Investigating the Mechanisms and Processes of Player-Avatar Relationship Construction: A Dual Process of Experiential and Psychological Interpretation During Game Play

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Abstract

Research into player-avatar relationship have found that players are able to experience different levels of emotional attachment, agency, embodiment, and identification with their game avatar. While current literature mostly addresses the psychological processes that form different types of player-avatar relationship, lesser is known about the mechanisms and processes of player-avatar relationship construction. Hence, the current study explores how game play experiences and the interpretation of game mechanics help players rationalize their relationship with game avatars. 28 adults who played an action adventure PS4 game, The Last of Us, participated in game play interviews and semi-structured in-depth interviews. Thematic analysis of the results revealed six different themes that explain the mechanisms that link players' gameplay experiences to their relationship with the game avatar. Subsequently, this paper discusses three major tendencies in which players may construct player-avatar relationships and the processes of player-avatar relationship construction.

Keywords: player-avatar relationship, game play elements, processes, mechanisms,

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Introduction

The player moved his game avatar, Joel, through a hole in the wall. It was dead silent around the dilapidated building except for the crunching sound of broken tiles at Joel's feet. Passing through the hole, Joel found himself in a dark, dank, and small room. Joel took another careful step. Suddenly, a hand shot out from the dark and grabbed Joel by the right ankle. Shocked, the player let out a gasp as the controller on his hand vibrated violently at the action of the unknown intruder. It was a man on the floor who was grabbing onto Joel's ankle. He was pinned down on the floor by a steel cabinet, his legs crushed by the weight of it. The man, while holding on to Joel's ankle, pleaded for Joel to give him the mercy of death, because he did not want to turn into one of those "things". At this point, a prompt at the bottom of the screen told the player that pressing "L1" would allow the player to aim the gun, while pressing "R1" would allow the player to shoot the gun. The player pressed L1 on his controller and a crosshair appeared on the screen while Joel aimed a revolver. The player hesitated. Finally, the player aimed at the man's head, pressed R1, and with a resounding bang, the man on the floor was dead.

Such exchanges between a game avatar, player, and a video game system as described above are but one of the many scenarios that provide players with a variety of interactions with a game avatar. With the inclusion of elements of interactivity, media scholars have suggested that the ways players enjoy video games are unlike that of traditional media consumption (Christoph, Dorothée, & Peter, 2009). From the two-dimensional representations in older games such as Pong or Mario, to the complex humanoid figures in contemporary Massively Multiplayer Online Roleplaying games (MMORPG) such as World of Warcraft and Final Fantasy XIV, virtual characters in video games influence the ways players experience the game (Banks & Bowman, 2016). Game avatars in video games are closely related to a player's sense of self during video game play (Zhong & Yao, 2013). They

also act as agents of a player's will in the virtual game world, allowing the player to transmit various aspects of himself into the virtual world, such as affects, emotions, personality, and non-verbal cues (Westerman, Tamborini, & Bowman, 2015). As such, past research has looked at how video game players perceive a social and functional affiliation with their game avatars, termed as player-avatar relationship (Lewis, Weber, & Bowman, 2008).

Degrees of player-avatar relationships have been found to influence video game play, including a player's attitudes or behaviors. In past studies, a player's relationship with a game character has been found to change the outcomes of game play (Lin, 2013). In a study by Konijn, Nije Bijvank, and Bushman (2007), participants who exhibited the highest level of aggression after playing a video game were those that played and identified with the violent traits of a game character. In another study on players' romantic beliefs and their relationship with game characters, it was found that players who identified more strongly with avatars in romantic video games were more likely to change their attitude towards idealized romantic beliefs (Song & Fox, 2016). Another study also showed evidences that players become more tolerant towards sexual harassment when they related more strongly with the identity of a stereotypical sexualized character (Dill, Brown, & Collins, 2008).

Besides effects on post-game attitudes and behaviors of players, player-avatar relationship can also influence learning (Lee & Hoadley, 2007), change the affective feelings of players (Bricker & Bell, 2012; Lin, 2013), and lead to different levels of enjoyment in video games (Christoph et al., 2009; Hefner et al., 2007). However, the extant literature on player-avatar relationship primarily focuses on investigating the characteristics of a game avatar, such as its visual appearances (Trepte & Reinecke, 2010), physical forms (Westerman, Tamborini, & Bowman, 2015), or behaviors (Bailenson, Yee, Merget, & Schroeder, 2006) to explore how players form different degrees of relationships with their game avatars. Less is known about the mechanisms and processes that help players to

construct a relationship with their game avatars, and how game play experiences influence these processes (Jansz & Martis, 2007). As gaming experiences are fluid, the degree of connection that a player feels for a game avatar can also change during the process of game play (Tukachinsky, 2007). Past studies have shown that player-avatar relationship can vary based on game genre, the player's emotional well-being, and the player's involvement with the game narrative (Elizabeth, 2015). Elements of a video game play experience can contribute to shaping player-avatar relationship, but the processes behind how gaming elements influence player-avatar relationship are currently understudied. To address this research gap in player-avatar relationship, the current study investigates the mechanisms and processes underlying the construction of player-avatar relationship, and explores how game play elements, which are important aspects of the video gaming experience, help shape player-avatar relationships.

This thesis is organized as follows: Chapter one reviews relevant literature. The literature review discusses results from past research that are relevant to the four main areas of focus in this study: Player-avatar relationships in video games, experiences of player-avatar relationship, game play elements and its influences on player-avatar relationship, and the processes of player-avatar relationship.

Chapter two details the method employed in this study to explore the mechanisms and processes behind player-avatar relationship. This chapter includes the research context of the current study, the sampling method, participants' profiles, the procedure employed to collect data, and the data analysis process.

Chapter three presents the results. The results section addresses the two research questions that are raised in the study. The results discuss the process through which players may form a relationship with their avatar, and offers six different mechanisms through which game play elements have an influence over player-avatar relationship construction.

Chapter four presents a concluding statement on the results of the study, including the implications of the findings of the study. It also discusses the limitations of the research project, as well as offers future research directions for researchers investigating player-avatar interaction.

Chapter One: Literature Review

Current research mainly suggests that the relationships between players and their game avatars are derived from the psychological feelings that the players feel towards their game avatars (Jin & Park, 2009; Li, Liau, & Khoo, 2013; Mahood & Hanus, 2017; Mallon & Lynch, 2014). Though psychological feelings play an important part in defining the relationship between players and a game avatar, they do not reflect the full interaction between the player and a game avatar during video game play, which consists of different game play elements. In most game play experiences, players utilize and interpret different game play experiences to help them form a relationship with their game avatar vis-à-vis the degrees of psychological connection between the player and the avatar.

Game Avatars and Player-Avatar Relationships

Broadly understood, game avatars are graphical depictions of a player in a virtual environment comprising a video game (Meadows, 2007). Game avatars allow players to transmit and translate their actions into a virtual game environment, allowing them to enact their agency, create a new identity, or feel present within the virtual game world (Christy & Fox, 2016). In game studies, game avatars have been defined as a "perceptible digital representations whose behaviors reflect those executed, typically in real time, by a specific human being" (Bailenson & Blascovich, 2004, p.65). The characteristics of game avatars in video games can differ from the range of avatars designed entirely by the player, to avatars designed solely by the game designer or creator (Elizabeth, 2015).

Game avatars in video games are closely related to a player's sense of self during video gameplay (Zhong & Yao, 2013). They act as agents of a player's will in the virtual game world, allowing the player to transmit various aspects of himself into the virtual world, such as affects, emotions, personality, and non-verbal cues (Westerman et al., 2015). Game avatars also allow players to do a variety of actions with their avatar in video games, such as moving it or making it respond to events in a virtual game space (Gazzard, 2009).

However, research have started questioning whether an avatar is more than just an instrument that helps bridge the physical realities of the player to the virtual realities of the video game (McCreery, Kathleen Krach, Schrader, & Boone, 2012). As players engage in video game play and interact with an avatar inside a video game, they begin to form a relationship with their game avatar (Banks & Bowman, 2016). These relationships between the player and the avatar can be very different (Harth, 2017); they can range from the very intimate, where the player feels like the avatar and himself are one individual (Klimmt, Hefner, Vorderer, Roth, & Blake, 2010), or it can be very superficial, where the player feels that the avatar is only a toy or a puppet used to engage in the video game (Geraci, 2014). Collectively, these different forms of relationships have shifted virtual experience of video games away from conventional human-computer interaction and into interactions among different social actors in a virtual world (Talamo & Ligorio, 2001).

Studies into player-avatar identities have provided an understanding of how players' offline identities are linked to the online identity of their game avatar, and theorized the variables that change the relationship between a player and a game avatar. Researchers have offered schemes to detail the different variables that change player-avatar relationships. For instance, Vasalou and Joinson (2009) have showed that the visual depiction of the avatar, its abilities, and other identifying cues provide players with opportunities to experiment with different roles or behaviors within the video game. Bartle's (1996) research into MUD

(Multi-User Dungeon) games identified how players can move from being a player, where the player and the avatar are two separate identities, into being a persona, where a player's real-life identity overlaps with his/her virtual one. In studying the relationship between the offline and online identities of game players and avatars, Gazzard (2009) proposed four different ways in which players can be linked to their game avatar. These are through the avatar's locus (the avatars' place in the world), agency (the control it affords to the player), empathy (how much a player can relate to the avatar), and player character (the identity of the player in the game world). For instance, the ability of a player to move a game avatar or feelings of agency over the game avatar can help to inform players about the interaction one has with an avatar. These past studies have informed us about the factors that change the degrees of a player's relationship with a game avatar.

However, though the studies described above outlined the potential factors that may change the relationship between the player and the game avatar, it does not theorize a process or mechanism through which such relational factors come about. This limits our understanding of how player-avatar relationships are constructed. Though we know that players can form different types of relationships with their game avatars in a video game, we do not know about the mechanisms behind how holistic game play experience helps construct player-avatar relationships, nor the process involved in the construction of such relationships. To extend our understanding of the mechanisms and processes of constructing player-avatar relationships, I will argue in the next section how we may examine player-avatar relationships by considering both the psychological and experiential experiences of video game play.

A Process of Psychological and Experiential Interaction in Player-Avatar Relationship

Video games are dynamic systems that are realized once a player starts interacting with them (Jørgensen, 2012). Being engaged with a video game and a game avatar is central

to the experience of game players (Llanos & Jørgensen, 2011), but such engagements can fluctuate from specific game situations to another based on the player's concentration on strategic actions in the game, empathy with the narrative of the game avatar, or solving a challenge inside the game. In examining the processes behind how players construct their relationship with game avatars, I argue that video games engage their players both on a psychological and an experiential level during their game play experience (Rapp, 2017a). Consequently, I contend that these two levels change how a player constructs his relationship with a game avatar while at play (Poels, Ijsselsteijn, & de Kort, 2015).

In studies on players' identities and game play behaviors, evidences showed that players were able to engage their game avatars in variably social ways (Banks & Bowman, 2016). Players' relationships with their avatar can change in multiple psychological dimensions that include, but are not limited to, an individual's emotional intimacy towards the avatar, feelings of agency, and sense of embodiment or identification a player feels for one's avatar.

But besides psychological feelings towards a game avatar, video games design elements, such as game rules, game mechanics, and interactive elements, also expand the number of ways a player can meaningfully interact with a game avatar (Shaw, 2013). Literature has offered insights into how the experiences of a player and different video game features can change a player's relationship with a game avatar. Past studies showed that graphics and sound effects of video games increase the sense of identification a player feels for the virtual character (Cohen, 2001). Haptic feedback from gaming systems has also been found to increase the players' immersion in the gaming experience and the game avatar while they engage in video game play (Nacke & Lindley, 2008). In a similar vein, Oliver et al. (2016) found that the amount of control afforded to players in a video game changes what players feel for their game avatars and how emotionally attached they are to their game

avatars. The types of control and actions the players can perform to accomplish the game goals can change their play style, and subsequently how they interact with and think about their in-game avatar in the virtual game world. For example, in puzzle or shooting games where the goal is to achieve the highest score possible, the controls and abilities of the avatar determine players' level of identification or emotional intimacy with a game avatar (Sherry, Lucas, Greenberg, & Lachlan, 2006). On the other hand, in other video game genres such as roleplaying games which emphasize storytelling, players identify more with their avatars' personalities and narrative backgrounds (Zhong & Yao, 2012). Based on these past studies, it can be understood that the relationships that a player forms with a game avatar are intrinsically intertwined with different game features and the player's interactions and experiences with them.

Video games, with the inclusion of rules, game mechanics, and interactive elements, provide affordances for users to interact with their game avatars. On a psychological level, players invest in their avatars emotionally while guiding the avatar through various obstacles or challenges in the game (Grodal, 2000). On a mechanical level, players can control and interact with their avatars through various game mechanics such as making the avatar walk, jump, run, pick up items, shoot a gun, etc. (Elizabeth, 2015). These two processes are intricate parts of the game play experience and have mutual influences on each other (Elson, Breuer, & Quandt, 2014).

It is from this perspective that the study contends that a player simultaneously integrates both psychological and experiential processes that lead to the construction of various types of player-avatar relationships. However, our understanding of the process through which a player form different relationships with their game avatar is limited. Studies have found that some players are able to form different types of relationships or goals with their game avatars (Klimmt et al., 2010), but these studies do not provide an adequate

explanation as to why this may be so when players are interacting with similar game features of the same game. Hence, to further our understanding of players' rationalization processes in constructing player-avatar relationships, I propose that players can form different relationships with game avatars through the mechanisms of interpretation of their game play experiences. The process of how players interpret their interaction with the game system and game play elements can provide answers into why some players view their game avatars as puppets, while others identify with their game avatars as similar to their real self. To explore this question, the current study did not only consider the psychological aspects of a player's relationship with a game avatar, but also the game play elements involved in the process of constructing such a relationship (Christy & Fox, 2016). Thus, I ask:

RQ1: What is the process of player-avatar relationship construction?

The Interaction Between Game Play Elements and Avatar Relationships

In understanding the interaction between game play experiences and players' experiences with game avatars, Elson, Breuer, Ivory, and Quandt (2014) have theorized that there are three phases of video game play. First, in the pre-game phase, the type of relationship that a player forms with an avatar may be determined by the player's tendency to be immersed in virtual characters (Lee, Peng, Jin, & Yan, 2006). This tendency to form differing relationships with game avatars can change a player's relationship with a game avatar, and determine whether the player would view his/her avatar as human-like or as an inanimate object (Banks & Bowman, 2016). Second, in the post-game phase, player-avatar relationship may also be influenced by the players' reflection after they finished their game play session (Yoon & Vargas, 2014). However, it is during the intermediate gaming phase that the experiences of a player's game play have the most impact on the type of interaction a player will perceive to have with his/her avatar (Williams, Kennedy, & Moore, 2011). In this phase, players' experiences with their avatar are heavily determined by their interaction with

various game play elements (Rapp, 2017b). Correspondingly, game play elements perform important roles in defining players' gaming experiences and their relationship with their avatars. This study adopted this game play framework to extend our understanding of the construction of player-avatar relationships. To uncover the different mechanisms and processes of constructing player-avatar relationships, this study specifically focused on the gaming phase, whereby game play elements were theorized to influence the interaction between a player and game avatar the most. During the gaming phase, there are three crucial game play elements that shape most players' game play experiences: Game narrative, game mechanics, and game system interface.

Game narrative. An important aspect of game content can be seen in the form of a game's narrative. The role and function of narrative in video games are relatively similar to the role of narratives in older media forms. The narrative of a video game is comprised of all the features of the game's story and settings, such as its plots and characters, and their respective interchanges, occurrences, and qualities (Green, Brock, & Kaufman, 2004).

In video games, the narrative plays an important role in changing media experiences and how a player relates to his/her avatar. For example, in a role-playing game such as Thief: Deadly Shadows where a player plays a thief, the player may interpret the narrative of the game from the avatar's perspective, and hence incorporates the identity and goal of the avatar within the game to effectively carry out his goals in the game. On the other hand, through a different interpretation of the narrative in the video game, players of Thief: Deadly Shadows may also instill the avatar with their own desires, intentions, and goals, and comprehend the narrative of the video game through different lenses (Konijn et al., 2007).

Preliminary studies into the interplay between video game narratives and player-avatar relationship have shown that how a game's narrative is incorporated into and emphasized within the virtual game world can influence the relationship between players and

avatars. For example, it is suggested that video game genres that place more emphasis on narration, such as role-playing games, should theoretically be able to transport their players more effectively into the virtual world, as compared to other non-narrative video game genres such as puzzle games or first-person shooters (Cohen, 2001). The richness in narrative details allows players to interpret or imagine the virtual world more easily, and the knowledge of the avatar's background can also make the player feel closer to the avatar than if it was not present (Green et al., 2004). It is further posited that the features of the narrative of the game, such as interactions between avatars and agents and whether non-playable characters spoke directly to the player, can also change the degree of player-avatar relationship.

With the recent evolution of the gaming industry and the emphasis of game designers on making players feel more immersed in the virtual world, many different types of video games have now incorporated intricate story elements into different genres of video games. For example, game designers of first-person shooter games, such as Halo, Mass Effect, Bioshock, and Left 4 Dead, have implemented intriguing storylines within the games to motivate and immerse players while they play these games. Simulation and puzzle games, such as Professor Layton and The Room, have similarly incorporated different storylines into the games to create multiple dimensions of game play experience for players, which play an important role in player-avatar relationship. As such, narratives in contemporary video games form an important aspect of the video game play experience, and may change how a player will come to relate to his/her avatar.

Game mechanics. In contemporary video game industry, game designers have developed a wide range of game genres and gaming devices, each targeted at players of different age, profile, motivations, and play styles (Poels, de Kort, & Ijsselsteijn, 2012). These different video game genres have different ways of engaging the players, and they allow players to interact with the virtual game environment in different ways. For example, a

first-person shooter game that has guns would allow players to shoot in the game, while another game, such as Tetris, would not have allowed players to shoot guns, but instead move blocks on the screen to complete a level. A feature of video games that determines the boundary of play and the interaction pattern of the players is the game mechanics that exist in video games. Video games have been defined as a type of playful activity in which players try to achieve a particular goal in accordance with the rubrics that demarcate its boundary of play (Adams, 2014). Video games are systems that present players with rules, such as the speed a character can move in the game or how players can defeat an enemy that they encounter inside a game. These rules are tangibly expressed within these games by the variety of game mechanics unique to each individual game. These game mechanics are described below.

In a study conducted by Adams and Dormans (2012), five main game mechanics understood to be essential components of most, if not all, video games were referred to. These game mechanics include: (1) physics, (2) internal economy, (3) progression mechanisms, (4) tactical manuevering, and (5) social interaction. These five core gaming elements define components that are present within the rules and boundaries of video games, and are essential for media forming a video game, and for helping players interact with video games and game avatars.

Past studies have found that the different types of game mechanics in video games have an influence over players' game play experiences and their behaviors inside the game. For instance, physics mechanics in a video game, typically defined by the movement of objects in the virtual game environment, such as how a game avatar moves from place to place, jumps up or down, or drives a vehicle, can determine how a player controls a game avatar and the actions he/she takes with it inside the game (Jin, 2010). Internal economy of games, such as the health bar of a game avatar and the resources available to a player inside a

game, can also determine the behaviors of players and how they decide to proceed through certain stages in the game. For example, players who engaged in a first-person shooter game, where the health bar of a game avatar is the most crucial game mechanics that a player has to manage in the game, will become keenly aware of the various vulnerabilities of the game avatar and undertake actions to prevent the depletion of its health bar (Bell, 2003). Consequently, these actions offer a unique gaming experience to the player.

Progression mechanisms in a video game, such as game check points and the power level of a game avatar, also have an effect on player's game play style and behaviors. Progression mechanisms determine the variety of ways that a player can move their game avatars through different levels in the video game, as well as determine the optimal strategy for players to accomplish goals in the game. As such, progression mechainsms help players rationalize their game play behaviors, allowing them to make sense of their behaviors in the game and changing their play styles to suit the goals and motivations of their game avatars. Additionally, in a study by Oliver et al. (2016), it was found that the amount of control afforded to players, which is part of the tactical manuevering mechanism in a game, changes how players feel for their game avatars and their degree of emotional attachment to it. The type of control and actions that the player can perform to accomplish the goals of a game avatar in a video game can change players' play style, and subsequently, how they interact with and think about the role of their game avatar in the virtual game world.

Social interaction mechanics in a video game, be it dialogues or trading of items between virtual characters in the game, can also determine the type of actions that a player will engage in during game play. For instance, many games now boast cooperative elements within their game play, such as enemies in the game which require multiple virtual characters working in tandem to defeat them (Boggs, Roskos-Ewoldsen, & Rhodes, 2008). Working together with virtual others in the game, whether it is an agent or another human player, may

require players to communicate with others to succeed in their task. Such cooperation sequences may also require players to adopt a different strategy as compared to when they are playing the game as a solo player.

Overall, in order to progress in the video game, players are required to interact with these game mechanics in the way intended by the game developer (Elson et al., 2014). The experiences of playing a video game are generated from a player's interactions and interpretations of these game mechanics that are built into a video game. As game mechanics comprise an important element in the game play experience, one of the goals of the current study is to investigate the roles of these game mechanics described within the player-avatar relationship construction.

Game system interface. Aside from the interaction between the player and game mechanics, there are a variety of other signals from a video game that may help provide the player with more information about a game avatar which helps them form a relationship with it. These feedback from the game may come in the form of graphical cues, such as the appearance, dressing, and looks of a game avatar. Graphical cues can also be transmitted to the player through the virtual environment. The overall aesthetics of the virtual game environment, such as the realism of the virtual world and the color tone of the world can provide players with more information about the virtual game world and the role of the game avatar in it (Treanor, Schweizer, Bogost, & Mateas, 2011).

The game interface can also transmit information to the player through sound cues. In many contemporary video games, game developers incorporate a variety of sound effects in the game to immerse players while they are traversing through the virtual game environment and controlling their game avatar. For example, when virtual characters speak to each other during a game sequence, besides providing players with a written dialogue, most games also have voice over from real life actors for what virtual characters say in the game (Grimshaw,

2008). Also, many of the interactions that a game avatar has with the virtual environment typically come with their corresponding sound effects. For example, when a game avatar walks through a puddle of water, players could hear the sound of the game avatar's shoes or feet splashing through the puddle. These sound effects have been found in past studies to help players feel more immersed in their game play experience while they are controlling a game avatar (Grimshaw, 2008).

Besides graphical and sound feedback, gaming interfaces also provide haptic feedback to the player that may give players some information about a game avatar and the virtual game environment. Game controllers from gaming systems such as PlayStation or Xbox have a vibration feature that activates during particular game sequences. For instance, when an enemy shoots a game avatar, the controller may vibrate to inform players that they are being shot. This also provides players with a sense of recoil that the game avatar may feel after getting shot. The game controller may also provide haptic feedback to the player through a game avatar's active interaction with the virtual environment, such as providing a vibration when a game avatar knocks into an object or a virtual agent inside the game.

Graphical, sound, and haptic feedback from the game can play important roles in influencing a player's game play experiences and player-avatar relationships. For example, players who engaged in games with high-quality graphics and sound effects were associated with a greater sense of enjoyment and feeling of competence while controlling their avatars, which leads to a heightened sense of relation between the player and the avatar (Elson et al., 2014). Graphical and sound realism of the avatar have also been shown to increase the sense of identification a player feels for the character (Cohen, 2001), while haptic feedback from gaming systems has been found to increase players' immersion in the gaming experience and the game avatar while they engage in video game play (Nacke & Lindley, 2008).

In this study, I argue that these game play elements, when interpreted by players during their gameplay, provide important mechanisms with which to understand the processes of constructing player-avatar relationships. Thus, I also ask:

RQ2: How does players' interaction with game play elements influence the construction of player-avatar relationships?

Chapter Two: Methodology

Currently, studies that investigated player-avatar relationships have typically utilized self-reporting surveys to explore its psychological underpinnings. However, as the aim of the current study is to further our understanding of the processes behind player-avatar relationship and the interpretations of game mechanics, I chose to utilize an audience-focused research to explore how players think about game play elements in relation to their relationship with a game avatar. Such method can yield different insights into how the gaming experience creates different degrees of player-avatar relationships.

In the past, research such as Steinkuehler's (2006) study on the semantic meaning of a player's discourse in MMORPGs, or Taylor's (2009) investigation of the cultural experiences of players engaging in online video games, have successfully utilized qualitative research to investigate the semantic meanings of gaming experiences. In some instances, the interview method has been used to investigate the different aspects of game play that allow players to feel engaged with the gaming experience, as well as their engagement with game avatars (Shaw et al., 2016). Meanwhile, ethnographic studies have been used to study MMOGs such as World of Warcraft to understand players' interaction with game mechanics (Rapp, 2017a, 2017b).

In the study of player and game avatar relationships, qualitative studies have been used to explore research questions that are related to the interactions between players and game avatars. For example, O'Connor, Longman, White, and Obst (2015) used the interview

method to identify the types of social identity that players adopt in MMOGs vis-à-vis their game avatars. Other studies also used interviews to identify players' feelings towards their avatars after engaging with it inside the game, as well as to determine the different approaches players take towards customizing their game avatars (Shaw et al., 2016). Jørgensen (2012) argued that using players as co-researchers in a study on game play experiences can allow researchers to form a deep understanding of the player's game experiences and the game system through a meaning-making partnership between the player and the researcher. In this sense, knowledge of the research question is co-constructed through a discussion with the participants where they are invited to interpret specific game features from their perspective as a player.

In the current study, my aim is to provide in-depth attention to the experiences of players and detail the process of player-avatar construction. This question requires that I seek out data not only from the output of the gaming system while the player is at play, but also from players' game play experiences, and more importantly, the interpretation of the game play experiences by the players. To do so, I collected both "Level I" (a record of what the player is doing inside the game) and "Level II" (player's interpretations of gameplay) data as defined by Kirschner and Williams (2014), which allowed me to connect players' actions with players' cognition in the investigation of player-avatar relationship construction.

Research Methods

In this study, I adapted the game play review method developed by Kirschner and Williams (2014). The use of the game play review method is appropriate to allow me to collect both empirical and interpretive data, both of which are crucial in deciphering players' interpretation of their interaction with game mechanics, and the way these interpretations inform them about their relationship with their game avatars.

Game play interview. In the first phase of each participant's session, I conducted a game play interview – a process that combines participants in-game activities with an unstructured interview. Participants were invited to play an action-adventure video game, The Last of Us, on a PlayStation 4 (PS4) system in a gaming research lab. While the players were engaged in game play, I occasionally probed them with questions to garner insights into their thoughts and feelings about their avatar, vis-à-vis various game play mechanics that they interact with during various points of the game. This was done to understand the interplay between interpretation of game play elements and the player's developing relationship with the game avatar inside the game. In total, I recorded about 42 hours of game play footages of players engaging with the game avatar in The Last of Us.

Semi-structured participants' interview. After the game play interview, I conducted a face-to-face semi-structured interview with participants to understand their game play experiences and feelings towards the game avatar in The Last of Us. I was guided by a set of prepared questions that revolved around themes such as the player's experiences with interacting with the game avatar, how they think about the game avatar's various actions and characteristics vis-à-vis game play elements, and their feelings towards different characters inside the game. During the interview, I also asked follow-up questions, particularly on relevant interactions between game play elements and player-avatar relationships that I have not anticipated (e.g. how whimsical actions in the game informed players about their relationship with the game avatar). I also took the opportunity to include these unanticipated questions into my subsequent research guides when I thought they may yield an interesting insight into the process of player-avatar relationship construction. The interviews were audio recorded and transcribed verbatim after the interview concluded.

Research Context

The Last of Us was developed by the game studio, Naughty Dog, and released on the PlayStation 3 system in 2013 and Playstation 4 system in 2014. The Last of Us is an action-adventure survival horror game played primarily from the third person perspective. For most parts of the game, players get to control Joel, a middle-aged American male, who needs to escort an American girl, Ellie, across the United States. Non-playable companion characters such as Tess (Joel's first companion in the game) and Ellie follow Joel around during the game and are controlled by an artificial intelligence system within the game. Throughout every part of the game, Joel interacts with various characters, environments, and objects to inform players about the narrative of the game. Players traverse through different virtual environments such as towns, old buildings, and hospitals to progress in the game. Players utilize different firearms and weapons in the game, such as a hand pistol or a shiv, to defend themselves against hostile zombie-like creatures called the Infected. The game provides players the ability to scavenge for different items that may be vital for survival, such as health kits, baseball bats, or materials that can be used to craft useful items. The health status of the playable character is displayed at the bottom right corner of the interface of the game; and when it is completely depleted, the game ends and the player has to restart at a saved checkpoint in the game.

This game was chosen as the research context because it provides a rich environment for the study of the game play elements and their connection with player-avatar relationship. First, The Last of Us boasts an extensive and pre-scripted narrative that allows players to probe their relationship and relevance to Joel, the game avatar, as they progress through the game. Additionally, as The Last of Us is primarily an action adventure game, game mechanics play an important role in determining the progress of the player in the game. Besides the usual game mechanics such as walking, jumping, running, shooting, or taking cover, players are also able to interact with companion non-playable characters (NPCs) who

follow Joel around during the game, obtain trinkets that provide them with more details about the virtual world, and engage in stealthy maneuvers to take down enemies in the game.

Sample

This study utilized both purposive and convenience sampling. Open calls to participate were sent out to public gaming forums, such as Facebook interest groups, and also relayed to potential participants through word-of-mouth in Singapore. The sampling approach was not to garner a representative sample, but to elicit participation from players who had experiences with playing video games and have interacted with various forms of game avatars throughout their experiences in playing video games.

In total, 28 Singaporean participants took part in the study. The age range of the participants is 21-38 years old, with a larger proportion of the participants below the age of 30. There were 23 male participants and five female participants in this study. Prior to their participation in the study, most of the participants indicated that they have extensive experiences with playing different genres of video games, such as roleplaying games, first person shooters, MMORPGs, and action-adventure games, which is the same game genre as The Last of Us. The participants' details are provided in the table below. To maintain the anonymity of participants in this study, pseudonyms are used in place of participants' real names.

Table 1. Participants' details and demographics

Participant	**Age**	**Sex**	**Occupation**	**Gameplay experience**	**Game genre player**
Emma	28	F	Tutor	3 years	Action-adventure;Role-playing;First-person Shooter
James	30	M	Student	20 years	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying;Role-playing;First-person Shooter;Multiplayer Online Battle Arena;Real-time Strategy
Sophia	27	F	Shoutcaster	10 years	Action-adventure;Role-playing;First-person

					Shooter;Multiplayer Online Battle Arena
Johnathan	22	M	Student	16 years	Action-adventure;Action Role-playing;Role-playing;First-person Shooter
Aiden	28	M	Cashier	23 years	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying;Role-playing;First-person Shooter;Multiplayer Online Battle Arena;Real-time Strategy
Jacob	22	M	Student	9 years	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying;First-person Shooter;Multiplayer Online Battle Arena;Real-time Strategy
Andrea	29	M	Coordinator	7 years	Action-adventure
Mason	23	F	Student	15 years	Action-adventure;First-person Shooter;Multiplayer Online Battle Arena
Michael	21	M	Student	11 years	Action-adventure;Action Role-playing;First-person Shooter;Multiplayer Online Battle Arena;Real-time Strategy
Edmund	30	M	Project Manager	18 years	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying;Role-playing;First-person Shooter;Multiplayer Online Battle Arena;Real-time Strategy
Dick	35	M	Project Engineer	30 years	Action-adventure;Action Role-playing;Role-playing;First-person Shooter;Real-time Strategy
Oliver	22	M	Student	10 years	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying;Role-playing;First-person Shooter;Multiplayer Online Battle Arena;Real-time Strategy
Kevin	25	M	Student	19 years	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying;Role-playing;First-person Shooter;Multiplayer Online Battle Arena;Real-time Strategy
Ryan	21	M	Student	5	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying;Role-playing;First-person

					Shooter;Multiplayer Online Battle Arena
Andrew	29	M	Cobbler	10 years	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying;First-person Shooter;Multiplayer Online Battle Arena;Real-time Strategy
Victor	38	M	Systems Analyst	15 years	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying;Role-playing;First-person Shooter;Real-time Strategy
Jayden	33	M	Technical Consultant	23 years	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying;Role-playing;First-person Shooter;Multiplayer Online Battle Arena;Real-time Strategy
Lily	21	F	Student	16 years	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying;Role-playing;First-person Shooter;Multiplayer Online Battle Arena;Real-time Strategy
Luke	21	M	Student	15 years	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying; Role-playing; First-person Shooter; Multiplayer Online Battle Arena; Real-time Strategy
Tim	21	M	Student	8 years	Action-adventure;Action Role-playing;Role-playing;Real-time Strategy
Calvin	22	M	Student	11 years	Action-adventure;Massively Multiplayer Online Roleplaying;Multiplayer Online Battle Arena
Benjamin	21	M	Student	8 years	Action-adventure;First-person Shooter
John	25	M	Unemployed	17 years	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying;Role-playing;First-person Shooter;Multiplayer Online Battle Arena;Real-time Strategy
Paul	37	M	Customer service executive	2 years	Role-playing;First-person Shooter
Noah	21	M	Student	3 years	Action-adventure;Massively Multiplayer Online Roleplaying

Bernice	21	F	Student	8 years	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying;Role-playing;First-person Shooter
Ethan	21	M	Student	8 years	Action-adventure;Action Role-playing;Massively Multiplayer Online Roleplaying;Role-playing;First-person Shooter;Multiplayer Online Battle Arena

Data Analysis

To examine the roles of game play elements and the mechanisms of player-avatar relationship, thematic analysis was performed. Thematic analysis is an iterative and inductive process of identifying and integrating emergent patterns during the whole study session (Braun & Clarke, 2006). First, transcripts and video recordings were carefully and repeatedly read and screened during data collection and pre-coding stage. Second, a set of initial codes were generated, identifying relationships of particular interest. Theoretical coding was guided by past literature and open coding was employed to other characteristics and possibilities that previous literature has not yet highlighted. It aims to determine how players engage with game play elements and how such elements influence the processes of player-avatar relationship construction. Third, the codes were examined to find unifying patterns, within and across interviews. Finally, the codes were reviewed and merged based on their relevance in explaining the different processes of player-avatar relationship.

Chapter Three: Results

The Process of Player-Avatar Construction

In response to RQ1, this section posits the processes that guide players' construction of their relationship with game avatars. During the game play interview sessions of participants, it was observed that the ways participants construct their relationship with a game avatar can differ, depending on how they observe and interpret different game play

elements, and the corresponding psychological feelings that arise from their interaction and perceptions of the game systems. Although similar game design elements are available for players in The Last of Us, they do not always engage with the game play elements in the same way. For example, two participants in the study, Mason and Sophia, interpreted the mechanics of shooting in the game differently, and consequently, this also changed their perceptions of and their relationship with the game avatar. When asked what game mechanics helped her to learn more about Joel and interact with the game avatar, Mason, who was proficient in aiming and shooting inside the game, said that she thought Joel was a good shot and the way Joel held a gun inside the game is "quite stable when he aims, so I guess he's quite confident in shooting." However, for Sophia who was having some trouble with aiming and shooting using the controller, she said: "I don't think he's (Joel) a very good shot. But, yeah…And I hate playing shooting games with a controller."

In the above case, both Mason and Sophia formed different opinions and felt differently towards the game avatar based on similar game mechanics inside The Last of Us. Players' interpretation of their interaction with game play elements can change the construction of player-avatar relationships. Depending on various factors such as skill level, personal experiences, or game play style, different cognitive processes would play different roles in helping players determine their relationship with a game avatar. This, in turn, changes how players construct player-avatar relationships.

Based on the game play behaviors of participants and the ways they rationalize their relationship with the game avatar, I observed that there are primarily three types of processes of player-avatar construction that may explain how the interaction of psychological and experiential experiences come to influence player-avatar relationship. In the first type, players would engage in a "role" driven process, where the juxtaposition of the position of the player and the game avatar allows players to develop and rationalize their relationship

with a game avatar. Players frequently thought about their role as a player vis-à-vis the game avatar, and their game play experiences help them rationalize their role and build their relationship with the game avatar. For instance, when asked to think about his position as a player in relation to the game avatar and other virtual characters in the game, Paul said:

> Paul: "I think throughout the game, even not in the cut scenes, they are always trying to help and protect each other. When you see her being beaten up by some ruffians, you go and punch the other guy. And then she will give you some healing items when you need it. So it shows like within the game, they will just show that she is trying to help you a lot."

Some participants in this study, when considering the movement mechanics in the game, noted that helping Joel walk or run inside the game placed them in the position of a care-taker who was responsible for the progression of the character. Noah noted this when he felt like Joel and him have become friends after going through various obstacles in the game together.

> Noah: "I know what you have been through and everything you have overcome, I feel so, I feel like I know you yeah and that really makes it like, that's what friends are, how friends develop because I know what happened to you, I know, we go through things together although you know, we go through things together and you feel that connection you know you feel connection like yeah."

Also, the participants noted that the transitions of cut scenes and playable sequences in the game helped them place themselves in Joel's shoes and enabled them to empathize with Joel's actions and motivations. For example, Luke noted that when Joel had conversations with other virtual characters in both game scenes and cut scenes, it allowed him to know his motivations and thoughts better.

> Luke: "He talk like…give me a sense of like his opinion lah. Like he…he don't want to…at first he wanted to reject to smuggle the things like that lah. It gives me a clue about his ideas…uh opinions…and also…what else? Like how he feels."

For such players, game design elements helped them to consider different perspectives and roles of a game avatar, which primarily change the way they construct their relationship with Joel while playing The Last of Us.

The second type is termed as a "story" driven process. Participants like Emma said that playing the game and knowing about the story of the game world made her feel like she is not playing a game, and she "can actually immerse yourself into a universe and imagine that this is a zombie world and you're trying to fight your way out of it." Players in this category typically focus on the narrative aspects of various game play elements to immerse themselves in the game play experience. This, in turn, influences their construction of player-avatar relationship. When engaging in the "story" driven process, players tend to infer most about the story of a game avatar and reflect upon the different narrative aspects of the game. For example, Ryan reflected on the different personalities of Joel in different game sequences and how they may have changed his game play behaviors and his interactions with other virtual characters in the game.

> Ryan: "Then we go to twenty years later, he was kind of a changed man. Because of the environment, he had to survive. So... he got to do what he got to do, like sometimes shoot guys, kill people. But then, there's also like a soft spot for, like, protecting people. Even if like you see Marlene being hurt, he will still decide to trust her and go with her."

Players in this category also actively reconstruct or extend the story of the game while they play. For instance, such players view game mechanics such as walking, running, or shooting as part of the story of the game, which allows them to understand and infer the game

avatar's objectives within the game's storyline. For example, Emma mused about Joel's personality after his failed attempt (shown as in-game actions) to save his daughter at the start of the game.

> Emma: "And I think he's a very caring character because he kept helping the little girl out of the car when she was trapped. And she- he ran up the hill with her and so on. Then I guess… part of the mmm… I think the prologue, then end up she died"

In this category, players make frequent narrative associations within their game play experiences. For instance, participants like Noah frequently thought about the personality of the game avatar and his relationship with it by noting the narrative significance of his actions in different parts of the game.

> Noah: "He cried for his daughter but doesn't give a damn about other people that he doesn't really care just shoots them kills them and yeah so usually those are the kinds that you know that really makes or breaks a character like you know how he is because he treats some person like that and then he treats another person like that, that really shows like what his priorities are and how he values them yeah"

Such inferential and reflective processes help players feel a close connection with the game avatar, albeit in a different way as compared to the process where players may be more driven by the different roles of a player and a game avatar during video game play.

The third process is termed as "consequence" driven, where the results of the players' actions and game play behaviors facilitate relationship building with a game avatar. For example, Emma observed how in some parts of the game, based on the available game mechanics, she needed to control Joel in a stealthy manner. This added to her impression of how Joel is a resourceful man, and it also affected her subsequent behaviors in controlling Joel while playing the game.

> Emma: "Because there're a lot of rounds where you need to be stealthy in the game. So… Tess is just sitting there waiting for the character to move. So I guess the character needs to be resourceful and then Tess will probably offer feedback: 'Oh it's suicide, we need to stealth around this place.'"

For these players, game play elements helped them rationalize the type of game choices they have, and consider the consequences of such choices towards their game avatar and its progression inside the game. Jacob said during the interview that game mechanics created a sense of care and connection between him and Joel because he "want him to progress." Participants who were most concerned about not letting Joel die in The Last of Us, which is a consequence of the health mechanics in the game, developed a strong sense of care towards Joel as they felt that the death of the game avatar would be fully attributed to their inability to perform well inside the game. For instance, Andrea said that when Joel "lives it's because of me, and if he's dead or killed by someone else it's also because of me. So I'll think that if he survives, I'll feel less guilty of getting the character killed." Also, players in this category are primarily concerned about the results of their interaction with game design elements. When asked about the type of game play elements that helped him rationalize his relationship with the game avatar, Calvin said that it "would be his fighting style. Ya, 'cause the way how he just ruthlessly kill people, just step on other people's head, that would tell you something about him." But because of the "cruelty" of Joel in the game, Calvin decided to distance himself from the game avatar as Joel's actions were not what Calvin would have decided to do in real life. In another vein, consequences of the player's actions in the game that are transmitted to them in various ways, such as haptic feedback from the controller, help participants like Noah to immerse himself in the game and embody the role of the game avatar.

> Noah: "You also have to maintain your own equipment you know make sure that it's not just every time the flash right you know then you need torches to actually batteries to actually maintain it but the shaking one it makes you have to shake it to brighten it right it makes it feel like it's not just you're not just in the game you know it's actually something you have to do in real life to actually do it you know and makes it more connected feels like you are in the game a bit more."

In this category, players are driven by the consequences of their actions in the game, such as the health and mortality of the game avatar, and the feedback of their actions that are transmitted from the game avatar to the player to help them construct a relationship with their game avatar.

Through the results of participants' game play behaviors and their consequent relationships with Joel after playing The Last of Us, I found that players tend to have certain preferences in interpreting various game play elements to rationalize their relationship with the game avatar. Whether players are role, story, or consequence driven when interpreting the meaning of game play elements would change players' relationships with Joel as it formulates their game play experiences. Hence, to further understand how game play experiences change the construction of player-avatar relationships, I delved deeper to investigate players' interpretations of their interactions with game play elements, and investigated the mechanisms that allow game play elements to influence the construction of player-avatar relationships.

Game Play Elements and the Construction of Player-Avatar Relationships

Player-avatar relationship is fluid and may shift depending on a player's game play experiences, which are influenced by his interaction with the narrative, game mechanics, or the game system interface at any point during game play. In response to RQ2, and based on the participants' game play behaviors and interview results, the themes highlighted below

detail mechanisms that allow game play elements and experiences to influence the construction of player-avatar relationships. These mechanisms shed more light on how game play elements allow players to construct their relationships with a game avatar through different processes and tendencies.

Theme 1: Acquisition of knowledge about the avatar's personality and background

One of the mechanisms that allows players to form a relationship with a game avatar is how players gain knowledge about the avatar and the narrative around the game avatar through their interaction with game play elements. Similar to getting to know a friend in real life, participants were able to form a close relationship with the game avatar as they gradually obtained information about it through game play elements.

In the Last of Us, the game avatar, Joel, frequently interacted with the virtual world he inhabits. One type of interaction that revealed an important information about the game avatar to the participants was Joel's social interactions with other virtual characters in the game, such as Tess or Marlene (both non-playable characters). Participants' observations of these interactions allowed them to build a repository of knowledge about who Joel is. For example, Michael noted that "the part where 20 years later he [Joel] is just like, his conversation between the Tess and Marlene, and they are reflecting his personality to like being strong and to survive till the apocalypse," allowed Michael to get to know Joel's personalities better, such as Joel's will to survive and his strong mentality. Similarly, Tom also noted that a scene in the game where Joel was interacting with his daughter Sarah allowed him to know that Joel was a playful person and also very family-oriented.

> Tom: "This is probably the very first cut scene, one where his daughter… he was very tired and he was telling his daughter not to disturb her, but, he was still like being playful with her. "Oh, the watch is not working…" and things like that. Can see that he really loved his daughter a lot."

Through these conversations that Joel has with other virtual characters in the game, participants were able to decipher the types of relationships the game avatar has with other virtual characters who exist in the virtual world. This opened a window that allowed participants to get to know Joel and feel a sense of connection with him.

Participants also noted that the artificial intelligence (AI) system that determines the actions of non-playable characters (NPCs) inside the game helps players gather more information about Joel. Participants noted that the AI of enemies and companion NPCs made Joel appear realistic as he interacted with other virtual characters. For instance, Emma recounted a part of the game where she, as Joel in the game, was holding an enemy hostage at gunpoint, and how the AI of the game made her feel immersed in the game avatar and the game.

> Emma: "Because when I hold a hostage, it feels like the other people will just back off. So they- they will- so it feels really like in an actual situation. The computer AI doesn't just 'bam bam bam bam bam' when I'm holding a hostage."

Parallel to Joel's interactions with other virtual characters, another way that the participants learned more about the game avatar was through cues from Joel's interactions with the game environment. Game mechanics in The Last of Us, such as sound and visual cues, allowed the emotional or physical cues that Joel exhibited inside the game to spillover to a player. For instance, Noah pointed out how the reactions and emotions of Joel affected him when he observed Joel getting shot by an enemy inside the game.

> Noah: "I feel… physically, hurt when he gets shot. Like it's very realistic when he, like… he has the recoil and then you can't shoot for, like, for, a second or something after you get hit? So it feels very realistic."

Another game play element that helps players to learn more about Joel's emotions and feelings in different situations within the game is through the sound and music of the game.

Sound effects of the game have an impact on the player's perceptions of Joel's character at different points in time, and this game play element drives an important mechanism that allows players to learn more about their game avatar and develop a relationship with the game avatar. For example, Sophia felt immersed and close to Joel when she heard different sound effects from the game.

> Sophia: "I think it was mostly the sound. Like if I had watched it without the, sound of, like the thud from the bat hitting the flesh, I… probably wouldn't have said 'ow'. Like if I were just watching it with no sound, I would've just been like, 'Oh well then'. But when you hear it, you, feel it as well in your body."

In this theme, it was discovered that various game play experiences trigger a mechanism of knowledge acquisition, which helps players think about the autonomy of the game avatar and his motivations in the game. This psychological element of a player's interaction with a game avatar was identified as a dimension of player-avatar relationship (Banks & Bowman, 2013). For instance, game play elements such as the voice acting of a game avatar and the graphical representations of the avatar, NPC, virtual environment, or sound effects in a video game are found to influence the construction of player-avatar relationships. Many participants noted that such cues from The Last of Us helped them to identify with Joel and allowed them to know the personalities of Joel and what he is feeling at different points in the game. This is similar to other studies that found evidences on how graphics and sound effects can create a more immersive context for video game play (Grimshaw, 2008; Wood, Griffiths, Chappell, & Davies, 2004). In this theme, I found that various game play elements allowed players to develop deep knowledge about a game avatar's characteristics, and also helped players to feel like the game avatar they are controlling is a real human being that they can form a social relationship with. Knowledge

acquisition, in this sense, helped players to form a relationship with their avatar while engaging in video game play.

Theme 2: A Sense of development with the game avatar

While playing The Last of Us, participants expressed that they feel responsible for guiding Joel through many obstacles in the game. This experience of guiding Joel gave participants a sense of responsibility and helped them establish an interdependent relationship with the game avatar. For instance, Noah observed that whenever he solved a puzzle sequence in the game or helped Joel complete a particular obstacle inside the game, he felt that he was helping to nurture and develop Joel as a character.

> Noah: "What I'm doing will actually change like actually help him grow...you're helping him to solve problems and grow it's like you being a parent and then you helping your child to like help him walk help him come here you know that kind of thing yeah"

In The Last of Us, Joel's abilities in the game were slowly and gradually made available to the participants as they progressed through various stages. As participants got to interact with more mechanics in the game that are tied to Joel, they felt a sense of joint development between Joel and themselves. This feeling of a shared sense of "growing up" made participants feel connected to Joel. For instance, Mason noted that being able to unlock new skills and abilities tied to Joel's character made her feel like the game avatar and herself are developing together and becoming stronger as a pair.

> Mason: "I think when they open up like new abilities… in a way it's like you're developing with like…you're able to develop with the character. Yeah I do feel more connected in a sense, because in a way your skill level increases and the person's skill level also increases."

Participants also noted that different progression cues, such as placing a ladder in a specific location so that Joel could scale a wall, or operating a power generator so that Joel could board a lift, also helped them to connect with Joel's character and understand the game avatar's motivations in the game world. In one scenario, Oliver said: "If you get to interact with it [the ladder] you actually know that ok maybe Joel wants to get the ladder or anything so that the partner don't need to do it or he's actually finding ways to go through his objective."

As participants progressed in the Last of Us, they usually learned more about the narrative of Joel and the other characters surrounding him. This also helped participants to discover more about Joel's motivations and goals, as well as increased their sense of shared development with the character as they progressed in the game. It was observed that progression cues, such as the ability unlocking mechanics in the game, made participants feel attached to the game avatar through a sense of joined fate and shared development with Joel's narrative. As Noah further reiterated in his interview, sometimes, through different game mechanics and progression cues, a player can come to see a game avatar almost as one's own child that he is tasked to develop while playing the game:

> Noah: "You actually see his progress from someone who is basically nothing to you and then you see him develop and then suddenly if something happens to him you feel like it's like how you, you raising a child when from a baby to a teenager you saw him every day you saw him develop and then when something happens to him you actually you know feel, relate to him, and feel how because just because you see his development throughout the thing what he do,"

Game play elements influence player-avatar relationship by enabling players to feel a sense of development with their game avatar while engaging in video game play. As compared to older video games where a sense of achievement is usually indicated by a high

score, avatars in contemporary video games can grow and develop in different ways. This can include leveling up when a game avatar gains experience points that help unlock new skills and abilities, or through the acquisition of new and powerful items as players progressed through a game (Wood et al., 2004). Experience points and items help a game avatar become more proficient inside the game, and in this study, helped participants feel a sense of development with the game avatar as they control it.

Through engagement with progression game mechanics, participants cited how seeing Joel become stronger inside The Last of Us gave them awareness that they are responsible for the growth of the game avatar. When Joel became more skilled and proficient in the things he did inside the game, participants are cued in on the growth of Joel's abilities, and this allowed participants to rationalize their relationship with the game avatar. Also, as the participants saw the narrative unfold through their progression in the game, they came to appreciate the narrative depth surrounding the game avatar. This contributed to a sense of immersion as the player became motivated to learn more about the avatar.

Theme 3: Control of the Game Avatar and the Sense of Choice

One of the defining features of video games that allows players to interact with their game avatars is how players have control over the game avatar. Participants in this study have opined that the sense of control inside the game is important for them to feel immersed while playing. For example, Sophia noted how playing The Last of Us felt "unnatural" for her because she cannot aim well and dislikes playing shooting games with a joystick.

> Sophia: "Cause the previous shooting games that I played were… like, Jurassic Park, House of the Dead… those sort of games and like, you usually play with a gun. And I hate playing shooting games with a, joystick. I am… all right with playing it with a mouse, cause at least you can aim, but I feel like it's very unnatural to play it with a

> controller so for me like the shooting aspect, like I didn't feel very connected to that. It felt very weird."

While playing a video game, game play elements may provide players with the agency to determine the actions performed by a game avatar. A sense of agency generally allows players to become connected with their game avatar and form a relationship with it. For instance, when talking about how he felt when he has control over Joel in The Last of Us, Benjamin said: "Being in control makes me feel more like him or him being more like me, something like that. It's like a correlation."

However, though the provision of control over a game avatar is an important factor that allows players to immerse themselves in the game play experience, I discovered in this study that this condition may be a necessary but not sufficient requirement that allows participants to understand their relationships with the game avatar vis-à-vis game play elements. In many instances during the game play sessions, participants were observed to have direct control over the movement and actions of Joel, but they did not feel connected, or even fully in control of the game avatar, as observed by Jayden:

> Jayden: "The part that makes me feel like I'm not controlling him is probably a part like… the thing is that I have to do it to make the story progress la. Like, "Oh, I have to follow Tess… I've to move this rubbish bin…" that kind of thing? To me I'm like, "Oh this is so troublesome!" that kind of thing. But I have to do it! Because I have no, like… control over what goes on."

In this study, I observed that one of the game play elements that provided participants with a strong sense of control over Joel and helped them to rationalize their relationship with him is the sense of choice in the game. Player choices provided inside The Last of Us allowed participants to feel connected to Joel, enabling them to act like an active participant of the narrative unfolding inside the game. This occurs primarily because the choices in the

game invoked a sense of control among participants, which allowed them to feel like they have agency in the virtual world. Participants expressed that they were able to perceive various types of choices in the game through different forms of game mechanics, such as: (1) movement of the avatar, (2) combat choices, (3) puzzle sequences, and (4) crafting mechanics. Such game mechanics in The Last of Us allowed participants to perceive a sense of choice in the game that changed their connection and interactive experiences towards Joel. For example, when I asked Tom about the instances when he felt like he was developing a relationship with Joel while playing the game, he referenced some game sequences that required him to choose how to engage the enemy. It was also through such game sequences that Tom felt immersed in the role of the game avatar, which increased his enjoyment of playing as Joel in the game.

> Tom: "But what makes me feel like I got control over him is like, I get to decide, even though like, uh he's a very confrontational, but I get to decide what he has to do. It makes me feel very happy ah, about that. But… I get to decide like, you take a sneaky path, you have to fight with your hands, or you have to fight with your gun… you can- get to decide where you throw- how to distract them, that kind of thing. It's basically like I'm owning him la, which makes me feel quite happy ah."

Another finding from this study that supported the notion of how a provision of game choices allowed participants to connect with Joel was when participants made Joel perform out-of-character or whimsical actions in the game. This was perhaps a way to compensate for a lack of control when players occasionally feel that the game is too linear or that they do not have much choice in a game sequence. For example, Ryan noted that "some part of the game you're in control is that you can walk, you can throw you can jump and walking around ignoring the stories sometimes", and those are the parts that makes him feel like "you're controlling him." While playing The Last of Us, some participants decided to utilize various

game mechanics to exert a sense of choice and control while they are playing the game. For example, Sophia said that pressing certain buttons on the controller to swing Joel's fists aimlessly made her feel like she had control over the game avatar and the choice to do what she wants in the game. Doing such actions made her reflect about her relationship with Joel, and made her aware of the agency that she exerts over the game avatar.

> Sophia: "But then when I press square, if there wasn't someone around he would still make the action of like trying to, beat someone up… even if he was just doing it to air, and at those points I felt it very weird, because it wasn't realistic to me but I also knew that I was the one pressing it. I was like 'Oh, he does that. I thought he only does that if I grab someone.' So I, knew that, I was very aware that I was controlling him"

In this theme, I uncovered how the feeling of control over a game avatar can be triggered by game play elements and can be important in allowing players to feel immersed and close to a game avatar. Studies on the relationship between players and game avatars have frequently cited how a sense of control over a game avatar in video games separates the video gaming experience from other traditional media experiences. Having direct control over a game avatar allows players to identify closely with the actions that the game avatar performs inside the game (Hefner, Klimmt, & Vorderer, 2007). Through participants' game play experiences, I observed that the feeling of choice, when viewed in the perspective of player-avatar relationship construction, plays a crucial role in providing players with a sense of control over a game avatar. Though the transformation of a player's actions from a game controller to the virtual world helps in fostering a feeling of control over a game avatar, it was found that such a translation is not a sufficient condition for all players to feel a sense of control over the game avatar. In many instances, players may not feel a sense of control even when they are able to fully control the actions of the game avatar in various game sequences.

But when players were presented with choices in the game, whether through combat mechanics, puzzle sequences, or crafting mechanics, it was noted that these game choices influenced players to feel like they are in control and are immersed in the game avatar. This is similar to past studies that reported on how the concept of choice in video games has been equated to personal self-determination and is linked to the intrinsic motivation for players to engage in a video game (Lim & Reeves, 2009). Overall, this theme concludes that the feeling of choice that may be afforded to players through various game play elements helps players rationalize their relationship with the game avatar while they are engaging in game play.

Theme 4: Perspectives of play

Another important mechanism that helps to link both game play elements and player-avatar relationship construction is the shifting of player's game play perspective during game play. In this study, it was found that participants shifted their game play perspective based on an important game design element: the juxtaposition of controllable and uncontrollable game sequences within The Last of Us. Controllable game sequences, which include all the game instances where participants had control over Joel, helped participants to take on the role of being Joel. On the other hand, uncontrollable game sequences, such as cut scenes, allowed participants to adopt the perspective of Joel by placing them in the shoes of the game avatar. For example, Oliver noted that cut scenes shown inside the game told him more about Joel's character, and in those cases, Oliver felt like a spectator inside the game.

> Oliver: "The cut scenes is more towards how Joel will actually do, do whatever I mean do what he actually wants to do. Yeah, so the cut scenes is more focused on Joel himself."

However, during participants' gameplay sessions, some participants described how they constantly shifted in and out of the perspective of the player or the game avatar. This is similar to Fine's (2002) concept of "frames" with regards to how players construct their

reality in role playing games. As participants engage in the game play experience, certain game mechanics such as the limited amount of ammunition of Joel's pistol in the game, allowed players to think about their perspective vis-à-vis the game avatar. This displayed the participants' ability to shift their perspective from the game avatar to themselves and vice versa. For instance, in another part of the game, Oliver noted how the mechanics of the ammunitions in the game allowed him to think about his perspective as a player, how he should approach the game sequence, and how that thinking allowed him to relate to the game avatar as a player:

> Oliver: "I'll rather conserve on ammunition and everything by sneaking through maybe because there'll be a harder boss or anything after that yeah so I can relate to him that there's very limited ammo so I'll just go stealth."

Another way that game mechanics influenced participants' perspective-taking was the congruency of actions between what participants wanted to do in the game versus what the game avatar actually did inside the game. When an action that a participant wanted to take in the game is congruent with what Joel actually did, such congruency of embodied experiences helped participants shift their perspective into the shoes of the avatar, and this helped them to rationalize their relationship with the game avatar while they engage in game play. For example, James recounted his experience with a water physics mechanics in the game, and how it allowed him to feel close to the game avatar as he would have also performed the same action given the game avatar's situation.

> James: "…Because very interestingly... If it was me, I would want to block the water away [in the game]. And he really did that. So I felt that connection there, oh he did that! Cause not many games are designed to this level of realism."

In these instances, the congruency of actions between participants and the game avatar allowed them to connect with the game avatar as they identified with the actions he performed in the virtual game world.

In another case, when the actions Joel performed in the game were incongruent with what participants wanted to do, such scenarios also allowed participants to learn more about Joel through perspective switching. For instance, during the game play sessions, I observed that many participants expressed some frustrations when they could not make Joel perform certain actions, such as shooting at a companion NPC or running in a game area. This is clearly expressed by Tom when he saw Joel shooting someone in the game even though he might not have wanted to shoot the character.

> Tom: "I feel like 'What! You're doing this? Why?' That kind of thing. It helps me want to, continue playing more. See- to- out of curiosity, to see what decisions he make and things like that ah."

Even though Tom is frustrated with the action that Joel made inside the game because it was incongruent with what he would have done, he expressed that this actually increased his motivation to play more and also to learn more about the personality of Joel and what he is capable of doing. These considerations allowed participants to rationalize their relationship with the avatar, and consequently, allowed them to form a clearer idea of their relationship with the game avatar.

Overall, certain game mechanics in the game, such as cut scenes, physics, and ammunition, can trigger a perspective switching process within players. In past studies that investigated players' perspectives and identities in video games, it was found that players are able to shift their perspectives during game play, whether it is projecting a mental model of one's real self in the virtual world or adopting the virtual identity of the game avatar (Jin, 2011a). These shifts in perspective during game play, in turn, help players to think in the

shoes of the game avatar in the video game, allowing them to understand the character's circumstances that can influence their game experiences and decisions while playing the game (Gonzalez, Saner, & Eisenberg, 2012). Perspective switching, in this study, was found to be a process that is triggered by the juxtaposition of different game sequences that allowed various levels of direct control of the game avatar. For instance, controllable game sequences allowed participants to play from a player's perspective and allowed them to feel like they are the game avatar in the virtual world. On the other hand, cut scenes allowed participants to learn more about the game avatar's background and his motivations from an audience point of view. The juxtaposition of both game sequences and cut scenes allowed players to shift in and out of perspective from being a player to an avatar and vice versa, and helped players to identify with the circumstances of the game avatar and form an understanding and connection with it.

Additionally, various game mechanics, such as the walking or shooting action of the game avatar, have also been found to allow players to consider the congruency of their embodied experiences between themselves and the game avatar. Previously, the congruency between an avatar's behaviors and the real-life behaviors of a player has been known to help players better identify with the game avatar that they are controlling (Elizabeth, 2015). In past studies, evidences showed that congruency of actions between a player and a game avatar can increase a player's enjoyment of the game (Jin, 2011b), and influence players to identify more with their game avatar (Trepte & Reinecke, 2010). In this study, I found that both congruent and incongruent actions between a player and a game avatar could help players to form a connection with the game avatar, albeit in different psychological processes. When participants experienced congruency of actions between themselves and an avatar, they opined that they felt like they are the character in the game and identified closely with the actions of the game avatar. However, when the actions of the player and the avatar

are incongruent, though such instances typically frustrate the player, it also forces players to put themselves in the shoes of the game avatar and think from his perspective. This consideration of the congruency of experiences between a player and a game avatar, triggered by game elements such as cut scenes or movement of the game avatar, allowed players to view the game from different lenses and create a relationship with a game avatar in the game.

Theme 5: Sense of care towards avatar's actions and mortality

While engaging in video game play, players are able to constantly see their actions translated into the virtual world through the game interface. Whether the player feels like he or she has the ability to affect the virtual world may influence the construction of a player's relationship with the game avatar. For instance, Mason noted that haptic feedback of the controller helped her to feel immersed in the game and gave her a sense that her actions in the game have certain impact in the virtual environment of The Last of Us.

> Mason: "I can be quite nervous cause like the controller vibrates whenever you get hit, and that kind of like...it kind of scares me, like you feel like you're getting injured and oh no you have to do something about it."

But aside from directly affecting participants' interactions with Joel, game mechanics in The Last of Us, such as shooting, jumping over an obstacle, or running away from an enemy, play an important role in the construction of player-avatar relationship by allowing players to develop a sense of care towards the game avatar. In this study, I observed that combat mechanics allowed participants to develop a connection with Joel's avatar by adverse consequences. This can occur through the poor management of resources during gunfights. For instance, Ryan noted how the limitation of resources in the game allowed him to feel like he existed inside the game while playing as Joel.

> Ryan: "For example if your items are limited, you will feel that you are really living in this survival world where not everything is unlimited ammo and you can't just find any potions and have it after every battle like that."

A sense of care can also be developed in situations where the game avatar is dying. When playing the Last of Us, participants pay close attention to the health bar in the interface of the game. When the health bar is depleted, Joel dies and the participant has to restart the game from a previously saved checkpoint. This hindered participants' progression through the game, and also taught the participants that they should avoid situations that could potentially harm Joel. Emma said: "It's like I feel that um, it's like, like let's say if I'm me, then I also don't want myself to die. So I think it's a very human thing to do." By learning the consequences of various game mechanics in the Last of Us, participants opined that they developed a sense of immersion and relation with Joel. As Benjamin noted, "You know you are going to die and you don't want to die. It's something that makes you feel like you're the character. You are like 'I really don't want to die.'"

This interplay between consequences of game play elements and the relationship between a player and a game avatar highlights how the notion of a game avatar's mortality can help players rationalize their relationship with a game avatar through a sense of care. For instance, the number of times that Joel died in the game while the player is controlling the character changed how Michael experiences the game and his feelings for Joel.

> Michael: "Because well you're not going to let your main character die right? ...Because it, first I, we are on the same side, yea. I'm controlling you, yea. So it gives you an initial impression of we are on the same side, yea, something like that."

In different game scenarios of The Last of Us, participants highlighted that they feel close to Joel when they are faced with actions or decisions in the game that may have consequences tied to Joel's mortality. For example, Jacob said that he "have to spam (the

button)" and that he will "die if I don't press this." Jacob tried his best not to let Joel get shot by his enemies as it has an adverse consequence by decreasing the health bar of Joel. In game instances where Joel may be in danger, participants would do their best to defend Joel to prevent him from dying; and this psychological processing gave participants a sense of immersion with Joel and helped them to rationalize their relationship with the game avatar.

Also, when the game system feedback informed participants about the negative consequences of Joel's death, it encouraged participants to defend Joel to prevent his demise and the reoccurrence of such negative circumstances. For example, Ryan said that "there was one time I was a bit nervous, I was trying to avoid get killed. I think it was near the harbor side where there were a lot of people shooting at me." This feeling of impending danger can draw both the player and game avatar together in a shared sense of fate, as well as help players feel connected with the avatar.

In this theme, I focused on how participants' sense of the consequences of game play elements and the notion of a game avatar's mortality can change player-avatar relationship. During this study, participants cited that the consequences of combat mechanics in The Last of Us, such as the resources of the game avatar and his shooting abilities, changed the way they think about Joel and their interaction with him. Consequences of the game avatar's actions, especially those that have adverse outcomes when not performed correctly, allowed participants to feel close to Joel as it triggered a sense of care towards his character. The concept of mortality in the game makes players feel more emotionally connected with a game avatar as players assume a role where they are responsible for actions that can result in the death or the progression of a game avatar inside a video game.

Theme 6: Player's reconstruction of avatar and game narratives

Most contemporary video games contain a storyline, which ranges from the intricate to being a tool to support game play. The results of the post gameplay interviews showed that

the narrative in The Last of Us served to initiate a reflection process among participants while they are playing the game. This reflection process entails participants to think about the narrative of the game, and to rearrange or reconstruct the sequences of in-game events to allow them to get a better understanding of the story. Participants agreed that the narrative in The Last of Us increased their emotional intimacy towards Joel, and such intimacy is built up when participants reflect on the narrative aspects of the game avatar and the virtual game environment.

An important reflection process that allows game narrative to build emotional intimacy between participants and Joel occurs when participants made connections between present and past game narratives or game scenarios. For example, Noah observed a change in the disposition of Joel towards Ellie during his game play when he was able to compare a past scene in the game with the current game sequence that he is going through.

> Noah: "When he was smuggling the girl, he actually a bit skeptical at first but I think after seeing how close resemblance she is to his daughter think he's like you know, he has a soft spot for it yeah soft spot for it and just went on with it."

Being able to make such connections between past and present narratives also allowed participants to make inferences about Joel's personality, decipher his motivations, and construct and rationalize their relationship with the game avatar. Jayden noted this in the post-game interview when he noticed a change in the personality of Joel based on events in the game. As Jayden was aware of the change in Joel's personality, he was able to learn more about the game avatar's motivations and form a connection with the game avatar.

> Jayden: "It's like somebody lost their loved ones they become very emotional and very, er, cold, cold-hearted, that kind of thing, that's what, I think that's how he changed la."

Another way the reflective process acts as a mechanism for the construction of player-avatar relationship is through participants' inference or creation of a narrative for Joel based on the meanings that they deciphered from his actions or abilities in the game. For instance, Benjamin noted how the navigation skills of Joel allowed him to make a guess on some of the events that may have happened to him during the 20-year transition period at the start of the game.

> Benjamin: "…Oh and also his navigation because he knows how to find the smuggling routes. He's more familiar I think because throughout his 20 years. The scene, 20 years plus he's probably trying to hide from his enemies, finding routes, smuggling routes."

By observing Joel's actions and reflecting upon the rationales behind them, Benjamin was able to fill in missing information about Joel's background story that were not provided in the game, which consequently helped him to understand Joel better and form a relationship with him.

When experiencing a video game's narrative through the lens of a game avatar, players can also build a relationship with the game avatar by comparing the game avatar's situation with their real life experiences. Participants used their prior knowledge of playing action-adventure games or watching certain movies as a basis to understand Joel and to build a relationship with him. Reflections might come from participants' existing knowledge of controls in similar games, similar experiences between themselves and Joel, or having performed actions they have seen inside the video game. Luke commented that seeing Joel carry a backpack in the game and interact with it when he has to retrieve items such as guns or bandages helped Luke to build a relationship with Joel by allowing him to relate his real life experiences with the game avatar's experiences.

> Luke: "I feel that the bag especially makes me feel... closer to the character because if I am him today, running around surviving, I must have a backpack. It makes you feel... the backpack is more of a significance to me, to make me relate to him"

In another instance, Mason also noted that in some parts of the game where Joel's actions or emotions were directly relatable to her real-life experiences, she was able to feel the same emotions as Joel, such as the game sequence when Joel lost his daughter at the beginning of the game.

> Mason: "For me I know how it's like to lose your loved one. And I think um going…like going on, like trying to survive is really hard um…especially when you don't have anyone else, other than people you have just met."

In this theme, game play experiences of the narrative and game mechanics have been found to trigger a reconstruction of game narrative that allows participants to develop a strong emotional connection with the game avatar. Participants were able to make inferences about the actions and goals of the game avatar based on their knowledge of what previously happened to the game avatar. This allowed them to understand why the game avatar would want to act in a certain way inside the game – for example, killing a NPC inside the game. Such psychological processing by players to reconstruct the narrative of the game avatar not only provided narrative depth to the game avatar, but also allowed players to form a stronger emotional attachment with the avatar based on feelings of empathy developed through this reflective process.

A dual process of constructing player-avatar relationships

From the archetypes of the different processes of player-avatar relationship construction and the mechanisms that allow game play elements to influence player-avatar relationships, I propose that the construction of player-avatar relationships can be seen as a dual process, consisting of the interaction between the experiential and the psychological

processes of a game play experience. While engaging in video game play, a player's game play experiences are determined by the player's active engagement in the mechanisms of game play, such as the observation and reaction towards graphical and sound feedback or the controlling of a game avatar using a video game controller. For instance, the observation of a sad expression and voice acting from a game avatar would tell players that the game avatar is experiencing a sad emotion in the game, and the observation of emotions in the game avatar can increase the perception of anthromorphic autonomy in the game avatar. Similarly, being able to make a game avatar walk or run inside a game using a game controller would inform players about the type of actions that the game avatar can perform inside the game and provide players with a sense of control and interaction with the game avatar. These experiential nodes and feedback from game play help to provide a link between a player and a game avatar that allows them to construct player-avatar relationship.

In parallel to the experiential processes of game play, the construction of player-avatar relationship is also influenced by the psychological processes that are triggered by players' engagement in game play elements. It was discovered in this study that different game play elements, such as game narrative, game mechanics, or the game system variables, prompt players to construct their relationship with their game avatars in different ways. For example, learning about the narrative in The Last of Us helped participants acquire new knowledge about Joel. This process allowed participants to infer more about the personality and motivation of Joel, as well as reinterpret some narrative elements in the game, which enabled them to develop emotional intimacy with the character. In another instance, participants who became aware about the mortality of the game avatar through the health bar mechanic of Joel in The Last of Us triggered a sense of care towards Joel, where players took on a role of responsibility to keep Joel safe and healthy inside the game. This sense of care

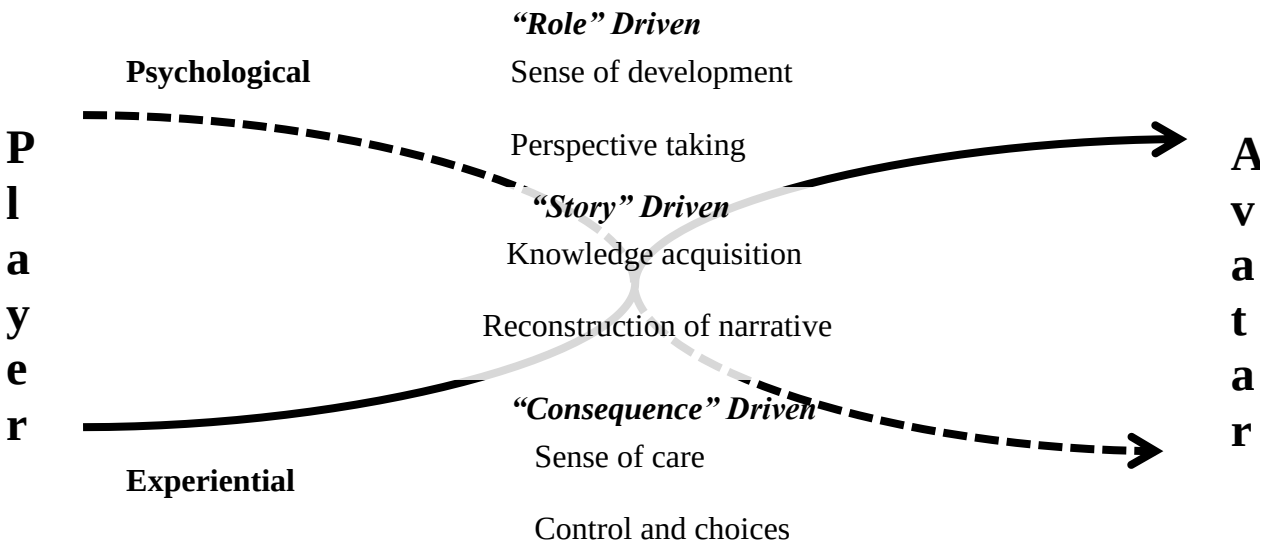

Figure 1. Experiential and psychological dual processing in the construction of player-avatar relation

helped players embody the actions that Joel is engaging in inside the game, and also helped them identify with the circumstances of the game avatar.

Figure 1 that is depicted above illustrates a framework that can be used to understand how the interactions between both psychological and experiential processes of video game play can inform us about the construction of player-avatar relationships. While playing a video game, both experiential and psychological processes of game play help players rationalize their relationship with a game avatar. However, it is noted that the ways players construct their relationship with a game avatar can differ depending on how they interpret their game play experiences and the corresponding psychological processes that govern these interpretations. It was observed that players typically have certain tendencies when constructing player-avatar relationships. Though players are generally exposed to similar cues during their game play experiences, their interpretation of their interactions with game play elements, as well as how they use their game play experiences to rationalize player-avatar relationship, can change the construction of player-avatar relationship. Depending on

various factors such as the skill level of the player, game play style, or his or her personal experiences, players typically opt to focus on one or two processes to determine their relationship with their game avatar. This changes how experiential and psychological interactions of a game play experience help build players' relationships with a game avatar.

By considering the interaction between players and game play elements, this study uncovered multiple pathways for players to create a sense of connection with their game avatar. Most participants in this study, after interacting with the game avatar for a period of time, developed a relationship with the character. However, it was discovered that the ways that they developed such feelings are uniquely different. They may engage in role, story, or consequence driven processes separately or simultaneously to construct player-avatar relationships that are based on their interpretation of their game play experience. The process of player-avatar relationship construction is a duality and a fluid process, which develops through multiple pathways where the player's experiences of game design elements change the player-avatar relationships formed during game play.

Chapter Four: Conclusion

The current study explores player-avatar relationship and its processes by considering different game play elements that are part of a game play experience ecosystem. This study investigated the interplay among game play elements that helps explain how players form relationships with the game avatar they are controlling. By understanding the mechanisms of game play experiences in influencing player-avatar relationships, the study sought to explicate the processes of player-avatar relationships by considering the interaction between players, avatars, and game play elements.

This study found that feelings and attachment that a player forms for a game avatar arise not only from a player's observations and reactions to the characteristics of a game avatar, but also from the players' interpretation of their game play experiences with the game

avatar. For instance, one of the scenes that evoked the strongest affective reactions with the participants of this study was when Joel witnessed the death of his daughter. The visceral emotions shown by Joel as he mourns the passing of his daughter, coupled with the voice of Joel in that scene made many participants feel sad for Joel as they placed themselves in the shoe of a father who was mourning the passing of his daughter. As participants mourn together with Joel while witnessing the death of the game avatar's daughter, the scene changed the way they view the game avatar, as well as how they rationalized the behaviors and actions of the game avatar. In past studies on relationships between media audiences and characters, evidences showed that the depth of an audience's connection with a media character could change the media viewing experience. For example, disposition-based studies suggested that an audience enjoyment of media content is a function of the disposition of the audience towards the character and the outcome of these characters within the narrative of the content (Raney, 2004). It is posited that an audience member would enjoy the media more when a liked character experiences a positive outcome, whereas the enjoyment of the media content would decrease when a disliked character experiences a positive outcome. This was resonated by other studies in the video game context where it was found that enjoyment of video games was predicted by a positive moral evaluation of an avatar's behavior inside a video game (Raney, 2011), and players who liked their game avatar more spent more time developing the avatar, and expressed more emotions towards it (Zhong & Yao, 2013). In this study's example, players did express that experiencing such emotional scenes in the game motivated them to play the game more to learn more about the game avatar, and this subsequently allowed them to construct and develop a relationship with the game avatar they are controlling in the video game.

However, aside from detailing the different mechanisms of game play experiences and how they influence the construction of player-avatar relationships, this study also

expands on how we understand a player's relationship with a game avatar by positing a dual process model of psychological and experiential interaction in the construction of player-avatar relationships. This dual process model seeks to provide an explanation for how the interaction between the player, the game system, and the game avatar can change the way players construct their relationship with a game avatar. Psychological processes such as emotional intimacy, immersion, and embodiment explain how players build close and intimate relationships with their avatars (Banks & Bowman, 2013), but a player's interpretation of the experiential processes of game play is equally important in understanding the different ways player-avatar relationships are constructed. Considering both the psychological and experiential processes together provides an explanation for how players relate to and construct their relationships with their game avatars.

The results of this study can be applied to help future game designers manipulate game play elements to facilitate positive game play outcomes. Video game play has been shown in the past to have positive outcomes for players when they are used for purposes such as education and learning. For example, games have been used as a form of civic learning (Gordon & Baldwin-Philippi, 2014), educational platform (El-Nasr & Smith, 2006), or as a channel to teach players essential social skills (Delwiche, 2006). When engaging in game play, a player's avatar is the main source from which a player can explore the meaning of his/her actions in the game, and experiment with different behaviors and relationships with social others present in the game (Turkay & Kinzer, 2014). In this regard, the mechanisms behind the construction of player-avatar relationships through game play experiences can be applied to platforms that aim to provide players with an immersive and deep experience with virtual characters. For example, educational games that seek to inculcate positive behaviors in players, such as healthy eating or online etiquettes, can use various game play elements to encourage players to take different perspectives while playing, consequently allowing them

to develop an intimate relationship with a game avatar while changing their attitude towards the positive behavior (Peng, 2009). Game mechanisms, in this sense, can change the effectiveness of positive goals or messages in video games (Kato, 2010).

Contemporary video games and artificial intelligence development have also started to look at how video game avatars can be used as a way for people to cope with loneliness or other negative psychological circumstances (Ducheneaut, Moore, & Nickell, 2007). In this study, the mechanisms and processes of player-avatar construction can help game designers create games that let players engage meaningfully with a game avatar, and at the same time, allow players to explore different types of relationships. The design of games using different game play elements to engage players in different ways can create experiences for players that resembles real life relationships. For instance, congruency of the embodied experiences inside video games helps players to feel like the game avatar is an actual human being, and such feelings allow players to form social relationships with the game avatar that resembles real life. Game play elements that enact a congruency of experiences, such as physics and controls inside the game, can also enable players to investigate different roles and emotions, and potentially act as an outlet for the exploration of social relationships for the player while he or she is engaged in game play.

Video game designers, based on the Self-Determination theory, have been exploring how video game play can help enhance player's feelings of competency, autonomy, or relatedness, which may positively affect their attitudes on subjects such as health risks or educational learning (Ryan, Rigby, & Przybylski, 2006). In this study, it was uncovered that interactions between game play elements and psychological processes may have some implications in changing player's feelings of competency and autonomy while viewing such game play outcomes in the lens of player-avatar relationship construction. For example, choices in a video game have been shown in this study to help link various game play

elements to a player's perceived agency in the game. As players possess control and choice over a game avatar, it was found that they started to feel connected to the game avatar, and this changes their game play behaviors. Such a mechanism can also be used in game design to help players feel a sense of competency and responsibility to the actions they perform inside a video game through a game avatar. Through a sense of development, players become responsible for the actions of their game avatar. This can further enhance the players' sense of relatedness and allow video games to influence players' attitudes or behaviors towards certain actions in real life.

Considering the potential applications of the results of this study, it is my hope that the findings can support the future developments of video games, allowing game designers to understand how the implementations of various game play elements can lead to different player-avatar relationships and game play experiences. The findings of this study can also be applied to be part of a framework of future studies that seek to understand the relationship dynamics between a player and a game avatar, and consequently, its effects on video game players.

This study is not without limitations. First, the majority of the participants were male players. It is known that female video game players exhibit different playing styles or are impacted by games in different ways, as compared to their male counterparts. Future research can probe into such demographic differences such as gender and age to expand our understanding of player-avatar relationship. As the study only studied one game, the Last of Us, to investigate player-avatar relationship, it is prudent for future research that seek to expand on the findings of this study to use other genres of video games, such as first-person shooters, MMORPGs, or puzzle games. As avatars in from different genre of games may serve different functions for players, studies using these games may present different findings

from the current study, or they may also corroborate the current findings if the game design elements assume similar roles in affecting player-avatar relationship.

Going back to the initial game play experience of the player described at the start of this thesis: As the player moves Joel, the game avatar, away from the body of the man on the floor that he just shot, one wonders how the player will think about his relationship with Joel now. Would the player become closer to the character because he thought he was the one shooting the man? Or would the player distance himself away from the character because it was the game that wanted him to shoot the man? Regardless, through this experience, something has changed, and the relationship between the player and the game avatar has taken another important step in establishing the dynamics of their relationship between each other.

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Appendix A.

Interview Guide

Interview guide

INTRODUCTION
Hello, my name is Jeremy. I am going to be the interviewer for this session and my job is to ask you some questions during, and after, your game play to make sure that we cover several different subjects of interest in this study. The purpose of this interview is to find out more about your how you feel connected to your character you are controlling and your gaming experience. There are no right or wrong answers to any of the questions. The purpose of the study is to find out what your personal opinions are, and all your opinions are equally important to.

Confidential/anonymous research
Before we start the session, I want to seek your consent for audio and video recording our interview session. However, your confidentiality will be assured in this study, and during the reporting of the results of the study, none of your responses will be identified to you. Your participation is voluntary and you can opt out at any time you want, or refuse to answer any questions. Also, if you want to have your comments expunged from the material, we will respect that wish. If you have questions about your rights as a study participant, or are dissatisfied with any aspect of this study, you may contact, anonymously if you wish, Nanyang Technological University's Institutional Review Board at (+65) 6592-2495 or irb@ntu.edu.sg.

Game introduction and 30-min Solo Game Play Session

Today, you will be playing a game called the Last of Us. This is an action-adventure survival horror game that was developed by the studio Naughty Dog. As this study is seeking to investigate how you become, or not become immersed in your main character, Joel, in the game, while playing the game, remember to keep a look out for things inside the game that help you relate to your character, and how they make you feel towards your character. You will be given a microphone while playing the game, so you can talk out loud your thoughts of whether certain things in a particular game scene help you to interact with the main character. For the first phase of the gameplay session, you will be playing the game for 30mins alone. Feel free to look for me if you have any questions while playing the game or have any difficulty advancing in the game. But besides that, enjoy the game and look out for how you relate to Joel, in the game.

You may begin playing the game now.

(10 minutes break)

<u>During Gameplay Observation</u>

Note: Joel is the main character that the player will be playing with in the "Last of Us" game.

Scenes to stop at:

1) Picking up the ladder and placing it.
    a. You just picked up a ladder and used it. Do you feel that you're the one picking up the ladder too?
2) Talking between Joel and Tess.
    a. Does the conversations between Joel and Tess make you think that you're also having a conversation in the game?
3) Monologue of Joel.
    a. Does Joel talking to himself about the happenings of the game make you feel like he is talking to you?
4) Shooting of guy who is on the floor.
    a. You just shot the man on the floor. Did you think you did that or Joel did that?
5) Using a health pack.
    a. You just used a health pack and it allowed yourself to increase Joel's health. Does that make you feel like you are recovering your own health or just Joel's health?
6) Dying inside the game.
    a. Joel just died. Does that make Joel more real or unreal to you?
7) Grabbing infected and strangling.
    a. You just chose to let Joel kill an infected person. Did you feel like you're the one doing the killing or Joel did?
8) Putting on and taking down the mask.
    a. You just saw Joel put on and take off his mask as he enters and leaves an area with spores. Does that make Joel a more real character to you?
9) Cooperating with Tess to place plank over the gap.
    a. You just cooperated with Tess to place the plank over the gap so both of you all could cross. Does that make you think you're the one cooperating with Tess?
10) Cut scene and Joel talking.
    a. You witnessed several cutscenes now where Joel is talking to other character. Do you feel like you are the one talking to the character?
11) Taking cover and shooting.
    a. You have learnt to take cover and shoot in the game. Do you think you're the one taking cover and shooting in those instances?
12) Punching and hitting another NPC using Joel.
    a. You allowed Joel to punch an enemy just now. Do you think you're the one doing the punching in those instances?
13) Escorting Ellie.
    a. Do you think you're the one doing the escorting of Ellie?
14) Interacting with environment, like dustbin and power supply.
    a. Do you think you're the one doing these actions in the game?

Other scenes that might be paused

1. Why did you do this (in a particular game instance)
2. In the past 10 minutes, do you feel like you have been consciously making choices on how to play the game?
    a. Would you have done the same thing? Why or why not?
3. You just did that (refer to game action). Why did you do this?

4. You just did that (refer to game action) and this just happened (refer to another game action). How did it make you feel
    a. How did it make you feel about Joel?
5. Do you like what are doing now? (in a particular game instance)
6. (In some game instances) Why did you allow Joel to act (refer to action) in this way?
7. What is your impression of Joel now?
    a. What makes you think so?
8. (Refer to a particular game instance) How does that make you feel now?
9. (In some game instances) How does this (refer to gameplay scenario) change your thoughts towards Joel?
10. How did this (refer to game mechanic) help you to think or relate to Joel?

In-depth Interview

i. Identity of game avatar

1. How will you describe Joel as a person?
2. What is Joel's personality?
3. What is Joel's goal in the world?
4. What is Joel's role in this world?
5. What are Joel's skills in the world?
6. How do you think Joel's relationships are with other people?

ii. Interacting with the game avatar

7. Can you recall the story of the game to me?
8. Did any parts of the story make you feel connected with Joel?
9. Did any parts of the story make you feel disconnected with Joel?
10. Can you recall the gameplay and mechanics that you have interacted to me?
11. What parts of the gameplay make you feel connected with Joel?
12. What parts of the gameplay make you feel disconnected with Joel?
    a. Does the physics in the game (walking, running, flashlight, punching, etc) make you feel connected with Joel? How so?
    b. Does the act of managing your resource and inventory (health bar, ammo count, health packs) make you feel connected with Joel? How so?
    c. Do progression cues in the game (picking up ladder, or pushing a door) make you feel connected with Joel? How so?
    d. Does the interaction between the NPCs (in cutscenes or inside the game) make you make you feel connected with Joel? How so?
13. Can you recall the avatar of Joel to me?
14. Does anything of the virtual avatar of Joel make you feel connected with Joel? How so?
15. Are there any parts of the game where you feel you become fully immersed in Joel and become one with him?

16. Do you relate to Joel? If so, what helps you to do so?
17. Do you think Joel's actions in the game are because of you as a player, or are because of what he is inside the game?

iii. Game avatar related questions

1. What characteristics of Joel do you like about him? Why?
2. What characteristics of Joel do you dislike about him? Why?
3. Do you care about Joel as you are playing the game?
    a. What makes you want to care about Joel?
4. Would you view Joel as a real person? Why or why not?
5. Would you view Joel as a friend to you? Why or why not?
6. Are there any scenes in the game where you felt strong emotions towards Joel?
    a. What are these scenes and why did you feel those emotions?

iv. Psychological processes of player-avatar relationship

1. How similar or different do you think Joel is to yourself?
    a. What makes you think so?
2. While playing the game, did you wish you were Joel at some point of the game?
    a. What parts of the game make you feel that way? Why?
3. What parts of the game makes you feel in control of Joel, and which parts of the game makes you feel you are not controlling Joel?
4. Do you feel like you have a lot of choices about how to play the game?
    a. If yes, how so?
    b. If no, how so?
5. Does choices (or the lack of choices given to you) in the game change the way you think about Joel?
6. While playing the game, do you think that you are playing the game in a way that is unique to yourself?
    a. Which parts are these games and why?
7. Do you think that Joel is a person with his own thoughts and actions?
    a. What parts of the game made you feel that way? Why?
8. What are the favorite things you like to do while playing as Joel inside the game? Why?

v. Gameplay outcomes

1. Do you think how you will act and how Joel will act in a particular situation will be similar to each other? Why or why not game?
2. Do you feel like you are capable while playing the game as Joel? Why or why not?
3. Do you think you experience the same emotions as Joel while playing the game? Why or why not?

CONCLUSION

Interviewer: This concludes our interview. Do you have anything to say before we wrap up? (Wait) Thanks again for your participation.