersion and attachment. Unlike in pet games, this thesis examines sociable animal interaction when it is not the main gameplay. However, players' motivations and expectations may determine how they want to interact with animals in games, for what reasons, and how it affects their player experience.

There is research on the appearance of virtual animals and the effects it can have on the player (Schwind et al., 2018; Sierra Rativa et al., 2020). Schwind et al. (2018) found an *uncanny valley* of virtual animals, which means evoking uncomfortable feelings. It is caused by deviation from the player's familiar mental concept of the animal, and it is prevalent in an intermediate level of realism. To avoid the sensation, a completely natural or stylized visual appearance is recommended (Schwind et al., 2018). Players also find virtual animals more empathetic when their appearance and expressiveness match (a natural avatar is facially expressive), and there is a positive correlation between empathy and immersion (Sierra Rativa et al., 2020). Hence, the visuals of the virtual animal used in this thesis may affect whether it is desirable to interact with, and therefore also the player experience.

Kusahara (2001) describes virtual pets' sense of reality as a combination of technological success, and *subjective reality*, which is determined by cultural attitudes and the psychology of the user. Not just the visual appearance, but an association with the live world is fundamental—realistic motion, behavior, responsiveness, and interactivity. Kusahara

argues that “the way we see virtual animals is inevitably influenced by the way we see real animals” (2001, p. 300). Therefore, in addition to age and experience with live animals, players’ cultural backgrounds and attitudes may affect how and why they interact with animals in games.

People’s attitudes can also depend on the animal’s species and appearance (Herzog, 2010). Herzog (2010) discusses the contrast between *biophilia* and *biophobia*, the former referring to humans being instinctively drawn to animals and the latter meaning an irrational fear or disgust response to certain species. Emotional responses also depend on the culture. For example, dogs are loved and considered pets in some places while loathed in others. Furthermore, *cute response* is the idea of an innate attraction to anything that looks like a human infant, such as animals with big eyes and soft features. People also tend to project emotions and mentality onto animals, which is called *anthropomorphism*. Humans being biophilic toward cute animals (Herzog, 2010) may explain players’ desire to interact with animals in games. As this study is situated in a culture that is affectionate of dogs, using a virtual dog for the experiment may also attract the participants to interact more than depictions of other species might.

In conclusion, previous research shows that virtual animals can affect players’ attitudes toward animals, improve their emotional state, and offer companionship. Players may also have varying attitudes toward animals and their expectations and motivations for interacting with virtual animals can differ. Their emotional experiences may be based on their backgrounds and the species and appearance of the virtual animal. The appearance and responsiveness of animals in games have been shown to affect immersion, but there is a lack of research on how animal interaction impacts the player experience.

## 2.4 Animals in games

Games as a medium are distinct for their interactive nature. The pre-defined actions, and the player's agency to perform them, enable the player experience (Salen & Zimmerman, 2003). Thus, representation in games is not only tied to the imagery but also to the code and the player's interaction with the system (Malkowski & Russworm, 2017). This engagement intensifies the experiential nature of games, and experiences generate *affects* (Shaw & Warf, 2009). Affects are unconscious reactions to representations that bleed into the live world by changing the emotional state, behavior, and thinking of players. The consequence is that "images, characters, and worlds can become objects of joy and hatred" (Shaw & Warf, 2009, p. 1341). In addition to influencing the player, games also have the power to shape the current culture and consensus (Malkowski & Russworm, 2017). Since games can be transformative to players and culture, representing animals includes an ethical responsibility.

Tyler (2022) discusses various depictions of animals in games: as non-player-characters, they are often enemies or a resource (for example hunted or kept for goods), an asset aiding the player (such as a horse for faster travel), or a virtual pet needing care. All instances of the same animal are often copies of the same assets with identical audiovisuals and behavior, and they are also used as ciphers to make a point or stand in for something (Tyler, 2022). Tyler argues that acting as an interchangeable placeholder devalues animals as "independent individuals, each with their own unique existence and experiences" (2022, p. 69). As an example, Tyler (2022) discusses idyllic farming games that ignore the reality and suffering of live farm animals. In contrast to embellished depictions, Coghlan and Sparrow (2021) argue that violence against animals in games reinforces indifference toward animals and their systematic mistreatment in the live world, and remark on a lack of research and critical discussion on the topic. Pet caretaking games are also criticized: similar to Tyler's (2022) notion of games devaluing animals, Anderton (2016, p. 145) states that "the simulated

pet objectifies creatures to satisfy the demand for non/human-animal engagements.” Anderton (2016) points out the production of virtual animals as a commodity—a sales strategy. This discussion reveals a range of ethical questions surrounding virtual animals. It may also have a game design significance from a player experience standpoint, as the ethical views held by a player may influence the emotional impact a game has on them.

An example of sociable animal interaction can be found in the video game *Stardew Valley* (Barone, 2016). In a case study, Sutherland (2020) documents that farm animals can be bought and named, and tended to by petting, feeding, and harvesting goods. Petting has a short-term outcome as the player’s input on the animal gives instant visual feedback, and a long-term outcome as the animal consequently produces more valuable goods later on. Sutherland (2020) notes a desire to pet the animals for the positive emotions it evokes but recognizes that if the animals are considered as a resource, petting them becomes a strategic choice. In other words, when Salen and Zimmerman’s (2003) criteria of meaningful play are met, the spontaneous sociable interaction with animals can shift to the opposite goal-oriented end of Caillois’ (2001) scale. In contrast, spontaneous short-term interaction with a virtual animal without benefit toward game progression may maintain its emotional impact. This could explain why it may be desirable to players—which is what this thesis investigates.

## 2.5 Summary

Player experience is the subjective experience of the player, which can be evaluated to improve the game design (Abeele et al., 2020; Wiemeyer et al., 2016). According to Salen and Zimmerman (2003), successful game design aims for meaningful play, which means that player actions have short-term feedback and discernible long-term consequences. However, sociable animal interaction as requested in online discourse (Lum, 2019; Wright, 2021) has only short-term outcomes. Its desirability may be explained by *biophilia*, the innate human

desire to connect with animals (Herzog, 2010). The encounter may evoke spontaneous play, *paidia*, and play of simulation, *mimicry* (Caillois, 2001), as the player deviates from rule-following play to interact with the animal. In addition, previous research shows that virtual animals can be used as tools for psychological benefit (Na et al., 2022; Norouzi et al., 2022; Tsai & Kaufman, 2009), which might also apply to animals in games.

Representations in games can have *affects* on players, changing how they think or behave (Shaw & Warf, 2009). For that reason, there are ethical considerations as to how animals in games are designed (Anderton, 2016; Coghlan & Sparrow, 2021; Tyler, 2022). The player's ideology, background, and perception of live animals may affect their attitudes toward virtual animals (Kusahara, 2001). Research also shows varying expectations of virtual animals and motivations for playing pet games (Lin et al., 2017, 2018). Attitudes also differ depending on the animal species (Herzog, 2010). Therefore, the player experience of sociable animal interactions in games might vary significantly between players.

Overall, the evidence suggests that different aspects of the player experience can be affected by virtual animals and that the effect is subjective. Previous research shows how the appearance of virtual animals can affect the audiovisual appeal and immersion metrics of the player experience (Abeele et al., 2020; Schwind et al., 2018; Sierra Rativa et al., 2020), and that a lack of responsiveness from the virtual animal inhibits attachment and immersion (Lin et al., 2018). However, there is a lack of research on the connection between sociable interactions with animals in games and the player experience. By merging game design and human-animal interaction theory this thesis can provide a starting point for researchers to fill this knowledge gap. An understanding of the topic could also help inform game design decisions on whether or how to implement the feature.

### 3 Methodology

This thesis aims to expand on existing research on virtual human-animal interaction and game design theory by exploring the following research question: (RQ) *How can sociable interaction with a virtual animal impact the player experience?* We approached this topic guided by two sub-questions: (SQ1) how do players interact with animals in games and (SQ2) why do players interact with animals in games?

These questions are inherently qualitative as they rely on the experiences, emotions, motivations, and perceptions of participants (Creswell, 2009). In the context of meaningful play, “meaningful” is described by Salen & Zimmerman (2003, p. 45) as an “emotional and psychological experience.” Similarly, existing literature highlights that “Games need to be evaluated with a strong focus on the human aspect—the player—in mind” (Wiemeyer et al., 2016, p. 245). For these reasons, this thesis follows a qualitative mixed methods approach based on gameplay observations and interviews. The method of in-depth interviews allows for personal depth (Lankoski & Björk, 2015), which is complemented with observation data to capture interactions as they occur. This enabled us to use *Concurrent Triangulation*; a mixed methods data analysis technique to find discrepancies and similarities, which can result in more well-validated and substantiated findings (Creswell, 2009). This method was also appropriate for this study’s timeframe, by shortening the data collection phase. The data were also analyzed in relation to existing literature to contextualize the findings and results.

#### 3.1 Data collection methods

We deemed a targeted sampling method based on game literacy to be the most appropriate option for recruiting participants, as their experience would keep “the player” in mind (Wiemeyer et al., 2016). The Gotland campus of Uppsala University houses students of the Department of Game Design, whose experience in games made them well-qualified to

participate. We recruited five such participants (feminine, masculine, and non-binary presenting) in their first or second year of studies through the online chat platform Discord. They were contacted through direct messages as forum posts did not yield enough interest.

For gameplay observations, we selected *House Flipper* (Frozen District, 2018) with the *House Flipper: Pets DLC* (Frozen District, 2022) to be our data source, which is a simulation game about renovating houses. We used the level “Garage”, as it is quick to finish and straightforward, requiring minimal guidance. At the start of a level, players can begin walking around picking up trash, cleaning surfaces, and moving decorations. When the house is clean enough, players can “finish” the job. With the DLC (downloadable content), players can bring pets to their job. They act as interactable companions in the area but have no long-term impact on the main gameplay. These attributes are why we found *House Flipper* to be best suited for this study: it allowed us to set up a contained, standardized level with a clear objective, and include a dog (Figure 1) that offers sociable, but completely optional interaction. The animal is by default set to follow the player in the level: this was switched off so that we could observe participants’ willingness to seek out and engage with the animal.

## Figure 1

*Australian Shepherd, with the dog interaction menu in the House Flipper Pets DLC (Frozen District, 2022).*



Previous research shows that virtual animals can feel uncanny and cause uncomfortable feelings in the players for not matching their familiar concept of a dog (Schwind et al., 2018). The Australian Shepherd (Figure 1) was selected for this study as we personally deemed it to be the least uncanny in appearance out of the available virtual dogs.

To test our data collection methods, we set up a pilot study. The pilot participant expressed significant consciousness of their engagement with the dog, feeling that they “should” interact with it because they were aware of our research focus on interaction. To minimize this bias, the participants were informed vaguely that the research was on “animals in games” at the start of the session. The gameplay was allocated 15 minutes and could be finished earlier if the participant felt done with the level. During this time, participants could freely choose whether to interact with the dog or focus on finishing the level. Simultaneously, we recorded the frequency and type of interactions that they engaged with on observation sheets. These contained tallies for programmed interactions in the dog interaction menu (Figure 1), a section for non-programmed interactions, and a scale of the participant’s level of engagement with the dog. This scale was inspired by how engagement was measured in Lin et al.’s (2018) study. Non-programmed interactions included observable behaviors, such as verbal engagement and laughter (Wiemeyer et al., 2016). Also recorded on the observation sheet were time spent playing, the percentage of level completion, and the participants’ initial reactions to the dog. The observation sheet can be found in Appendix A.

After playing the game, participants were given full context on the research focus and interviewed in-depth on the following themes: previous experience with live and virtual animals, how they interacted with the dog, what motivated them to interact, and how those interactions impacted their gameplay experience. The interview questions were formed by our research questions and key theory, such as the player experience measuring constructs developed by Abeelee et al. (2020) and meaningful play (Salen & Zimmerman, 2003).

Demographic data were not collected as making generalized assumptions about social groups is not justified using a sample size of only five participants. The interviews were semi-structured and lasted for 20-40 minutes, with recorded audio. Appendix B contains the full interview schedule. Both researchers were present during the sessions, which were conducted over the span of two weeks in a room at the university's campus.

### **3.2 Data analysis techniques**

Four of the interviews were transcribed manually, with the fifth and longest using OpenAI's *Whisper* (2022) for AI-assisted auto-transcription. The AI-transcribed interview was then reviewed and edited to match the recording where the AI had made mistakes.

We used a three-cycle data coding procedure to reduce the amount of data to an organized selection of quotes based on inductive and deductive codes. The process used concepts as described by Skjott Linneberg & Korsgaard (2019); starting with *descriptive coding* based on a coding framework, then *pattern coding* and *categorization* in the second and third cycles where theoretical triangulation was introduced. Concurrent with the third cycle, interview quotes were triangulated with the observation data. The observation data are presented as graphs in the *Results and discussion*. The interview findings are organized under theoretical headers using key quotes.

### **3.3 Limitations and ethical considerations**

This is a small-scale bachelor's thesis focusing on the optional sociable interactions with a specific virtual dog in the game *House Flipper* (Frozen District, 2018). Therefore, the quality of the game and the virtual dog may have impacted the gameplay experience and results (Schwind et al., 2018; Sierra Rativa et al., 2020). The aim was not to offer a generalized representation of people who play games, but to start exploring the topic of

human-animal interaction within game design by looking at one group available to us, which was game design students. These participants' perspective of games is colored by their experience as game designers, which may have led to more game theory-oriented and rule-focused views than those of casual players seeking mere entertainment. Their answers may also have been influenced by being personally contacted by someone they share an education with, and being subject to sampling bias. Our positional bias—being game design researchers who have ethical concerns for animals, subconsciously looking for certain answers—may have angled both participant responses and our analysis. A sample of players who lack a game design background may have offered even more valuable data for the research purpose of making more enjoyable games. Had more time and resources been available for this research, we believe that recruiting non-designers would have been more viable.

All participants were young adults and had to sign a form of consent before starting. Their identities were kept confidential through neutral pseudonyms (as seen in the *Results and discussion*) and the omitting of personally identifiable data. We decided on using *Whisper* (OpenAI, 2022) in our workflow only after we researched their privacy policies extensively and felt certain that the interview data would be secure.

## 4 Results and discussion

This section presents and interprets the data collected on (SQ1) how and (SQ2) why players interact with animals in games, to examine (RQ) how sociable interaction with a virtual animal can impact the player experience. Five game-literate participants were observed during gameplay of *House Flipper* (Frozen District, 2018), which contained an interactable virtual dog. They were then interviewed on their experiences. All participants were game design students with positive views on animals. We observed that participants engaged with the dog despite understanding that it did not contribute to the goals, enjoying the autonomy to do so. The effect on the player experience varied significantly between participants, ranging from overall neutral to moderately positive impact on the value of the game. It offered a break from rule-following gameplay, but a stronger connection may add more meaning to the sociable interaction. Observation results are discussed first, followed by the themes derived from the interview answers. Lastly, a conclusion summarizes the main findings.

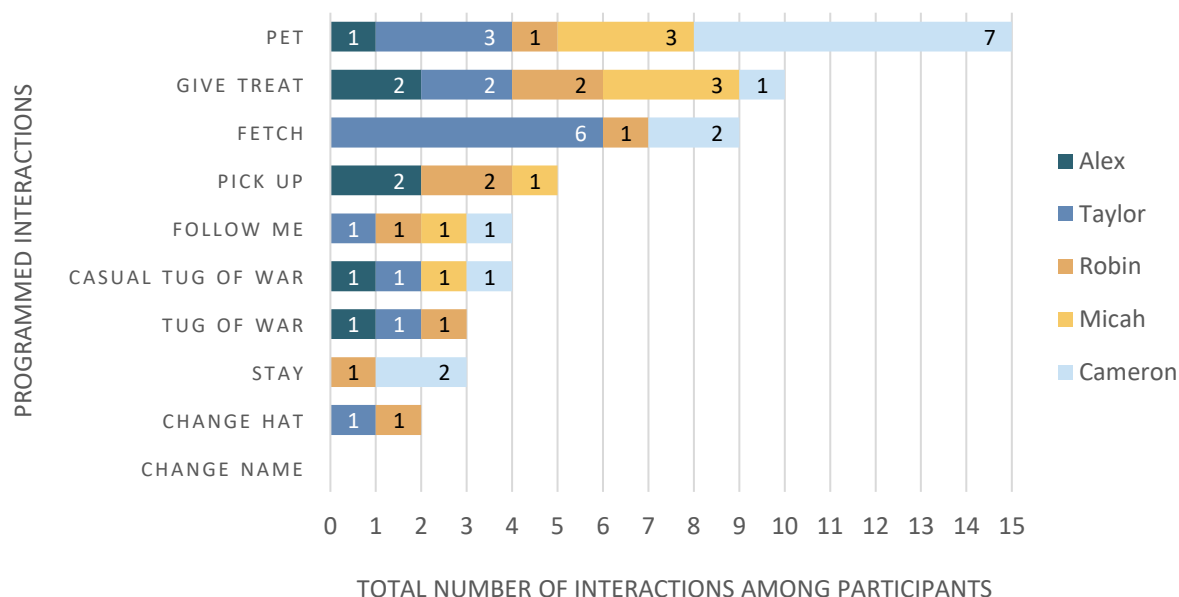
### 4.1 Observation results and discussion

During gameplay observation, we collected data on how many programmed animal interactions participants performed (Figure 2), their first reactions, any non-programmed interactions, and other notable behavior. The engagement level was estimated as ranging from ignoring the animal to interacting constantly based on the overall frequency of interaction (Figure 3). All participants interacted with the virtual dog immediately at their first encounter and returned to the dog after completing the main gameplay. Three out of the five participants interacted consistently by repeatedly engaging with the animal throughout their sessions. One participant, Alex, focused mainly on the game and engaged with the dog on occasion. In contrast, Cameron interacted with the dog constantly, regularly speaking to it and seeking it out upon hearing it. Based on body language and behavior, Cameron was also noticeably

excited about the dog—a deviation from the subtle reactions of the other participants, who at most displayed surprise (“Dog!”) or amusement (laughing). Other notable recurring behaviors were two of the participants jumping with their player character when they saw the dog jump, and using “pick up” to carry the dog around and try to place it on top of objects. More individual behaviors will be discussed later in conjunction with their assigned themes.

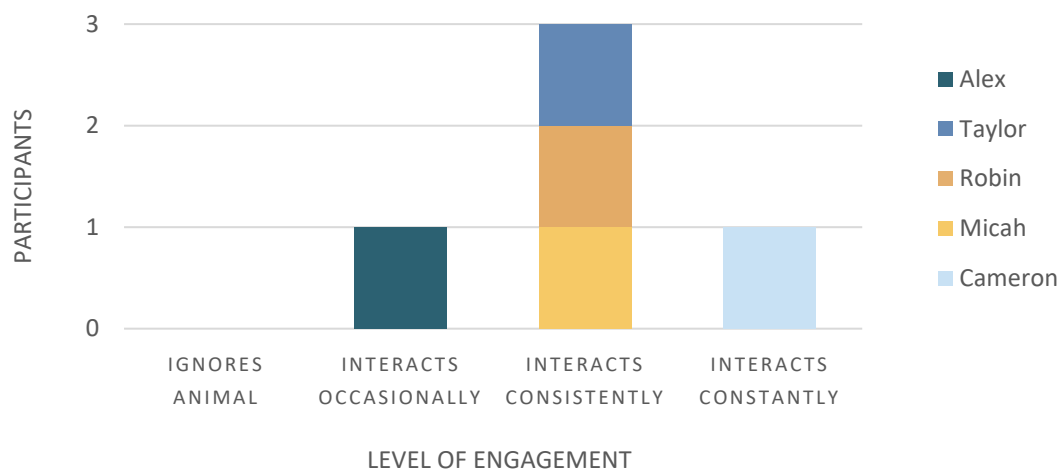
**Figure 2**

*Distribution of used dog interactions between participants.*



**Figure 3**

*Participants' levels of engagement with the virtual dog.*



The two most popular interactions were “pet” with fifteen uses and “give treat” with ten, which were both used by all participants. The least used actions were “change hat” and “change name”, which may have been due to their obscurity in the interaction menu (Figure 1). Meanwhile, “give treat” and “fetch” had the most malfunctions, which may have led to reattempts. A notable deviation from the other participants is Taylor using “fetch” six times—an interactive activity where a toy is thrown and the dog brings it back. Taylor noted avoiding time-consuming actions like “pick up” and preferring quick actions like “pet”, which is contradicted by the amount of time they spent playing fetch. Though Taylor laughed in response to the dog running after the toy, they disliked “fetch” due to its malfunctions: if the dog did not respond, Taylor immediately lost interest in it. A similar behavioral pattern was exhibited by two other participants when the dog did not react to “give treat”. This confirms the ghost effect described by Lin et al. (2018), in which the virtual animal’s unawareness of the player’s prompts creates a disconnect, resulting in a loss of immersion.

The immediate engagement by all participants exhibits *biophilia*, the innate human desire to connect with animals (Herzog, 2010). It also shows that encountering an animal in a game can evoke spontaneous play *paidia* (Caillois, 2001). The recurring breaks from goal-oriented gameplay further demonstrate this spontaneous desire to perform sociable animal interactions. The observable responses of laughter and excitement suggest that the interaction had some positive emotional impact. The varying levels of engagement and ways of interacting indicate individual preferences. This may be due to differences in attitudes toward animals (Kusahara, 2001), experiences with live animals, or player types as described by Lin et al. (2017). Overall, we can observe a desire for sociable animal interactions, but if the implementation does not meet the player’s expectations, the experience can fall short. This suggests that game designers should be considerate of how well they implement the feature to avoid disappointing the player.

## 4.2 Player experience

This sub-section introduces more of the interview data to analyze how sociable interaction with the virtual animal affected different facets of the player experience defined by Abeele et al. (2020). The emergence and experience of meaningful play (Salen & Zimmerman, 2003) and spontaneous play (Caillois, 2001) are also discussed.

### 4.2.1 *Ease of control and immersion*

In addition to malfunctions, the animal interaction controls seem to affect immersion. Robin liked the interaction menu (Figure 1) for its clarity, while Alex disliked it for the feeling of disconnect it created, stating “After I saw the interface I became less interested.” There were also differing opinions on the interaction controls themselves: to Alex, playing “casual tug of war” felt like “dragging the dog” instead of a mutual exchange, while Taylor found it the opposite: “It feels more like you’re really there.” The lack of visual feedback made Micah feel like the dog did not want to be there, and Cameron found it similarly lacking: “You press the button, but did it work? Does the dog know that I love it?” Instead, they liked “pet”, because “being able to actually see a hand reach out and pet the dog was really nice.” This affirms Kusahara’s (2001) analysis of realistic motion, behavior, responsiveness, and interactivity as being fundamental to virtual animals. A lack of immediate feedback also fails to fulfill the first criteria of meaningful play (Salen & Zimmerman, 2003). Therefore, responsive controls and discernible feedback from the virtual animal can improve the immersion of the player and the experience of the sociable interaction.

### 4.2.2 *Curiosity and autonomy*

We found a resemblance to the curiosity adults displayed toward the functionalities of the robot dog in research by Weiss et al. (2009) as our participants tested what was possible

within the simulation of our selected game. We identified this exploration of features and limits as a motivation for interaction. For example, two participants attempted to place the virtual dog on objects, one of them expressing amusement at the possibility of the dog getting stuck on top. Taylor noted a desire to “try out features”, and Robin expressed a desire to test: “Can I do this? Is it possible?”. Alex and Robin initially found the dog interesting, but as Robin stated, after seeing the features they would “leave him.” However, Cameron expressed that “I was really pissed I couldn’t pet the dog” in another game, and Micah said that “I really hate that you can’t feed the fish in *Stardew Valley* (Barone, 2016)”, indicating that not having the option to interact with animals in games worsened their experience. As the player experience is based on the agency to choose actions (Salen & Zimmerman, 2003), and the agency to act within the rules for personal delight is foundational to games (Caillois, 2001), limiting this autonomy and freedom of choice impairs the player experience (Abeele et al., 2020). In Alex’s words, “A button that says ‘pet’ does give the player a lot more agency and feel over the game. I can pet the animal if I want.” To conclude, players may be motivated to interact with virtual animals to discover what is possible, and finding out that they cannot interact can be disappointing. Therefore, while animal interaction may not be important to all players, excluding it may impair the feeling of autonomy for those who desire it.

#### ***4.2.3 Audiovisual appeal***

Indicative of the instinctive cute response and the cultural attraction to dogs (Herzog, 2010), being considered a “dog” made the virtual animal more desirable, and four of the participants used “cute” to describe it and its interactions. For example, Micah said “I’m not really attached to this, but also, it’s a dog. I like dogs. Dogs are cute.” However, the virtual dog was also called “uncanny”, “ugly”, and “janky”, with “human-like, creepy eyes” and “foamy” fur. Despite this, Cameron explained that the desire to interact with it was stronger

than the uncomfortable feelings: “It has enough dog-like qualities to be enjoyable, like something that you want to interact with.” Similarly, Micah recounted getting an “ugly” virtual cat in a game, and at first not wanting it, but giving it a name and eventually getting attached to it. This exemplifies the “uncanny valley” of virtual animals (Schwind et al., 2018), but based on the results, the empathy toward the animal and the desire for animal connections can outweigh the lack of visual appeal. As Cameron described, “The innate feeling of wanting to pay attention to this adorable animal is definitely overpowering versus the whole ‘you’re a little creepy and this is a bit weird.’” Therefore, the participants' use of “cute” may refer to more than appearance—players may find the nature of the virtual animal endearing. Anderton (2016, p. 145) speaks of the “human desire to care for dependents” when discussing the appeal of pet simulation games. In this sense, the notion of “cute” can even be dismissive. Nevertheless, we can observe a desire for sociable interaction with virtual animals despite unappealing graphics when perceived as an entity to form a caring connection with.

#### ***4.2.4 Meaning, goals, meaningful play, and spontaneous play***

According to the participants, the virtual dog had an overall neutral or positive effect on the *meaning* of the game, albeit negative aspects were also expressed. While Alex stated that “I don’t think the dog did much to add or subtract the level of meaning”, others found some value in it. Cameron used the word “enjoyable” and that it is a “sweet mechanic to have in a game that has nothing to do with dogs.” Robin thought it “adds a bit of cuteness to something that might not always be very cute” and recounted feeling “happy”. Micah disliked the implementation of the virtual dog but noted still being drawn to it for it being a dog. Despite consistent engagement and laughing responses to the dog during gameplay, Taylor stated “It did not make me feel anything. It was fun, but that was it.” While participants did not find interaction with the dog meaningful toward gameplay, it seemed to offer emotional

value or entertainment. This suggests that animals in games can evoke positive emotional reactions, benefiting the player experience even when the criteria of meaningful play (Salen & Zimmerman, 2003) are not met—but that the extent of the effect depends on the individual.

In participants' descriptions of what made animal encounters in games meaningful, we saw a pattern in the sense of a connection: familiarity, attachment, companionship, and gratitude. Cameron recounted multiple virtual animals and considered attachment to be the reason for their memorability. Micah described the emotional impact of being able to name their virtual pet and pet it after a battle: "I already named you. Oh, God, I love you so much now that I can pet you too." Familiarity with the animal also seems to add meaning, as there was a stronger desire to interact with animal characters that are encountered recurrently in a game: "The fact that it was the same dog made it extra sweet." Alex described a game that made them feel alone, but finding an animal they could interact with evoked an impactful feeling of "I have a friend here." Micah liked having the virtual dog follow them, explaining that the company is "like a safety in games." This affirms that virtual animals provide companionship (Chesney & Lawson, 2007) and emotional support (Lin et al., 2017, 2018; Norouzi et al., 2022), and that a lack of attachment hinders the experience (Lin et al., 2017). Therefore, these findings suggest that the sociable interaction itself is not necessarily meaningful, it is the context and connection that amplifies the emotional experience.

The virtual animal was understood as separate from the goals, but participants still engaged with it voluntarily: as Robin stated, "If I just wanted to finish the game I would have just finished the game." This exhibits the desire to interact with a virtual dog regardless of game progression, and that the encounter evoked spontaneous play (Caillois, 2001). Alex, who interacted the least, felt a strong disconnect between the animal and the rest of the game. They would have preferred to either be able to progress the relationship with the dog or only have the option to "pet" it. Taylor similarly thought that just being able to "pet" would have

been sufficient. In contrast, Cameron, who interacted the most, expressed a desire to only interact with the dog had they not known of the game's goals, and preferred keeping it separated from the main gameplay. In addition, Taylor and Robin thought that a wrong type of integration could even be "annoying." Overall, however, there was a desire for more goal-oriented gameplay integration for the dog. In terms of meaningful play (Salen & Zimmerman, 2003, p. 45), if "integrated into the larger context of the game", the virtual animal may bring more value. As a result, the player might experience a stronger connection to it, increasing the desire for optional sociable interactions and their emotional impact. In other words, to make sociable interaction without contribution to game progress more meaningful, the virtual animal should be integrated into the game in a way that allows for a connection to develop.

### **4.3 Virtual human-animal interaction**

This section goes through player expectations and attitudes towards virtual animals, comparison to live animals, ethical concerns, and motivations to engage with virtual animals.

#### ***4.3.1 Motivations and expectations***

Participants made recurring comparisons between the virtual dog used in the experiment and live dogs. Its independent actions made it feel more alive, but Cameron noted that it was unrealistic how "well-behaved" the virtual dog was: "I don't think a dog would sit still for that long." Micah pointed out that "the dog is not wagging its tail", and compared it to their pet: "If I see [my dog] following me without wagging his tail (...), something feels wrong." They said that it would add realism if the virtual dog would for instance "tilt its head" because "that is what a dog would do." In contrast, Cameron reminisced about playing fetch with a live dog while cleaning: "I did exactly that in this game!" The similarity seemed to make them enjoy the virtual dog more: "It's a nice presence to have." Taylor stated that

“You know it’s not a real dog but it doesn’t feel that different from a real dog”, and explained how a virtual human feels much different. Micah had an opposing opinion as they found significantly more value in interacting with their pet dog. There was a desire to engage with virtual animals “like an actual living thing”, but what that involved varied drastically between participants. This affirms how live world experience with animals affects expectations (Lin et al., 2018). Kusahara (2001) emphasizes an association with the live world, but based on the results, players have different standards depending on their attitudes and experiences. A more life-like depiction may be beneficial in games to meet the expectations of more individuals.

Participants also held different expectations specifically for virtual animals, as Micah said: “Did it behave like a dog? No. Did it behave like a game dog? Yeah.” Similar to children’s willingness to interact with a robot dog despite usability challenges observed by Weiss et al. (2009), technical difficulties did not prevent Micah from playing tug of war with the virtual dog. Instead, they took it outside to make more room for the interaction to work. Malfunctions were also explained as behavior: when the dog did not respond to “give treat”, Robin “thought he didn’t see it”, and issues with “fetch” made Cameron deduce that “The dog is bad at fetch!” Furthermore, technical difficulties had negative emotional impacts, as it made Robin “sad” when they could not interact due to a “pet is busy” notification: “he just stands there but he’s busy.” Similarly, Micah got upset when a treat they tried to give to the dog fell on its face, exclaiming “Oh no, that’s so mean!” As a unique attribute of virtual animals, malfunctions can be seen as behavior—even life-like. Understanding the distinct limitations of the medium may be why some can tolerate technical difficulties, while the motivation to get past them indicates a strong desire for engagement. However, usability issues should not be overlooked as their presence can have negative emotional impacts, break immersion, and dissuade players from interacting with the animal, worsening the player experience.

In addition to behaviors, participants also exhibited anthropomorphism (Herzog, 2010) by assigning emotions to the virtual animal. Alex noted “He’s happy!” when they saw the virtual dog jumping, while Micah stated that “it didn't seem happy”; “The dog is not wagging its tail. So it's like it doesn't want to be there. It doesn't like you.” They felt that they were “forcing it to play”, which made them want to stop interacting. Robin felt it would be “mean” to not interact with the dog, and described: “He entered the garage, and then you cannot not interact with it!” Similarly, Cameron felt obliged to interact: “I want to make sure that I’m not going to get in trouble for not petting the dog. (...) Like I’m a bad person.” Furthermore, they explained: “It’s not a real dog. I just wanted it to be happy, and know that it was loved, and had my attention.” Robin and Cameron also wanted to keep the dog away from the mess they were cleaning. Robin said “I wanted to lock him out. (...) When I had cleaned the garage part, I let him in again” while Cameron explained that “It’s a dog, I don’t want the dog to get injured.” Despite participants acknowledging that it is not a “real dog”, we observed engagement with the virtual animal resembling the treatment of a live dog, such as protecting it from perceived harm and being considerate of its “feelings”. While children may believe that virtual pets have emotions (Tsai & Kaufman, 2009; Weiss et al., 2009), our participants were aware that they do not. Rather, adults seem to engage in a play of pretend—which Caillois (2001) defines as *mimicry*—to simulate interaction with a live dog. Therefore, it may be of value for games to offer opportunities for players to engage in this type of play activity.

#### **4.3.2 Ethical concerns**

All participants expressed positive attitudes toward live and virtual animals. However, as players’ backgrounds affect how they approach virtual animals (Kusahara, 2001; Lin et al., 2017), their attitudes still differed. Both Micah and Cameron expressed strong negative feelings about the killing or mistreatment of animals in games. Cameron recounted their horse

in one of their favorite games dying: “I was more upset about that than I was about anything else.” They also described a game, in which a strategy emerged for players to kill guard dogs instead of avoiding them, stating “It was really sad, and I don’t like it.” Similarly, Micah compared “mistreating” the virtual dog during the experiment to mistreating their own: “I would never throw a treat in my dog’s face (...). I hurt that dog. I feel bad.” Moreover, knowledge of the death of a dog kept them from buying a game they wanted: “You can’t just tell me to have feelings for the dog (...) and then show me them gruesomely dying. I’m going to protect myself and not get attached.” These reactions suggest that Micah and Cameron connect the mistreatment of virtual animals to the living world, with emotional repercussions. This may be an effect of *mimicry*—play-acting a life-like relationship (Caillois, 2001)—in which the mistreatment becomes a simulation of harming an animal and therefore unpleasant. Therefore, harming animals in games may be detrimental to some players’ experience.

Other participants were more unconcerned about mistreating virtual animals. “If there was a cliff, I probably would have dropped him (...), and then I would have regretted it a lot”, Robin mentioned in the interview. We found this surprising since they also felt it would be “mean” to ignore the dog. They explained: “Impulses. You can act on them in video games.” Similarly, Alex tried placing the dog on a car, stating that “It would’ve been funny if I put the dog on the car and the dog can’t leave anymore.” Micah was conflicted by wanting the dog to follow them despite feeling like it did not want to be there, saying: “You can’t just force yourself to be close to them just because you want to be.” The agency to engage with a game as desired is fundamental to the player experience (Salen & Zimmerman, 2003). However, this direct engagement with the represented elements also leads to unconscious reactions that can change how the player thinks (Shaw & Warf, 2009). Because of this, Coghlan and Sparrow (2021) argue that violence against animals in games may reinforce indifference toward live animals. Overall, the previously described behaviors display a disregard for the

dog's autonomy in the simulation and therefore in a sense "exploit" the virtual animal for entertainment or company. In the words of Anderton (2016, p. 174), games can construct animals as "humanized, objectified vehicles of transient entertainment and humor." This may be the case in *House Flipper* (Frozen District, 2018), which may have made the animal interaction disappointing to some participants.

Micah and Cameron expressed concern for live animals' boundaries, which exemplifies how sociable interactions can also be considered exploitative. Cameron recounted learning boundaries from a cat, while Micah stated: "If the dog doesn't want to be pet, you can't just non-consensually start petting it." Similarly, Robin noted—while they like dressing up animals—that the live animal "just does not like it." However, they enjoy being able to dress up animals in games and were delighted to give the virtual dog hats "because it's cute." Despite how games can fulfill the desire for animal interaction without crossing the boundaries of live animals, the action is not completely contained in the simulation. As Taylor (2022, p. 69) argues, depictions in games can devalue animals as "independent individuals, each with their own unique existence and experiences." In terms of affects (Shaw & Warf, 2009), non-consensual interaction with animals in games may make players ignorant of the boundaries and autonomy of live animals. Alternatively, Anderton argues that by representing animals as mortal, sentient entities games have the potential to promote empathy and "wholesome coexistences with non/human animals" (2016, p. 174). From a player experience perspective, as some participants disliked the virtual dog for feeling "shallow" and "empty", more accurate animal depictions may also enable more meaningful encounters in games.

Micah and Alex expressed a distaste for game companies capitalizing on animal interactions because the feature is so popular, which aligns with Anderton's sentiments of "the production of animal images as a capitalist commodity" (2016, p. 145). Micah criticized the game they played during the experiment: "They didn't care about giving the dog a

personality or having it be a part of the game in any way.” They explained that game companies will “throw a dog at you” just for the marketability of it. Alex had the same sentiment: “Now I kind of understand its function. Games put it in because people like it.” The feature of sociable animal interaction is now so common that Alex finds it “way less meaningful” to encounter. Contrasting this, while Cameron also found the dog to be generic, they said, “I think it’s kind of sweet that they put in the effort for that.” They explained often seeking out this optional animal interaction in games. While surface-level interactions can satisfy some players’ wish to engage with animals, both Micah and Alex desired a more meaningful connection. To conclude, the ethical concerns brought up by some participants show how optional sociable animal interaction can also be displeasing, and as Lin et al. (2018) found, players may avoid pet games that are below their standards. But our results suggest that a more comprehensive and life-like implementation of animals in games has the potential of improving the emotional impact of sociable interaction on the player experience.

#### **4.4 Conclusion**

To approach how sociable animal interaction impacts the player experience (RQ), we first observed how players interact with virtual animals (SQ1). The results show that all participants engaged with the virtual dog immediately, and continued to interact throughout their gameplay sessions while displaying signs of excitement and delight such as laughter. This suggests that encountering an animal in a game evokes spontaneous play (Caillois, 2001) and positive emotional reactions, improving the player experience. However, when the virtual animal did not respond to participants in a desired way, they disengaged, confirming that it can interfere with immersion (Lin et al., 2018) and thus impair the player experience.

Through interviews, we explored what motivates players to interact with animals in games (SQ2). For the participants, this was mainly their positive attitudes toward dogs, a

curiosity to test features, seeking out benefits such as entertainment, “cuteness”, and companionship, and a desire to simulate a live animal relationship through *mimicry* (Caillois, 2001). Participants’ reasons for not interacting with the dog included technical difficulties, lack of responsiveness, lost interest upon seeing the available features, ethical concerns, and feeling that the interaction was meaningless. The participants also displayed different standards and expectations for the virtual dog: some felt satisfied with the superficial interactions while others desired more gameplay integration. Their preferences appeared to depend on their attitudes toward live and virtual animals, confirming the findings of Kusahara (2001) and Lin et al. (2017, 2018). Overall, their responses suggest that a sense of connection with the virtual animal—such as companionship, attachment, gratitude, or familiarity—may increase the desire for and emotional impact of sociable interactions.

Finally, as the player experience is subjective, the impact of virtual animal interaction varied between participants. Our data suggest that optional, sociable animal interaction primarily benefits players’ sense of autonomy, by allowing them more agency in the game and momentary emotional rewards. The perceived “cuteness” and mental connection to a desirable live animal can evoke delight, improving the player experience. However, if the player finds the virtual animal a meaningless and frivolous addition, it can also have a more neutral or negative impact. Therefore, fulfilling Salen and Zimmerman’s criteria of meaningful play (2003) by further integrating the animal into the game could make the sociable interaction more gratifying, by enabling the player to connect with it.

To conclude, our preliminary findings suggest that optional sociable animal interactions can influence the player experience mainly by improving autonomy and offering emotionally gratifying breaks from rule-following gameplay. The emotional impact appears to be more significant if the virtual animal is responsive in a life-like manner and meaningful for the gameplay, such as by helping the player reach goals or offering companionship.

## 5 Conclusion

Based on online discourse, optional sociable interactions with animals are desirable to video game players (Lum, 2019; Wright, 2021). This thesis aimed to gain a preliminary insight into the phenomenon by exploring (RQ) how sociable interactions with virtual animals can impact the player experience. The research was approached by examining (SQ1) how and (SQ2) why players interact with animals in games.

To best represent player experience, a qualitative mixed-methods research design was employed. Five game-literate participants were observed during gameplay of *House Flipper* (Frozen District, 2018), which contained a virtual dog offering optional, sociable interaction. Participants were then interviewed in-depth about the experience. Interviews were transcribed, coded, and finally triangulated with the observation data and existing theory.

We found that all participants engaged with the virtual dog throughout their gameplay session, understanding that it would not progress the game, while displaying some positive reactions (SQ1). Participants were motivated to interact with the virtual dog to test features and boundaries, receive entertainment, companionship, and appealing responses, and to mimic a relationship with a live dog (SQ2). Participants were discouraged from interacting due to technical difficulties, lack of responsiveness, perceived harm to the animal, its behavior not feeling life-like, and a lack of meaning toward gameplay or progression (SQ2). Some experienced that the interaction brought some emotional value to the game, while others found it neutral, and some even distasteful when considered a marketing strategy (RQ). Overall, there was a desire for the virtual dog to have more goal-oriented and emotional gameplay value. Participants' descriptions of memorable virtual animals displayed a pattern of feeling a connection: familiarity, attachment, companionship, and gratitude appeared to make interaction more desirable. Some participants also reported instances when they had desired sociable animal interactions, but the game did not include the feature.

To reflect our findings on previous literature, players voluntarily took breaks from rule-following gameplay to interact with the virtual animal, showing that the encounter can evoke spontaneous play *paidia* (Caillois, 2001). This displayed the human desire to connect with animals (Herzog, 2010) and offered an opportunity for players to engage in play activity of *mimicry* (Caillois, 2001) to simulate a relationship with a live animal. We confirmed that a lack of responsiveness from the virtual animal breaks immersion (Lin et al., 2018) and can dissuade some players from wanting to interact with it. However, in contradiction to Schwind et al. (2018), we also observed a desire to engage with virtual animals despite their uncanny appearance—possibly due to, in Anderton’s words, the “human desire to care for dependents” (2016, p. 145). Out of the measurable constructs of the player experience (Abeele et al., 2020), sociable animal interaction as an optional feature primarily improves the players’ sense of autonomy. In terms of meaningful play, sociable animal interaction could add some value to the player experience even when Salen and Zimmerman’s (2003) full criteria were not met.

In conclusion, optional sociable animal interaction can impact the player experience by offering a break from goal-oriented gameplay, and bringing agency and brief enjoyment. However, some might find it meaningless or even ethically questionable. To mitigate the possible shortcomings, our findings suggest that life-like responsiveness and enabling the player to form a connection to the virtual animal through gameplay increase the emotional benefit. We suggest that when deciding on implementing sociable interactions in games, this—meaningful and life-like engagement—is something players may desire.

These findings are preliminary, but they offer some guidance and perspective to game designers when considering implementing the optional feature. To theorists, this thesis outlines the gap in knowledge on sociable human-animal interaction in games and offers a starting point for future research. For instance, the desirability and impact of sociable interaction may be different depending on the perceived species, as this virtual animal being a

“dog” increased its desirability for the participants. A larger-scale study could provide better insight into the impact of animal interaction by comparing the player experience of a game with an interactable animal, a non-interactable animal, and the absence of an animal.

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## 6.1 Ludography

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Appendix A

The printed sheet for recording gameplay observation data.

Pet

Pick Up

Give Treat

Fetch

Casual Tug-of-War

Tug-of-War

Of which defeats

Set to Follow

Set to Stay

Change Name

Change Hat

Engagement Level

Ignores animal

Interacts occasionally

Interacts consistently

Interacts constantly

Initial Reaction

Interacted?

Notes

Time

Completion %

Participant

Time

Date

## Appendix B

Interview schedule by theme. The order and wording of questions varied. Not included in the appendix are unique follow-up questions that surfaced during individual interviews.

<p><b>Previous experience</b></p> <ul style="list-style-type: none"> <li>‣ What games do you like to play? <ul style="list-style-type: none"> <li>○ What do you usually look for in games?</li> </ul> </li> <li>‣ Do you know of many games where you can interact with the animals? <ul style="list-style-type: none"> <li>○ Are there any of those you play yourself?</li> <li>○ Were there any of those animals you found particularly memorable?</li> <li>○ Can you think of an animal you wanted to interact with but couldn't?</li> </ul> </li> <li>‣ How do you feel about animals?</li> </ul>	<p><b>Surface interactions</b></p> <ul style="list-style-type: none"> <li>‣ How would you describe the animal in the game? <ul style="list-style-type: none"> <li>○ Appearance?</li> <li>○ Behaviour?</li> </ul> </li> <li>‣ What was your initial reaction to it? <ul style="list-style-type: none"> <li>○ A feeling, if any?</li> </ul> </li> <li>‣ How would you describe your interactions with it? <ul style="list-style-type: none"> <li>○ Which actions did you enjoy most?</li> <li>○ Why those actions?</li> <li>○ Which were the least enjoyable? (Why?)</li> </ul> </li> <li>‣ How were the controls (with the dog)?</li> </ul>
<p><b>Impact on the experience</b></p> <ul style="list-style-type: none"> <li>‣ When you did interact with the animal, how did it make you feel?</li> <li>‣ Would you want to bring the animal to your next “job” in the game? Why/Why not? <ul style="list-style-type: none"> <li>○ How would you feel about the option to interact with animals like this in other games (like the ones you play)? Why/Why not?</li> </ul> </li> <li>‣ What did you think of the game itself? (We didn't make it, so you can be honest!) <ul style="list-style-type: none"> <li>○ What were the most and least fun parts?</li> <li>○ How meaningful to you was the game, if at all? <ul style="list-style-type: none"> <li>▪ Did the animal affect this in any way?</li> </ul> </li> </ul> </li> <li>‣ How interested to explore?</li> <li>‣ Clear how to reach the goal? <ul style="list-style-type: none"> <li>○ How did the dog affect this, if at all?</li> <li>○ Should the dog be more or less active/integrated?</li> </ul> </li> </ul>	
<p><b>Cooldown</b></p> <ul style="list-style-type: none"> <li>‣ Is there anything you would like to mention that we haven't covered?</li> <li>‣ Please, nickname the dog you've interacted with today!</li> </ul>	<p><b>Why interact (or not)?</b></p> <ul style="list-style-type: none"> <li>‣ Was the animal as you expected? <ul style="list-style-type: none"> <li>○ Would you change anything? How? (Why?)</li> </ul> </li> <li>‣ Generally, did you feel like you wanted to interact with the animal?</li> <li>‣ What made you want to/not interact with the animal? <ul style="list-style-type: none"> <li>Did you miss any interactions?</li> </ul> </li> </ul>