The Pennsylvania State University

The Graduate School

FOR BETTER OR WORSE?:

THE EFFECTS OF INTERACTIVITY AND PERSPECTIVE ON IDENTIFICATION, SOCIAL COMPARISON, AND SELF-ESTEEM IN VIDEO GAMES

A Thesis in

Media Studies

by

Anne Dooley

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Arts

May 2022

The thesis of Anne Dooley was reviewed and approved by the following:

Michael Schmierbach
Associate Professor of Media Studies
Thesis Advisor

Mary Beth Oliver
Professor of Media Studies

Frank Dardis
Associate Professor of Advertising and Public Relations

Anthony Olorunnisola
Professor of Media Studies
Associate Dean for Graduate Programs and Research

Abstract

Video games are considered a unique form of media due to their interactive nature. Without player input, a video game cannot continue. Many previous studies have researched the potential effects video games have on their players. However, little research has investigated the potential effects of this medium on self-esteem. Using the theories of identification and social comparison, this study seeks to find if perspective and interactivity can increase player identification and social comparison, therefore changing their state self-esteem. To do so, this study employed a 2 x 2 factorial design on interactivity (present/absent) and perspective (second/third) to see if playing a short text-based game could potentially raise self-esteem through identification when presented in the second person or lower it through upward comparison when presented in the third person. This was compared to individuals who watched a recorded playthrough of the same game in either second or third person. With a final sample of $N = 101$, results showed that interactivity did not have influence on self-esteem, nor did perspective. However, interactivity did affect how much control individuals felt which in turn influenced identification, and those who engaged in upward comparison reported lower self-esteem than those who did not. Implications and future research are discussed.

Table of Contents

List of Tables

List of Figures

Acknowledgments

I would like to thank the following people for their help, without which this project would not exist:

Dr. Michael Schmierbach, who answered every question I had, regardless of time or simplicity. His mentorship has pushed me to become a better researcher, question everything, and will influence how I continue in academia for the rest of my career.

To my committee, Drs. Frank Dardis and Mary Beth Oliver. Through every stage of the process, you helped me push and mold my ideas until they were something I could really stand behind.

My parents, Karen and Frank Dooley, who have shown me hard work my entire life and believed in me, especially when I needed it the most. I once asked you how I could keep going in school when I was very young, and you told me I could get a Master's degree. I am very proud to prove you right in the very place we had that conversation.

To Josh McCawley, who watched the ups and downs but never once wavered in support. Thank you for listening to my concerns, my ideas, and my rehearsals of every presentation I made.

Finally, to Ian Goodrich. I believe in you just as much as you believe in me; your turn.

Chapter 1

Introduction

Video games have been a popular subject in social science research, whether it be their effect on enjoyment (e.g., Hefner et al., 2007; Klimmt et al., 2007), aggression (e.g., Lin, 2013; Klimmt et al., 2009) or persuasion (e.g., Fox et al., 2020; Fox & Bailenson, 2009). However, a common factor in video game research is games' interactivity. Interactivity makes video games unique and has the potential to strengthen their effects on the sense of self one has when playing, especially when it comes to self-esteem. Previous research has focused on the relationship between self-esteem and video games by starting with participants with low self-esteem (e.g. Davies & Hemmingway, 2011; Lemmens & Peter, 2010), but few studies have examined the effects of video games on self-esteem. However, there are multiple ways one can interact with characters through video games that might influence self-esteem. One such interaction can be described through Social Comparison Theory, where individuals will evaluate their traits based on another individual with traits they desire, or one who they feel is lesser than them (Raney & Bryant, 2020). It is also possible that identification with a main character can cause an individual to merge their qualities with qualities they find desirable, heightening a sense of self-esteem.

With this research, I plan to explore the link between playing a game and how players perceive the protagonist of a video game, whether they see themselves as said character or compare themselves to that character. Understanding how interactivity can possibly influence these effects could give players and video game industry workers a deeper understanding of the effects their worlds create, specifically on the self-esteem of the player. Therefore, this study plans to examine the relationship of interactivity and sense of control (SOC) in video games, and how identification and social comparison may also relate to sense of control. This study also aims to examine possible links between sense of control and self-esteem, using identification and

social comparison as mediators. Finally, this study will attempt to determine if the theories of identification and social comparison work in tandem, or if other factors such as narrative voice determine which character interaction is more likely.

Chapter 2

Literature Review

Interactivity and Sense of Control in Video Games

Video games offer a unique media experience through their interactive nature. Interactivity, as defined by Klimmt and Possler (2020) in the context of video games, is when "players actively engage in, modify, and co-create the 'content' of a video game," (p. 342). This interactivity is a crucial feature of video games: Without player input, the game ceases to continue (Kim, 2014). Video game players engage in the medium knowing that their input is not only possible but required if they wish to fully engage with the game. In the video game context, interactivity acts as a way for players to get direct feedback (Klimmt et al., 2007). When inputting a command through a controller, mouse, or button press, the player will be able to see a direct consequence, whether positive, negative, or neutral, of that command. This allows the player to feel like they are not only watching the story, but like they are an important piece of the story.

Interactivity leads to a very important aspect in player experience: a sense of control. Control allows audiences to feel higher agency, which in turn allows them to feel more involved with the medium, making way for an altogether better experience (Sundar, 2008). When players feel more in control, they are more likely to enjoy the experience or intend for it to continue (Ryan et al., 2006; Turkay & Adinolf, 2015). Not only that, but when a player views the self as the source, they are able to exhibit more control over the medium which can lead to incorporation of identity into the media use (Sundar, 2008). Interactivity is an affordance of player control in which they are able to be a part of the game in an active way.

Video games offer a space in which players can explore safely and robustly. Interactivity allows players to expand their understanding of the media to an experience in which they can try new roles with little or no consequence on their lives (Klimmt & Possler, 2020). Video games provide an environment in which players can make choices freely, talk to other characters, and explore a new world safely (Lin, 2013). Player interaction can help establish a presence in the video game world beyond their real-world presence, as they can see their actions take shape in the game world, mimicking their life experiences (Ahn & Bracken, 2017). Not only that, but their interaction with the world can extend to control over their environment by customizing what their avatar or the world as a whole look like (Kim, 2014). Interactivity in the game environment therefore stretches beyond choices made in game to exploration of space and actions (Green & Jenkins, 2014). This allows for a heightened sense of the game's world and the player's part in that world. In allowing players to exist in this space, interactivity fosters a higher sense of control.

Video games are an active form of engagement in which the source directly responds to player commands (Lin, 2013). Video game interactivity allows the player to watch their action of pressing a button correspond with actions in the game (Klimmt et al., 2007). Interactive narratives like video games allow the player to direct the narrative's plot points (Green & Jenkin, 2014). This is distinctive from other media such as books or film: It is not enough to be an observer in a video game, but an actor in the story (Klimmt et al., 2009). By fostering this interactivity, Klimmt et al. (2007) found that control over the narrative significantly affected enjoyment. Given this control, players often find it easier to be immersed in interactive environments (Kim, 2014). Not only that, but interactivity allows for the player to empathize more with the characters in the game.

Interactivity in video games allows for a space in which the player can form greater physical and mental attachments. A study by Lin (2013) showed that the interactivity of the video game was shown to have a higher physical effect (like raising the player's blood pressure) when compared to those watching videos. Likewise, Klimmt et al. (2010) found that players were more likely to assume the role of the character in the game they were playing post-play time. Player control spurs the game events, and this close reaction allows players to feel in control of the progress of the game, allowing for the player to feel they are a part of the game (Klimmt, 2009). Interactivity, and the increased connection that comes from it, can influence how well a player will internalize and process messages because they see themselves at the center of the action (Klimmt, 2009). Not only that, but increased interactivity has been shown to elevate levels of presence in the virtual environment as well as enjoyment (Jang & Park, 2019).

In order to properly study this concept, previous research has manipulated levels of interactivity through playing a video game in comparison to watching a video. For instance, Lin (2013) found playing video games produced higher physical effects when compared to watching videos. Hefner et al. (2007) also had their participants either play a game or watch a video, demonstrating higher interactivity effects. Ahn & Bracken (2017) also showed gameplay footage as a low interactivity setting against video gameplay as a high interactivity setting. For this reason, this paper will consider playing a video game as high interactivity and watching gameplay as low interactivity.

Interactivity has been shown to strengthen player relationships with games, but the attachment player's feel may be influenced by how they see themselves in relation to the video game, specifically the protagonist of the game. Therefore, it is important to consider how interactivity in the video game environment may cause identification effects.

Identification

Putting players in the center of the story allows the player to experience the game as if they were the playable character. The concept of identification refers to a merger of the self with a character (Lewis et al., 2008; Klimmt et al., 2009; Klimmt et al., 2010). Identification describes a move away from the self and into the other, and has been argued to be not just an attitude but a cognitive process (Cohen, 2001). Identification allows players to experience the medium's events like they were really happening to them (Cohen, 2001). It is not just being like the character, but assuming the identity of a character and forgetting the self (Cohen, 2001). It is therefore possible that the interactivity of video games fosters a better environment for identification, as players are already in the center of the action, making choices for their character (McDonald & Kim, 2001). Identification can also lead to empathy, or when an individual feels the feelings of another (Raney & Bryant, 2020). Carrying out the actions of a certain character allows for a more direct route to the feelings and roles of the character (Klimmt et al., 2010). Identification and empathy differ from other forms of character attachment like sympathy because it is not just about understanding how a character feels, but also feeling what that character feels (Cohen, 2001).

Identification allows video game players to temporarily alter their self-concept and see themselves as being the video game character (Klimmt et al., 2009). This brings the player closer to the character, as they are temporarily able to feel emotions as if they were that character (Klimmt et al., 2009). Video games offer a better space for this, as they allow the player to command the main character through button pressing or tracked movement, allowing them to align the actions they do with the actions the character does. In a study done by Hefner et al. (2007), they found that those who played video games identified more strongly with characters

than those who watched videos, and that this would lead to a more enjoyable experience. When a player strongly identifies with a character, they are no longer viewing that character as separate, but as themselves (Lewis et al., 2008; Klimmt et al., 2009). This allows players to attach to the character psychologically, feeling their friendships, responsibility, and actions as their own (Lewis et al., 2008).

Because identification is an altering of self into other, this also leads to an altering of self-perceptions. In a study done by Lin (2013), the author found that those who played violent games thought of themselves as more aggressive, and those who played a peaceful game thought of themselves as more docile. Comparing these effects to the effects of those who had watched videos, the video game condition was significantly higher in identification. The control that players exhibit in a video game allows them to feel character emotions (Klimmt et al., 2010) as well as opens possibilities for higher self-image (Hefner et al., 2007). Not only that, but using video games and their access to identification also allows players to feel higher levels of support in the real world; Fox et al. (2020) found that using a serious game to communicate environmental risk had players perceive higher self-efficacy and had them engage more in the real world. Because identification allows players to fill new spaces, they also feel that they are closer to new roles (Klimmt et al., 2010). In addition, identification has been shown to lead to reinforcement and learned behaviors in the real world post-gameplay; by watching rewards and punishments happening to a character that a player identifies with, they can interpret how likely it is those rewards or punishments will happen to them personally and will make adjustments in their real lives (Fox & Bailenson, 2009).

Up until this point, research on identification effects in video games has not considered the possible route of players comparing themselves to the protagonist instead of identifying with

the protagonist. It is possible some players will not see themselves as the protagonist, and instead will look to see if they are better or worse than the protagonist. To propose this alternate experience, it is important to look at the literature surrounding Social Comparison Theory.

Social Comparison Theory

Narrative media allows audiences to consider and form their identity in relation to characters in multiple ways. One such way is through Social Comparison Theory (Festinger, 1954). Social Comparison Theory occurs when a media user evaluates the traits of a character and determines whether the character has an attractive trait (upward comparison), or if the character exhibits inferior traits (downward comparison; Raney & Bryant, 2020). When engaging in upward social comparison, an individual can form their identity in a positive way by further understanding traits they would like to obtain in the future (Krakowiak & Tsay, 2015). When an individual compares themselves to a character or individual they view as superior to themselves, they can engage in upward comparison and are more likely to feel inferior and worse about themselves; alternatively, when an individual compares themselves with a character or other individual that they deem inferior, they can engage in downward comparison and feel superior or better about themselves (Raney & Bryant, 2020). In both situations, identity is confirmed through comparison with another. In this way, identification is not necessary to form identity through gameplay, as identity may be formed through comparison.

Social Comparison Theory allows for individuals to form their ideal self or goals through exploration of what a character would do in a narrative (Slater et al., 2014), which leads to greater enjoyment (Meier & Neubaum, 2019). In their study, Krakowiak & Tsay (2015) found social comparison could lead to envy in those deemed more virtuous. Certain players may be more likely to compare themselves against the main character of a game, then. Therefore, it

would stand to reason that players that engage in social comparison by admiring traits of characters or by feeling inferior to characters would also feel worse about themselves and their identity.

This, however, is not necessarily mutually exclusive with the idea of identification. Meir & Neubaum (2019) found that it is possible for an individual to both see similarities and differences in a character at the same time, and therefore identify with the similarities and socially compare with the differences. This study, therefore, plans to explore both possibilities to see if perspective influences players to social comparison or identification, or if both are at play.

Self-Esteem

Self-esteem is the way a person views their own worth (Orth & Robins, 2014). It has been defined through both two lenses: state and trait. State self-esteem regards players as enhancing their self-esteem through mastering skills in a game and effectively playing them out (Davies & Hemingway, 2011). This perspective posits that individuals heighten their self-esteem by proving their ability within a game, transferring this ideology to the real world (Davies & Hemingway, 2011). In the context of video games, trait self-esteem is used as a coping mechanism for self-perceived deficiencies (Davies & Hemingway, 2011). In either state or trait self-esteem, virtual environments can influence a player's perception of the self (Cohen et al., 2020).

One potential explanation behind video games influencing self-esteem is that they offer a safe place to practice skills. For instance, Molyneux et al. (2015) argue that gaming creates real-world social capital, and that learned behavior from a video game can spill into the player's life outside the game; their findings indicate that multiplayer gaming improved social ties and sense of community in players. Video games can be a form of practice for face-to-face conversation

and allow players to have a low-risk way of communicating with others (Lemmens et al., 2010). Beyond social skills, gaming also allows individuals to perceive positive outcomes as personal accomplishments, which can in turn influence engagement in the real world. In their study, Fox et al. (2020) found that when individuals felt they controlled their environment in a serious game, they felt like they had the capability to make changes in the real world. Thus, video games afford players positive feelings in which their perception of self, and therefore self-esteem, are heightened.

Self-esteem and identification have been shown to be linked, as identification can cause alteration of self-concept (Klimmt et al., 2009). When identification with a video game character happens, it follows that they should feel they have the traits of said character, which can lead to a higher self-image and self-esteem (Hefner et al., 2007; Klimmt et al., 2009). Because identification allows players to imagine themselves in roles they otherwise could not achieve, media characters act as a model for the ideal self (Cohen et al., 2020). This is also the case for Social Comparison Theory; players can use media characters as a gauge of traits they would like to assume, or can compare their morals to a morally ambiguous character in order to feel they are superior (Krakowiak & Tsay, 2015). Close examination and assumption of the goals of a video game character should, therefore, allow a player positive affect in the form of higher self-esteem.

Hypotheses

To operationalize interactivity, I intend to have half of the participants play a text-based game (interactivity present) and half watch the game being played in a recorded video (interactivity absent). Based on the research explained in the previous section, this paper posits that high interactivity fosters a higher sense of control in video game players when compared to those who read the text without their input. This sense of control should, in turn, also positively

influence the state self-esteem of the player, as the more in control they feel, the better they should feel about themselves. Self-esteem will be measured after playing or watching the text-based game. Therefore, I propose the following:

H1a: Participants making choices in a text-based game will have a higher sense of control than those watching the playthrough in a non-interactive way.

H1b: A higher sense of control will lead to higher self-esteem.

H1c: Participants making choices in a text-based game will have higher self-esteem mediated through sense of control than those watching the playthrough in a non-interactive way.

In addition to examining the relationship of interactivity on self-esteem and sense of control, this study plans to determine if identification can also affect self-esteem when playing a video game. Identification will be measured after the participants play or watch the game, and based on the previous research, is predicted will have the following relationships:

H2a: Interactivity will create an expectation of a sense of control, which will serve as a direct mediator for identification.

H2b: Sense of control will positively predict self-esteem through identification.

H2c: Interactivity will lead to a sense of control. This sense of control will influence identification, which will in turn positively influence self-esteem.

In addition to those who identify with protagonists, this study also aims to examine players who compare themselves to protagonists. Previous research has shown that perspective can influence identification (Chen et al., 2017), specifically that first person perspective can boost identification effects. Therefore, this study aims to manipulate player connections to the main character via perspective. Perspective manipulation will be done by assigning participants

to different conditions in which they will either play or watch the game in the second person (e.g. You) or the third person (e.g. She/he/they):

H3a: Watching or playing in the second person (instead of third) will positively predict identification.

This research can also be applied to social comparison through the use of upward comparison. Upward comparison with characters can create a feeling of inferiority in individuals (Raney & Bryant, 2020), but relies on the comparative aspect. Therefore, seeing the character as other and not self should inspire social comparison. This paper will prime individuals to think of the character as other and not self by presenting the game in the third person. Therefore, I predict:

H3b: Watching or playing in the third person (instead of second) will positively predict upward comparison.

Finally, prior research has shown that self-esteem is connected not only to identification, but to social comparison. Specifically, upward comparison, or when a person compares themselves to someone they believe to be better, can negatively affect self-esteem. Therefore, this paper posits the following hypothesis and research question:

H4: Those who engage is upward comparison with the protagonist will report lower levels of self-esteem after playing or watching a game.

RQ1: How, if at all, will downward comparison affect self-esteem after playing or watching a game.

The model below (Figure 1) shows the above hypotheses and their predicted positive or negative influence.

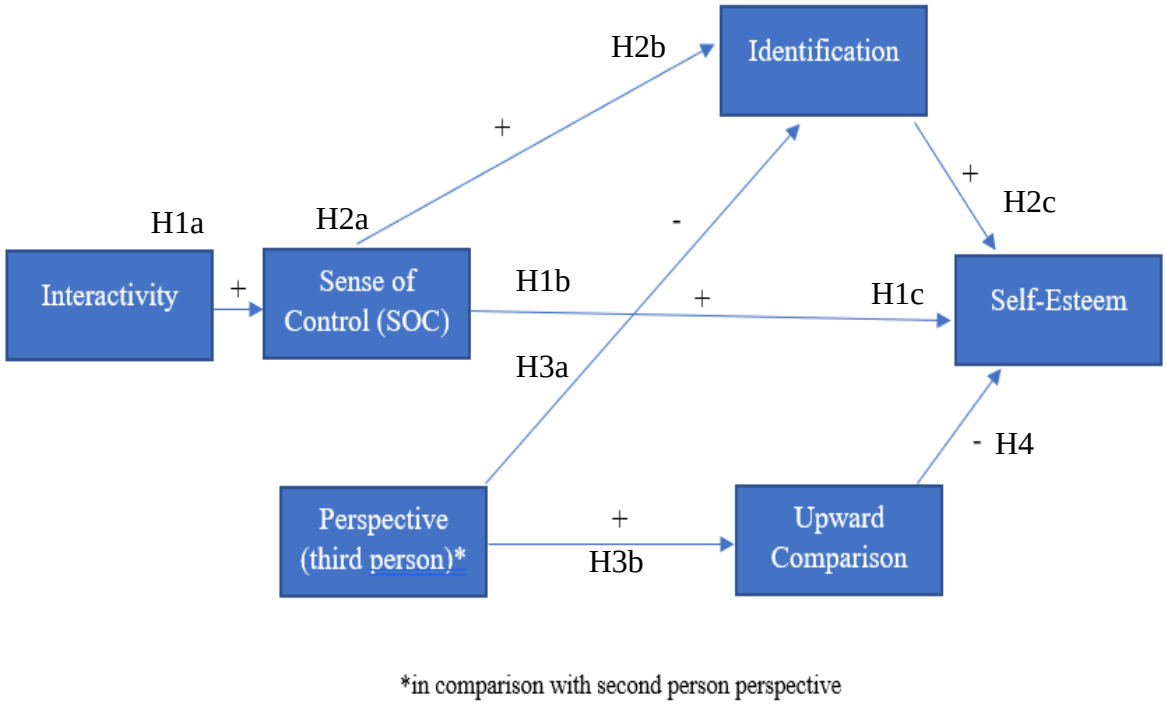


Figure 1: Hypothesized Model

Chapter 3

Methods

Sample

Participants of this study were recruited through a mix of Amazon mTurk and Reddit. Those who were recruited through Reddit were offered a chance to win a $25 Amazon gift card upon completion of the study. Those who were recruited through Amazon mTurk were rewarded with a range of $1 to $3.75 depending on when they took the study. To ensure any differences between where the sample was collected were evenly distributed throughout the four conditions, a chi square was run to show no significance in difference for Reddit or mTurk users in the interaction and perspective conditions. Thus, Reddit and mTurk users were evenly spread into the four conditions. Studies have found similar effects with video games in as little as 30 participants (e.g. Hefner et al., 2007). After taking out participants who did not finish the survey, and those who failed any attention check question, the sample size was $N = 101$.

Individuals were asked to report their age, ethnicity, gender, and video game habits. Ages ranged from 18-71 with a mean of $M = 35.83$. Most participants identified themselves as White/Caucasian (84.2%), followed by Other/Multiple (6.9%), Asian (4%), Latino or Hispanic (3%), and African American/Black (2%). The majority of participants were men (59.4%), followed by women (37.6%), non-binary/third gender (2%) and those who preferred not to say (1%). Most participants were college educated (48.5%) or had attended some college (24.8%). Finally, participants recorded how long they had played video games in years, and how many hours a week they played video games on average. Participants played video games between 2-45 years with an average $M = 24.25$, $SE = 9.975$. Individuals had also recorded that they played video games for 0-80 hours a week with an average of $M = 13.97$, $SE = 13.774$.

Procedure

The study adopted a 2 x 2 factorial design to manipulate interactivity (present/absent) and perspective (second person/third person). Research has shown that point of view can foster a sense of identification (Chen et al., 2017), so this study attempted to prime participants into thinking of themselves as the character (second person; identification) and thinking of themselves in comparison to the character (third person; social comparison). To do this, participants played or watched a short text-based game of the author's design in different perspectives. This text-based game offered those in the present interactivity condition choices in the game as they played. These choices included how quickly they went on the journey, which directions they took, and which tool they used in their game. All choices led to the same main story, with slight deviations on how quickly they reached their goals. The game followed the main character as they visited their aunt, obtained a magical gem, and defeated evil creatures. In the absent interactivity condition, participants were asked to read a filmed playthrough of the game. These playthroughs made the same choices regardless of the perspective condition, and the choices were randomly chosen by a fair dice roll. To ensure participants played or watched the game to the end, a keyword was given at the end of the game. Participants had to enter this keyword in order to continue with the survey. Those in the second person perspective manipulation played or watched the game with the protagonist referred to as you/your/yours, whereas the third person condition played or watched the game with the protagonist's name as Kendal and with feminine pronouns (she/her/hers). Full stimulus materials are available in Appendix B.

Participants were also asked to answer questions regarding the plot of the game they played or watched as an attention check. Only participants who successfully answered all five of

these attention checks and also successfully identified if they had played or watched the game from their respective perspective were included in the study. After participants played or watched the game, they were asked to take a survey. At the end of this survey, they were given a code to redeem their reward depending on their recruitment.

Measures

Mood: Before participants began the experiment, they were asked to rank their mood. This scale asked them to "Please indicate how much you feel the following emotions at the time of taking this survey." Items that measured negative mood were reverse-coded (marked by {R} in this text). The emotions given were as follows: happy, {R} sad, {R} angry, {R} stressed, calm, and content. These items were measured on a 1-7 Likert scale anchored between *None at all* and *Completely.* The reliability of this scale item was $\alpha = .857$.

Interactivity: As a manipulation check, individuals were asked to record how interactive they found their experience. Questions on interactivity were measured using an adapted scale from Oh and Sundar (2015) which was adapted from Kalyanaraman and Sundar (2006). It included three items measured on a 1-7 Likert scale anchored between *Strongly Disagree* and *Strongly Agree.* These items were: "This gameplay experience was very interactive for me"; "The gameplay experience allowed me to perform a lot of actions"; and "The gameplay experience allowed me to access the game in a variety of ways," (Oh & Sundar, 2015). Finally, participants were also asked to rank how interactive they found the study on a scale of 1-7, 1 being *Not at all* and 7 being *Very much*. The reliability of this scale item was $\alpha = .957$.

***Sense of Control (SOC)*:** Sense of control was measured using Witmer and Singer's (1998) pre-existing presence in virtual environments questionnaire. It included eleven items measured on a 1-7 Likert scale anchored between *Not at all* and *Very much*. These items were: "How much are

you able to control events?"; "How responsive is the game to actions that you initiate (or perform)?"; "How much do the aspects of the game involve you?"; "How compelling is your sense of objects moving through space?"; "Are you able to anticipate what would happen next in response to the actions that you perform?"; "How compelling is your sense of moving around inside the game?"; "How involved are you in the gaming experience?"; "How much delay do you experience between your actions and expected outcomes?"; "How quickly do you adjust to the gaming experience?"; "How proficient in interacting with the game do you feel?"; and "Are you involved in the game to the extent that you lose track of time?" (Witmer & Singer, 1998). The reliability of this scale item was $\alpha = .893$.

Identification: Identification was measured using Cohen's (2001) identification scale. It included nine items measured on a 1-7 Likert scale anchored between *Strongly Disagree* and *Strongly Agree*. These items included: "While playing the game, I forgot myself and was fully absorbed"; "I was able to understand the events in the program in a manner similar to that in which the protagonist understood them"; "I think I have a good understanding of the protagonist"; "I tend to understand the reasons why the protagonist does what he or she does"; "While playing the game, I could feel the emotions the protagonist portrayed"; "During playing, I felt I could really get inside the protagonist's head"; "At key moments in the game, I felt I knew exactly what character was going through"; "While viewing the program, I wanted the protagonist to succeed in achieving their goals"; and "When the protagonist succeeded I felt joy, but when they failed, I was sad," (Cohen, 2001). The reliability of this scale item was $\alpha = .908$.

Social Comparison: Social comparison was measured using Allan and Gilbert's (1995) social comparison scale. This scale measures both upward and downward comparison. When an individual engages in upward comparison, they think they are less desirable than a character or

other person; when they engage in downward comparison, they think they are more desirable than a character or other person. After data was collected, a factor analysis was run on this scale and found a clear division between upward and downward comparisons. Therefore, upward comparison was measured in four items on a 1-7 Likert scale anchored between *Strongly Disagree* and *Strongly Agree*. These items included: "I feel this character's competence exceeds mine"; "I am inferior to this character"; "I feel like this character is more likeable than me"; and "I feel this character is more talented than me," (Allan & Gilbert, 1998). The reliability of this scale item was $\alpha = .855$.

Conversely, downward comparison was measured using the same scale with eight items. These items were: "I feel like I am superior to this character"; "I feel stronger than this character"; "This character is less talented than me"; "I think this character is less desirable than me"; "I think I am more competent than this character"; "This character is stronger than me"; and "This character is more unlikable than me," (Allan & Gilbert, 1998). The reliability of this scale item was $\alpha = .856$.

Self-Esteem: Self-esteem was measured using Heatherton & Polivy's (1991) state self-esteem scale. It included nine items measured on a 1-7 Likert scale anchored between *Strongly Disagree* and *Strongly Agree*. However, after data was collected, a factor analysis was run in order to determine if the items scaled correctly. Scale items that dealt with attractiveness loaded differently than the rest of the scale, and therefore were dropped with the justification that the game the participants played or watched was text-based, and therefore attractiveness was not relevant. This scale was to measure high self-esteem, therefore, items that measured lower self-esteem were reverse-coded (marked by {R} in this text). The scale items included: "I feel confident about my abilities"; "I feel that others respect and admire me"; "I feel as smart as

others”; “I feel good about myself”; “I feel confident that I understand things”; “{R}I am worried about looking foolish”; “{R} I feel like I’m not doing well”; “{R}I feel that I have less scholastic ability right now than others”; “{R}I feel concerned about the impression I am making”; “{R} I feel inferior to others at this moment”; “{R} I am worried about what other people think of me”; “{R} I feel displeased with myself”; “{R} I feel self-conscious”; “{R} I feel that I am having trouble understanding things that I read”; “{R} I feel frustrated or rattled about my performance”; and “{R} I am worried about whether I am regarded as a success or failure,” (Heatherton & Polivy, 1991). The reliability of this scale item was $\alpha = .937$.

Chapter 4

Results

The first step in analysis was to ensure the independent variables had no potential confounds. Chi squares were run to ensure that gender, race/ethnicity, and education were evenly spread throughout the conditions and were found to be insignificant. The conditions were also tested for differences in means for age and video game experience, which were also deemed insignificant (see Appendix A for test statistics).

A manipulation check was run to determine if those in the present interactivity condition perceived higher interactivity than those in the absent condition. An Analysis of Variance (ANOVA) was run to see if perceived interactivity varied as a function of the interactivity condition. The difference was significant, with those in the present condition perceiving their experience as more interactive (M = 4.535, SE = .193) than those in the absent condition (M = 2.162, SE = .191), $F(1, 99) = 76.519$, $p < .001$. Manipulation of condition was therefore considered successful.

To test the presented hypotheses, a bivariate correlation of the presented variables was run to establish relationships (Table 1). Then, a Multivariate Analysis of Variance (MANOVA) was run to test if SOC, identification, upward comparison, downward comparison, and self-esteem varied as a function of interactivity and perspective. This analysis revealed a significant main effect for interactivity, Wilks' L= .494, $F(5, 93) = 19.802$, $p < .001$, partial $\eta 2 = .506$.

		Interactivity	Perspective	Sense of Control	Identification	Upwards Comparison	Downwards Comparison	Self-Esteem
Interactivity	Pearson Correlation	--						
Perspective	Pearson Correlation	.069	--					
	Sig. (2-tailed)	.490						
Sense of Control	Pearson Correlation	.581**	-.086	--				
	Sig. (2-tailed)	<.001	.394					
Identification	Pearson Correlation	-.056	-.016	.482**	--			
	Sig. (2-tailed)	.580	.870	<.001				
Upwards Comparison	Pearson Correlation	.089	-.035	.151	.145	--		
	Sig. (2-tailed)	.375	.729	.132	.149			
Downwards Comparison	Pearson Correlation	.041	-.202*	-.095	-.430**	-.042	--	
	Sig. (2-tailed)	.685	.042	.346	<.001	.678		
Self-Esteem	Pearson Correlation	.034	.085	.034	.094	-.424**	-.172	--
	Sig. (2-tailed)	.733	.396	.738	.352	<.001	.086	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 1: Bivariate Correlation of all Tested Variables

There was not a significant main effect for perspective, Wilks' L= .920, $F(5, 93) = .920$, $p = .165$, partial $\eta 2 = .080$, nor for interactivity x perspective, Wilks' L= .973, $F(5, 93) = .512$, $p = .767$, partial $\eta 2 = .027$ (Table 2). Although there was no significance here, it should also be noted that the means across these interactions were relatively similar, showing that the interactive manipulation did not affect the perspective manipulation. H1a predicted that those who played the game would report a higher SOC than those who watched a playthrough. The univariate analysis (Table 3) showed a significant main effect for interactivity, with those who played experiencing a much higher SOC ($M = 4.421$, $SE = .147$) than those who watched a playthrough ($M = 2.923$, $SE = .146$), $F(1, 97) = 52.200$, $p < .001$, partial $\eta 2 = .350$. Thus, H1a is supported.

Interactivity x Perspective

Dependent Variable	Interactivity Condition	Perspective Condition	Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Sense of Control	Watched	Second	3.186	.200	2.789	3.582
		Third	2.661	.212	2.240	3.082
	Played	Second	4.479	.217	4.049	4.909
		Third	4.364	.200	3.967	4.761
Identification	Watched	Second	4.893	.233	4.431	5.355
		Third	4.731	.247	4.242	5.221
	Played	Second	4.628	.252	4.128	5.128
		Third	4.733	.233	4.271	5.194
Upward comparison	Watched	Second	2.981	.248	2.489	3.474
		Third	3.094	.263	2.572	3.616
	Played	Second	3.438	.269	2.905	3.972
		Third	3.111	.248	2.619	3.603
Downward comparison	Watched	Second	3.426	.197	3.034	3.818
		Third	2.958	.209	2.543	3.374
	Played	Second	3.495	.214	3.070	3.919
		Third	3.116	.197	2.724	3.507
Self-Esteem	Watched	Second	4.856	.234	4.391	5.321
		Third	4.806	.249	4.313	5.300
	Played	Second	4.668	.254	4.165	5.172
		Third	5.125	.234	4.660	5.590

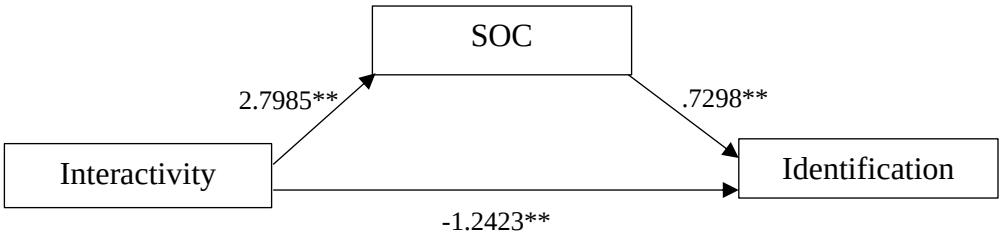
Table 2: Means Table for Interactivity and Perspective on SOC, Identification, Upward comparison, Downward comparison, and Self-Esteem

H1c predicted a mediation effect of SOC on the relationship of interactivity and self-esteem. Running a Hayes (2022) PROCESS Model 4 simple mediation model while controlling for perspective and upward comparison, no significant indirect effects were found, b = .1413, SE = .1664, 95% CI = [-.1919, .4749]. Therefore, H1c was not supported.

Dependent Variable	Interactivity Condition	Mean	Std. Error	F
		Interactivity Condition		
Sense of Control	Watched	2.923	.146	52.200**
	Played	4.421	.147	
Identification	Watched	4.812	.170	.299
	Played	4.680	.172	
Upward comparison	Watched	3.038	.181	.851
	Played	3.275	.183	
Downward comparison	Watched	3.192	.144	.305
	Played	3.305	.145	
Self-Esteem	Watched	4.831	.171	.074
	Played	4.897	.173	

Table 3: Means Table for Interactivity on SOC, Identification, Upward comparison, Downward comparison, and Self-Esteem

H2a posited that interactivity would enhance identification through SOC. Again, a Hayes (2022) PROCESS Model 4 simple mediation model was run while controlling for perspective and upward comparison (Figure 2). This found significant negative direct effects of interactivity on identification, b = -1.2423, SE = .2305, 95% CI = [-1.6998, -.7848], and significant positive indirect effects when SOC was used as a mediator, b = 1.0789, SE = .1881, 95% CI = [.7453, 1.4898]. This implies that an increase in SOC lead to greater feelings of identification in the interactivity condition; however, once that SOC is considered, interactivity may reduce identification. This shows a mediation effect of SOC, and therefore H2a is supported.



Note: In this model, absent interactivity = 0, and present interactivity = 1

Figure 2: Hayes (2022) PROCESS Model 4 Analysis on Interactivity to Identification through SOC

H1b predicted that a higher SOC would lead to a higher self-esteem, and H2b predicted that SOC would positively predict self-esteem through identification. This Hayes (2022) PROCESS Model 4 used perspective, upward comparison, and interactivity as control variables while testing the indirect effects of SOC on self-esteem through identification (Figure 3). While the existing correlation of SOC on identification has already been established, there were no direct effects of SOC on self-esteem, b = -.0434, SE = .1389, 95% CI = [-.3191, .2323]. Therefore, H1b was not supported. This model also showed that there were no significant indirect effects of SOC on self-esteem through identification, b = .1390, SE = .0952, 95% CI = [-.0388, .3406]. Therefore, H2b was not supported.

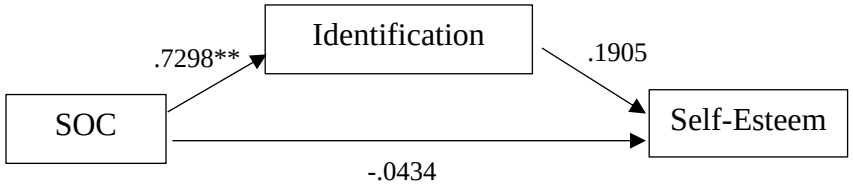


Figure 3: Hayes (2022) PROCESS Model 4 Analysis of SOC on Self-Esteem through Identification

H3a predicted that playing or watching the game in the second person perspective would positively predict identification. Using the aforementioned MANOVA of interactivity and perspective, the univariate analysis of perspective on identification shows no significance, F(1, 97) = .014, p = .906, partial η2 = .000 (Table 4); H3a was not supported.

H3b predicted that playing or watching the games in the third person perspective would positively predict upward comparison. The univariate analysis of perspective on identification shows no significance, F(1, 97) = . 175, p = .677, partial η2 = .002; H3b was not supported. Despite this, an exploratory analysis of downward comparison was also employed and was found to be significant: Those who played or watched the game in the second person were significantly more likely to engage in downward comparison (M = 3.460, SE = .145) than those who played

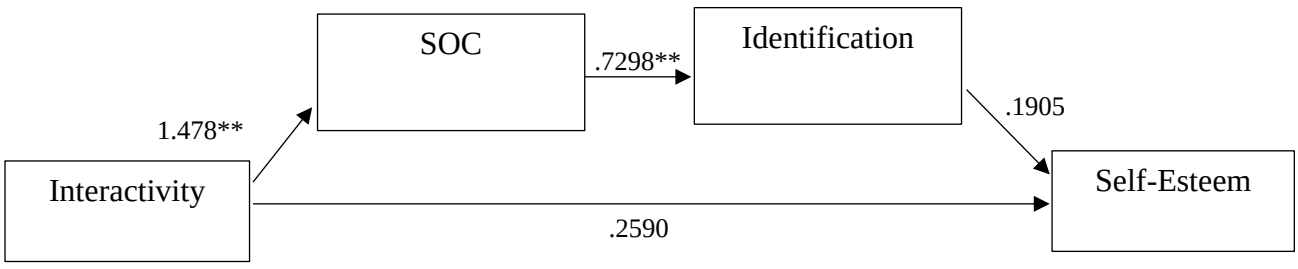
or watched in the third person perspective (M = 3.037, SE = .144), F (1, 97) = 4.281, p < .05, partial η2 = .042.

Perspective Condition

Dependent Variable	Point of View	Mean	Std. Error	F
Sense of Control	Second (You)	3.832	.147	
	Third (Kendal)	3.512	.146	2.382
Identification	Second (You)	4.761	.172	
	Third (Kendal)	4.732	.170	.014
Upward comparison	Second (You)	3.210	.183	
	Third (Kendal)	3.102	.181	.175
Downward comparison	Second (You)	3.460	.145	
	Third (Kendal)	3.037	.144	4.281*
Self-Esteem	Second (You)	4.762	.173	
	Third (Kendal)	4.966	.171	.704

Table 4:Means Table for Perspective on SOC, Identification, Upward comparison, Downward comparison, and Self-Esteem

H2c predicted interactivity would affect self-esteem through a serial mediation of SOC and identification. To test this, a Hayes (2022) PROCESS Model 6 serial mediation was run (Figure 4). Results showed a significant relationship between interactivity and SOC, as well as a



Note: In this model, absent interactivity = 0, and present interactivity = 1

Figure 4: Hayes (2022) PROCESS Model 6 Analysis of Interactivity on Self-Esteem through SOC and Identification

significant relationship between SOC and identification. However, results did not show a significant relationship between identification and self-esteem, nor a direct effect of interactivity on self-esteem. Further, there were no significant indirect effects of interactivity to self-esteem through both SOC and identification. Therefore, H2c was not supported.

Finally, H4 predicted that those who engaged in upward comparison with the protagonist will report lower levels of self-esteem, and RQ1 questioned the relationship of downward comparison to self-esteem. To answer this, the bivariate correlation of upward and downward comparison to self-esteem was examined. This showed significant correlation between upward comparison and self-esteem, $r = -.424$, $p < .001$, and no significant correlation between the two variables, $r = -.172$, $p = .086$. However, this approaches significance, so a Hayes (2022) PROCESS Model 4 was run controlling for perspective, interactivity, and identification, testing the effects of downward comparison on self-esteem through upward comparison to see what the effects are when upward comparison is considered (Figure 5). This showed a significant negative relationship between upward comparison and self-esteem ($b = -.4267$, $SE = .0865$, 95% CI = [-.5984, -.2550); thus, H4 was supported. However, in analyzing RQ1, there were no direct or indirect effects of downward comparison on self-esteem.

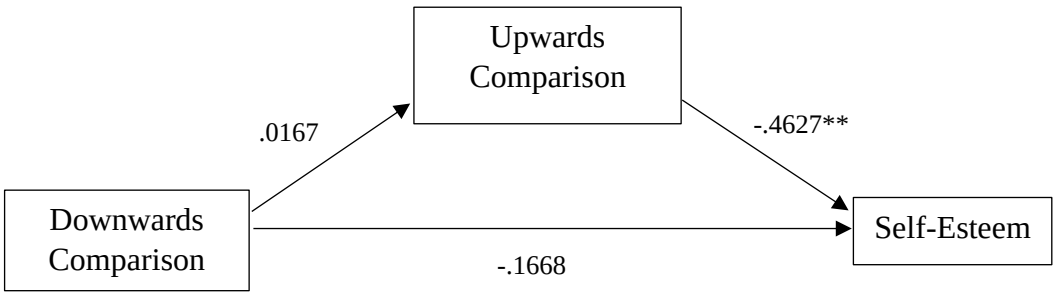


Figure 5: Hayes (2022) PROCESS Model 4 Analysis of SOC on Self-Esteem through Identification

Chapter 5

Discussion

This study set out with the aim to determine if interactivity and perspective in a gaming environment could affect one's intention to identify with or compare oneself to the main character, and if that identification or social comparison would affect self-esteem in the individual. However, the results of this study indicate that self-esteem did not interact with SOC, interactivity, or identification.

As expected through prior studies (e.g., Sundar, 2008; Kim, 2014), interactivity did foster a higher sense of control in participants. Those who played the game felt significantly more in control of the game than those who watched a playthrough. This reiterates that choice in games lets the user feel more in control, which in turn led to players identifying more with the character in the interactive condition. This supports the concept that when a player has more interactivity and control with their medium, this can lead to a higher identification with the main character (Hefner et al., 2007). Control, in this way, seems to strengthen the bond of player to character.

However, once control is accounted for, interactivity had a negative relationship with identification. It is possible this can be explained through cognitive load theory; this theory posits that individuals have a limited amount of cognitive space to process both choices afforded by interactivity and the opportunity of those choices (Sundar & Oh, 2020). The condition of high interactivity afforded users choice, which may have taken up more mental space and therefore decreased their ability to identify with the protagonist. Based on these findings, identification may be a mental process that requires either control or lack of choice in order for individuals to create a shorter mental path.

Another potential explanation for the negative relationship to identification through interactivity is the idea of identifying with the task. This study focused on identification with a protagonist, but it is possible that participants were identifying with the actions taken by the protagonist, as that is over what they had control. This leads to the idea that identification might not solely focus on the person, but the performance. This would also explain why those in the second person perspective condition were more prone to downward compare than they were to identify. Further, this study controlled for failure, so if a participant was identifying with the player choices and not the protagonist, results may seem neutral.

Despite this, there was not a connection between control and self-esteem through identification. Previous research has found an existing connection between control and self-esteem (e.g. Hefner et al., 2007; Fox et al., 2020), however, this may be due to the nature of the game that participants played. This study offered control through text, where players could decide the actions of the protagonist by selecting one of several text options. Although participants found this interactive and it fostered a sense of control, it is possible that this bond to the character was formed separate from self-esteem because there were no visual components beyond player imagination. It should also be noted that although individuals who played the game did find the interactive condition of this experiment more interactive than those who did not, the mean of those who played was still towards the middle of the 7-point Likert Scale (M = 4.535, SE = .193). It is possible that individuals felt this task was only moderately interactive, which could have potentially weakened these effects.

Another possible explanation for the lack of connection to self-esteem may be the concept of state self-esteem. As noted, state self-esteem refers to how individuals feel about themselves in the moment, whereas trait self-esteem refers to a longer lasting view of the self

(Davies & Hemingway, 2011). Based on the lack of relationship between interactivity, perspective, and self-esteem, it is possible that self-esteem is not inclined to act as a state. Instead, individuals may be proud or ashamed of work they do, but this state of emotion may not affect their overall self-esteem.

It is also interesting to note that perspective did not seem to affect whether participants engaged in upward comparison or identification. Due to the nature of social comparison (specifically that it occurs when one compares oneself to another; Raney & Bryant, 2020), this study hypothesized that playing or watching a game from the perspective of the other would create comparison. Therefore, it should stand to reason that those who played in the third person condition with a main character that had a different name from them would be more likely to compare themselves to this character than those who played in second person condition, having the main character adopt their identity. It also stands to reason that those who played in the second person would have an easier path to identification than social comparison, as the main character was referred to as "you." This was not the case, however, as individuals did not engage in upward comparison nor identification as a function of perspective. In fact, upward comparison was unattached to both perspective and interactivity.

However, exploratory analysis showed that individuals who played the game in the second person perspective were more likely to engage in downward comparison, or comparison in which they felt better than the main character (Raney & Bryant, 2020). This could be due to the closeness of the perspective; when participants were asked what they thought of the character in comparison to themselves after reading it from their own perspective, they may have been more inclined to think less of the character than themselves. It is also possible that the main character of the story did not inspire participants, so upward comparison was ineffective. This

could also be due to the nature of the game, as there were no visual aspects of the character, so participants could visualize the main character in any way they chose.

This is not to say, however, that upward comparison did not occur. In fact, upward comparison did lead to lower self-esteem, as hypothesized. Conversely, downward comparison had no significant relationship to self-esteem. This, however, was not due to perspective or interactivity. This presents the possibility that individuals who are more prone to low self-esteem may engage in upward comparison, or vice versa. Based on the lack of interaction with the manipulated conditions, this correlation may be more of a predisposition of individual participants than a manipulation of the study itself.

This study has several theoretical and practical implications. On the theoretical side, this study shows that though interactivity can affect feelings of control, it may negatively influence identification. This study also shows the established relationship of upward comparison to lower self-esteem, while there are no effects of interactivity and perspective on self-esteem established here. This begs the question: Is state self-esteem a proper measure of how one feels after accomplishing a task? This will be referenced in the future research section. As for practical implications, there is a growing number of ways to watch people play games. For instance, streaming platforms such as Twitch allow individuals to stream games they play to a broad audience for compensation. Similarly, YouTube content creators called Let's Players play video games and commentate on it for popularity and compensation. Comparably, playthroughs, where individuals play video games and post the footage to YouTube or other streaming services without commentary, is also popular. Therefore, a study that compares playing a game to merely watching one being played is necessary to recognize the expanding ways that individuals watch gameplay footage for entertainment.

Limitations and Future Research

This study is not without its limitations. Data collection was taken from two different sources, and although the randomization of these sources between conditions made it so this was insignificant, future research should consider attempting a study like this from one source like mTurk or Reddit. Second, self-esteem was not affected by the manipulated conditions. This could be for a number of reasons; it is possible that the medium of a text-based game did not inspire a strong enough connection with the main character. It is also possible that the main character herself did not inspire enough comparison to affect self-esteem. It may also be due to the use of the concept of state self-esteem. Future research should instead consider the use of mood like shame or pride to gauge the effects of a successful video game experience.

This study attempted to control for feelings of failure by creating a game in which players could not prematurely end the game with a failure. Therefore, the player succeeded no matter what choices they made. Future research should consider using a visual and auditory video game, and controlling for failure in a different way, or by merely testing failure as an option. This may also enhance comparison or identification by allowing players to see the main character. Future research should also consider manipulating perspective by having participants play a visual game in the first person or third person perspective. Finally, although there was a connection between upward comparison and lower self-esteem, this can only be considered correlational, not causal due to a lack of interaction of upward comparison and self-esteem with other manipulated variables. Future research should consider pre-testing for self-esteem in a way that would not desensitize participants to truly call this relationship causal.

Chapter 6

Conclusion

Video games create a space in which players can interact with characters in a more personal way due to interactivity. In this study, perspective and interactivity were manipulated through a text-based game to see what potential effects this had on the player and their experiences. Although self-esteem did have a relationship with upward comparison, this relationship was not affected by perspective or interactivity. Interactivity did, however, positively influence sense of control as well as identification. Likewise, perspective did have an effect on downward comparison but did not affect upward comparison or identification. Future research should consider testing these relationships with a game that allows for audio and visual cues to see if this strengthens the already existing relationships found here, and if those relationships in turn affect self-esteem. Narrative is a powerful tool, especially in an interactive genre like video games, so continuation of this research is vital in order to understand the psychology of the player, and how to best create content in this medium.

References

Ahn, Changhyun & Bracken, Cheryl (2017) Interactive Narrative Choices: Testing Transportation into Video Game Narrative. *Conference Papers -- International Communication Association*, 1–26.

Allan, S., & Gilbert, P. (1995). A social comparison scale: Psychometric Properties and relationship to psychopathology. *Personality and Individual Differences*, *19*(3), 293–299. https://doi.org/10.1016/0191-8869(95)00086-l

Chen, M., Bell, R. A., & Taylor, L. D. (2017). Persuasive effects of point of view, protagonist competence, and similarity in a health narrative about type 2 diabetes. *Journal of Health Communication*, *22*(8), 702–712. https://doi.org/10.1080/10810730.2017.1341568

Cohen, J. (2001). Defining identification: A theoretical look at the identification of audiences with media characters. *Mass Communication and Society*, *4*(3), 245–264. https://doi.org/10.1207/s15327825mcs0403_01

Cohen, J., Appel, M., & Slater, M.D. (2020). Media, Identity, and the Self . In 1027391050 788315253 M. B. Oliver, 1027391051 788315253 A. A. Raney, & 1027391052 788315253 J. Bryant (Authors), *Media effects advances in theory and research* (pp. 179-194). New York, NY: Routledge, Taylor & Francis Group

Davies, John J & Hemingway, Timothy J. (2011) Guitar Hero or Zero? Fantasy, Self-Esteem, and Deficient Self-Regulation in Rhythm-Based Music Video Games. *Conference Papers -- International Communication Association*, 1–33.

Festinger, L. (1954). A theory of social comparison processes. Human Relations, 7, 117–140. doi:10.1177/001872675400700202

Fox, J., & Bailenson, J. N. (2009). Virtual Self-Modeling: The Effects of Vicarious Reinforcement and Identification on Exercise Behaviors. *Media Psychology*, *12*(1), 1-25. doi:10.1080/15213260802669474

Fox, J., McKnight, J., Sun, Y., Maung, D., & Crawfis, R. (2020). Using a serious game to communicate risk and minimize psychological distance regarding environmental pollution. *Telematics & Informatics*, *46*, N.PAG. https://doi-org.ezaccess.libraries.psu.edu/10.1016/j.tele.2019.101320

Green, M. C., & Jenkins, K. M. (2014). Interactive Narratives: Processes and Outcomes in User-Directed Stories. *Journal of Communication*, *64*(3), 479–500. https://doi-org.ezaccess.libraries.psu.edu/10.1111/jcom.12093

Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. The Guilford Press.

Heatherton, T. F., & Polivy, J. (1991). Development and validation of a scale for measuring state self-esteem. *Journal of Personality and Social Psychology, 60*(6), 895-910. http://dx.doi.org/10.1037/0022-3514.60.6.895

Hefner, D., Klimmt, C., & Vorderer, P. (2007). Identification with the player character as determinant of video game enjoyment. *Entertainment Computing – ICEC 2007*, 39–48. https://doi.org/10.1007/978-3-540-74873-1_6

Jang, Y., & Park, E. (2019). An adoption model for virtual reality games: The roles of presence and enjoyment. *Telematics & Informatics*, *42*, 101239. https://doi-org.ezaccess.libraries.psu.edu/10.1016/j.tele.2019.101239

Kalyanaraman, S., & Sundar, S. S. (2006). The Psychological Appeal of Personalized Content in Web Portals: Does Customization Affect Attitudes and Behavior? *Journal of Communication*, *56*(1), 110–132. https://doi.org/10.1111/j.1460-2466.2006.00006.x

Kim, J. (2014). Interactivity, user-generated content and video game: An ethnographic study ofanimal crossing: Wild world. *Continuum*, *28*(3), 357–370. https://doi.org/10.1080/10304312.2014.893984

Klimmt, C. (2009). Serious games for social change: Why they (should) work. In U. Ritterfeld, P. Vorderer, & M. Cody (Eds.), Serious games: Effects and mechanisms (pp. 248–270). New York, NY: Routledge.

Klimmt, C., Hartmann, T., & Frey, A. (2007). Effectance and control as determinants of video game enjoyment. *CyberPsychology & Behavior*, *10*(6), 845–848. https://doi.org/10.1089/cpb.2007.9942

Klimmt, C., Hefner, D., & Vorderer, P. (2009). The video game experience as "true" identification: A theory of enjoyable alterations of players' self-perception. *Communication Theory*, *19*(4), 351–373. https://doi.org/10.1111/j.1468-2885.2009.01347.x

Klimmt, C., Hefner, D., Vorderer, P., Roth, C., & Blake, C. (2010). Identification with video game characters as automatic shift of self-perceptions. *Media Psychology*, *13*(4), 323–338. https://doi.org/10.1080/15213269.2010.52491

Klimmt, C., & Possler, D. (2020). Video Games. In 1027391050 788315253 M. B. Oliver, 1027391051 788315253 A. A. Raney, & 1027391052 788315253 J. Bryant (Authors), *Media effects advances in theory and research* (pp. 342-356). New York, NY: Routledge, Taylor & Francis Group

Krakowiak, K. M., & Tsay, V. M. (2015). The Dual Role of Morally Ambiguous Characters: Examining the Effect of Morality Salience on Narrative Responses. *Human Communication Research*, *41*(3), 390–411. https://doi-org.ezaccess.libraries.psu.edu/10.1111/hcre.12050

Lemmens, J., Valkenburg, P., & Peter, J. (2010). The Psychosocial Causes and Consequences of Pathological Gaming: A Longitudinal Study. *Conference Papers -- International Communication Association,* 1.

Lewis, M. L., Weber, R., & Bowman, N. D. (2008). "they may be pixels, but they're my pixels:" developing a metric of character attachment in role-playing video games. *Cyber Psychology & Behavior*, *11*(4), 515–518. https://doi.org/10.1089/cpb.2007.0137

Lin, J.-H. (2013). Identification matters: A moderated mediation model of media interactivity, character identification, and video game violence on aggression. *Journal of Communication*, *63*(4), 682–702. https://doi.org/10.1111/jcom.12044

McDonald, D. G., & Kim, H. (2001). When I Die, I Feel Small: Electronic Game Characters and the Social Self. *Journal of Broadcasting & Electronic Media*, *45*(2), 241. https://doi-org.ezaccess.libraries.psu.edu/10.1207/s15506878jobem4502_3

Meier, Y., & Neubaum, G. (2019). Gratifying Ambiguity: Psychological Processes Leading to Enjoyment and Appreciation of TV Series with Morally Ambiguous Characters. *Mass Communication & Society*, *22*(5), 631–653. https://doi-org.ezaccess.libraries.psu.edu/10.1080/15205436.2019.1614195

Molyneux, L., Vasudevan, K., & Zúñiga, H. G. D. (2015). Gaming Social Capital: Exploring Civic Value in Multiplayer Video Games. *Journal of Computer-Mediated Communication*, *20*(4), 381–399. https://doi.org/10.1111/jcc4.12123

Oh, J., & Sundar, S. S. (2015). How does interactivity persuade? an experimental test of interactivity on cognitive absorption, elaboration, and attitudes. *Journal of Communication*, *65*(2), 213–236. https://doi.org/10.1111/jcom.12147

Orth, U., & Robins, R. W. (2014). The Development of Self-Esteem. *Current Directions in*

Psychological Science, *23*(5), 381–387. http://www.jstor.org/stable/44318803

Raney, A. A., & Bryant, J. (2020). Entertainment and Enjoyment as Media Effect . In 1027391050 788315253 M. B. Oliver, 1027391051 788315253 A. A. Raney, & 1027391052 788315253 J. Bryant (Authors), *Media effects advances in theory and research* (pp. 324-341). New York, NY: Routledge, Taylor & Francis Group

Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The Motivational Pull of Video Games: A Self-Determination Theory Approach. *Motivation and Emotion*, *30*(4), 344–360. https://doi.org/10.1007/s11031-006-9051-8

Slater, M. D., Johnson, B. K., Cohen, J., Comello, M. L. G., & Ewoldsen, D. R. (2014). Temporarily Expanding the Boundaries of the Self: Motivations for Entering the Story World and Implications for Narrative Effects. *Journal of Communication*, *64*(3), 439–455.

Sundar, S. S. (2008). Self as source: Agency and customization in interactive media. In *Mediated Interpersonal Communication* (Vol. 9780203926864, pp. 58-74). Routledge Taylor & Francis Group. https://doi.org/10.4324/9780203926864

Sundar, S. S., & Oh, J. (2020). Psychological Effect of Interactive Media Technologies. In 1027391050 788315253 M. B. Oliver, 1027391051 788315253 A. A. Raney, & 1027391052 788315253 J. Bryant (Authors), *Media effects advances in theory and research* (pp. 324-341). New York, NY: Routledge, Taylor & Francis Group

Turkay, S., & Adinolf, S. (2015). The effects of customization on motivation in an extended study with a massively multiplayer online roleplaying game. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *9*(3), Article 3. https://doi.org/10.5817/CP2015-3-2

Witmer, B. G., & Singer, M. J. (1998). Measuring presence in virtual environments: A presence

questionnaire. *Presence: Teleoperators and Virtual Environments*, *7*(3), 225–240. https://doi.org/10.1162/105474698565686

Appendix A- Chi Squares and ANOVAs for Demographics per Condition

Chi Square on Gender x Interactivity

Interactivity Condition

Gender	Non-interactive	Interactive	Total
Man	30	30	60
Woman	21	17	38
Non-binary/third gender	0	2	2
Prefer not to say	0	1	1
Total	51	50	101

The difference between gender in the cells was not significant, $\chi 2(3, N = 101) = 3.411$, $p = .332$

Chi Square on Gender x Perspective

Perspective Condition

Gender	Second Person	Third Person	Total
Man	28	32	60
Woman	20	18	38
Non-binary/third gender	1	1	2
Prefer not to say	1	0	1
	50	51	101

The difference between gender in the cells was not significant, $\chi 2(3, N = 101) = 1.362$, $p = .714$

Chi Square on Ethnicity x Interactivity

Interactivity Condition

Race/Ethnicity	Non-interactive	Interactive	Total
White/Caucasian	43	42	85
Asian	2	2	4
Black	1	1	2
Latino	1	2	3
Other	4	3	3
Total	51	50	101

The difference between ethnicity in the cells was not significant, $\chi 2(4, N = 101) = .478$, $p = .976$

Chi Square on Ethnicity x Perspective

Perspective Condition

Race/Ethnicity	Second Person	Third Person	Total
White/Caucasian	42	43	85
Asian	2	2	4
Black	2	0	2
Latino	2	1	3
Other	2	5	3
Total	51	50	101

The difference between ethnicity in the cells was not significant, $\chi 2(4, N = 101) = 3.621$, $p = .460$

Chi Square on Education x Interactivity

Interactivity Condition

Education	Non-interactive	Interactive	Total
Some High School	0	3	3
High school/GED	4	7	11
Some College	12	13	25
College	27	22	49
Some graduate school	2	3	5
Graduate school	6	2	8
Total	51	50	101

The difference between education in the cells was not significant, $\chi 2(5, N = 101) = 6.559$, $p = .256$

Chi Square on Education x Perspective

Perspective Condition

Education	Second Person	Third Person	Total
Some High School	2	1	3
High school/GED	7	4	11
Some College	14	11	25
College	22	27	49
Some graduate school	1	4	5
Graduate school	4	4	8
Total	51	50	101

The difference between education in the cells was not significant, $\chi 2(5, N = 101) = 3.812$, $p = .557$

To determine that age, time (in years) playing video games, and hours per week playing video games were spread evenly in the interactivity and perspective conditions, two MANOVAs were run with the following results:

Age x interactivity: $F(1, 99) = .571$, $R^2 = .006$, $p = .452$

Years playing games x interactivity: $F(1, 99) = .042$, $R^2 = .000$, $p = .839$

Hours per week playing games x interactivity: $F(1, 99) = 1.026$, $R^2 = .010$, $p = .314$

Age x perspective: $F(1, 99) = .162$, $R^2 = .002$, $p = .688$

Years playing games x perspective: $F(1, 99) = 1.728$, $R^2 = .017$, $p = .192$

Hours per week playing games x perspective: $F(1, 99) = .299$, $R^2 = .003$, $p = .586$

Appendix B- Stimulus Materials

Second person play condition:

https://play2.textadventures.co.uk/Play.aspx?id=editor/dd9dcee0-4bbc-4297-9278-2cf22f267ea0%2fRuby%2c+Emerald%2c+Opal.aslx

Third person play condition:

https://play2.textadventures.co.uk/Play.aspx?id=editor/b47509d1-c996-49b8-a8e5-bb2316f2b84e%2fKendal%27s+Journey.aslx

Second person watch condition:

https://www.youtube.com/watch?v=QgmAUnoSECk

Third person watch condition:

https://www.youtube.com/watch?v=p4KtQwL520Y