

Louisiana State University

## LSU Scholarly Repository

---

LSU Doctoral Dissertations

Graduate School

---

2017

### Questing with Grandma: Building Closer Families Through Intergenerational Video Gaming

Sanela Osmanovic Vukelic

*Louisiana State University and Agricultural and Mechanical College*

Follow this and additional works at: [https://repository.lsu.edu/gradschool\\_dissertations](https://repository.lsu.edu/gradschool_dissertations)



Part of the [Communication Commons](#)

---

#### Recommended Citation

Osmanovic Vukelic, Sanela, "Questing with Grandma: Building Closer Families Through Intergenerational Video Gaming" (2017). *LSU Doctoral Dissertations*. 4238.

[https://repository.lsu.edu/gradschool\\_dissertations/4238](https://repository.lsu.edu/gradschool_dissertations/4238)

This Dissertation is brought to you for free and open access by the Graduate School at LSU Scholarly Repository. It has been accepted for inclusion in LSU Doctoral Dissertations by an authorized graduate school editor of LSU Scholarly Repository. For more information, please contact [gradetd@lsu.edu](mailto:gradetd@lsu.edu).

QUESTING WITH GRANDMA:  
BUILDING CLOSER FAMILIES THROUGH INTERGENERATIONAL VIDEO GAMING

A Dissertation

Submitted to Graduate Faculty of the  
Louisiana State University and  
Agricultural and Mechanical College  
in partial fulfillment of the  
requirements for the degree of  
Doctor of Philosophy

in

The Department of Communication Studies

by

Sanela Osmanovic

B.A., Southeastern Louisiana University, 2002

M.A., Southeastern Louisiana University, 2004

August 2017

*To my brother Armin,  
my heart and my soul.*

*Together, we favored the road travelled by few,  
and played through the darkest and happiest times of our lives.*

## ACKNOWLEDGEMENTS

In social video gaming, the biggest accomplishments require joint effort—and because art imitates life, the dissertation process is no different. For being the leader of my wonderful dissertation-owning team, thank you to Dr. Loretta “The Lightbringer” Pecchioni, the wielder of the libram of knowledge and the staff of enlightenment. Your research kickstarted this project, and I am immensely grateful for our fellowship that continuously broadens my horizons, for your guidance, support, infinite patience, and treasured friendship. To Dr. Graham Bodie, thank you for your infallible advice and remarkable attention to detail, and for always gazing “onwards and upwards,” driving us to do more and be better. To Dr. James Garand, thank you for always being there to answer my questions, and for the light you so effortlessly shone on the dark and labyrinthine alleys of statistics. Finally, to Dr. Mary Jill Brody, the paladin of souls, thank you for your serene and soul-baring presence, and for always drawing my attention to what was in the peripheral vision. I could not have wished for a better group for this quest.

Also, thank you Dr. Rachel Hall for your insight; to Dr. Ruth Bowman, thank you for ensuring I have a place in our department, I would not have had a chance to write these words if it were not for your persistence and your work. And to our most wonderful Texas rose, Ms. Donna Sparks, thank you for your support, friendship, and love. Finally, thank you to all teachers in our department who generously shared their knowledge and time.

Naturally, a protagonist on a difficult quest sometimes needs to lean against the wall and huff, puff, weep. Fortunately, with academic siblings around, one rarely finds herself alone in those moments. Thank you Nicole Costantini, Cassie Shimek, Andrea Vickery, Raquel

Robvais, Kaitlin Cannava, Adam Harvey, and Liz Sills, for your friendship and counsel, for your encouragement, poetry, lunches, and chuckles.

Lastly, every protagonist on a quest has that someone (or someones) at home “worth fighting for,” if we are to trust games and Disney movies. I have two families, one here in Louisiana, and one back in Europe. They are the cornerstone of my work and my happiness. So, to my Louisiana family, to Tracy Nobles, to Randi Oliveri, and to their daughter Angelena, thank you for giving me a home in Baton Rouge, for your thoughtfulness, your beautiful hearts, and your love. To my parents, Nafija Kurtic-Osmanovic and Sabit Osmanovic, thank you—a daughter could not hope for a better childhood and life. You made sure I knew there were no limits; you have given me everything. To my baby brother Armin Osmanovic, my sister-in-law Ana and my niece Mia, thank you for being there in every way possible, for your endless love, generosity, and support, for talks, joy, and laughter. This diploma belongs on your wall. And last, but certainly not least, to my partner Stuart Wells, you are my bliss. Thank you for happiness, coziness, and comfort, for adventures, for making this quest so much easier, and my world so much better.

## TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	iii
LIST OF TABLES.....	vii
LIST OF FIGURES .....	viii
ABSTRACT .....	ix
CHAPTER 1: INTRODUCTION .....	1
Purpose of the Study.....	5
CHAPTER 2: BACKGROUND AND THEORETHICAL FRAMEWORK .....	7
Family and Shared Activities .....	8
Games and Play.....	12
Understanding Video Games .....	15
Social Side of Video Games.....	17
Sociability of Video Games .....	19
Older Adults and Video Games.....	30
Theoretical Framework.....	36
Family Communication Patterns Theory .....	37
Self-Other Overlap .....	39
Social Penetration Theory.....	41
Summary .....	45
CHAPTER 3: METHODS.....	48
Research Design .....	48
Sample and sampling procedure .....	49
Instruments and Data Collection .....	49
Data analysis .....	53
CHAPTER 4: GROUP 1 – GAMING TREATMENT GROUP .....	54
Information about the Sample.....	54
Findings of Hypotheses Testing .....	56
Summary Statistics.....	56
Hypotheses Testing: Inclusion of Other in the Self (H1-H4) .....	58
Hypotheses Testing: Self-Disclosure (H5-H8).....	61
Findings Addressing the Research Questions .....	65
Findings Addressing the Narrative Data .....	66
Summary of Findings.....	73

CHAPTER 5: GROUP 2 – CONVERSATION TREATMENT GROUP .....	76
Information about the Sample.....	76
Findings of Pretest-Posttest Analyses .....	77
Summary Statistics.....	77
Inclusion of Other in the Self .....	79
Comparison to Gaming Treatment Group .....	81
Self-Disclosure.....	82
Comparison to Gaming Treatment Group .....	85
Findings Addressing the Research Questions .....	87
Summary of Findings.....	93
CHAPTER 6: DISCUSSION.....	96
Inclusion of Other in the Self .....	96
Self-Disclosure.....	99
Limitations.....	103
Conclusion.....	104
REFERENCES.....	106
APPENDIX A.....	119
APPENDIX B.....	124
APPENDIX C.....	127
APPENDIX D.....	128
APPENDIX E .....	129
APPENDIX F .....	130
APPENDIX G.....	131
APPENDIX H.....	132
VITA.....	134

## LIST OF TABLES

<b>Table 1.</b> Hypotheses and research questions .....	47
<b>Table 2.</b> Descriptive statistics for younger adults, IVs, and DVs pretest and posttest.....	57
<b>Table 3.</b> Descriptive statistics for older adults, IVs, and DVs pretest and posttest.....	57
<b>Table 4.</b> Results of pretest and posttest IOS for younger and older adults .....	59
<b>Table 5.</b> Results of pretest and posttest self-disclosure dimensions for younger and older adults .....	62
<b>Table 6.</b> Correlation matrix for relationship closeness, and breadth and depth of self-disclosure for younger adults .....	63
<b>Table 7.</b> Correlation matrix for relationship closeness, and breadth and depth of self-disclosure for older adults .....	63
<b>Table 8.</b> Correlation of self-disclosure and family communication orientation for younger and older adults.....	65
<b>Table 9.</b> Effect of play location and type of play on self-disclosure and relationship closeness for younger and older adults.....	66
<b>Table 10.</b> Hypotheses and research questions findings .....	75
<b>Table 11.</b> Descriptive statistics for younger adults, IVs, and DVs pretest and posttest.....	78
<b>Table 12.</b> Descriptive statistics for older adults, IVs, and DVs pretest and posttest.....	78
<b>Table 13.</b> Results of pretest and posttest IOS for older and younger adults .....	80
<b>Table 14.</b> Results of pretest and posttest self-disclosure for older and younger adults .....	83
<b>Table 15.</b> Correlation matrix for relationship closeness, and breadth and depth of self-disclosure for younger adults .....	84
<b>Table 16.</b> Correlation matrix for relationship closeness, and breadth and depth of self-disclosure for older adults.....	84
<b>Table 17.</b> Correlation of self-disclosure and family communication orientation for older and younger adults.....	85
<b>Table 18.</b> Effect of play location and type of play on self-disclosure and relationship closeness for younger and older adults.....	88



## LIST OF FIGURES

<b>Figure 1.</b> Differences in self-other overlap between pretest and posttest for both groups.....	81
<b>Figure 2.</b> Differences in breadth of self-disclosure between pretest and posttest for both groups.....	86
<b>Figure 3.</b> Differences in depth of self-disclosure between pretest and posttest for both groups .....	86

## ABSTRACT

While small and large technological miracles have undoubtedly made our lives easier, they have potentially also made a significant part of our daily social routine obsolete. People live in the same space but rarely spend quality time together, interacting and bonding. One of the solutions to diminishing family relationships may lie in the technology itself—video games. Previous research having shown the sociability of video games, and in this study, we examined their potential in creating closer family relationships, especially among different generations. Participants ( $n = 183$ ), mainly grandparents and grandchildren, were asked to play video games together over a period of six weeks. Participants completed a modified version of the self-other overlap, self-disclosure, and relationship closeness inventories before and after the treatment and responded to a series of open-ended questions post-treatment. Results indicate a significant increase in the inclusion of other in the self, as well as an increase in breadth and depth of self-disclosure for both younger and older adults. A comparison group ( $n = 88$ ), comprising also mostly grandparents and grandchildren, was tasked with having conversations either face-to-face or in a mediated setting. The comparison group completed the same questionnaires, with results indicating a significantly smaller increase in the inclusion of other in the self and depth of self-disclosure, while breadth of self-disclosure experienced the same increase as in the gaming group. The findings suggest that video games can provide a platform for family communication, resulting in the rejuvenation and maintenance of intergenerational relationships. Gathering around a novel shared activity, both younger and older adults found new ways of connecting to their family members, whether through more frequent conversations, broader selection of topics, shared subjects, or pure entertainment.

## CHAPTER 1

### INTRODUCTION

The need for entertainment, competition, and challenge is part of human nature—that is how we discovered music, dance, and ultimately games (Huizinga, 1955). People have always played games, from the ancient Senet board game, through more hazardous gladiator challenges of the Roman Empire, to contemporary leisure activities such as sports and video games (Radoff, 2011). Huizinga (1955) explained that playfulness and games are fundamental elements of civilization, critical for human cultural advancement, where each of us is *homo ludens*—man the player—and games are “a regularly recurring relaxation, the accompaniment, the complement, in fact an integral part of life in general” (p. 26). This is becoming increasingly more prominent today, as the digital age has brought on the tremendous rise of video games. Games are now pervasive, expanding into many aspects of modern life, from Internet search engine logos to mobile phones, from television to computers. Play is at our fingertips, instantly ready to begin as soon as we decide whether we want to dance to professional choreography, lose in scrabble to grandma who lives on the other side of the country, compete in tennis in our living rooms, fly a fighter jet, or go on a heroic adventure to save the world. While they started off as exercises for a narrow interest group 30 years ago, the technological revolution of the new millennium, and the proliferation and accessibility of new computer devices have broadened video game development to encompass wider audiences, ultimately changing gaming from a marginal subculture to a major component of the mainstream culture (Castronova, 2005; Juul, 2010).

The advancement of technology has also affected the nature of video game use, leading to "gamification" or incorporation of game elements into other fields such as education, medicine, military and other training (Deterding, Sicart, Nacke, O'Hara, & Dixon, 2011). In the past decade, specialized video games have been used for search and rescue training, laparoscopic surgery training, military response training, stroke rehabilitation, and reduction of post-traumatic stress symptoms, to name a few (Backlund, Engström, Hammar, Johannesson, & Lebram, 2007; Raybourn, 2012). Other games have been utilized to raise awareness of social issues, educate on sexual and other health-related behaviors, help scientists analyze complex data, and bring about social change (McDaniel & Henry, 2010). Such applications slowly transformed the perception of video games as solely entertainment products, making clear the valuable application in production and training environments (Deterding et al., 2011), and creating an important moment for games. Namely, throughout history, as games have added enjoyment to everyday life, the perceived fun-factor was both the reason we engaged in them and rarely took them seriously (Goffman, 1961). Such perception is particularly true today of adults who play video games for the sake of playing, as there is a pervasive unwillingness to admit to enjoying and engaging in what is perceived as an adolescent activity (Thornham, 2009; Findahl, 2011). Goffman (1961), however, emphasizes the necessity to treat fun seriously, underlining that games abide by formal regulations of societal engagement and are thus no different than other aspects of social life.

Here is that word again—social. Interestingly enough, while games have historically been seen as collective activities (Huizinga, 1955), video games are generally perceived as a solitary endeavor (Juul, 2010). Play with others, however, has been the backbone of video

gaming since the beginning; after all, the first video game, *Pong*, was created for two players (Kent, 2001). Such development is only natural, as all video games today are simply digital, more complex descendants of analog giants. For example, role playing games stem from vastly popular *Dungeons & Dragons*, strategy games all have a chess board as their basis, and sports and simulation games simply digitize their real-life counterparts (Kent, 2001).

Video games can certainly be played alone, but their social potential is undeniable—even single player video games hold the sociability potential through chat capacities, score and achievement comparisons, and the creation of a parasocial setting for the gamer and the audience (de Kort, IJsselsteijn, & Poels, 2007). Social aspects of video gaming are important as they in many ways exemplify the features we associate with mediated communication: social interaction, networking, and interactivity. Examining the social side of video gaming is about examining the performance of playing together, as well as exploring the meaning of this particular endeavor—why do we play together, and what does that encompass? Even more importantly, how can joint video gaming be used to maintain and improve the most important relationships in our lives? Indeed, here video games seem to have much potential—research has shown that video gameplay, especially in the circle of friends and family members, can yield positive physical and mental outcomes, as well as improve relationships and promote connectedness (Przybylski & Mishkin, 2015; Osmanovic & Pecchioni, 2015; De Schutter, 2011). Such effects are especially important for intergenerational family relationships, where the advancements of the past decades have created a large gap among younger and older adults, alienating them from each other's worlds (Segrin & Flora, 2011). Intergenerational video

gameplay as a shared activity with entertainment and play at its foundation has the potential to bridge that gap.

Before we can go further, however, we have to understand that video games are a significant part of the technological advances that have created the gap in the first place, and thus not easily accepted by those who still remember—and miss—the social interaction rituals that were largely lost with the advancements in technology. While small and large technological miracles have undoubtedly made our lives easier, they have potentially also made a significant part of our daily social routine obsolete. Families and friends still gather, but now around television sets, or even more solitarily in the past decade, around computers, tablets and smartphones. Watching television, the activity on which families spend five hours a day on average (The Nielsen Company, 2015), does not require nor necessitate much interaction (Kirkorian, Pempek, Murphy, Schmidt, & Anderson, 2009). Thus, those gathered around the screen may share the space, but they share little else; people are either preoccupied by the program or otherwise immersed into social media on other devices and being only physically present. Such lack of communication and interpersonal interaction has led to weaker family ties, distant relationships, and even a breakdown of families and friendships (Segrin & Flora, 2011). Researchers have realized that people live in the same space but rarely spend quality time together (Roxburgh, 2006), actually interacting and bonding.

Popular media continuously emphasize the importance of meaningful interactions among family members and friends, resulting in advertisements calling for sharing meals without distractions. With the popularization of personal computers, tablets and smartphones, however, the silence and distance are becoming more pervasive. A child with a phone in her

hands, swiping expertly in search of her favorite *YouTube* show is becoming a more common sight than a child playing outside (Strasburger & Hogan, 2013). So, technology has not only steamrolled over meaningful, relationship-building interactions among younger and older adults, it also is serving as a replacement for interaction with developing children while science scrambles to uncover long-term consequences of this new trend in parenting (Holloway, Green, & Livingstone, 2013).

As postulated above, there may be a solution to the digital barriers to interaction, and it may lie in the technology itself – after all, as the old adage goes, we have to fight fire with fire. The fire of recovery in this case may lie in one of the most controversial and discussed outcomes of the technological golden age – video games. Despised by most for the better part of the past three decades, frequently viewed as a terrible waste of time (Gee, 2003), accused of turning people into murderous zombies (Anderson, 2001), blamed for the rise in anti-social behavior (Griffiths, 2015), video games came into their own and may hold the potential to make people happier and help them maintain a healthy social life within and outside their families.

### **Purpose of the Study**

The dynamic power of technology as it shapes and is shaped by society is the fundamental inquiry of the dissertation. Technology has altered the fundamentals of interaction and bonding, diminishing the old and presenting the new communication framework (Castells, 2001). Consequently, the aim of this study is to provide an interactional understanding of one aspect of new technologies—social video gaming, and its current and potential role as a preferred family leisure activity. The main focus of the research is the intergenerational family interaction in, around, and through video games. Specifically, taking

into consideration family communication patterns and pre-existing bonds between older and younger family members, the study explores the potential effect of joint video gaming on intergenerational relationships and relationship closeness within families. Can video games—the new, young entertainer—harmonize with the old concept of leisurely play, and provide a bridge, a platform to reconcile generations? Thus, the larger question driving the study revolves around the possibility that social video gaming, especially gaming with family members and friends, could revitalize family relationships by providing, under somewhat different conditions, a shared activity through which individuals historically bonded, and which were lost in the technological revolution.



## **CHAPTER 2**

### **BACKGROUND AND THEORETICAL FRAMEWORK**

Picture it: Sicily, 1922. As the sun sets on the daily chores, a young peasant girl on the cusp of womanhood walks with her mother across the field to uncle Guido's house. The rest of the family and neighbors are already there – men sitting on the long bench against the wall, puffing on their pipes, some sharpening the tools, some working the wood for new wine and olive oil barrels; one carefully, meticulously whittling a new rook for the worn-out chess board on the rickety table in front of them. Women are gathered around the fire, darning old clothes and stitching colorful, meaningful patterns into pillowcases and towels. The murmur of chatter permeates the room, gravelly voices of older men retelling the stories of war and famine leaving room for softer tones of women's conversations about the news from the neighboring villages, the work that still needs to be done, and the hideousness of the plague from the north called "pesto." As the evening grows late and the supply of wine diminishes, the swarm of simultaneous conversations buzzes louder, laughter ringing through the room as the topics grow more personal. A young peasant girl listens to the elders' tales intently, grasping for bits of wisdom and information, answers to questions she dares not ask. Her shy, furtive glances collide over the fire sparks with that of a young man from another village; their short, suppressed grins sending signals across the distance. These gatherings on long, cold, winter nights will allow them to meet, and perhaps by this time next year, she will be telling her own stories in the circle of women around the fire, stitching white flowers onto baby's christening clothes, while he carefully whittles the cradle as older men give him contradicting advice. She smiles at this image and, absentmindedly rolling her mother's green thread, wonders when and

how these gatherings started. As long as she can remember, her family and friends have always assembled at the end of the day. In the summer, these meetings are shorter and in smaller groups. Days are long, and there is much to do. In the winter, when days are short and frost grips the land, it is like tonight – everyone in one room, talking, laughing, arguing, working, living.

However much wisdom the young peasant girl will acquire over her long, adventurous life, at that moment she cannot comprehend the magnitude of the event she is witnessing. Little does she know that she is partaking in a social practice that has taken place since the dawn of life as we know it now, the building block of the society, of relationships that keep the world running (Goffman, 1967).

### **Family and Shared Activities**

Decades of scientific research have placed family communication in a prominent position as the source for a child's attitudes, beliefs, and behaviors. Family members provide a foundation for the development of self, serving as primary socialization agents in the acquisition of interpersonal skills necessary for social wellbeing and relationship development (Kunkel, Hummert, & Dennis, 2006; Koerner & Fitzpatrick, 2002). While the emphasis in research is usually placed on parent-child relationships, the broader family unit affects the child's development. One of the influential family relationships is that between a grandparent and a grandchild. Distinct due to the usually large generational gap, positive grandparent-grandchild relationships have been shown to produce positive psychosocial outcomes for both parties, where grandchildren gain a source of family values, beliefs, and history, as well as social support, and grandparents gain the source of pride and the feeling of being young again (Lin,

Harwood, & Bonnesen, 2002; Harwood, McKee, & Lin, 2000; Brussoni & Boon, 1998). While this study does not focus on any one family relationship in particular, the research on grandparent-grandchild relationships is taken as a baseline due to its applicability on intergenerational family interactions overall. Studies have shown that young adults have a rather negative view of older adults, holding up the stereotypes of old age—deterioration of physical and mental faculties—undervaluing their competence, their perceived intelligence or abilities (Kite, Stockdale, Whitney, & Johnson, 2005). On the other hand, close relationships with grandparents have been found to generate positive stereotyping of older adults (Pecchioni & Croghan, 2002). Thus, it is important to provide younger and older adults with an opportunity and means to create closer family bonds, improving not only their relationships, but also potentially affecting the views and interactions with older adults on the whole.

Why are intergenerational family relationships important? Because population aging is one of the sturdiest demographic trends of the past few decades, particularly in developed countries. According to the National Institute of Aging (2015), "In 2006, almost 500 million people worldwide were 65 and older. By 2030, that total is projected to increase to 1 billion—1 in every 8 of the earth's inhabitants" (p. 2). The rise in life expectancy, combined with the decline in natality, is making older adults an increasingly large fraction of the world's population (NIA, 2007), leaving a significant mark on the relationships and the structure of family. Three and even four generations are now in a position to spend significant parts of their lives together, with older adults having a much larger span of years to perform their family roles (Szinovacz, 1998), and "intergenerational relationships ...take on an added dimension as the number of grandparents and great-grandparents increase" (NIA, 2007, p. 10). Thus, it becomes

increasingly important to form and maintain strong bonds among older and younger adults in families, especially because these relationships are typically involuntary and tend to be sacrificed on the altar of the all-consuming adolescence and newfound independence. As adolescents become involved in the unforgiving whirlpool of new romantic, academic, and social activities, family ties take the back row. Consequently, the frequency and intensity of family relationships weakens, especially with grandparents (King & Elder, 1995; Roberto & Stroes, 1992). One way to maintain the important intergenerational relationships within families is through shared activities appealing to both sides of the age spectrum and, potentially, also creating closeness to further strengthen the bonds.

Previous research has shown that everyday shared activities and rituals such as hobbies and leisure interests served as successful relationship maintenance strategies, increasing intimacy and closeness (Holman & Jacquart, 1988; Kingston & Nock, 1987). Shared activities, in this sense, are social phenomena used in the process of interaction as a catalyst in the construction of bonding (Collins, 1998). According to Collins, shared activities are achieved when two or more individuals are physically proximate, and there is a mutually recognized focus on the same object or action. A shared focus, in turn, creates a common mood which leads to the breakdown of differences between the individuals and allows them to develop a sense of solidarity and allegiance. Such view resonates with the previous research of Durkheim (1995), who also emphasized that:

Ritual interaction occurs when participants in the situation share a common mood and recognize their mutual engagement. These interactions develop into a broader sense of solidarity where the individuals share the same perspective, talk about the same issues, and submit to the same ideals. (p. 53)

Individual's use of activity-related symbols and jargon allows the engagement generated by the event to be carried across time to other situations, furthering the cycles of interaction (Collins, 1998).

While Goffman (1967) suggested that shared activities can be carried out if there is a perception of co-presence, Collins (1998) underlined the necessity of co-presence, where social bonding can only take place if each person sees the other's reaction, the emotional energy of their involvement in the event:

As the persons become more tightly focused of their common activity, more aware of what each other are doing and feeling, and more aware of each other's awareness, they experience their shared emotion more intensely, as it comes to dominate their awareness. Members of a cheering crowd become more enthusiastic, just as participants at a religious service become more respectful and solemn, or at the funeral become more sorrowful, than before they began. It is the same on the small-scale level of a conversation; as the interaction becomes more engrossing, the participants get caught up in the rhythm and mood of the talk. (p. 48)

The richness and entertainment of co-present interaction give bonds given room to develop, suggested Collins (1998).

Face-to-face interaction provides a profound basis for bonding, and a highly efficient way to develop the sense of a group. Being in the same space, focused on the same event, and in the same train of thought is certainly a way to break down the barriers between individuals. The same mood, however, can be engendered—or perhaps revived—in mediated interaction as well; that is, bonds can be forged and maintained through the mediated environment in an equally effective manner (Licoppe, 2004; Wellman, Quan Haase, Witte, & Hampton, 2001). Mediated communication allows individuals to keep an interaction alive across space and time, where jokes can be told, stories shared, gossip conveyed much like in face-to-face conversation (Licoppe, 2004). We can be engrossed in the interaction with one or more people when talking

on the phone or texting (Baron, 2004). We can tell a joke to a friend, we can flirt through internet chat, and we can argue; share daily events with family members through social media, or text with a love interest and later relive the high points of the conversation (Bargh & McKenna, 2004). Intense emotions thrive in mediated communication; there is engrossment in the topic, the sharing of the mood – all aspects of shared activities Collins (1998) maintained.

Sharing any activity together, however, may not be the only factor. A number of studies found that the effect of the shared activity is exponentially increased when the activity is novel and exciting, producing higher levels of relationship satisfaction (Reissman, Aron, & Bergen, 1993; Carson, Carson, Gil, & Baucom, 2007), and in turn fostering bonds and closeness (Girme, Overall, & Feingataa, 2014). Looking at the shared and rather enthralling activity of video gameplay, of common focus and engagement into the distinctive environment that incorporates its own set of emotions, and we have the potential for a considerable platform for the maintenance and strengthening of relational bonds and closeness, both in physical presence and a mediated setting. To further explain how games fulfill these and other roles, the following section reviews the path games took from play to the leisurely activity they are today.

### **Games and Play**

To begin, let us look at why we play. Huizinga (1955) postulated that play is older than civilization given that animals engage in it as well, and the instinct for play is a central element in human culture. While animals play not just for fun, but also to develop social and hunting skills, human play has been removed from the realm of learning. Instead, Huizinga described play as "a free activity standing quite consciously outside 'ordinary' life, as being 'not serious,'

but at the same time absorbing the player intensely and utterly" (1955, p. 13). So, play has come to be defined as a voluntary activity, beyond our basic needs but rather satisfying a cultural craving as we remove ourselves from everyday life and the rules that govern it into the world of pretense, aiming simply to have fun. Play is the opposite of productivity, with no material goods produced and no wealth gained (Juul, 2005). Thus, Huizinga (1955) explained that good judgment and hard work are customarily perceived as the opposite of play, which brings us back to the notion that playing is an activity for children, and not something for rational, hardworking, productive adults.

To say that we play games as a pursuit that is free from our society, however, does not hold ground in contemporary video gaming research. Due to their player-driven nature, Pearce (2008) postulated that games are indeed a productive and rational activity, where the players are creative producers focused on efficiency and instrumental play as they are driven through rational structures of the game. Video games are thus removed from the traditional definition of play—after all, there is a large number of human activities that can be played (Sutton-Smith, 2001). As Malaby (2007) explained, safety, enjoyment, and detachment from the worries of everyday life are not inherent features of video games. One global example would be gold farming. Gold farmers are individuals, sometimes informal companies, who engage in repetitive and frequently monotonous tasks in video games with the goal of earning in-game currency, which they then sell for real money. In this case, video gaming becomes a highly productive and instrumental activity, removed from perceived enjoyment (Dibbell, 2007). Many games, especially massively multiplayer online games, provide an opportunity for the

gamers to earn real money by offering leveling or helping services, or selling in-game assets and funds.

Nevertheless, the majority of people see games as a leisurely activity engaged in not for work but for fun. Play and games are frequently used as synonyms for leisure, and leisure is undeniably seen as the reward for productive labor (Rojek, 2010; Goldman & Wilson, 1977). Here, it is important to note that leisure is a fairly new phenomenon—the shortening of the work week at the start of the 20th century gave workers free time and this time expanded even further as the technological advances streamlined labor both on factory floors and at home (Goldman & Wilson, 1977). Historically, free time has been the privilege of the rich, but during the last century that landscape has changed. Today, leisure time is an expected and implicit part of daily life for most social situations. This embedding of free time into our schedules resulted in the need, the ambition to fill this time with meaningful activities. In the last three decades, video games have become a prominent leisure-related pursuit for millions of individuals of all ages (Findahl, 2011). Thus, video gaming is now situated in everyday life, in the social practices of gamers, and the growing use of video games can be seen as a product of expanding availability as well as quantity of leisure time.

With all this in mind, would it not simply be logical—and precious—if we could use this specific leisure activity to reawaken the social bonding rituals we almost lost precisely because of the technological advances that led us to increased free time and video gaming? In the following section, I will attempt to explain the appeal of video games and detail their social interaction potential overall.



## Understanding Video Games

This study is about the engagement in and with video games, but it is important to provide at least a brief characterization of the games. As the overview above indicates, it is not easy to define video games. Game designers who observe them from the internal (how to make them) rather than an external (how they are used and why) point of view define a game as "a system in which the players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome" (Salen & Zimmerman, 2004, p. 80). In contrast, game studies researchers who are more concerned with who plays, and how and why they do so, claim that video games are constantly evolving and yet to find their final form (Mäyrä, 2008); others state that games simply cannot be defined as they are boundless, and there are no intrinsic characteristics they all share (Wittgenstein, 2009).

**History of video games.** Video games started small in the 1950s, as programming exercises that led to the creation of entertainment for restless (male) adolescents, and an extension of social gameplay through digital, computer-led textual adventures. The graphics were poor, and participation required much imagination and tolerance from users. As with many other fields, technology has allowed rapid progress of gaming platforms in the past three decades. The video game worlds of today are vivid, detailed and immense, immersing the players into a graphically stunning environment for hours, weeks, and sometimes even years of gameplay. Some games are more linear in nature, while others allow players to choose their own paths on the way to game completion (where such a goal exists<sup>1</sup>).

---

<sup>1</sup> Massively multiplayer online games, for example, do not have an ending but allow for constant involvement in an ever-changing world as the character is built and upgraded.

While video games have always been a largely visual experience, it is not only the graphics that have improved over the years. The flexibility of the medium and its users demanded for better storytelling as well. As a matter of fact, there was no such thing as stories in the early years of video gaming, simply because serious hardware and memory constraints before the 1980s did not allow for long lines of text to be stored (Juul, 1999). As the complexity of the games advanced with technology, so did the need for at least background stories, leading to a realization – "the gaming world permits as a narrative technique to not tell the story from beginning to end, but to tell stories sideways, to give alternative possibilities that the [player] can, in a way, choose between" (Rushdie, 2010, para. 2).

The concept of alternative, user-based narratives changed the future of video games. Storytelling took a quantum leap through the role-playing games (RPGs) and adventure games in the late 1980s and early 1990s (Lebowitz & Klug, 2012), as players were given free reign over their characters and their narratives. The players liked this new control and the audience—the now participating spectators—demanded more. And the gaming industry obliged.

The development of video game narratives provided for gamers' deeper involvement in the story, at the same time enhanced and limited by programming. Inside and outside the game, the players have found ways to meet the needs produced by their high emotional involvement with the main character and the game itself, in personalizing and visually impersonating themselves through the characters. The first-person perspective is what gets the gamers to feel so immersed in and entwined with their virtual life:

Books are written in first- or third-person. In the third-person style, you're reading about someone or something. Ico pushed the block. Well, I guess. That doesn't seem to encapsulate the situation, though. Commander Shepard saved the Geth. That *Mass Effect*-inspired statement is just plain false. *I* saved the Geth. (Clevenger, 2012, para. 4)

As we can see, video games allow for a great deal of individual interpretation, creating a culture in which narratives and characters are played with, further developed, and made denser and richer through gamers' own production. Knowing this, even if social scientists are right and we cannot fit video games into one single definition, we can certainly still come to better understand them. Every game is created in the social framework in which it is played, and video games especially only take form once the player provides input and interacts with the game, thus creating meaning (Juul, 2010). In this study, video games are seen as contingent on the gamer, shaped inside the social framework of her/his play. Several layers of social context have to be considered in researching the world in and around video games—the general and gaming culture in which video gameplay takes place, each carrying its own set of interactions and investments, from forming relationships to achieving status (Juul, 2010). In addition, and most importantly for this research, there is the sociability of video gaming. Sociability refers to the potential of games to provide for casual interaction through and around playing, and is defined as "extracting the serious substance of life leaving only "togetherness," the sheer pleasure of the company of others" (Simmel, 1949, p. 224).

### **Social Side of Video Games**

For this study, it is particularly important to investigate the effects of video games in terms of social interactions – in other words, from what outcomes of video gameplay could families benefit in improving interpersonal relationships and creating stronger bonds. Research has shown that video gameplay, both cooperative and competitive, is often conducive to social interactions (Colwell, Grady, & Rhaiti, 1995; Durkin & Barber, 2002; Olson, 2010) and has been found to promote feelings of social presence, engagement, and fun (Lim & Reeves, 2010). One

of the most popular multiplayer games of the past decade, *World of Warcraft*, has more than 10 million players, and 54 percent of user activity on Facebook is spent on social games like *Words with Friends* and *Candy Crush* (ESA, 2015). Studies reveal that games also can offer a platform for gamers to both maintain old and develop new close relationships and connections (Yee, 2006), where playing with others creates a sense of community and lessens loneliness (Shen & Williams, 2011). Emmerich and Masuch (2013) postulated that social experience in and around video gameplay can be affected by a set of factors including the number of players engaged, the relationship between players (friends vs. strangers), the type of the game environment (competition vs. cooperation), the communication mechanism within the game and outside of it (in-game chat vs. out-of-game chat vs. face-to-face communication), and the presence of an audience (Kappen, Gregory, Stepchenko, Wehbe, & Nacke, 2013).

**Playing with friends and family.** The Entertainment Software Report (2015) revealed that some 68 percent of gamers play with a friend present, while 79 percent of married couples said playing video games together had a positive effect on their marriage. Specifically, research to date has shown that in comparison to no play, light video gameplay of under 20 hours a week is linked to higher self-esteem and closer family relationships (Durkin & Barber, 2002), as well as pro-social behavior, reduced stress, and higher overall satisfaction with life (Przybylski & Mishkin, 2015).

Ravaja et al. (2006) found that the choice of gaming partners influences player's emotional state. Specifically, playing with or against a friend produced deeper engagement, greater social presence, and higher levels of physiological arousal than playing with a stranger or against the computer. While friends use interaction through multiplayer games as a means

to maintaining and enhancing their relationships (Wohn, Lampe, Wash, Ellison, & Vitak, 2011), co-playing video games with parents was found to decrease the level of aggressive behavior, and increase prosocial behavior in adolescents (Coyne, Padilla-Walker, Stockdale, & Day, 2011). In addition, while cooperative gameplay overall enhances social cohesion and trust (Greitemeyer, Traut-Mattausch, & Osswald, 2012), both competitive and cooperative gameplay with friends result in greater positive affect (Schmierbach, Xu, Oeldorf-Hirsch, & Dardis, 2012).

Friends and family members do not have to be active participants in gaming either. Players experience positive outcomes when friends and family act as an audience as well. From the social interaction perspective, Kappen and colleagues (2014) study indicated that the "presence of an audience is the first step towards establishing a socio-spatial interrelationship between the player, [and the] audience in a collocated space gaming" (p. 159). Players see the spectators as a performance gauge, greatly preferring a presence of an active and engaging over a passive and silent audience, regardless whether their feedback is positive or negative (Kappen et al., 2014). Thus, there does not even need to be a co-player for video games to provide a (positive) social experience.

### **Sociability of Video Games**

Looking at these findings, we can see that every video game, regardless of genre and difficulty, carries the possibility for social interaction. Emphasizing the adaptability of the medium is important—games do not have to be created with social interaction in mind. Rather, social interaction exists within and outside of video games, comprising both the sociability of physical presence and co-play, and social interactions mediated by the game itself, mostly across distances. To this end, we need to consider not only social games indigenous to

social networking sites and mobile devices, and multiplayer games whose foundation lies in the interaction, but also single player games which carry implicit sociability through garnering social capital. Thinking of single player games as interactive platforms may seem counterintuitive—after all, just 16 years ago, game researchers said that “whereas the vast majority of games played all over the world are collective in nature (that is, they involve the participation of more than one person), practically all electronic games are individual” (Zagal, Nussbaum, & Rosas, 2000, p. 448). In fact, viewing video games as a solitary activity has been the foundation of academic research in this sphere for decades. For example, early studies pointed at the isolation of gamers, and deterioration of offline friendships (Kraut et al., 1998), suggesting that the negative effects of gaming could result from two factors: a “displacement of social activities where the individual ends up spending so much time [on gaming] that he or she is unable to participate in face-to-face social activities, and the displacement of strong ties” (p. 1025). When the researchers revisited the results of this study a decade later, however, they discovered that “almost all of the previously reported negative effects had dissipated over time” (Erdoğan, 2008, para. 5), with the negative outcomes “reduced as society became more accustomed to using the Internet” (Erdoğan, 2008, para. 23). In gaming history, this translates to the popularization of massively multiplayer online games (MMOGs) such as *World of Warcraft*, sophisticated single- or multiplayer party games such as *Just Dance*, online virtual worlds such as *Second Life*, and ever-growing browser and phone games such as *Candy Crush*. With the abundance of video game titles, genres, and platforms, even single player games provide an opportunity for social interaction, and not only through collocated co-play. So, to determine the levels of social interaction potential in specific types of video games, we have to

look at the games based on the number of players who participate in the video gameplay – one, two, or a multitude – or act as an audience. For this analysis, it was important to separate the interaction channels mediated by the video game as serving the purpose of promoting gameplay, and social interaction channels outside the game, where the topic can still be the game but the overall effect is sociability.

**Sociability of single player games.** Single player games can only be played by one person. Yet, seldom are single player games entirely deprived of a social component. First of all, unless the player is the creator of the game as well, it is impossible to play without knowing that others are playing or have played the game as well. Such knowledge increases the player's social capital, as she is able to talk about the intricacies of gameplay with others (de Kort, IJsselsteijn, & Poels, 2007). She can also compare her gameplay and skill against others through a high-score list, many of which are now made available through game support platforms to all who play the game (de Kort et al., 2007). Single-player games on Facebook, for example, will even provide the player with not only the best scores overall, but also the scoreboard consisting solely of the people in her social network, people with whom she presumably has personal relationships. Ian Bogost (2004) observed that a high score list transforms the game from a solitary to a social engagement, where man versus the machine morphs into man versus man. Most gaming platforms are taking advantage of this nowadays: Xbox Live, PlayStation and Steam all have a system in which gameplay yields high scores, achievement points, trophies, and ranks that communicate play time, game literacy, and playing skill level. The scores and achievements create gaming capital among those who use these platforms and creates

opportunities for competitive play, bringing us to the question of whether this can then be considered single player gaming (Malaby, 2006; Walsh & Apperley, 2009).

As the sociability of single-player games is mostly related to out-of-game communication, their greatest potential for social interaction, especially in families, lies in the audience. One person may be the only one playing a single player game, but there is a potential for a number of others to be witness to the instance of play. For example, a gamer may be playing in the living room in the company of others; this collocation presents, at a minimum, a possibility for interaction. The objective, physical presence creates an atmosphere of joint engagement, solidarity, and sharing (Kappen et al., 2014). Thus, the gamer becomes a performer for an audience that sometimes actively and sometimes passively participates in her play (Kappen et al., 2014). As we saw from research findings above, audience presence increases the enjoyment of gameplay, and audience interaction is greatly preferred over a silent audience (Kappen et al., 2014). So, in this case, the performance of playing the game transcends the play itself, with the purpose shifting from personal enjoyment or winning to moving the audience and receiving the desired feedback. The audience also can take a participatory role (Kimble, 1992) in single player games, compensating for their lack of control over gameplay by offering verbal tips (e.g. “jump to the left!” “watch for that boulder”), and thus impacting the player’s experience and performance (Kappen et al., 2013). These player-audience situations can be highly collaborative, creating a symbiotic relationship and leading to a “social experience of play” (Kappen et al., 2014).

Thus, single-player games do provide for sociability to emerge, through acquisition of social and gaming capital, and maintenance of parasocial relationships with an audience.



**Sociability of two-player (and multiplayer) games.** In two player and multiplayer games, players are immersed in the same gaming session, where they can be collocated or remote, and the gameplay itself can be simultaneous or alternating (Ducheneaut, Yee, Nickell, & Moore, 2006). If players are collocated, i.e. if the gameplay takes place at the same location and at the same time, there is potential for interaction both through the game and out of it, giving this type of gaming the greatest potential for sociability. There are three types of collocated play. In one scenario, the game is simultaneous, meaning that gamers play the same game session at the same time, such as a particular map in *Call of Duty* where they can support and protect each other (Emmerich & Masuch, 2013). In another scenario, gamers take turns playing the same game, which is common in adventure games or where only one gaming controller is available. This situation is known as hot-seat gaming (Emmerich & Masuch, 2013). The third possibility is sharing the same game instance while not sharing the location, in which case the gameplay is simultaneous but remote. If the players are remote, the interaction between them is usually mediated by the game (in-game chat, emotes) and supported by another mediated channel, for example text messaging or voice chat such as Skype (Emmerich & Masuch, 2013), somewhat lowering the sociability of this setup by removing the possibility for interaction in the physical world.

In a two player or multiplayer game, the gameplay can be competitive or cooperative, depending on the game itself, as well as the gamer's preference or relationship. Players typically select one or the other (Emmerich & Masuch, 2013). While video game design mostly makes it possible to collaborate in one gaming session and be rivals in another one, this setup can affect social interaction, both physically as warring parties do not share chat, and

emotionally as competitive play can cause resentment. Myers (2007) notes that, although the emphasis is frequently placed on social play, it is important to underline that playing games that contain the social aspect is not better or worse than playing single player games. In some instances, when game design allows switching the gameplay between cooperative and competitive, games can become a platform for opportunism (Gutschera, 2009). In such situations, flattering, whining, intimidation through out-of-game consequences or bribing with out-of-game benefits become common strategies to affect other players' behavior. Thus, again, it is essential to distinguish between the social play inside the game and the sociability of gaming, moving away from the gross oversimplification of the claim that social play is always good (Gutschera, 2009), and looking more at the sociability potential of the games, both through in-game and out-of-game channels. For this study, where co-play and collocated co-play are one of the possible platforms for relationship-building, it is important to consider whether or not the gameplay revolves around a zero-sum game, that is, whether it is a game where one player's triumph inevitably means another player's downfall (Salen & Zimmerman, 2004), or is it a game where players can be cooperative without the antagonistic undercurrent.

The potential impact on relationships of cooperative vs. competitive play is evident. Previous research has shown that cooperative play led to a higher motivation for gameplay among friends, lower level of in-group conflict, as well as increased effort in achieving game goals (Mason & Clauset, 2013; Peng & Hsieh, 2012). In addition, as Gajadhar et al. (2010) found that older gamers are less competitive or even a-competitive, preferring to take a more supportive role by helping others, antagonistic competitive gaming may affect their motivations and reduce their desire to play.

**Sociability in massively multiplayer online games.** Massively multiplayer online games (MMOGs) are picturesque online universes that provide an opportunity for thousands of players to share the gaming session at the same time, interacting with the game and with other players through their avatars, three-dimensional graphical representation of themselves (Yee, 2007). As massively multiplayer online games have dozens, sometimes hundreds of servers each capable of hosting thousands of players immersed into the same gaming session, several channels are available for communication among players. For instance, in the abovementioned MMO *World of Warcraft* there are four main chat modes, all of which are represented in a chat window on the player's screen. In "say" mode, a bubble with the typed words appears above the player's head, much like in the comics, while the avatar gestures, mimicking casual hand movements during a relaxed conversation. These words are visible to anyone in the player's vicinity. In "guild" mode, the text is only displayed in the chat boxes of the members of the particular guild to which the player belongs. In "party" mode, the messages are only displayed to those with whom the player has grouped, whether for questing, dungeons, trading, or just socializing. In the "whisper" mode, the message is sent from one player to another, and can only be seen by them. The latter three messages can be communicated across any distance, i.e. the avatars do not have to be collocated in the game to talk.

Another feature of the interaction system in MMOGs is the broad collection of "emotes", commands that allow players to express emotions, opinions, praise, contemplation, anger, etc. Players can type—or select from the chat menu—commands such as "/applaud", "/smile", "/nod", "/wave", to gesture to another player or express one's own state of mind. For example, selecting another player and typing "sigh" will produce a public sentence in the chat

"You sigh at [name of the selected player]". If the player does not select anyone and types "/sigh", s/he produce a public sentence "[Player's name] lets out a long, drawn-out sigh". In both cases, the command produces another reaction, that of the player's avatar, whose physical appearance changes to reflect the used "emote"—in this case, the avatar's shoulders and chest lift and go back down to mimic a sigh. In recent MMOGs, there are 300-400 "emotes" available to the players and they are frequently used to enrich their interactions (Yee, Bailenson, & Ducheneaut, 2009).

However, as we have seen in the cases of single player gaming and two player gaming, the communication among players is not contained to the game itself; it spills into other channels such as forums, chat apps, voice protocols like Skype and TeamSpeak, and social media. Players continue social interaction beyond the game both as a platform and as a topic. To reiterate, the sociability of games is embodied in out-of-game communication as these channels are utilized for players' ongoing chat, not necessarily related to the game, while social play is embodied in in-game communication channels (Yee, Bailenson, & Ducheneaut, 2009). Still, the classification in MMO games is not as straightforward as in two-player games or multiplayer games: in-game chat is frequently used for both mundane and significant conversations not related to the game, and in the same time a number of out-of-game channels are dedicated solely to the discussion of, about, and around gameplay. However, even in those cases, the conversations in out-of-game platforms are not unvaryingly focused on sharing information, but also strengthening the community and the social ties among the players. Gamers will, for example, share stories of their favorite encounters, ask for advice on private issues, or simply talk about their day, in or out of the game (Rao, 2008). As Ducheneaut and his

colleagues (2006) highlight, gaming can be an excuse to spend time together, and even when the players are not collocated, gaming together produces a sense of social presence. Social presence—the illusion of being together with a mediated person—can be experienced in video games in three dimensions: co-presence, psychological involvement, and behavioral engagement (Biocca, Harms, & Burgoon, 2003). Co-presence as defined by Goffman (1959) involves sensory awareness of an embodied other, as well as the sense of being in the specific environment together. Here, it is important to underline that sharing activities in a game can generate a greater sense of social presence than sharing the same physical space:

Higher levels of social presence may be attained between remote players who are continuously and mutually engaged in a collaborative game, than between collocated players who are each concentrated on attaining their individual goals without the need to interact or share. (de Kort, IJsselsteijn, & Poels, 2007, p. 7)

MMOGs are not only home to a slew of non-player characters that respond to the gamer avatar's actions and reactions, but also home to other avatars controlled by humans, creating mutual awareness and thus a heightened potential for co-presence.

The second dimension of social presence, psychological involvement, is a sense of access to intelligence, to a virtual body that acts with intelligent deliberation. Witnessing a player's avatar interact with the game environment by buying an item from the vendor or even simply jumping over the virtual puddles provides the feeling of sharing the space with another, even if you did not communicate directly. Finally, behavioral engagement refers to interaction such as chatting, and eye contact (Biocca et al., 2003). In MMOGs, where the motivations to play the game start with its social aspects in the form of communication and cooperation, psychological involvement and behavioral engagement are achieved through talking with other players, working together towards common goal, or joining a guild or a social group (Jansz &

Tanis, 2007; Griffiths, Davies, & Chappell, 2003). In addition, as mentioned before, players as well as computer-controlled non-player characters in MMOGs exchange programmed displays of non-verbal communication, such as smirking, winking, nodding, blushing, eye-rolling, etc., effectively using their avatars to express emotions, opinions, praise, contemplation, even silliness without engaging in a conversation. The expressiveness of virtual non-verbals is limited, yet provides clues, and also serves as an interlude to interaction between strangers.

Studies uncovered that the level of social presence depends greatly on the complexity of the medium's interface, i.e. to what extent it allows for different types of communication, and supports different portrayals of appearance and behavior (Bailenson & Yee, 2006). Alexander, Brunyé, Sidman, and Weil (2005) postulated that in an interactive multiplayer environment “greater interaction and presence of others will lead to higher engagement of the individual with the game and the group” (p. 7). Thus, graphically rich environments of MMOGs, with layered narratives and a population of social beings, whether human or computer-controlled, provide perfect possibilities for high levels of social presence. MMOG players are usually imaginative, idiosyncratic and non-conformist, enjoying a specific type of slow-progress entertainment that pairs them with a pre-filtered group of people (Yee, 2006), likely to share attitudes and interests. As social presence in online environments and similar interests both facilitate self-disclosure in an online environment (McKenna & Bargh, 2000), MMOGs are thus an ideal setting for players to form and develop relationships.

The above research shows that video games provide a platform for social interaction regardless of genre and game environment. Now, some games are more conducive to the building of relationships and creating stronger social bonds, but spending a few hours a week

playing a game both players – or player and audience – enjoy together should have a positive effect not only on each participant individually, but also on their interpersonal relationship. Playing a video game together will also provide the players with a common, shared experience, with joint gaming and social capital, giving them topics to discuss, and an interaction within which to discuss matters.

Now, let us go back to our disappearing custom of gathering family and friends, talking, sharing, and telling stories, bonding while focusing on the work at hand. While the need for the work at hand has been removed, the need for social bonding remains—after all, humans are social animals (Aristotle, 1920). With all we have learned about video games and their effects, we can reasonably postulate that video games could replace the work activity around which the family would gather to share in their efforts as well as of themselves. Younger and older family members could “go back” to doing, working together, which would in turn provide for quality time, leading to social bonding. Such a possibility is especially important as the rapid change in technology and the accompanying change in language use can exponentially widen the gap between generations, making it difficult for older adults to form relationships with younger people in their families. In a recent study by Osmanovic and Pecchioni (2015), younger participants explained they find it easier to talk about serious topics with older adults in their families while playing a game together. The activity provides enough distraction to remove potential conversational awkwardness from the situation, but not so much that it takes away from the focus on the topic at hand. Much like knitting or whittling.

Now, the question is, how do we get older adults to play video games.

## Older Adults and Video Games

The truth is, we may not need to use much persuasion after all. Research suggests that a significant number of older adults already play video games: Between 1999 and 2015, the percentage of gamers older than 50 has increased from nine to 29 percent (ESA, 2004, 2015). In Europe, the number of individuals who play video games declines with age, although these numbers are not inconsequential; specifically, 15 percent of those aged 45-55 and 11 percent of those aged 55-64 reported playing video games (European Summary Report, 2012). Notably, the gap between the percentage of males and females who are gamers decreases with age—in the 45-55 cohort, 40% of males and 34% of females are gamers, while in the 55-64 cohort, 28% of males and 27% of females are gamers (European Summary Report, 2012). This shift is also true in the U.S., where “the number of female gamers age 50 and older increased by 32 percent from 2012 to 2013” (ESA, 2014, p. 3).

The number of older gamers may be growing, but the research on video games and the population above the age of 50 has largely focused on rehabilitation or prevention of physical and mental decline. Studies have shown that casual video games can enhance reaction time, processing speed, and general cognition in the older population (Goldstein et al., 1997; Kueider, Parisi, Gross, & Rebok, 2012), help in stroke rehabilitation (Broeren, Claesson, Goude, Rydmark, & Sunnerhagen, 2008; Cameirão, Bermúdez i Badia, Duarte, & Verschure, 2011), and improve interaction with caregivers (Boulay, Benveniste, Boespflug, Jouvelot, & Rigaud, 2011).

Fewer studies have looked at older adults beyond the perceived decline and found that older adults play games to entertain themselves, to relax, to escape, to socialize. Schultheiss (2012) reported that older adults prefer accessible games that combine knowledge and



entertainment, and their solvency and tendency to invest in high-end technologies makes them a perfect audience. Nap, de Kort and IJsselsteijn (2009) found that older adults stay faithful to the games they play, citing fun and relaxation as the main motivator for playing, closely followed by escape from reality and staying in touch with society. Contrary to these findings, Pearce (2008) reported that older adults enjoyed more demanding, intellectually challenging games with rich narratives, and large, involved communities in which they can take part – "in short... they just want to have fun" (Pearce, 2008, p. 171).

With all this in mind, De Schutter (2010) developed a player classification for older adults, dividing them into five categories:

1. *Timewasters* mainly play casual games, not caring about the game, but just wanting to spend time on something other than the daily routine. Thus, their motivations lie in dealing with boredom, relaxing, and escaping everyday routine.
2. *Freedom fighters* play mainly casual games but their gameplay is a function of self-determination, of showing they are the masters of their own time. Their motivations thus lie in satisfying the need for autonomy.
3. *Compensators* play a wide range of games but because they chronically have nothing better to do, most likely due to an age-related disability which leaves them bound to the house. Their motivations for gaming lie in the need for connectedness and relatedness, as well as in the need for autonomy and competence.
4. *Value seekers* play a variety of games because they find them culturally relevant, interesting, and satisfying their broad span of interests. Their motivations for gameplay range from escapism through competence to enjoyment.

5. *Ludofiles* play a wide variety of games because they are passionate for playing the games; they identify themselves as playful people. Their motivations for gameplay range from escapism through competence to enjoyment.

Not that there has been much insight into this field – as is evident from the research above, the study on the use of video games in later life still remains a niche field. A simple search of academic databases will show 27 articles on older adults and games from 1983 to 2011, and then upwards of 200 studies from 2011 to today. Yet, the majority of this opus focuses on one category of older gamers—the Compensators, the frail older adults who struggle with age-related decline, and frequently with technology as well. The research converges on two questions: 1) how can we use games to make older adults healthier, stronger, more productive; and 2) what are the accessibility concerns when designing games for older adults, how can we make sure older adults will play these games that will be so life-enhancing to them. Such approach is problematic because aging is not a synonym for decline. Research shows that people of all ages can improve skills and cognitive functioning, people of all ages appreciate meaningful media content, and beauty, and they use media selectively (Ryan, Rigby, & Przybylski, 2006). Studying the intersection of video games and aging through the lens of decline is a very limited perspective and also a negative one, implying a lack of need and want, lack of life beyond the maintenance of mental and physical faculties.

Quandt, Grüninger, and Wimmer (2009) found that older gamers overall displayed high levels of "enthusiasm for new technologies and are relatively loyal regarding the usage of a special genre, while their environment often reacts with strong prejudices on their hobby" (p. 64). Dogruel (2008) showed that the readiness of older adults to purchase or use video games

primarily depends on the perceived benefits while the adoption of a game mostly depends on perceived usability. Nap, de Kort and Ijsselstein (2009) conducted a focus group study which revealed that older adults mostly enjoy casual games, and stay faithful to the few games that they keep playing. These older gamers also reported that fun and relaxation is their main motivator for taking up video gameplay, coupled with the underlying motivation of escape from reality, as well as to stay in touch with the society. Contrary to this, a 2008 study by Pearce revealed that older adults enjoyed more demanding, intellectually challenging games, largely spending between 20-40 hours a week on gaming. The participants in Pearce's study, however, also saw video games as a means to escape into a different world, preferring games with rich narratives, and large, involved communities in which they can take part—"in short... they just want to have fun" (Pearce, 2008, p. 171). One common theme threads through most of the above research—older adults dislike fighting and racing games, with a strong distaste for anything that focuses on speed or reflexes. They do overall, however, enjoy the social side of gaming. These findings were corroborated in a study by De Schutter and Vanden Abeele (2010), who delineated the reasons older adults find playing digital games meaningful:

- A way to meet new people, and to stay in touch with young people.
- As a gateway to new cultures and languages.
- To cope with loneliness.
- To stay connected with children and grandchildren.
- To relax with work colleagues.
- To learn from and teach grandchildren.
- To compete with children/partner, and overcome challenges.

The authors placed an emphasis on the connectedness that video gameplay provides, even across great distances, because in the interviews with older adults they found that it can "provide means to spend time together apart... a means for requesting help and attention from sons, or something to structure the conversation with friends" (De Schutter & Vanden Abeele, 2010, p. 90).

Not unexpectedly, Gajadhar et al. (2010) found that older adults reported the highest levels of satisfaction in playing with another person, with physical presence taking precedence over mediated co-play. Participants reported more pleasure, fun, and challenge when playing side-by-side. These findings were supported by De Schutter (2011), who found that social interaction was the most important predictor of length of gameplay for older adults.

**Social intergenerational gaming.** As we could see from the research above, playing video games with another person is more conducive to game enjoyment and length of play for older adults (Gajadhar et al., 2010; De Schutter, 2011). Both younger and older generations reported that social interaction is one of the strongest motivators to play video games (De Schutter & Malliet, 2014; Sherry, Lucas, Greenberg, & Lachlan, 2006). Very little research, however, has focused on whether older adults and younger adults play video games together, nor how this co-play is performed and how it affects intergenerational family groups.

Of the few studies available, research by Volda and Greenberg (2012) identified more passive gameplay behavior by older players in the presence of children, suggesting some older adults are more likely to give gameplay priority to their younger partners. Additionally, Gajadhar et al. (2010) found that compared to younger players, older adults are less competitive and take on a more supportive role. Volda and Greenberg (2012) also noted and

delineated five distinct roles taken on by both younger and older players, respectively, in family intergenerational video game play:

- Decision Maker/Negotiator,
- Configurer/Bystander,
- Instructor/Instructed,
- Discouraged Gamer/Encourager and Strategizer, and
- Performer/Audience

As we can see, older adults tend to take more passive roles of negotiator, bystander, encourager, audience and the individual receiving instruction, while younger adults "rule their domain" as decision makers, configurers, discouraged gamer, performer, and instructor.

In both the Volda and Greenberg (2012) and Rice, Yau, Ong, Wan, and Ng (2012) studies, younger participants expressed doubt regarding older adults' ability to successfully partake in the game, and took time to explain and help when their playing partner asked for aid. The gameplay overall proved to be satisfying for all those involved, with all pairs recognizing:

an improvement in their social interaction with their partner the longer they played the game, with the majority of participants willing to play again... Despite variations in verbal communication, engagement during the gameplay was generally good, with laughter between pairs, and common remarks that it was fun to play (Rice et al., 2012, p. 2337).

Research by Osmanovic and Pecchioni (2015) confirms these findings, uncovering that intergenerational gameplay within families yielded social interactions and connectedness, with both younger and older adults finding the gameplay a platform for bonding. In their study, young adults reported playing video games with older family members mainly as a means of maintaining or deepening the relationship, the platform to spend time together, and talk about

simple and complex topics in a setting they find comfortable and comforting. Older adults found video gaming with younger family members enjoyable, fun, and bonding, highly rating the informal daily contact and the common ground joint gameplay creates between the two generations (Osmanovic & Pecchioni, 2015). Both generations cherish the social interaction and the confederacy of collaborative play, while younger adults unanimously emphasized the desire to play more with the older adults in their families (Osmanovic & Pecchioni, 2015).

In the end, it is important to note that older adults will soon be the biggest demographic group in the world. According to the United Nations World Population Prospects (2015), "the number of older persons in the world is projected to be 1.4 billion by 2030 and 2.1 billion by 2050" (p. 7), meaning that a quarter or more of world's population in 2050 will be over the age of 60. The time has come to re-frame older adulthood as a time of enterprise, vigor, and playfulness.

### **Theoretical Framework**

In order to understand the family interaction, in which individuals come to accommodate each other, video gaming within families has to be observed as a process in which people and technology adapt to each other over time through design, concession, and interaction. Understanding the aspects of our interactions with and around video games has much to offer to research on interpersonal interactions and the adaptation of old social practices into new lifestyles. This is especially true in intergenerational gaming, where older adults who tend to have well-established rituals of social interaction come together with young adults, who have their rituals of technology use. The main focus of the research is the intergenerational family interaction through and around video games. Taking into

consideration family communication patterns and pre-existing bonds between an older adult and a younger adult, the study seeks to find the effect of joint video gaming on intergenerational relationships and relationship closeness within families. Having reviewed the intergenerational family relationships, the effect of shared activities, the history and sociability of games, as well as motives of both young and older players and outcomes of their gameplay, it is necessary to place these elements into a theoretical framework within which they can be observed. For the purpose of this study, intergenerational gaming will be examined through the lens of the family communication patterns theory, which will allow us to investigate the effect of communication orientation on existing and budding relationships, self-expansion model, which will allow us to analyze relationship closeness over the course of the study, and social penetration theory, which will allow for the examination of the conversations and their effect on the relationship.

### **Family Communication Patterns Theory**

Family communication patterns theory (FCPT) is based on Fletcher's (1993) schematic hierarchy, postulating that family schema are central to its functioning. Developing FCPT, Koerner and Fitzpatrick (2002) argued that "knowledge that determines most of a family's communication behavior is contained in a family-type relationship schema" (p. 82) where they "have far-reaching consequences for how family members communicate within the family" (p. 38). Schema are cognitive generalizations about the self focused on the facets of life that are important to the individual. As a part of our identity, they determine how we regulate behavior, organize our world, perceive ourselves, and evaluate others (Froming, Nasby, & McManus, 1998; Kihlstrom & Klein, 1994). Relationship schema hold knowledge on a specific

type of relationship, such as romantic relationships, friendships, and family relationships, such as that between a grandparent and a grandchild (Koerner & Fitzpatrick, 2002). Koerner and Fitzpatrick (2002) postulated that there are two dimensions of family communication schema or family communication patterns: conversation orientation and conformity orientation. Conversation orientation is characterized by frequent, unstructured, unrestrained interactions that allow family members to express their thoughts and feelings on a broad range of topics (Koerner & Fitzpatrick, 2006). Conformity orientation is characterized by uniformity of attitudes, values, and beliefs (Koerner & Fitzpatrick, 2006). The emphasis is placed on the "climate of homogeneity" (Koerner & Fitzpatrick, 2006, p. 55), with focus on relationship maintenance, and obedience to those higher on relationship hierarchy.

The crossing of these two family communication orientations creates four family types: consensual, pluralistic, protective, and laissez-faire (Koerner & Fitzpatrick, 2002b). Consensual families are high in both conformity and conversation orientation, and thus observe the family hierarchy while also respecting the conversational space. Pluralistic families are low in conformity orientation and high in conversation orientation, and consequently dedicated to fostering open dialogue, new ideas, and joint decision-making. Protective families are high in conformity orientation and low in conversation orientation, valuing family hierarchy, obedience, and enforcement of family rules. Laissez-faire families are low in both conversation orientation and conformity orientation, and are characterized by rare interactions with little importance placed on conversation and family cohesion (Koerner & Fitzpatrick, 2002b). Family communication patterns also differ depending on the individual's relationship schema (Koerner & Fitzpatrick, 2002). For example, although the family as a whole may be high-conformity



oriented, a grandchild may have a more lenient and open relationship with one grandparent. Because schema develop from previous experiences and observation, however, family communication patterns are generally highly correlated with relationship schema (Koerner & Fitzpatrick, 2002).

For this study, it is important to consider family communication patterns as we look at the bonding over a shared activity. As evident from the research presented above, video gaming can be both a competitive and a collaborative endeavor (Colwell, Grady, & Rhaiti, 1995; Durkin & Barber, 2002; Olson, 2010). Conformity oriented families emphasize obedience to authority and do not place a high value on open communication, which leads to the negative perception of conflict and, consequently, conflict avoidance (Koerner & Fitzpatrick, 2002). Thus, it stands to reason that families high in conversation orientation will find it easier to navigate the potentially turbulent waters of joint video gaming, while those high in conformity could experience more strain. Family communication orientation could thus affect the levels of self-disclosure and, with it, the potential building and maintenance of relationship closeness. We will hence discuss the hypotheses related to the family communication patterns in the subsection on self-disclosure.

### **Self-Other Overlap**

Next, we will consider one of the relationship schema imperative both to family communication patterns and relational maintenance, inclusion of other in the self (IOS) (Aron, Aron, & Smollan, 1992). IOS is a part of the self-other overlap construct which stipulates that individuals are motivated to form and maintain close relationships owing to an intrinsic yearning to grow, to expand their sense of the self (Aron & Aron, 1987). With high IOS, an

individual shares the other person's perspectives, identities, and resources or, in other words, possesses a self-other overlap regarding that relational partner (Aron, Aron, Tudor, & Nelson, 1991). In the context of family relationships, young adults who report high IOS with the parent are likely to share beliefs and values, use "we" language, and receive more support from the older adult (Agnew, Van Lange, Rusbult, & Langston, 1998). Studies have shown that IOS is associated with relational maintenance, where the "model has proven fruitful in understanding the cognitive underpinnings of a variety of relationship phenomena such as the fundamental motivations to enter and maintain relationships" (Mashek, Aron, & Boncimino, 2003, p. 390). Thus, it stands to reason not only that both younger and older adults are motivated to form stronger bonds, but also that the resulting higher IOS also may be associated with greater closeness in family relationships and, with it, relationship satisfaction. With this, we postulate that:

H1: Regularly playing video games together is positively associated with a higher perceived IOS for both the older and younger adult.

H2: Increase in perceived IOS is positively associated with greater relationship closeness.

Given Koerner and Fitzpatrick's (2002) argument that the family communication patterns are dominant in relationship schema, it would stand to reason that a young adult's self-other overlap with a specific older adult in the family would be influenced by the overarching FCP. As both conversation and conformity orientations focus on different aspects of family interconnectedness, we may expect that both positively predict inclusion of other in the self. Moreover, both may interact to predict IOS (Koerner & Fitzpatrick, 2002), so that those high in both orientations (i.e., consensual families) tend to possess the highest levels of

young adult-older adult inclusion of other in the self; in other words, high conformity orientation may strengthen the positive contribution of conversation orientation. In this study, we proceed from the standpoint of both the younger adult and older adult, and thus we hypothesize:

H3: Conversation orientation is positively associated with perceived IOS for both older and younger adult.

H4: Conformity orientation is positively associated with perceived IOS for both older and younger adult.

### **Social Penetration Theory**

Social penetration theory (SPT) posits that relational closeness develops as a product of interpersonal communication advancing from superficial to more personal levels, and mainly through reciprocal self-disclosure (Altman & Taylor, 1973). Self-disclosure encompasses exchange of information, expressions of positive and negative emotions, as well as mutual activities (Taylor, 1968). In other words, behaviors considered in SPT range from disclosure of low-risk personal information to the sharing of personal experiences, hopes and dreams, ambitions, and goals.

When it comes to the selectivity of self-disclosure—with whom we share information about ourselves and to what extent—Altman and Taylor drew on Thibaut and Kelley's (1959) social exchange theory, viewing relationships in economic terms and self-disclosure in terms of the cost/reward ratio. As humans are rational creatures seeking rewards and avoiding punishment, we make judicious choices on disclosing information, considering not only the interests of the relationship, but also what effect the given information will have on the other

person. Initial, low-level self-disclosures serve to reduce uncertainty. As the relationship progresses, higher-level self-disclosures serve to promote a close relationship, and with it potentially gain help and support, satisfaction, and contentment. On the other end of the spectrum, higher-level self-disclosures also carry a higher cost through greater vulnerability, potential rejection, and loss of trust of the relationship. In every relationship, individuals weigh costs against rewards, and if the perceived mutual benefits outweigh the cost of greater vulnerability, the self-disclosure and with it the social penetration will continue.

With this in mind, in social penetration theory Altman and Taylor (1973) postulated that, after the initial encounter, the closeness of the relationship progresses through the linear stages as the breadth and depth—or the number of topics discussed, and the importance of the topic to the person respectively—of self-disclosure increase. They proposed that self-disclosure consists of peripheral, intermediate, and core layers. The peripheral layer contains biographical data such as name, and age, the intermediate layer contains attitudes, values, and opinions; and, the core layer contains personal beliefs, needs, fears, and values.

Altman and Taylor (1973) further identified five stages of social penetration or relational closeness development: orientation, exploratory affective, affective, stable, and depenetration stage. The orientation stage comprises initial assessment and first impressions, where interaction typically revolves around small talk with little to no insight into the person. The following, exploratory affective stage, sees more personal information and opinions revealed. The self-disclosure tends to be largely superficial, such as opinions about music or sports, forming the basis for casual friendships which develop at this stage. Most relationships remain at this level. The affective stage is where the interaction becomes more personal and the

disclosure of private information becomes more comfortable, allowing for personal idioms and idiosyncrasies. With both parties comfortable enough to argue and criticize each other, close relationships develop at this stage. A comfortable exchange of private information and the open disclosure of the private self is the hallmark of the stable stage, where both parties are able to predict the reactions of the other person to specific types of disclosures. In the final, depenetration stage, costs of self-disclosure begin to outweigh the benefits, slowly moving the relationship from the higher to the lower stages of development, and sometimes to its ultimate demise.

As we can see, social penetration theory operates under assumptions that relational development is a methodical and predictable process where relationships progress from shallow to intimate through increasing levels of self-disclosure based on the perceived benefits and costs to both parties. Researchers have incorporated social penetration thinking into their scholarship, applying it across a variety of areas, from health communication and education to interpersonal relationships. Positive responses to self-disclosure have a positive effect on existing relationships, with no significant difference of the disclosures across different relationship types, i.e., family, friend, or romantic partner (Magsamen Conrad, Greene, Banerjee, & Bagdasarov, 2008). In family relationships, which are of interest for this study, self-disclosure has been strongly associated with openness in family communication, cohesiveness, identity development, and satisfaction with family relationships (Rittenour & Soliz, 2009; Martin & Anderson, 1995; Papini, Farmer, Clark, Micka, & Barnett, 1990). Some family relationships are more difficult than others, however, and studies have shown that potential repercussions may outweigh the benefits of self-disclosure in child-stepparent relationships

(Golish, 2000; Afifi & Burgoon, 1998). Similarly, Soliz (2007) found higher levels of self-disclosure between children and grandparents than children and stepgrandparents, which may, it is suggested, be explained by the shorter relationships, still in development, with the latter. Reciprocal self-disclosure between grandparents and grandchildren was found to be positively associated with perceptions of shared family identity (Soliz & Harwood, 2006).

These findings were also reflected in the few studies of self-disclosure in a mediated video game environment. Taylor and Taylor (2009) found that game-mediated conversations were characterized by intimacy, where participants reported feeling safe disclosing personal information. In a study of 6000 messages exchanged among the players of a task-oriented game, Peña and Hancock (2006) found the majority of them not to be task-related, but rather socioemotional and positively valenced. Besides this work, however, few studies have looked specifically at self-disclosure and how it is used and perpetuated by gameplay to advance relationships. In this study, I seek to examine how intergenerational gameplay among family members affects the breadth and depth of the players' self-disclosure and thus relational closeness, postulating that:

H5: Regularly playing video games together increases the breadth and depth of self-disclosure among family members of different generations.

H6: Increase in breadth and depth of self-disclosure is positively associated with relationship closeness.

As mentioned above, it is also important to consider family communication patterns as we look at the bonding over a shared activity, as families high in conversation orientation may find it easier to navigate the potentially turbulent waters of joint video gaming, while those

high in conformity could experience more strain. Family communication orientation could thus affect the levels of self-disclosure and, with it, the potential building and maintenance of relationship closeness, and we postulate that:

H6: Conversation orientation is positively associated with the breadth and depth of self-disclosure.

H7: Conformity orientation is negatively associated with the breadth and depth of self-disclosure.

In addition, different types of games and player involvement need to be considered as well:

RQ1: How are collocated co-play and remote co-play related to levels of self-disclosure and relationship closeness?

RQ2: How are cooperative and competitive gaming related to levels of self-disclosure and relationship closeness?

### **Summary**

Decades of scientific research have placed family communication in a prominent position of the source for a child's attitudes, beliefs, and behaviors. Family members provide a foundation for the development of self, serving as primary socialization agents in the acquisition of interpersonal skills necessary for social wellbeing and relationship development (Kunkel, Hummert, & Dennis, 2006; Koerner & Fitzpatrick, 2002), and healthy behaviors (Baiochi-Wagner, 2015) to name a few. The family unit of today is changing, owing to the population aging, one of the sturdiest demographic trends of the past few decades, particularly in developed countries. According to the National Institute of Aging (2007), "in 2006, almost 500 million people worldwide were 65 and older. By 2030, that total is projected to increase to

1 billion—1 in every 8 of the earth's inhabitants" (p. 2). The rise in life expectancy combined with the decline in natality is making older adults an increasingly large fraction of the world's population (NIA, 2015), leaving a significant mark on the relationships and the structure of family. Three and even four generations are now in a position to spend significant parts of their lives together, with older adults having a much larger span of years to perform their family roles (Szinovacz, 1998), and "intergenerational relationships ...take on an added dimension as the number of grandparents and great-grandparents increase" (NIA, 2007, p. 10). Thus, it becomes increasingly important to form and maintain strong bonds among older and younger adults in families, especially because these relationships are typically involuntary and tend to be sacrificed on the altar of the all-consuming adolescence and newfound independence (King & Elder, 1995; Roberto & Stroes, 1992).

One way to maintain the important intergenerational relationships within families is through shared activities appealing to both sides of the age spectrum and, potentially, also creating closeness to further strengthen the bonds. Video games may hold the potential to make people happier and help them maintain a healthy social life within and outside their families. Indeed, research has shown that video gameplay, especially in the circle of friends and family members, can yield positive physical and mental outcomes, as well as improve relationships and promote connectedness (Przybylski & Mishkin, 2015; Osmanovic & Pecchioni, 2015). In addition, video games are the biggest entertainment industry in the world, perpetually drawing attention of young adults especially. And they are now increasingly gathering interest among older adults (ESA, 2004, 2015), who enjoy demanding, intellectually challenging games with rich narratives, and large, involved communities in which they can take



part—in short, they just want to have fun (Pearce, 2008). And they especially enjoy the social side of gaming (Gajadhar, Nap, de Kort, & IJsselsteijn, 2010; De Schutter, 2011), as a means to spending time together, requesting help and attention from children and grandchildren, or something to structure the conversation with friends and family.

This dissertation thus investigates the effects of the engagement in gaming, particularly by older adults and their younger family members. Through hypotheses and research questions (Table 1), I seek to provide a deeper understanding of which factors influence the building of closer relationships, how shared gaming shapes the bonding experience, and what are the motivations, needs, and outcomes of joint video gaming for both younger and older adults. The following chapters describe the methods and the findings of this research.

**Table 1.** Hypotheses and research questions

H1:	Regularly playing video games together is positively associated with a higher perceived self-other overlap for both the older and younger adult.
H2:	Increase in perceived self-other overlap is positively associated with greater relationship closeness.
H3:	Conversation orientation is positively associated with perceived self-other overlap for both older and younger adult.
H4:	Conformity orientation is positively associated with perceived self-other overlap for both older and younger adult.
H5:	Regularly playing video games together increases the breadth and depth of self-disclosure among family members of different generations.
H6:	Increase in breadth and depth of self-disclosure is positively associated with relationship closeness.
H7:	Conversation orientation is positively associated with the breadth and depth of self-disclosure.
H8:	Conformity orientation is negatively associated with the breadth and depth of self-disclosure.
RQ1:	How are collocated co-play and remote co-play related to levels of self-disclosure and relationship closeness?
RQ2:	How are cooperative and competitive gaming related to levels of self-disclosure and relationship closeness?

## **CHAPTER 3**

### **METHODS**

The purpose of this study is to examine the relationship among joint intergenerational gaming in families and self-other overlap, dimensions of self-disclosure, and relationship closeness. This chapter explains the methodology used to investigate the research questions and hypotheses. In particular, this chapter describes the research design, instrumentation, data collection procedures, and data analysis.

#### **Research Design**

The study of player interactions and relationship development in and around a video game depends on the players, the location of play, the type of play, and finally the game itself. With this many factors, the most reliable results can be reached through a multi-method, longitudinal study. The combination of a pretest-posttest study to assess changes in self-other overlap, relationship closeness, and quantity and type of self-disclosures, and a descriptive study that captures the participants' experiences allows for a better understanding of the variables of interest and how they interplay in the intergenerational gaming process.

For this study, data were gathered across two experimental groups. The first group, experimental group 1, was tasked with playing video games with their selected family member at least three hours a week, whether in a mediated or collocated setting. To control for the effect of gaming as a shared activity, a comparison group, experimental group 2, was asked to talk to their selected family member at least three hours a week, whether by phone or in person. The data from the dyads were collected over a period of six weeks. The duration of six weeks was determined based on the findings of a small-scale pilot study implemented in 2016.

**Sample and sampling procedure.** The participants were recruited through the research participation system and from classes at two large Southern United States universities using a convenience sampling method. Each participant was asked to select an older adult, age 55 and above, from their immediate family circle who would consent to participate in the six-week study. Group 1 was tasked with playing video games together; group 2 was tasked with having conversations on the phone or in person. Younger adults received partial course credit while older adults did not receive any compensation for taking part in the research.

### **Instruments and Data Collection**

Considering the pretest-posttest nature of the study, self-completed questionnaires were used to collect standardized and thus comparable information from the participants. All questionnaires were web-based, administered using the Qualtrics survey tool. Web surveys were employed for being easily available and accessible, with the possibility to prompt for missing data or explain potentially difficult sections, which is important given the age of some of the participants and lack of funding for the study. For the same reason and also given the potentially mediated nature of the study, thus placing participants at greater distances, the questionnaires were used to collect narrative data as well, allowing for a broader accessibility. Using the Qualtrics software, each pair of participants was pre-assigned an ID through embedding, and the responses were anonymized. The survey was distributed online. The questionnaire took approximately 30 minutes to fill out, with the narrative section approximated at 10 minutes, depending on the detail and typing proficiency of the respondent.

All participants were tasked with completing a questionnaire at the beginning and the end of the study. The initial questionnaire consisted of seven sections. The first section

contained questions on demographic information (including gender, age, and relationship status) and the relationship between the two family members (i.e., parent-child or grandparent-grandchild) participating in the study (see Appendix A). For group 1, the second section comprised questions on previous gaming experiences (e.g. “Have you ever played video games?”, “What games do you play most frequently?”, “Do you play or have you played video games with older family members (age 55 and up)?”, see Appendix A). For group 2, the second section comprised questions on the modes and frequency of communication with their family members in general (e.g. “Which family member do you talk to the most?”, “What means of communication do you usually use?”, see Appendix A). For group 1, the third section was available to those who positively responded to the query on previous gaming experience with older family members and comprised related to that experience (e.g. “With which older family member do you play video games most frequently?”, “Within the past three months, how often have you played video games with this family member?”, see Appendix A). For group 2, the third section comprised questions on the modes and frequency of communication with the family member who co-participated in the study (e.g. “How often do you talk?”, “What means of communication do you usually use?”, see Appendix A). Both groups were then asked to complete the following four sections which addressed family communication patterns, self-disclosure, relationship closeness, and inclusion of other in the self items which were coded per their respective scales, detailed below.

**Family communication patterns.** Section 4 comprised questions on conformity and conversation orientations of family communication, measured using categories from Koerner and Fitzpatrick’s (2002b) Revised Family Communication Patterns instrument (see Appendix B).

Both conversation (10 items; e.g., “My parents and I often have long, relaxed conversations about nothing in particular”;  $\alpha = .94$ ) and conformity (16 items; e.g., “If I don’t approve of it, I don’t want to know about it”;  $\alpha = .91$ ) orientations were measured on a 7-point Likert scale (1=“strongly disagree”, 7=“strongly agree”). In hypotheses testing, both variables were treated as continuous.

**Self-disclosure rating scale.** The fifth section comprised questions on breadth and depth of self-disclosure, measured using the Revised Self-Disclosure Scale (see Appendix C) developed by Wheelless and Grotz (1976). Both breadth (8 items, e.g., “I usually talk about myself for fairly long periods at a time”;  $\alpha = 0.82$ ) and depth (10 items, e.g., “Once I get started, my self-disclosures last a long time”;  $\alpha = .84$ ) were measured using a 7-point Likert-type scale ranging from 1=“strongly disagree” to 7=“strongly agree.” In hypotheses testing, both variables were treated as continuous.

**Relationship closeness.** The sixth section comprised questions on relationship closeness, measured on a 7-point Likert scale using categories from the modified Friendship Qualities Scale (Bukowski, Hoza, & Boivin, 1994; see Appendix D), with predetermined questions for closeness (12 items; e.g. “\_\_\_\_\_ and I have a strong connection”;  $\alpha = .77$ ). In hypotheses testing, the variable was treated as continuous.

**Inclusion of other in the self (self-other overlap).** The final section comprised questions on the extent to which each participant includes the family member into the sense of self, measured using Aron, Aron, and Smollan's (1992) pictorial Inclusion of Other in the Self (IOS) instrument (see Appendix E). The IOS scale asserts that in a close relationship, an individual acts as if there is a degree of inclusion of the other within the self, so that, for example, close

friends believe they are interconnected with each other. The IOS scale consists of a set of Venn diagrams, each representing varying levels of overlap ranging from slight to almost entirely overlapping. One circle in each pair is labeled “self” and the other circle is labeled “other.” The participants were instructed to select the pair of circles that best depicted the nature of perceived closeness to the family member with whom they were participating in the study. The IOS scale has been extensively validated in both experimental and observational studies (Aron, Aron, & Smollan, 1992).

The final questionnaire, completed after six weeks of interaction, comprised six sections. The first section contained questions on demographic information and the relationship between the two family members participating in the study (see Appendix A). For group 1, the second section comprised questions on games played, gaming type (collaborative, cooperative, or other) and location (collocated, remote, or other, see Appendix F) during the experiment. For group 2, the second section comprised questions on the modes and frequency of communication with the selected family member during the study (e.g. “How often did you talk?”, “What means of communication did you usually use?”, see Appendix F). The following three sections comprised repeated self-disclosure, inclusion of other in the self, and relationship closeness measures as described above.

**Digital postcards.** The sixth and final section of the survey was designed for narrative data collection, consisting of digital postcards asking the participants to share their experience of the six-week study in their own words. Participants were asked to reflect on their gaming/conversation rituals, the expectations, outcomes, and plans (see Appendix G). Questions to reflect on, and to aid in writing the postcards, were provided on the same page.

## **Data analysis**

Responses to the scaled items for both groups were examined using pretest-posttest statistical analysis, which is presented in greater detail in the Results chapters for both experimental groups. Narrative data was examined using careful, line-by-line content analysis, investigating the context, perspectives, and overall character of the responses. Emerging patterns and themes were uncovered by searching for word repetitions, then analyzing keywords and their context (Miles, Huberman, & Saldaña, 2014). Themes were grouped and assigned colors, and the narrative data was highlighted accordingly. Exemplars for self-other overlap and relationship closeness were identified based on the context, metaphors, adverbs and connectors (Miles, et al., 2014) surrounding keywords such as “close,” “relationship,” “connection,” “time,” “together.” Exemplars for self-disclosure were identified based on the context, metaphors, adverbs and connectors surrounding keywords such as “communicate,” “talk,” “call,” “topic.” Exemplars for both positive and negative sentiment towards the experience of spending six weeks playing games/talking were identified based on the context, metaphors, adverbs and connectors surrounding keywords such as “repetitive,” “fun,” “enjoy,” “learn,” “help.” Key findings under each main theme are reported in the Results sections using verbatim quotes, corrected only for grammar and spelling, and for the removal of potentially identifying information. The corrections of minor spelling and syntactic errors are not indicated in the quote, while any other alteration of the original text is enclosed in square parentheses.

Summary statistics and detailed analyses of pretest-posttest studies and the narrative data for both groups are presented in the following chapters 4 and 5, Gaming Treatment Group and Conversation Treatment Group respectively.

## **CHAPTER 4**

### **GROUP 1 – GAMING TREATMENT GROUP**

The aim of this study is to provide an interactional understanding of social video gaming within families. More specifically, this study attempts to answer the questions: what are the effects of social gaming on relationships, and what is its current and potential role as a social leisure activity in everyday family life? The main focus of the research presented in this chapter is the intergenerational social interaction in, around, and through video games, and how that interaction potentially changes interpersonal family relationships. This chapter presents the findings of the gaming treatment group which engaged in six weeks of joint play. The four sections provide: overall information about the sample, results of hypothesis testing regarding changes in the self-other overlap and self-disclosure, results of the research questions examining the gaming experience, and a summary of findings related to the hypotheses and research questions for this sample.

#### **Information about the Sample**

**Participant recruitment.** The younger adult participants were recruited through the research participation system and classes at two large Southern United States universities after receiving approval from the appropriate Institutional Review Board (Appendix H). Each participant was asked to select an older adult, age 55 and above, from their immediate family circle who would consent to play video games with him/her at least three hours a week for six weeks, either in a mediated or collocated setting. Younger adults were tasked with, in cooperation with their older gaming partner where possible, selecting a video game or games



they would play together. Younger adults received partial course credit while older adults did not receive any compensation for taking part in the research.

**Sample.** The sample consisted of 182 participants: 89 older adults, 58 females and 31 males ( $M = 1.65$ ,  $SD = .48$ ), ages 55-77 ( $M = 59.43$ ,  $SD = 4.57$ ), and 93 younger adults, 51 females and 42 males ( $M = 1.59$ ,  $SD = .50$ ), ages 17-28 ( $M = 20.39$ ,  $SD = 2.05$ ). The older cohort ( $n = 89$ ) comprised 75 (84.27%) grandparents, 11 (12.36%) parents, 2 (2.25%) stepparents, and 1 (1.12%) aunt. The original, unaltered dataset for older adults comprised 95 entries; six participants were removed, four for not completing the entire survey, and two for providing serial responses. The younger cohort ( $n = 93$ ) comprised 77 (82.80%) grandchildren, 13 (13.98%) children, 2 (2.15%) stepchildren, and 1 (1.08%) niece. The original, unaltered dataset for younger adults comprised 95 entries; two participants who offered serial responses were removed.

**Previous video gaming experience.** The majority of the older adults who participated in the study—63 or 70.8%—reported never having previously played video games. None of the remaining 29.2% identified as active gamers or playing video games on regular basis, but stated they had either tried video games in the past or play sporadically. Their gaming experience included a wide variety of games and platforms, from mobile apps to exergames and sports simulations, to more complex first-person shooters. Younger adults who participated in the study predominantly (82, 88.2%) reported playing or having played video games, of which 29 (31.2%) identified as active gamers who play six or more hours per week. They too reported having played or playing a variety of games on different platforms.

## Findings of Hypotheses Testing

### Summary Statistics

The survey output was checked to ensure cleanness of the data for the hypotheses testing. Four participants were removed from older adults' survey responses for not completing the survey beyond the demographic questions. As the response to all questions was mandatory before proceeding through the survey, there were no issues with missing data.

The dataset was analyzed using the Stata 12 software. Each of the four outputs— younger adults' pretest and posttest, and older adults' pretest and posttest—was checked for multicollinearity using pairwise correlation matrices. No highly correlated items with correlation coefficients higher than  $r = 0.7$  were identified. During the hypotheses testing, each model was again checked for multicollinearity using regression and variance inflation factor analysis; the results are described within the report for each of the two hypotheses subsections. The collected data were next examined for outliers through graph charts and descriptive statistics. Six outlier responses were detected in total, three in each group. Close examination of the outliers determined that four of them were serial responses (i.e. all answers were "7"), and they were removed from the final dataset. Two outliers were in the Age variable and they were retained. Next, the reliability of the responses was measured to ensure the replicability of the study, resulting in an acceptable Cronbach's  $\alpha = .855$  for younger adults and  $\alpha = .796$  for older adults. Finally, statistical analyses were performed on all variables to preview the summary of the measures of central tendency; the results are presented in Tables 2 and 3 below.

**Table 2.** Descriptive statistics for younger adults, IVs, and DVs pretest and posttest

Variable	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>
Gender	1.59	.50	-.19	1.04
Age	20.39	2.05	.69	3.72
Gaming type	1.57	.52	-.04	1.55
Gaming location	1.69	.46	-.81	1.66
Conversation orientation	41.42	12.13	-.85	2.59
Conformity orientation	74.01	16.69	.20	1.51
IOS pre/posttest	3.81/ 5.24	1.40/ .99	.46/- .70	2.20/3.11
Breadth of self-disclosure pre/posttest	34.07/ 38.90	6.28/ 15.00	-.26/- .77	3.12/2.55
Depth of self-disclosure pre/posttest	44.15/ 49.18	11.64/ 17.11	.27/- .94	2.07/2.97
Relationship closeness pre/posttest	49.43/ 59.18	24.28/ 17.39	-.07/- .98	1.42/2.58

**Table 3.** Descriptive statistics for older adults, IVs, and DVs pretest and posttest

Variable	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>
Gender	1.65	.48	-.63	1.40
Age	59.42	4.57	2.04	7.63
Gaming type	1.57	.52	-.04	1.55
Gaming location	1.69	.46	-.81	1.66
Conversation orientation	43.10	17.56	.08	1.63
Conformity orientation	73.5	26.27	-.50	1.56
IOS pre/posttest	4.22/ 5.53	1.95/ 1.39	-.03/- .79	1.76/2.76
Breadth of self-disclosure pre/posttest	33.17/ 36.25	5.26/ 9.18	-.78/1.18	2.71/2.99
Depth of self-disclosure pre/posttest	39.62/ 43.59	12.41/ 11.68	1.42/- .31	3.09/1.83
Relationship closeness pre/posttest	53.20/ 67.93	29.35/ 20.65	-.37/- 1.77	1.30/2.76

To determine the sample size needed to detect significant bivariate correlations and differences between variables, *a priori* power analysis was performed using the power of 0.80 and an alpha level of 0.05 for a two-tailed model. With the correlation coefficient of greater than  $r = .3$  as a threshold of importance, a sample of 84 was required to detect a significant correlation with the power of 80%. The levels of correlation detectable given the sample size of 89 older adults and 93 younger adults were 82% and 84%, respectively, indicating the study has sufficient power to detect significant moderate to large correlations. However, the power to detect small correlations ( $r = .2$ ) with the sample size of  $n = 89$  was .47, and thus not adequate. For the differences between variables, a sample of 90 was needed to achieve 80% power at two-sided 5% significance level. A *post hoc* power analysis using the smaller of the two samples,  $n = 89$ , revealed that the statistical power to detect moderate ( $d = .5$ ) and large ( $d = .8$ ) effects was  $> .99$ , and .82 for small ( $d = .3$ ) effects (Cohen, 1992). Both power analyses were conducted using the program G\*Power (Erdfelder, Faul, & Buchner, 1996).

#### **Hypotheses Testing: Inclusion of Other in the Self (H1-H4)**

The participants completed the Inclusion of Other in the Self (IOS) instrument as a measure of their perception of self-other overlap pre-treatment and post-treatment. The scale consists of a single pictorial item comprised of seven pairs of Venn diagram-like circles, each overlapping on a continuum from a lesser to a greater degree (see Appendix E). In each individual pair, one of the circles is labelled “self” while the other circle is labelled “other.” The degree of overlap depicted by each of the individual pairs represents a degree of interconnectedness. The varying degree of self-other overlap in relation to the other six pairs is then assessed to indicate the participant’s perception of inclusion of other in the self on a

seven-point scale (Aron et al., 2004). In the first four hypotheses, I posited a positive effect of joint video gaming on the perception of self-other overlap, as well as a relationship between the resulting perception of the inclusion of other in self, closeness, and family communication patterns. Logistic regression was used to determine the model fit for predicting IOS. With five predictors, the likelihood ratio  $\chi^2 = 69.89$ ,  $p < .0001$ , McFadden's pseudo  $r^2 = 0.23$  showed that the model is statistically significant and a good fit. Variance inflation factor analysis revealed there is no to low collinearity between the variables, with the highest VIF of 2.45 for conversation orientation.

**Hypothesis 1.** The first hypotheses postulated that regularly playing video games together is positively associated with a higher perceived self-other overlap for both older and younger adults. To assess this hypothesis, a paired t-test was employed to determine whether there was a statistically significant mean difference between the perception of inclusion of other in self before and after the six-week gaming treatment. The results of the paired t-tests are presented in Table 4.

**Table 4.** Results of pretest and posttest IOS for younger and older adults

Variable/Results	<i>N</i>	<i>Pretest- posttest diff. of M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Inclusion of Other in Self for Younger Adults	93	1.44	.71	19.46	.000
Inclusion of Other in Self for Older Adults	89	1.30	.79	15.58	.000

Among younger adults, there was a statistically significant difference between pretest ( $M = 3.81$ ,  $SD = 1.40$ ) and posttest ( $M = 5.25$ ,  $SD = .99$ ),  $t_{(92)} = 19.45$ ,  $p < .0001$ , CI.95 1.29, 1.59. Cohen's effect size ( $d = 1.19$ ) suggests a large increase in the perception of self-other overlap.

The difference in the perception of inclusion of other in the self between pretest ( $M = 4.22$ ,  $SD = 1.95$ ) and posttest ( $M = 5.53$ ,  $SD = 1.39$ ),  $t_{(88)} = 15.58$ ,  $p < .0001$ ,  $CI_{.95} 1.14, 1.46$ , was also significant for older adults. Cohen's effect size for older adults ( $d = 0.77$ ) suggests a moderate to high increase in the perception of self-other overlap. The first hypothesis was thus supported for both test groups, with younger adults experiencing a more significant change.

**Hypothesis 2.** The second hypothesis posited that an increase in perceived inclusion of other in the self is positively associated with greater relationship closeness. To assess this hypothesis, pretest-posttest change scores were calculated for both inclusion of other in the self and relationship closeness variables. A Pearson's product-moment correlation was used to assess the relationship between the perception of self-other overlap and relationship closeness. There was a moderate positive correlation between the two variables both for younger adults ( $r_{(93)} = .6304$ ,  $p < .0001$ ), and older adults ( $r_{(89)} = .6782$ ,  $p < .0001$ ). Overall, for both groups, increases in the perception of inclusion of other in the self were correlated with increases in rating of relationship closeness. The second hypothesis was therefore supported for both groups of participants.

**Hypotheses 3 and 4.** The third and fourth hypotheses posited that family communication patterns—conversation and conformity orientation respectively—are positively associated with the perceived increase in the inclusion of other in self for both older and younger adults. A Pearson's product-moment correlation was used to assess the relationship between the pretest-posttest change in the perception of self-other overlap, and conformity and conversation orientations in family communication. For conformity orientation, there was a moderate negative correlation between the two variables both for younger adults

( $r_{(93)} = -.3530, p = .0005$ ), and older adults ( $r_{(89)} = -.3279, p = .0017$ ). For conversation orientation, there was a statistically significant albeit low positive correlation between the two variables for younger adults ( $r_{(93)} = .2762, p = .0074$ ), and no statistically significant correlation for older adults ( $r_{(89)} = .1233, p = .2498$ ). Overall, for both groups, conformity orientation in family communication negatively impacted the increase in the perception of self-other overlap, while conversation orientation was positively correlated with the increases in ratings of relationship closeness for younger adults and made no difference for older adults. Thus, the third hypothesis was partially supported, with only younger adults seeing a small correlation between the conversation orientation and the perception of the inclusion of other in the self. The fourth hypothesis was not supported, with the results showing a significant but negative correlation between the conformity orientation and the perception of self-other overlap for both groups.

#### **Hypotheses Testing: Self-Disclosure (H5-H8)**

The remaining four hypotheses proposed a positive effect of shared video gaming on the two elements of self-disclosure, breadth and depth, as well as an effect of self-disclosure on the perception of closeness, and an effect of family communication patterns on the resulting levels of self-disclosure. Logistic regression was used to determine the model fit for predicting self-disclosure. With five predictors, the likelihood ratio  $\chi^2 = 52.84$  ( $p < .0001$ ) showed that the model is statistically significant. However, in the same time, McFadden's pseudo  $r^2 = 0.16$  points to a not-so-stellar model fit, as it fails to meet the 0.2-0.4 mark of a good fit. Variance inflation factor analysis revealed there is low to moderate collinearity between the variables,

with mean VIF's below 1.5, and the largest VIF of 4.5 for the conversation orientation and 4.3 for the conformity orientation.

**Hypothesis 5.** The fifth hypothesis posited that regularly playing video games together increases the breadth and depth of self-disclosure among family members of different generations. To assess this hypothesis, a paired t-test was employed to determine whether there was a statistically significant mean difference between breadth and depth of self-disclosure before and after the six-week gaming treatment. The results of the paired t-tests are presented in Table 5. Among younger adults, there was a statistically significant difference between pretest ( $M = 34.07$ ,  $SD = 6.28$ ) and posttest breadth of self-disclosure ( $M = 38.90$ ,  $SD = 15.00$ ),  $t_{(92)} = 2.94$ ,  $p = .0042$ , CI.95 1.56, 8.09. Cohen's effect size ( $d = .42$ ) suggests a moderate increase in the breadth of self-disclosure for this test group. Older adults also experienced an increase in the breadth of self-disclosure between pretest ( $M = 33.16$ ,  $SD = 5.26$ ) and posttest ( $M = 36.25$ ,  $SD = 9.18$ ),  $t_{(88)} = 4.62$   $p = .0041$ , CI.95 1.75, 4.40. Cohen's effect size for older adults ( $d = 0.41$ ) similarly suggests a moderate increase in the breadth of self-disclosure.

**Table 5.** Results of pretest and posttest self-disclosure dimensions for younger and older adults

Variable/Results	<i>N</i>	<i>Pretest- posttest diff. of M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Breadth of self-disclosure - younger adults	93	4.83	15.85	2.94	.0042
Depth of self-disclosure - younger adults	93	5.03	22.15	2.19	.0310
-----					
Breadth of self-disclosure - older adults	89	3.07	9.86	2.94	.0041
Depth of self-disclosure - older adults	89	3.98	17.49	2.15	.0347



Depth of self-disclosure also underwent a statistically significant increase for both groups. For younger adults, pretest ( $M = 44.15$ ,  $SD = 11.64$ ) and posttest ( $M = 49.18$ ,  $SD = 17.11$ ),  $t_{(92)} = 2.19$ ,  $p = .0310$ ,  $CI_{.95} .47, 9.59$ , and Cohen's effect size value ( $d = 0.35$ ) suggests a small to moderate increase in the depth of self-disclosure. Older adults also experienced a small to moderate increase in the depth of self-disclosure between pretest ( $M = 39.62$ ,  $SD = 12.41$ ) and posttest ( $M = 43.59$ ,  $SD = 11.68$ ),  $t_{(88)} = 2.15$ ,  $p = .0347$ ,  $CI_{.95} .29, 7.66$ , and with Cohen's effect size score of  $d = .36$ . Therefore, the fifth hypothesis was supported for both older and younger adults, with a larger positive effect on breadth of self-disclosure than on depth.

**Hypothesis 6.** The sixth hypothesis predicted that an increase in the breadth and depth of self-disclosure results in an increase in the perception of relationship closeness. A Pearson's product-moment correlation was used to assess the relationship among the variables. Tables 6 and 7 present the results of the correlation analysis.

**Table 6.** Correlation matrix for relationship closeness, and breadth and depth of self-disclosure for younger adults

	<i>N</i>	Breadth	Depth	Closeness
Breadth	93	1.000		
Depth	93	.4461**	1.000	
Closeness	93	.3008*	.1427	1.000

**Table 7.** Correlation matrix for relationship closeness, and breadth and depth of self-disclosure for older adults

	<i>N</i>	Breadth	Depth	Closeness
Breadth	89	1.000		
Depth	89	.5025**	1.000	
Closeness	89	.6523**	-.0141	1.000

Correlation is statistically significant at: \* $p < 0.05$ ; \*\* $p < 0.01$

As we can see, a statistically significant positive correlation was found between the change in the breadth of self-disclosure after the treatment, and the change in the perception of relationship closeness for both younger and older adults, with a more significant effect for the older cohort. In the same time, a statistically significant correlation was not found for the change in the depth of self-disclosure, and the change in the perception of relationship closeness for either younger and older adults. Thus, the sixth hypothesis was partially supported.

**Hypotheses 7 and 8.** The seventh and eighth hypotheses posited that the conversation orientation is positively and conformity orientation is negatively associated with the changes in the rating of self-disclosure. As evident from Table 8, a Pearson's product-moment analysis revealed a significant positive correlation between breadth of self-disclosure and conversation orientation, moderate for younger adults ( $r_{(93)} = .3329, p = .0011$ ) and small for older adults ( $r_{(93)} = .2955, p = .0049$ ). At the same time, conversation orientation did not have a statistically significant impact on the changes in the depth of self-disclosure. Conformity orientation, as predicted, was negatively associated with both breadth and depth of self-disclosure, but the correlation was only marginally statistically significant for depth of self-disclosure for younger adults, exhibiting a small negative association ( $r_{(93)} = .2142, p = .0492$ ). Both hypotheses were thus partially supported. While the direction of the relationship was predicted correctly, conversation orientation impacted only breadth of self-disclosure for both groups, and conformity orientation only depth of self-disclosure for younger adults, by a small margin.

**Table 8.** Correlation of self-disclosure and family communication orientation for younger and older adults

		Conversation orientation		Conformity orientation	
	<i>N</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
<i>Younger adults</i>					
Breadth of self-disclosure	93	.3329*	.0011	-.1262	.2282
Depth of self-disclosure	93	.1151	.2718	-.2142*	.0492
-----					
<i>Older adults</i>					
Breadth of self-disclosure	89	.2955*	.0049	-.1431	.1810
Depth of self-disclosure	89	.0707	.5102	-.0793	.4602

Correlation is statistically significant at: \* $p < 0.05$ ; \*\* $p < 0.01$

### Findings Addressing the Research Questions

The two research questions centered on the potential effect of the type of gaming (collaborative vs. cooperative play) and chosen gaming location (collocated vs. remote play) on changes in the dimensions of self-disclosure, and relationship closeness. For gaming location, 67.4% or 60 older adults ( $n = 89$ ) engaged in remote co-play with their younger family members, while 29 (32.6%) played in a shared space. These numbers differ slightly for younger adults ( $n = 93$ ) due to four additional respondents—64 (68.8%) elected remote co-play with older family members and 29 (31.2%) chose a collocated environment. Competitive gaming was slightly more prevalent, with 50 (56.2%) of older adults and 51 (54.8%) of younger adults preferring the contest, while 38 (42.7%) of older adults and 41 (44.1%) of younger adults favoring collaboration. One gaming pair reported playing several games, with a mix of collaborative and competitive styles.

Multivariate analysis of variance (MANOVA) was used to determine the effect of gaming type and location on the change in the dimensions of self-disclosure, and relationship

closeness, and the perception of self-other overlap. The analysis did not reveal any significant effects. One-way ANOVAs were employed to test individual dependent variables, to the same non-significant results (see Table 9).

**Table 9.** Effect of play location and type of play on self-disclosure and relationship closeness for younger and older adults

	<i>Play location (collocated/remot e)</i>			<i>Play type (collaborative /cooperative)</i>	
	<i>N</i>	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>
<i>Younger adults</i>	<i>(1,91)</i>			<i>(1,91)</i>	
Breadth of self-disclosure	93	.01	.9218	1.29	.2791
Depth of self-disclosure	93	.16	.6888	0.19	.8293
Relationship closeness	93	.22	.8637	1.05	.3557
-----					
<i>Older adults</i>	<i>(1,87)</i>			<i>(1,87)</i>	
Breadth of self-disclosure	89	.94	0.3348	.92	.4017
Depth of self-disclosure	89	.55	0.4622	2.87	.0619
Relationship closeness	89	.04	0.8414	1.16	.3170

### Findings Addressing the Narrative Data

In the final part of the closing survey, participants were asked to describe their six-week joint gaming experience—which games they played, did they compete or collaborate, what was the usual gaming ritual, what stood out to them the most, how did they feel about it at the beginning and the end of the study, will they continue playing video games together. The resulting output was analyzed for themes regarding the experiences, particularly those related to the dependent variables. To glean how participants' personal narratives relate to their survey responses, the output was arranged according to the dependent and independent variables respectively, and is in kind presented here.

**Games played.** Games were largely selected by the younger cohort, and comprised a variety of genres. Most of the dyads—60.7% (54)—played casual, turn-based app games such as *Words with Friends* and *Trivia Crack*. Other popular choices were Wii games (13, 14.6%), *Minecraft* (9, 10.1%), sports games such as *Madden* (6, 6.7%), first-person shooters such as *Call of Duty* (4, 4.5%), and simulations such as *Need for Speed* (3, 3.4%). An overwhelming number of older adults (80, 89.9%) reported enjoying the experience of playing games with their family members over the course of the study, citing fun, gratification of spending time together, learning something new, as well as feeling happy for being involved and able to help their child or grandchild with a school assignment. The majority of the younger cohort (77, 82.8%) also reported having enjoyed the experience of playing games with their family members over the course of the study, referencing connectedness, sharing an activity with a family member, and fun.

**Inclusion of other in self and relationship closeness.** The self-other overlap was regarded as one theme with relationship closeness, as this factor captures very broad conscious feelings of closeness with another person (Aron et al., 1992). Time spent together and the resulting closeness were in the center of most responses. As one female participant (57) noted:

My daughter is my oldest child so we have an extremely close bond. Now that she's older, it's hard for us to do fun things together even though we live in the same city. Even though it was a silly phone game for school, I appreciated the extra time we were able to spend together and I was surprised at the amount of time we actually spent engaged in conversation while doing this project. I think that more than anything that time actually made our relationship stronger.

Younger adults shared similar experiences, as a male participant (19) elaborated:

I found that we exchanged text messages more often during this time because my dad is a big trash talker. My dad and I already are very close but I'd say that this added an

extra element to our relationship! It was great doing something together and it gave us something out of the norm to look forward to!

For some, it was about feeling physically closer to their family member, said one grandmother

(63):

Watching your children become their own person is something all parents wish for. Yet, you still feel this loss of your child not being in your daily routine anymore. With these video games, as simple as it may sound, reconnects you again no matter how far. While I played, it made me think of her, and when she played, it made me feel like we were connected even though we were not in the same city. It made me feel close to her and we enjoyed it.

A younger female participant (18) concurred:

I liked that we were playing together. It was a nice since the game put us both in position to have conversations about the game and other things in her and my life at the moment. She is about 900 miles away from me so it was a nice way to keep connected and share in each other's lives.

Others brought the family in on the gaming experience. A female participant (22) described her experience:

It made me want to expand my vocabulary. It also made me want to play more games with family members because it feels like you do get closer. You are constantly thinking about beating them when you play. Which means you are constantly thinking about them as well. Overall, I enjoyed this experience. I would not have started playing games with older relatives without this study. I will continue to do so now. The most fun was trash talk among and to family members because you shouldn't usually be doing that. When it comes to games though, it is totally acceptable to do so. I enjoyed playing games but I may switch to other games to play intergenerationally because I need spell check.

More than two-thirds of both older and younger adults (74.2% and 69.9% respectively) cited more frequent communication and spending more time together as the outcomes of the six-week joint gaming, while 24 (25.8%) younger adults and 31 (34.8%) older adults specifically cited an effect on relationship closeness. A female participant, age 74, said:

Playing games with my grandson keeps me sharp. We joke and talk and compliment each other on good moves. I love that he treats me as an equal and doesn't hold back. Playing games has brought us closer, in my opinion. Doing this with [my grandson] is now one of the joys in my life. I feel that playing games together has taught us both different things, we have learned from each other and about each other.

**Self-disclosure.** Both breadth and depth of self-disclosure featured prominently in the participants' comments about their shared experiences. An abundance of both space and time for conversation brought along a slew of topics, both previously discussed and not. The participants reported sharing more of their lives, past and present, with their family members as they played together. A male participant, age 55, said:

I used to teach him how to play these games; and now he teaches me. This realization brought our relationship to a new level. We spoke about his station in life and his plans, relationships with others and long and short terms goals and achievements. We spoke a lot about politics and life itself.

Another male participant, age 59, had a similar experience:

Me and my stepson enjoyed playing video games together. He asked me how life was when I was growing up. We talked about how things were so different. It was a great opportunity for us to catch up. We often joked about all kinds of different things, but we also had serious conversations about how times are changing. It was really a great opportunity to connect with each other.

Younger participants also found enjoyment in the communication and conversations with their gaming partner, and learned more about them. As one male participant (19) explained:

I liked that we had the ability to communicate and actually play a game together. I feel like I learned more about how my mom thinks, I can understand better our different choices, and I mean in life. I did not like that she was really close to beating me every time.

A female participant (21) from the younger cohort concurred:

This was the first time that I have ever played a game with any older family member. Throughout these six weeks, I learned more about myself as well as my family members than I had in all this time living an hour away from each other. Playing this game caused

my grandfather and I to joke and talk more than normal, which really helped our relationship. I now know where my competitiveness [comes] from.

Older adults hope to continue gaming together. Said a male participant (57):

We plan on continuing our poker competition and adding my other son into our competition. After partaking in this experiment, I can say that I feel like we were able to grow in our relationship and become better friends. I also learned that my son is better than me at online poker.

A female participant (63) had the same idea:

I would continue to play video games with my grandchildren to connect with them and learn personal information about them. It is a good relaxed and neutral ground for both parties. It gives us a chance to slow down and listen to one another. I wish I could have used it with my own parents to learn about their history and lives before my existence.

Overall, about one-third (30, 33.1%) of older adults and younger adults (27, 29.1%) listed examples of one or both dimensions of self-disclosure as a part of their six-week gaming experience.

**Gaming type and location.** In the participants' responses, type of play—collaborative or competitive—was designated in all responses as it was one of the guiding questions for the essay. The issue of collocated co-play vs. remote co-play was only cited in five (5.6%) responses overall. One of the younger participants (m, 18) noted:

I enjoyed playing with my grandma, but I honestly don't think you can replicate the feeling of spending quality time with another person while also sharing the space. There is a difference between playing a game with someone in the same room and playing against someone online. People behave a lot differently online than when they are in person.

An older male (56) participant had a different experience:

Personally, I would enjoy playing the game in person more than I did over technology but technology enabled us to interact even though we were not physically next to each other. I believe that the game has sparked an interaction with my family member that would not have happened if we never would have played. But, I think I would enjoy playing a game with him here with me so we could interact more.



While all participants designated whether they played a competitive or collaborative game, only a few commented on the influence of the gaming type on their entire experience. As for gaming type, competitive play was slightly more frequent than collaborative play, and one male (61) participant explained:

The competition was friendly but definitely was a competition with everyone. It was really noisy and boisterous with lots of good-natured teasing. We made it a family time and there was a lot of “smack talking” and friendly ribbing. My grandson usually won as he has years of experience more than I but he is a gracious winner. We had a good time when we played. When the whole family played, it was really a good time and helped the family gel and form tight relationship bonds.

Another male participant (23) preferred collaborative gaming:

I liked playing video games with my parents. They weren't too thrilled to play initially but they grew a new appreciation for video games and the players after seeing how hard it was for them. We played *Minecraft* and I enjoyed teaching them how to do certain things like cutting down trees and building houses. I felt proud when they showed improvement. But even though we played cooperatively, we would sometimes argue because they would get frustrated with the controller and get angry at me for not holding their hand every step of the way.

**Technology and continuation with gaming.** The above response leads us to one of the themes that surfaced in the participants’ reports of their experiences—older adults and their use of technology. Almost half of younger adults (42, 45.2%) reported frustration with what they perceived as their family members’ slow mastering of games and devices needed to play the selected game. Fewer older adults (19, 21.3%) reported issues with new technologies being a significant part of their gaming experience. One female participant, age 58, described her experience:

Needless to say, I soon discovered that I stink at this fun past time. I am extremely uncoordinated, I guess because I haven't played enough through to develop the necessary skills. The games we played involved racing classic cars, and we laughed a whole lot...mostly at my lack of coordination! I shouted at the TV screen and tried not to swear in front of my grandson. It amazed me at how tense I became as I just tried to

manage the controller, constantly reminding myself to breathe deeply and relax my shoulders...this is what our youth do to relax after a hard day??? But, I was determined I was going to get the hang of working that controller! I did improve with each race that we played. Will I continue to play video games? I imagine so, if my grandchildren want to, and especially if any of us really need a good laugh!

Younger adults for the most part in the end found their older family members' unconventional use of technology amusing, as explained by a female participant (19):

I liked that I had a great deal of time of playing a game with my grandmother; it kept her and I communicating. She learned how to send me messages through *Words with Friends* when I could not answer my phone; I thought it was adorable that she learned something I did not know about the game.

A male participant (19) had fun with his grandmother's play and conversation style:

It was really funny. I think that she thought that to play is back and forth until it ends. So, when it was taking me a while to answer, she was texting me on the gaming app to see if I was still playing. After a while, she used the gaming app instead of the messenger, sending me messages that she was going to the grocery and such. I thought it was pretty funny.

Despite the positive outcomes, though, only 53 (59.5%) older adults and 39 (41.9%) younger adults reported planning to continue with joint gaming and making it a part of their daily or weekly family routine. A male participant (68) said:

If I found a more challenging version of the game that had harder levels of questions, it might be more compelling to play often.

Younger adults dealt with similar issues, as evident from a male participant's (20) explanation:

We were both disappointed in the game because the questions weren't very challenging and seemed overly simplistic.

Participants' narratives provided a deeper understanding of their experiences, and perhaps an insight into potential moderating elements that occurred during the study.

Primarily, both younger and older adults found new ways of connecting to their family

members, whether through more frequent conversations, broader selection of topics, shared subjects, or pure entertainment. Gathering around the novel activity allowed participants the space to talk and listen in a relaxed environment, and they largely reported bonding and enjoyment, with older adults also placing emphasis on learning and acquiring new skills. Not all was fun and games, however, as the repetitiveness and simplicity of the selected games resulted in boredom and loss of interest for some participants of both cohorts. Several dyads who played more demanding and involving games relished the experience, but some older participants were left frustrated after struggling with complex controls, while their younger counterparts were annoyed with having to repeatedly provide instructions.

### **Summary of Findings**

This chapter presented the findings of the gaming treatment group which engaged in six weeks of joint play. Pretest-posttest analyses were used to determine the effect of shared gaming activity on four dependent variables: the perception self-other overlap, relationship closeness, and breadth and depth of self-disclosure. In addition, the data were tested for the effect of conformity and conversation orientations in family communication, playing location, and type of gaming on any changes in the dependent variables. A summary of the hypothesis and research question testing is presented in the Table 10 below.

To summarize, after spending six weeks playing video games together, both younger and older adults experienced a moderate to high increase in the perception of self-other overlap, and in the breadth and depth of self-disclosure. The broadening of the range of conversational topics and the increasingly personal nature of self-disclosures were positively

associated with the growth in self-other overlap, and all three constructs correlated with the reported enhancement of relationship closeness for both groups.

As for the independent variables, conversation orientation was found to be positively associated with the increase in self-other overlap for younger adults, and breadth of self-disclosure for both groups. Conformity orientation exhibited only a marginally significant negative correlation with the depth of self-disclosure for younger adults. Building on this trend, whether the participants played collaborative or competitive games in a collocated or mediated setting did not have a significant effect on the changes in self-other overlap, relationship closeness, or self-disclosure.

The narrative responses offered further insight into the above findings. In their own words, older adults who, for the most part, have never played video games before found the experience enjoyable, rewarding, and bonding. Slightly more than half of the participants wish to continue playing video games with their younger family members. Those who did not express the desire to carry on mostly cited boredom with and lack of challenge in the games selected by their younger family members.

Younger adults also found playing video games with their older family members a source of enjoyment, conversation, and social bonding. The six-week gaming assignment allowed them to gain more knowledge of their family members, and increase respect for their abilities, skills, and expertise, as well as demonstrate their own capabilities, gaining new levels of regard from the older counterparts. Only about 42% of them, however, plan to continue gaming with older family members. Those who did not express the desire to continue cite as

main reasons the dissatisfaction with simple games, lack of time, and disinclination to put effort into teaching older adults more complex controls and games.

**Table 10.** Hypotheses and research questions findings

H1:	Regularly playing video games together is positively associated with a higher perceived self-other overlap for both the older and younger adult.	Supported
H2:	Increase in perceived self-other overlap is positively associated with greater relationship closeness.	Supported
H3:	Conversation orientation is positively associated with perceived self-other overlap for both older and younger adult.	Partially supported
H4:	Conformity orientation is positively associated with perceived self-other overlap for both older and younger adult.	Not supported
H5:	Regularly playing video games together increases the breadth and depth of self-disclosure among family members of different generations.	Supported
H6:	Increase in breadth and depth of self-disclosure is positively associated with relationship closeness.	Partially supported
H7:	Conversation orientation is positively associated with the breadth and depth of self-disclosure.	Partially supported
H8:	Conformity orientation is negatively associated with the breadth and depth of self-disclosure.	Partially supported
RQ1:	How are collocated co-play and remote co-play related to levels of self-disclosure and relationship closeness?	No significant findings
RQ2:	How are cooperative and competitive gaming related to levels of self-disclosure and relationship closeness?	No significant findings

Overall, it may be said that the six-week gaming treatment to which experimental group 1 was exposed had a marked effect on the intergenerational relationships between participating family members. The conclusions of the pretest-posttest data analysis and the narrative accounts of gaming experiences will be discussed in further detail in the final chapter, along with the outcomes of the second experimental group's conversation treatment reported in the next section.

## **CHAPTER 5**

### **GROUP 2 – CONVERSATION TREATMENT GROUP**

Evaluating the effects of social intergenerational video gaming on family relationships necessitates an assessment of the effects of interpersonal interactions removed from this leisure activity. Are the changes in self-other overlap, relationship closeness, and self-disclosure an outcome of sharing a gaming activity or simply that of spending more time together and engaging in conversation? Addressing that question, this chapter presents the findings of the conversation treatment group which engaged in six weeks of talking to each other three hours a week or more. The four sections follow the same design as hypothesis testing and narrative assessment in the previous chapter, and provide: overall information about the sample, analyses and results of the changes in the self-other overlap and self-disclosure, examination of the interaction experience, and a summary of findings for this sample.

#### **Information about the Sample**

**Participant recruitment.** The younger adult participants were recruited through classes at a large Southern United States university after receiving approval from the appropriate Institutional Review Board (Appendix H). Each participant was asked to select an older adult, age 55 and above, from their immediate family circle who would consent to converse with him/her at least three hours a week for six weeks, either in a mediated or collocated setting. Younger adults received partial course credit while older adults did not receive any compensation for taking part in the research.

**Sample.** The sample consisted of 88 participants: 49 older adults, 32 females and 17 males ( $M = 1.65$ ,  $SD = .48$ ), ages 55-71 ( $M = 59.57$ ,  $SD = 3.73$ ), and 49 younger adults, 28 females and 21 males ( $M = 1.57$ ,  $SD = .50$ ), ages 18-25 ( $M = 20.84$ ,  $SD = 1.71$ ). The older cohort ( $n = 49$ ) comprised 44 (89.79%) grandparents, and 5 (10.20%) parents. The younger cohort ( $n = 49$ ) comprised 44 (89.79%) grandchildren, and 5 (10.20%) children.

**Previous interaction experience.** When asked how frequently they communicate with the selected family member and by what means, older adults who participated in the study reported talking 1.41 hours a week on average ( $SD = .65$ ), mostly face-to-face (36.73%) or on the phone (34.69%). A minority of them (16.32%) mainly conversed with their family member using VoIPs (Voice over Internet Protocols) such as Skype or Facetime, while 6 (12.24%) reported that texting was their most utilized form of interaction.

Younger adults' perception diverged slightly, reporting an average of 2.41 hours a week ( $SD = 1.55$ ) spent in conversation with the selected older family member. This cohort also estimated the usual means of communication differently, with 32.65% listing face-to-face as the most frequent channel, 28.57% using the phone, 14.29% relying on VoIPs, and 24.49% reporting that they talk to their family member mostly through texting.

## **Findings of Pretest-Posttest Analyses**

### **Summary Statistics**

The survey output was checked to ensure cleanness of the data before the analysis. As the response to all questions was mandatory before proceeding through the survey, there were no issues with missing data. The collected data were next examined for outliers through graph charts and descriptive statistics. One outlier response was found in the Age variable and

retained. Finally, statistical analyses were performed on all variables to preview the summary of the measures of central tendency; the results are presented in Tables 11 and 12 below.

**Table 11.** Descriptive statistics for younger adults, IVs, and DVs pretest and posttest

Variable	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>
Gender	1.57	.50	-.29	1.08
Age	20.83	1.71	.03	2.59
Conversation orientation	39.37	12.38	.02	3.34
Conformity orientation	77.32	13.11	-.30	1.80
IOS pre/posttest	4.27/ 4.63	1.38/ 1.52	-.29/-.46	3.22/2.82
Breadth of self-disclosure pre/posttest	34.24/ 41.85	10.22/ 10.8	1.20/.04	3.35/1.79
Depth of self-disclosure pre/posttest	45.96/ 48.75	8.92/ 10.16	.54/.45	2.80/2.64
Relationship closeness pre/posttest	59.44/ 63.32	13.28/ 8.32	0.17/-.88	1.49/3.09

**Table 12.** Descriptive statistics for older adults, IVs, and DVs pretest and posttest

Variable	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>
Gender	1.65	.48	-.64	1.41
Age	59.57	3.73	1.31	4.87
Conversation orientation	35.38	9.87	.23	1.87
Conformity orientation	87.53	12.82	-.01	2.00
IOS pre/posttest	4.49/ 4.71	1.12/ 1.29	-.33/-.21	3.59/2.25
Breadth of self-disclosure pre/posttest	27.89/ 33.44	7.27/ 10.77	1.38/.84	2.74/2.38
Depth of self-disclosure pre/posttest	45.02/ 46.55	11.88/ 12.18	.80/.37	2.17/1.53
Relationship closeness pre/posttest	61.45/ 65.55	11.71/ 11.19	.39/-1.11	1.37/3.13



A *post hoc* power analysis was conducted using the program G\*Power (Erdfelder, Faul, & Buchner, 1996) to attend to the limited statistical power of the conversation group study due to the modest sample size ( $n = 49$  for each of the two groups). The *post hoc* power analysis using the sample size and a two-sided 5% significance level revealed that the statistical power to detect moderate effects ( $d = .5$ ) was .92, large effects ( $d = .8$ ) effects was  $> .99$ , and small effects ( $d = .3$ ) was .54 (Cohen, 1992). Thus, there was more than adequate power (i.e.,  $> .80$ ) at the moderate to large effect size level, but less than adequate statistical power at the small effect size level, increasing the risk of the Type II error.

### **Inclusion of Other in the Self**

To remind the reader, the participants completed the Inclusion of Other in the Self (IOS) instrument as a measure of their perception of self-other overlap pre-treatment and post-treatment. The scale consists of a single pictorial item comprised of seven pairs of Venn diagram-like circles marked “self” and “other,” each overlapping from a lesser to a greater degree and representing different levels of interconnectedness (see Appendix E). The analysis of the gaming treatment group data uncovered a significant increase in self-other overlap post intervention, as well as a correlation between said increase and the enhancement of relationship closeness. In addition, the increase in the self-other overlap was positively correlated with the conversation orientation in family communication.

Testing the conversation treatment group data for the same effects also yielded significant outcomes. A paired t-test was employed to determine whether there was a statistically significant mean difference between the perception of inclusion of other in self

before and after the six-week conversation treatment, finding a clear increase in the self-other overlap for both age groups. The results of the paired t-tests are presented in Table 13.

**Table 13.** Results of pretest and posttest IOS for older and younger adults

Variable/Results	<i>N</i>	<i>Pretest- posttest diff. of M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Inclusion of Other in Self for Younger Adults	49	.36	.91	2.84	.007
Inclusion of Other in Self for Older Adults	49	.22	.59	2.68	.010

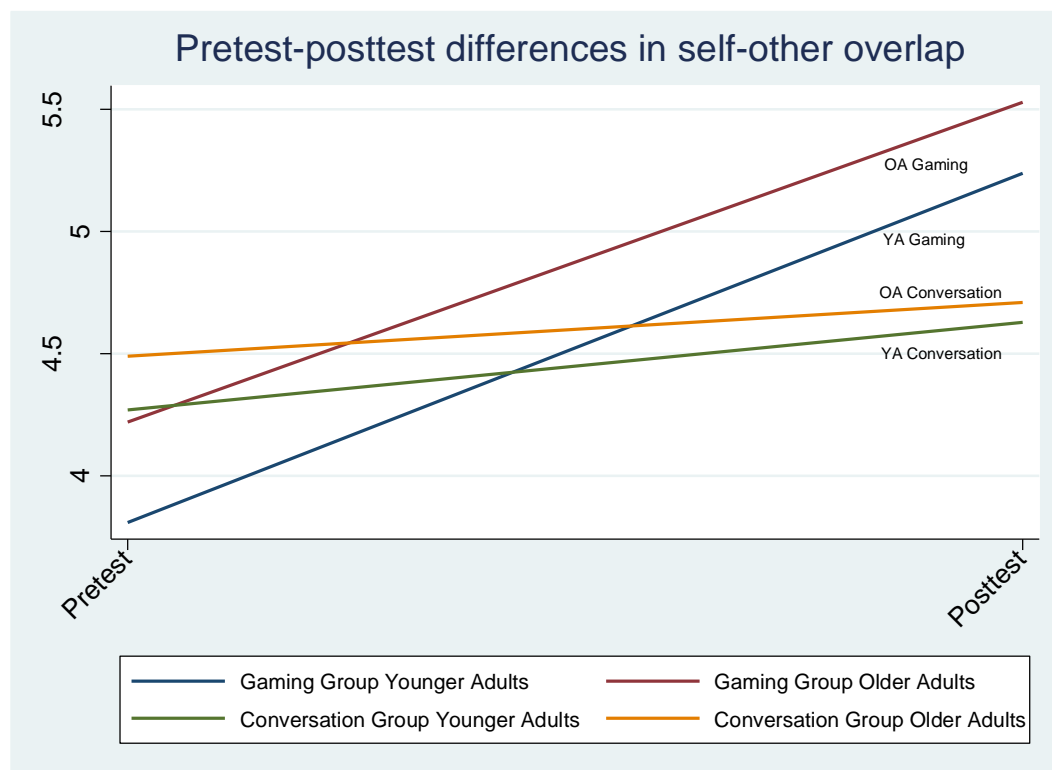
Among younger adults, there was a statistically significant difference between pretest ( $M = 4.27$ ,  $SD = 1.38$ ) and posttest ( $M = 4.63$ ,  $SD = 1.52$ ),  $t_{(49)} = 2.84$ ,  $p = .007$ ,  $CI_{.95} .12, .63$ . Cohen's effect size ( $d = 0.25$ ) suggests a small increase in the perception of self-other overlap. The difference in the perception of inclusion of other in the self between pretest ( $M = 4.49$ ,  $SD = 1.12$ ) and posttest ( $M = 4.71$ ,  $SD = 1.29$ ),  $t_{(49)} = 2.68$ ,  $p = .0101$ ,  $CI_{.95} .06 .39$ , was also significant for older adults. Cohen's effect size for older adults ( $d = 0.18$ ) suggests a small increase in the perception of self-other overlap.

Next, a Pearson's product-moment correlation was used to check for the effect of an increase in perceived inclusion of other in the self on relationship closeness. To assess the outcomes, pretest-posttest change scores were calculated for both inclusion of other in the self and relationship closeness variables. There was a small positive correlation between the two variables for younger adults ( $r_{(49)} = .2429$ ,  $p = .0159$ ), and no statistically significant effect for older adults ( $r_{(49)} = .1311$ ,  $p = .3691$ ). Thus, for younger adults, the slight increase in the perception of inclusion of other in the self was correlated with an increase in the rating of relationship closeness.

Finally, the potential influence of the family communication patterns—conversation and conformity orientation respectively—on the change in the perception of self-other overlap was assessed using a Pearson's product-moment correlation. For conversation orientation, there was a statistically significant small positive correlation between the two variables for younger adults ( $r_{(49)} = .3106, p = .0109$ ), and a positive but not statistically significant correlation for older adults ( $r_{(49)} = .1983, p = .1720$ ). For conformity orientation, the correlation was negative but not statistically significant for either groups.

### Comparison to Gaming Treatment Group

For both groups, the inclusion of other in the self pretest-posttest analysis follows the trends of the gaming treatment group findings, if not quite with the same effect size, as evident from Figure 1.



**Figure 1.** Differences in self-other overlap between pretest and posttest for both groups

As we can see, the conversation group started off with a somewhat higher perception of self-other overlap and experienced a distinctively smaller increase over the course of the study. It is important to note that in both groups, younger adults underwent a steeper increase than older adults.

Correlation between the increase in the self-other overlap and the increase in relationship closeness was moderate for the gaming group. For the conversation group, there was a small correlation for younger adults and no statistically significant correlation for older adults. As for the independent variables, the findings were the same for conversation orientation and self-other overlap, with a small correlation for younger adults, and no correlation for older adults. The findings diverge here: group 1 experienced moderate correlation between conformity orientation and self-other overlap for both cohorts, group 2 had no statistically significant findings here.

### **Self-Disclosure**

The potential increase in the number of topics discussed and the personal nature of the conversations—in other words, the breadth and depth of self-disclosure—were the focus of the remaining four analyses of the gaming treatment group data. A positive effect of shared video gaming on the increase in self-disclosure was found, as well as an effect of self-disclosure on the perception of relationship closeness. Additionally, the rise in self-disclosure was positively correlated with the conversation orientation in family communication, and partially negatively associated with the conformity orientation. Conversation treatment group data were examined correspondingly.

A paired t-test was employed to assess whether there was a statistically significant mean difference between breadth and depth of self-disclosure before and after the six-week conversation treatment. The results of the paired t-tests are presented in Table 14. Among older adults, there was a statistically significant difference between pretest breadth of self-disclosure ( $M = 27.89$ ,  $SD = 7.27$ ) and posttest breadth of self-disclosure ( $M = 33.45$ ,  $SD = 10.77$ ),  $t_{(49)} = 8.31$ ,  $p < .0001$ , CI.95 4.21, 6.89. Cohen's effect size value ( $d = 0.61$ ) suggests a moderate increase for this test group. Younger adults also experienced an increase in the breadth of self-disclosure between pretest ( $M = 34.30$ ,  $SD = 10.18$ ) and posttest ( $M = 41.86$ ,  $SD = 10.81$ ),  $t_{(49)} = 9.25$ ,  $p < .0001$ , CI.95 5.91, 9.19. Cohen's effect size for younger adults ( $d = .72$ ) similarly suggests a moderate to high increase in the breadth of self-disclosure.

**Table 14.** Results of pretest and posttest self-disclosure changes for older and younger adults

Variable/Results	<i>N</i>	<i>Pretest- posttest diff. of M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Breadth of self-disclosure - older adults	49	5.55	4.67	8.12	.0000
Depth of self-disclosure - older adults	49	1.53	4.66	2.30	.0257
-----					
Breadth of self-disclosure - younger adults	49	7.55	5.72	9.25	.0000
Depth of self-disclosure - younger adults	49	2.79	2.99	6.54	.0000

Depth of self-disclosure also underwent a statistically significant increase for both groups. For older adults, pretest ( $M = 45.02$ ,  $SD = 12.41$ ) and posttest ( $M = 46.55$ ,  $SD = 11.88$ ),  $t_{(49)} = 2.30$ ,  $p = .0257$ , CI.95 .19, 2.87, and Cohen's effect size value ( $d = 0.12$ ) suggests a minor increase in the depth of self-disclosure. Younger adults also experienced a small increase in the depth of self-disclosure between pretest ( $M = 45.96$ ,  $SD = 8.92$ ) and posttest ( $M = 48.76$ ,  $SD = 10.13$ ),  $t_{(49)} = 6.54$ ,  $p < .0001$ , CI.95 1.94, 3.66, and with Cohen's effect size score of  $d = .29$ .

Next, a Pearson's product-moment correlation was employed to investigate whether an increase in the breadth and depth of self-disclosure was correlated with an increase in the perception of relationship closeness. To assess the outcomes, pretest-posttest change scores were calculated for both dimensions of self-disclosure, and for relationship closeness. While statistically significant correlations were found between the perception of breadth and depth of self-disclosure, no statistically significant positive correlations were found between the change of self-disclosure dimensions after the treatment, and the change in the perception of relationship closeness for either younger or older adults. The results are presented in Tables 15 and 16 below.

**Table 15.** Correlation matrix for relationship closeness, and breadth and depth of self-disclosure for younger adults

	<i>N</i>	Breadth	Depth	Closeness
Breadth	49	1.000		
Depth	49	.5449**	1.000	
Closeness	49	.1725	.0574	1.000

Correlation is statistically significant at: \* $p < 0.05$ ; \*\* $p < 0.01$

**Table 16.** Correlation matrix for relationship closeness, and breadth and depth of self-disclosure for older adults

	<i>N</i>	Breadth	Depth	Closeness
Breadth	49	1.000		
Depth	49	.3437*	1.000	
Closeness	49	.2694	.2556	1.000

Correlation is statistically significant at: \* $p < 0.05$ ; \*\* $p < 0.01$

Finally, the examination of a potential correlation between conversation and conformity orientations and the changes in the rating of self-disclosure revealed a significant positive correlation between breadth of self-disclosure and conversation orientation, moderate for younger adults ( $r_{(49)} = .3016$ ,  $p = .0352$ ) and small for older adults ( $r_{(49)} = .2883$ ,  $p = .0445$ ). At

the same time, conversation orientation did not have a statistically significant impact on the changes in the depth of self-disclosure. Conformity orientation was negatively associated with both breadth and depth of self-disclosure, but the correlation was not statistically significant for either cohort. The results are presented in Table 17 below.

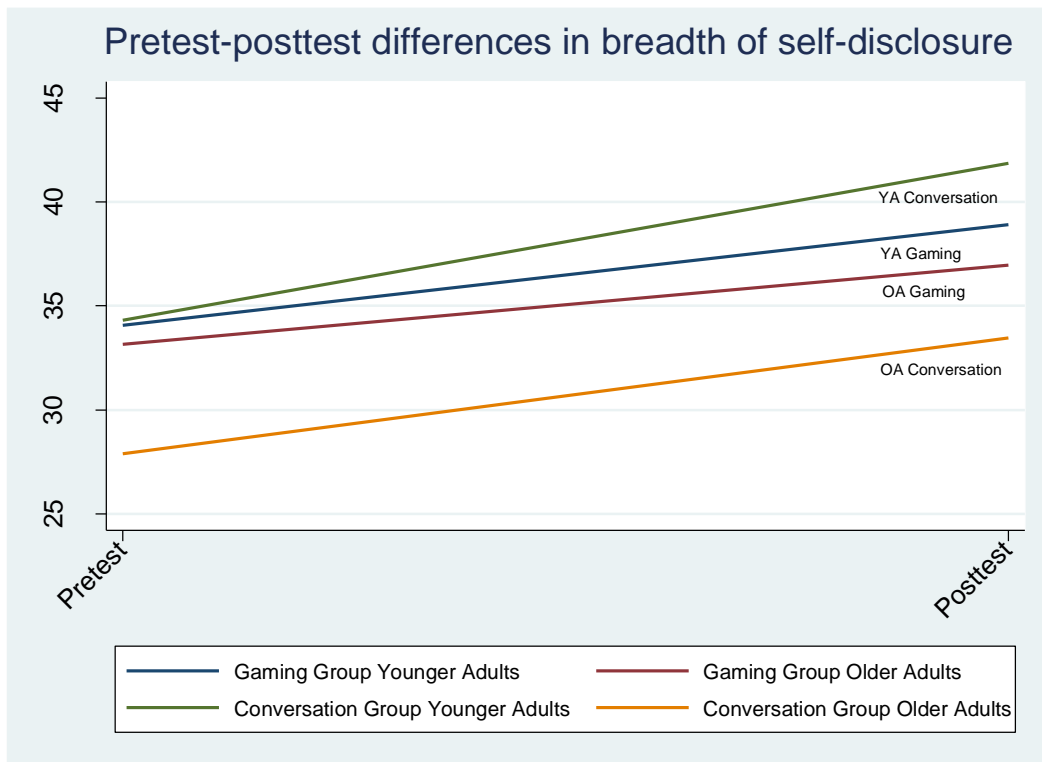
**Table 17.** Correlation of self-disclosure and family communication orientation for older and younger adults

		Conversation orientation		Conformity orientation	
	<i>N</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
<i>Older adults</i>					
Breadth of self-disclosure	49	.2883*	.0445	-.1394	.3393
Depth of self-disclosure	49	.0961	.5112	-.0085	.9539
-----					
<i>Younger adults</i>					
Breadth of self-disclosure	49	.3016*	.0352	-.1304	.3718
Depth of self-disclosure	49	.1471	.3131	-.1142	.4345

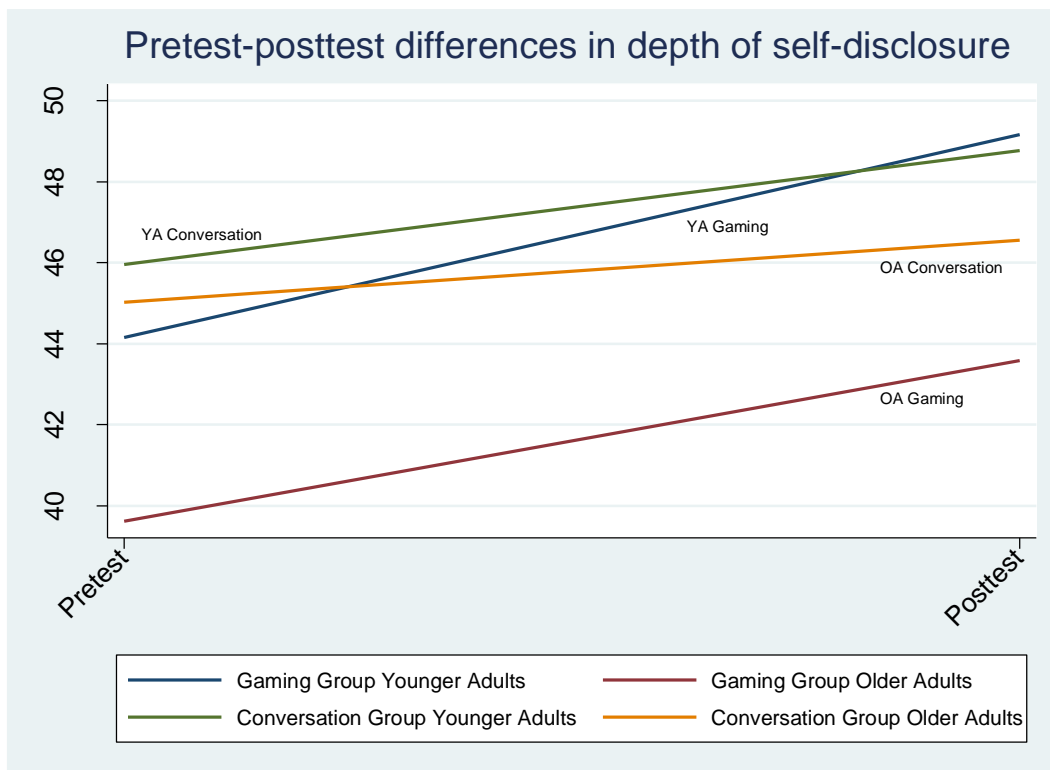
### Comparison to Gaming Treatment Group

The findings related to the breadth and depth of self-disclosure also follow the general trends of the gaming treatment group, with some interesting differences. Younger and older adults in both groups experienced a moderate increase in the breadth of self-disclosure. There was a slightly sharper rise for both cohorts in the conversation group, as evident from Figure 2.

When it comes to depth of self-disclosure, a small increase was found for the conversation group in comparison to a moderate increase of the gaming group (see Figure 3). Also, older adults in both groups reported a milder increase in depth than younger adults. It is interesting to note that perception of depth of self-disclosure in the given relationship was rated higher both in pretest and posttest than breadth. In both cases, however, older adult cohort perceived levels of self-disclosure with the family member lower than younger adults.



**Figure 2.** Differences in breadth of self-disclosure between pretest and posttest for both groups



**Figure 3.** Differences in depth of self-disclosure between pretest and posttest for both groups



Further, unlike gaming group, there were no correlations between breadth and depth of self-disclosure, and the increase in relationship closeness. As for the independent variables, the direction of correlations remained the same for conformity orientation, but there were no statistically significant findings. In small contrast, the gaming group experienced a statistically significant negative impact of conformity on the depth of self-disclosure. Conversation orientation had the same effect on both groups: moderate effect for younger adults and small for older adults on breadth of self-disclosure, and no effect on depth for any cohort.

### **Findings Addressing the Research Questions**

In the gaming treatment group data analysis, the research questions centered on the potential effect of the type of gaming (collaborative vs. cooperative play) and chosen gaming location (collocated vs. remote play) on changes in the dimensions of self-disclosure, and relationship closeness, finding no significant relationships. For the conversation treatment group, there was only one comparable question: are the changes in the dimensions of self-disclosure, and relationship closeness affected by the chosen channel of conversation (i.e. face-to-face, phone, texting, or Skyping). Of the younger cohort, 17 (34.69%) reported that the phone was the most frequently used communication channel during the study, while 16 (32.65%) gave preference to face-to-face communication and 13 (26.53%) mainly conversed with their family member using VoIPs (Voice over Internet Protocols) such as Skype or Facetime. Only 3 (6.12%) participants reported that texting was their most used form of interaction during the study. Older adults' perception diverged slightly, with 21 (42.86%) estimating face-to-face was the most frequent channel during the study, 17 (34.69%) giving preference to the phone, and 8 (16.33) reporting VoIP apps were their chosen channel. Like

younger adults, only 3 (6.12%) participants reported that texting was their most used form of interaction during the study.

Multivariate analysis of variance (MANOVA) was used to determine the effect of the channel of communication on the change in the dimensions of self-disclosure, and relationship closeness. The analysis did not reveal any significant effects. One-way ANOVAs were employed to test individual dependent variables, to the same non-significant results (see Table 18).

**Table 18.** Effect of communication channel on self-disclosure and relationship closeness for younger and older adults

	<i>N</i>	<i>F</i>	<i>p</i>
<i>Channel of conversation (i.e. face-to-face, phone, texting, or Skyping)</i>			
<i>Younger adults</i>		<i>(1,47)</i>	
Breadth of self-disclosure	49	1.42	.1950
Depth of self-disclosure	49	1.83	.0675
Relationship closeness	49	1.02	.4644
-----			
<i>Older adults</i>		<i>(1,47)</i>	
Breadth of self-disclosure	49	1.05	0.4367
Depth of self-disclosure	49	.85	0.6344
Relationship closeness	49	1.52	0.1755

### Findings Addressing the Narrative Data

In the final part of the closing survey, participants were asked to describe their six-week communication experience—what did they talk about, who initiated the conversations, what was the usual chat ritual, what stood out to them the most, how did they feel about it at the beginning and the end of the study, will they continue scheduling weekly talks. The resulting output was analyzed for themes regarding their experiences, particularly those related to the

dependent variables. To understand how participants' personal narratives relate to their survey responses, the output was arranged according to the dependent and independent variables respectively, and is in kind presented here.

**Inclusion of other in self and relationship closeness.** The self-other overlap was regarded as one theme with relationship closeness, as this factor captures very broad conscious feelings of closeness with another person (Aron et al., 1992). Unlike the gaming treatment group, time spent together and the resulting closeness were not the focus of most narrative responses. As a matter of fact, only 10 (20.4) younger adults and 14 (28.6) older adults specifically referred to increased relationship closeness in their digital postcards. For some, as one female participant (21) noted, this is simply because three hours of talking per week was not beyond their usual routine:

I live with my parents, so I see them every day. My [extended] family is also close, and we talk on the phone daily. There are times when I think they are too involved in my life and I get annoyed, but then I remember how lucky I am to have them. This assignment did not really make me go out of my way, although I did spend more time than usual talking to my grandma. She lives about 10 minutes from my parents, so we just supplemented our phone conversations with hanging out or shopping during the weekend.

Another female participant, age 56, was in a similar situation:

My daughter calls me all the time. Mostly asking for advice, or when she is bored or driving. We are very close and I appreciate her calls, so this project was easy for us, because it's already our routine.

For others, however, it was a bonding experience, as observed by one son (22):

I actually started calling my mom a couple of times a week to talk. I get along with her much better than with my dad and am more comfortable sharing things about myself and my life. I think she liked it too because I initiated the weekly phone calls and now

she does it more. We definitely grew closer and she knows more about what's going on with my life than my brother.

Older adults shared similar stories and relished spending time with their family members, as a male participant (62) explained:

[My grandson] and I decided to do our "talking" during the weekend since we both have busy weeks, and he was at my door on Saturday nights with a half a gallon of ice cream and a war movie. Next weekend, I am barbecuing. We do talk when he is here, mainly about my late wife, or about his school and life. I like that it's brought us closer. He has grown to be a good man, and I am proud of him.

For one older female participant (59), it was about feeling better together:

When I was younger, I envisioned my kids and grandkids living near. Well, fate has a funny way of changing your life. When I fell ill 2.5 years ago, I had to move in with my daughter and her family. It's been difficult on everyone: I despise losing my independence and my daughter despises losing her freedom. But we love and respect each other and make it work. Helping my granddaughter with this school project, we talked to each other like two adults for the first time. We both opened up and I feel we are closer than ever before.

**Self-disclosure.** Both breadth and depth of self-disclosure featured prominently in the participants' comments about their six weeks of chatting experiences. The participants reported sharing more about themselves and their lives with the family members. A male participant, age 21, said:

I used to talk to my grandfather about football, fishing, his woodwork projects, school, that kind of stuff. When we had to talk more for this assignment, we ran out of things to talk about in the first week, and in the end we ended up talking about everything. My life, my relationships, my work, my friends, my plans. He told me about his and grandma's life, health, activities. What I like is that now we have more to talk about and inside jokes about family members!

Another male participant, age 64, had a similar experience:

We found more things we have in common besides family and the military. He also helped me with my computer, taught me stuff.

Similarities were not only found in shared interests, as observed by one female (18) participant:

Looking at my grandma when we talked, I realized we have the same little ticks. Like, she rubs her eyebrow with her thumb when she is confused, just like me. They recently moved back to [the South] and I didn't see her much growing up, so it was a surprise.

Other participants also found enjoyment in finding shared interests through the communication and conversations with their family member. As one male participant (20) explained:

My mom started a small business making jewelry. She is a very creative type of person, so we have that in common. She lives 700 miles away, but when we Skyped she would show me some of her ideas and designs and I gave my input.

A female participant (56) from the older cohort concurred:

My granddaughter told me about a new hobby she picked up, and it was something I used to do when I was younger! So she came over and we went through my boxes. Later, we went shopping for supplies and watched a movie together. It made me feel like a kid again.

Other participants also decided to share some activities during the six-week study. Said a male participant (19):

I got my grandpa to watch *Game of Thrones* with me. I live in a dorm and don't own a TV, and he has HBO, so win-win. And he loves it, it's "our thing" now.

A female participant (22) had the same idea:

I visited my grandparents once a week. My grandfather and I both like *Scrabble* and *Yahtzee*, so we'd play and they'll make dinner. It's an hour drive each way, but worth it.

Overall, about one-quarter (11, 22.4%) of older adults and younger adults (13, 26.5%) listed examples of one or both dimensions of self-disclosure as a part of their six-week chatting experience.

**Challenges and continuation after the study.** While the majority of the participants reported enjoying at least some aspects of the task, more than half of both older adults (26 or 53.1%) and younger adults (31 or 63.3%) faced a variety of challenges as well. Disagreements and arguments spoiled the experience, as one male participant (19) noted:

We argued a lot. It was always about something stupid, like something that happened on a show that was on TV.

An older female (66) participant had a similar experience:

[Grandson] ranted the entire time: about school, work, politics, people, anything. He was always complaining, even as a kid, but this experiment with him was just tiresome. I did get to talk to him about it and that was good.

Others experienced one-sided conversations as well; a female (55) participant reflected:

He would call me and talk about himself for an hour. I found out every detail of his life, what he did and said, all the names of his teachers, his coworkers, his friends. When he was done, he'd ask about me and my life, but a minute later he would find some excuse to hang up every time. He would say he has to use the toilet, his phone battery is low, or someone texted him and he needs to go.

Younger adults faced similar issues as well, as one female (19) participant elaborated:

I soon discovered my grandmother only wanted to talk about her health and her life. We had a good time at first but after a while I wasn't too thrilled about it. Fortunately, she took my criticism graciously and I ended up finding out some stuff about my parents I didn't know!

Both younger and older adults experienced some difficulties with the topics of conversation, resulting in frustration, awkwardness, and boredom. One female (18) participant explained:

I think we were both disappointed because we kept talking about the same issues. After a while the conversations became mundane, always the same questions and answers. We talked on the phone and there were a lot of awkward silences.

Perhaps understandably, only 9 (18.3%) younger adults and 13 (26.5%) older adults reported planning to make longer conversations with family members a part of their weekly routine. A male participant (24) said:

I enjoyed it but I simply don't have time right now. During the assignment, my mom would call to talk and it would always be a bad time for me because of my busy schedule. I stuck to the conversation for the assignment, but my mind would be elsewhere. I think it's better that we talk when I can focus on the conversation, even if that's not every week.

Older adults dealt with similar issues, as evident from a male participant's (59) explanation:

Can't schedule talking to the family like you would a delivery. It's something that should happen naturally and not be forced.

Participants' accounts offered a deeper insight into their experiences during the study.

In some measure, both younger and older adults appreciated the experience, connecting over deeper conversations, broader selection of topics, and newfound shared interests. For some, talking three hours a week was not outside the norm, while for others it created both opportunities and challenges. Opportunities were found in discovering more about the family members, be it positive or negative. Challenges arose for both cohorts in having their voices heard during the conversation, dealing with arguments, boredom, and the lack of common topics that would move the chats from the realm of mundane. The majority of the participants do not plan on continuing with weekly conversations with family members, preferring that chats arise naturally.

### **Summary of Findings**

This chapter presented the findings of the conversation treatment group which engaged in chatting with the selected family member for at least three hours per week for six weeks.

Pretest-posttest analyses were used to determine the effect of weekly conversations on four dependent variables: the perception of self-other overlap and relationship closeness, breadth and depth of self-disclosure. In addition, the data were tested for the effect of conformity and conversation orientations in family communication, and the communication channel on any changes in the dependent variables. Here, it is important to reiterate that the modest sample size of each cohort ( $n = 49$ ) in this group indicates less reliability when it comes to detecting small effects, with only 0.54 statistical power for effect sizes equal to or smaller than  $d = .3$ .

To summarize, after spending six weeks conversing three hours a week or more, both younger and older adults experienced a small increase in the perception of self-other overlap, and depth of self-disclosure, as well as a moderate to high increase in the breadth of self-disclosure. While the slight increase in the self-other overlap displayed a moderate positive association with the growth in relationship closeness for younger adults, there was no such effect for older adults. The broadening of the range of conversational topics and the increasingly personal nature of self-disclosures were also not correlated with any increase of relationship closeness for either age group.

As for the independent variables, conversation orientation was found to be positively associated with the increase in self-other overlap and breadth of self-disclosure for younger adults, with moderate effects. For older adults, conversation orientation exhibited a small positive correlation with breadth of self-disclosure. Conformity orientation had no statistically significant correlation with the self-other overlap or the dimensions of self-disclosure for either group. Relatedly, what communication channel participants used during the experiment did



not have a significant effect on the changes in self-other overlap, relationship closeness, and self-disclosure.

The narrative responses offered further insight into the above findings. Some participants found the six-week chatting experience connecting and bonding, while others found it frustrating or boring. Only about a quarter of participants wish to continue with regular longer weekly conversations with the family members. Those who did not express the desire to carry on mostly cited boredom, repetitiveness of conversations, and full schedules.

Overall, it can be said that the six-week conversation treatment had a moderate effect on the intergenerational relationships between participating family members. The conclusions of the pretest-posttest analysis and the comparison with the results of the first experimental group will be discussed in further detail in the next chapter.

## **CHAPTER 6**

### **DISCUSSION**

The aim of this study was to explore the effects of intergenerational video gaming on the bonds between older and younger family members. At the heart of the inquiry was the potential of the shared leisurely activity to build or maintain relationship closeness between generations through the increase in self-other overlap and self-disclosure. Using a mixed-methods longitudinal design allowed for the collection of survey data on these two constructs and detailed narrative accounts of the effects of gaming on dyadic family relationships. For comparison purposes, the same design was used to collect data on the effects of regular conversations on intergenerational family relationships, removing the shared gaming factor. This chapter presents the results of this investigation. The four sections provide: a discussion on the self-other overlap findings, a discussion on the self-disclosure findings, study's limitations and recommendations for future research, and the conclusion.

#### **Inclusion of Other in the Self**

Aron and Aron's (1986) self-expansion model of motivation and cognition in close relationships postulates that expanding one's self is a fundamental human drive. In the context of a close relationship, Aron, Mashek, and Aron (2004) proposed that an individual's self is expanded through a process called inclusion of other in the self, defined as the degree to which an individual's self-perception overlaps with his/her perception of the close other. Inclusion of other in the self develops as the person is motivated to embrace the resources, perspectives, and identities of their relationship partner (Aron et al., 1991). Through this process, each individual not only welcomes other's knowledge and capabilities, but also begins

experiencing the world from the other's point of view to some degree, which is exceptionally important in relationships with a significant generational gap. In a sense, one becomes close with their relationship partner as the partner becomes part of the self.

The major premise of this research was that regularly sharing in the engaging activity of playing video games with a family member builds closer relationships. Indeed, while participants played video games, in the background their relationships changed. The shift materialized in the significant upward slope of self-other overlap for both groups, highly correlating with the increase in relationship closeness. This outcome suggests that playing video games together certainly creates a platform for the expansion of family relationships, which is in line with the postulate of the self-other construct that, when individuals are motivated by the gain of the other's resources, they will include other in the self. This will in turn lead to continuous reciprocation and the strengthening of the relationship (Aron & Aron, 1986). Narrative accounts supported these findings. The opportunity for conversation and bonding grew in both younger and older adults. The older cohort, largely consisting of individuals who have never played video games before, found the experience entertaining, interesting, and gratifying. The younger cohort enjoyed the opportunity to display their expertise to older family members while in turn discovering more about them and receiving the benefit of an interested listener and adviser. Younger adults also gained greater awareness of their older gaming partners' knowledge and capability, while older adults saw their relationships with post-adolescents as more rewarding.

The findings of the comparison group were less stellar. While there was certainly an increase in the self-other overlap after the six-week conversation treatment, it was very

modest. In addition, this small surge was not correlated with relationship closeness for older adults and was only marginally positively correlated for younger adults. According to the illuminating narrative reports, the cause may be in the lack of motivation as most of the participants did not find the weekly conversations particularly rewarding. While the gaming dyads gathered around a fun activity, which added a dose of excitement and an environment that not only allowed for sharing stories but creating them too, the conversation group were left to their own devices, finding topics and ways to push through arguments and awkward pauses. As a matter of fact, accounts that reviewed the conversation experience positively, and saw it as bonding mostly also engaged in some shared experiences, such as shopping, watching a show, or pet sitting. The small correlation for younger adults possibly resulted from increased motivation as their participation in the study was a part of the class credit.

Next, the postulation that the overarching family communication patterns (FCP) positively influence the self-other overlap was only partially supported. Namely, conversation orientation had a positive correlation with the self-other overlap for the younger cohort but not for older adults. Conversation orientation is characterized by frequent, unstructured, unrestrained interactions that allow family members to express their thoughts and feelings on a broad range of topics (Koerner & Fitzpatrick, 2006). Thus, these findings indicate that this FCP is more influential for younger adults, and less significant for older adults, perhaps due to older adults' inherent authority in the relationship making it a "non-issue" for them, because in the conversation orientation family they are already willing and free to disclose openly. Further, although predicted differently due to the perception of gaming as an entertaining platform that may allow for the breaking of strict rules, conformity orientation was negatively correlated with

the self-other overlap for both younger and older adults. Conformity orientation is characterized by uniformity of attitudes, values, and beliefs, with a focus on obedience to those higher in the relationship hierarchy (Koerner & Fitzpatrick, 2006). In retrospect, the findings are logical as even in the relaxed atmosphere of video gaming, younger adults may be disinclined to break the rules, and older adults may be careful to preserve the hierarchy.

For the conversation group, the findings were the same for the conversation orientation, with a small effect for younger adults, and also no effect for older adults. Conformity orientation was also negatively correlated with the self-other overlap for either group but the results were not statistically significant. These findings may be due to the lower motivation overall, as discussed above, or due to the conversation group's smaller sample.

### **Self-Disclosure**

Self-disclosure, defined as exchange of information, expressions of positive and negative emotions, as well as mutual activities (Taylor, 1968), is of central importance in the development of close relationships (Altman & Taylor, 1973). A great deal of research has been conducted examining relationship closeness and self-disclosure, especially on how self-disclosure plays in the structure, development, and prediction of closeness (Lippert & Prager, 2001; Laurenceau, Feldman Barret, & Pietromonaco, 1998). Altman and Taylor (1973) postulated that, after the initial encounter, the closeness of the relationship progresses through the linear stages as the breadth and depth—or the number of topics discussed, and the importance of the topic to the person respectively—of self-disclosure increase. In family relationships, which are of interest for this study, self-disclosure has been strongly associated

with openness in family communication, cohesiveness, identity development, and satisfaction with family relationships (Rittenour & Soliz, 2009; Martin & Anderson, 1995).

Building on the major premise of this research that shared gaming with a family member increases relationship closeness, I postulated that self-disclosure also thrives during this activity. Indeed, there was a moderate increase in breadth and depth of self-disclosure for both younger and older adults after the six-week gaming period. These findings resonate with the postulates of the social penetration theory (Altman & Taylor, 1973) that, as relationships progress, breadth and depth of self-disclosure increase. Breadth of self-disclosure was positively correlated with relationship closeness, more so for older than for younger adults. However, the correlation between depth of self-disclosure and relationship closeness, while positive, was not significant.

Next, similarly to the self-other overlap findings, the hypotheses about the influence of the overarching family communication patterns on self-disclosure were only partially supported. As predicted, conversation orientation had a moderate positive correlation with breadth of self-disclosure for younger adults, and a small positive correlation for older adults. No significant correlation was found for depth of self-disclosure. Also as predicted, conformity orientation had a negative correlation on depth of self-disclosure for both cohorts. The correlation with breadth was also negative, but not significant. The directions of correlations make sense, as it stands to reason that families high in conversation orientation would find it easier to navigate the potentially turbulent waters of joint video gaming, while those high in conformity could experience more strain. In addition, depth suffers in general due to the mostly remote gameplay discussed above.

Again, narrative accounts may shed more light on these findings. Participants largely reported sharing more with and finding out more about their family members, connecting and understanding each other better. However, almost two-thirds of dyads played online games in a remote setting. While this platform provides for joking, small talk, and challenging each other, it may not be the best channel for deeper, more intimate questions or revelations.

The findings for the comparison group were rather similar. Both younger and older adults reported a moderate increase in breadth and a small increase in depth of self-disclosure after the six-week conversation treatment. However, there was no correlation between the dimensions of self-disclosure and relationship closeness for either cohort. Conversation orientation also saw the same outcomes: a moderate correlation for younger adults and a small one for older adults for breadth of self-disclosure, and no effect for depth for either cohort. Conformity orientation had no significant correlations with the dimensions of self-disclosure for either cohort. Looking at the narrative data, these results may be due to some participants viewing the conversations as a “chore,” expanding the number of topics just to fill the required time. In addition, some participants reported their collocutor lacking listening skills, and only having interest in hearing their own voice.

Finally, while I can postulate that remote gaming may have affected the sharing of deep, personal information, there was no significant effect of the gaming location, collaborative or competitive play on the self-other overlap and self-disclosure, nor on the resulting relationship closeness. Similarly, the preferred communication channel, e.g. phone or face-to-face, had no significant effect on the outcomes of the main constructs for the conversation group.

Overall, it can be said that the gaming group experienced larger effects post-treatment. For both younger and older adults, positive emotions such as happiness and enjoyment coalesced with—and stemmed from—the bonding, the conversations, the feeling of being closer to loved ones, and of maintaining relationships across distances. They used the platform to spend time together, and talk about simple and complex topics in a setting they find comfortable and comforting.

Ironically, not all was fun and games in this group. Despite positive outcomes, only about half of the older adults and less than half of the younger adults plan to continue playing with their family member. The cause of this lack of motivation to continue is clear—younger adults have considerably underestimated the technical abilities of their older family members, as well as their capabilities in mastering new forms of electronic entertainment. Such a response was to be expected; after all, even game designers “often view older users as ‘old’ first and ‘users’ much further down the proverbial list—somewhere after ‘physically impaired’, ‘socially bereft’, ‘technically illiterate’ and ‘struggling to use unmodified versions of mainstream technologies’” (Östlund, 2005, p. 27). Thus, younger adults largely selected games based on old tabletop models, such as *Trivia Crack* and *Words with Friends*. Such games have a minimal learning curve and are less involving, which in turn led to older adults soon becoming bored, and younger adults are already disinterested in these unchallenging apps. While some concerns about game accessibility may be valid, as many older adults do dread the fast response time requirements and the complex control(ler)s, this concern should be addressed and removed as an obstacle in enjoying the many worlds and stories video games provide.



## Limitations

The design of this study is limited due to several factors. First, the modest sample size of each group ( $n = 89$ ,  $n = 93$ ,  $n = 49$ ,  $n = 49$ ) impacts the generalizability of results. Furthermore, the participants were selected using a sampling procedure of convenience rather than randomized sampling of a larger population. Another issue is the type of instruments used. Questionnaires rely on the participants self-reporting their perceptions of relationship closeness, self-other overlap, and dimensions of self-disclosure. The possibility exists that some of the participants selected response options incongruent with reality, either based on incorrect self-appraisal or in an effort to be viewed in a better light. This could have occurred even with the knowledge that their survey results were anonymous. Dillman (2000) suggests that “although self-administered questionnaires are often selected [over interview questionnaires] because of respondent’s greater honesty with their answers, there is little doubt that social desirability is somewhat of a problem for this method as well” (p. 38). The same limitation exists within the narrative data—as the study was a part of a course credit or research credit assignment, it is possible that the participants provided inaccurate information due to their perception of what the researcher would want to hear.

As with any strategy, there are also limitations related to the design of the model utilized for research. One of the limitations of mixed methods model as articulated by Creswell (2009) is the degree of difficulty involved in attempting to make direct comparisons between results of multiple analyses in different forms. For example, in the case of this study, there cannot be a direct comparison of survey and narrative data because the survey data represents the combination of scores on more than one related item that

cannot be fully, accurately reflected in the narrative data. To address this issue, the narrative data is relegated primarily to a supporting role in order to aid in the interpretation. This decision is supported by another limitation of the design, the collection of narrative data solely at the end of the program which makes the output usable only to confirm retrospective pretest-posttest findings. Ideally, the narrative accounts should be collected in face-to-face interviews at the beginning, end, and throughout the study; which would be feasible with funding.

Future research should address the identified limitations to this study. In addition, design challenges that allow for greater interaction among the generations should also be examined. As Malaby (2007) argued, we need to acknowledge that individuals participate in gaming not just as an escape or as unproductive activity. These additional motivations are important to developing a fuller understanding of what types of social games should be developed for the full benefit of intergenerational relationships.

The social power of video games lies in the backstage, in all the ropes and pulleys that work together to create the experience that is on the surface entertaining, but also affects heart, body, and soul of those who take part in it. The more we know about factors affecting the outcomes of social gaming, which ropes and pulleys work well together, the better we can put new technologies to use in the maintenance of the most important relationships throughout our lives.

### **Conclusion**

With each year, the aging population grows. In the same time, especially in the Western world, the use of technology has led to people living in the same space but rarely spending

“quality time together,” actually interacting and bonding. While popular media continuously emphasize the importance of meaningful interactions among family members and friends for the strength of the relationships, resulting in calls for sharing meals without distractions, with the wide introduction of personal computers, tablets and smartphones, the silence and distance are becoming more pervasive. In order to enhance lives across generations, the same technology can be used to counter this effect. With careful design and consideration of current and potential players, video games have the capacity to positively impact families, and social life in general, bridging the distance, and allowing us to not just play stories and share stories, but create them as well.

And this, this is what our young peasant girl from Sicily knew—games, family, and stories. She is gone now, along with her many worlds, little joys, and great sorrows. She is gone, but not long. Her daughter sits in a cozy living room in Miami, intently staring at the TV and listening to her grandson explaining how to use the controller. “Here,” he says, taking her hands in his, “you push this button to run, and this one to duck. With this one, you shoot.” She laughs as her avatar on the TV fires an arrow while crouching: “Alright, got it, let’s go! Where do we go?” Her grandson gestures at the screen. “Look, there is some sort of a shipwreck in that cove, let’s see what’s there.” As their avatars run down the flowery hill, she grins and says, “Speaking of shipwrecks, do I have a story to tell you. Picture it: Sicily...”

## REFERENCES

- Afifi, W. A., & Burgoon, J. K. (1998). "We never talk about that": A comparison of cross-sex friendships and dating relationships on uncertainty and topic avoidance. *Personal Relationships*, 5(3), 255-272. doi:10.1111/j.1475-6811.1998.tb00171.x
- Agnew, C. R., Van Lange, P. A. M., Rusbult, C. E., & Langston, C. A. (1998). Cognitive interdependence: Commitment and the mental representation of close relationships. *Journal of Personality and Social Psychology*, 74, 939–954. doi:10.1037/0022-3514.74.4.939
- Alexander, A., Brunye, T., Sidman, J. and Weil, S. (2005). From gaming to training: A review of studies on fidelity, immersion, presence, and buy-in and their effects on transfer in pc-based simulations and games. *DARWARS Training Impact Group*, Woburn.
- Altman, I., & Taylor, D., (1973). *Social penetration: The development of interpersonal relationships*. NewYork: Holt, Rinehart and Winston
- Anderson, C. J. (2001). Effects of violent video games on aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, and prosocial behavior: a meta-analytic review of the scientific literature. *Psychological Science (Wiley-Blackwell)*, 12(5), 353.
- Aristotle. (1920). *Aristotle's politics*. Translated by Jowett, B., & Davis, H. W. C. Oxford: Clarendon Press.
- Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of Other in the Self Scale and the structure of interpersonal closeness. *Journal Of Personality And Social Psychology*, 63(4), 596-612. doi:10.1037/0022-3514.63.4.596
- Aron, A., Aron, E. N., Tudor, M., & Nelson, G. (1991). Close relationships as including other in the self. *Journal of Personality and Social Psychology*, 60, 241-253.
- Aron, A., Mashek, D., & Aron, E. N. (2004). Closeness, intimacy, and including other in the self. In D. Mashek & A. Aron (Eds.), *Handbook of closeness and intimacy* (pp. 27-41). Mahwah, NJ: Erlbaum.
- Aron, E. N., & Aron, A. (1987). The influence of inner state on self- reported long-term happiness. *Journal of Humanistic Psychology*, 27, 248-270.
- Backlund, P., Engström, H., Hammar, C., Johannesson, M., & Lebram, M. (2007). Sidh-a game based firefighter training simulation. In *Information Visualization, 2007. IV'07. 11th International Conference*, 899-907.

- Bailenson, J.N., & Yee, N. (2006). A longitudinal study of task performance, head movements, subjective report, simulator sickness, and transformed social interaction in collaborative virtual environments. *PRESENCE: Teleoperators and Virtual Environments*, 15(6).
- Baiocchi-Wagner, E. A. (2015). Future directions in communication research: Individual health behaviors and the influence of family communication. *Health Communication*, 30(8), 810-819. doi:10.1080/10410236.2013.845492
- Bargh, J. A., & McKenna, K. A. (2004). The internet and social life. *Annual Review of Psychology*, 55(1), 573-590. doi:10.1146/annurev.psych.55.090902.141922
- Baron, N. S. (2004). See you online: Gender issues in college student use of instant messaging. *Journal Of Language And Social Psychology*, 23(4), 397-423. doi:10.1177/0261927X04269585
- Biocca, F., Harms, C., & Burgoon, J. K. (2003). Toward a more robust theory and measure of social presence: Review and suggested criteria. *Presence: Teleoperators & Virtual Environments*, 12(5), 456-480.
- Bogost, I. (2004). Asynchronous multiplayer: Futures for casual multiplayer experience. Presented in Other Players Conference on Multiplayer Phenomena, Copenhagen Denmark. Retrieved from <http://bogost.com/downloads/IBogost-AsynchronousMultiplay.pdf>
- Boulay, M., Benveniste, S., Boespflug, S., Jouvelot, P., & Rigaud, A. (2011). A pilot usability study of MINWii, a music therapy game for demented patients. *Technology & Health Care*, 19(4), 233-246. doi:10.3233/THC-2011-0628
- Broeren, J., Claesson, L., Goude, D., Rydmark, M., & Sunnerhagen, K. S. (2008). Virtual rehabilitation in an activity centre for community-dwelling persons with stroke. *Cerebrovascular Diseases*, 26(3), 289-296. doi:10.1159/000149576
- Brussoni, M. J., & Boon, S. D. (1998). Grandparental impact in young adults' relationships with their closest grandparents: The role of relationship strength and emotional closeness. *The International Journal Of Aging & Human Development*, 46(4), 267-286. doi:10.2190/2B7B-E3LH-74JJ-UJRY
- Bukowski, W.M., Hoza, B. & Boivin, M. (1994). Measuring friendship quality during pre- and early adolescence: The development and psychometric properties of 50 the friendship qualities scale. *Journal of Social and Personal Relationships*, 11, 471-484. doi: 10.1177/0265407594113011
- Cameirão, M. S., Bermúdez i Badia, S., Duarte, E., & Verschure, P. J. (2011). Virtual reality based rehabilitation speeds up functional recovery of the upper extremities after stroke: A randomized controlled pilot study in the acute phase of stroke using the Rehabilitation

- Gaming System. *Restorative Neurology & Neuroscience*, 29(5), 287-298.  
doi:10.3233/RNN-2011-0599
- Carson, J. W., Carson, K. M., Gil, K. M., & Baucom, D. H. (2007). Self-expansion as a mediator of relationship improvements in a mindfulness intervention. *Journal of Marital and Family Therapy*, 33(4), 517–528.
- Castells, M. (2001). *The internet galaxy: reflections on the internet, business, and society*. New York, NY: Oxford University Press.
- Castronova, E. (2005). *Synthetic worlds: The business and culture of online games*. Chicago, IL, US: University of Chicago Press.
- Clevenger, E. (2012, 08 12). Video games have more storytelling potential than any other medium. Retrieved from Video games have more storytelling potential than any other medium Read more at <http://venturebeat.com/2012/08/12/ico-and-the-power-of-video-games/>
- Cohen, J. (1992). A Power Primer. *Psychological Bulletin*, 112(1), 155-159.
- Collins, R. (1998). *The sociology of philosophies: a global theory of intellectual change*. Cambridge, MA: MIT Press.
- Colwell, J., Grady, C., & Rhaiti, S. (1995). Computer games, self-esteem and gratification of needs in adolescents. *Journal of Community & Applied Social Psychology*, 5(3), 195-206.
- Colwell, J., Grady, C., & Rhaiti, S. (1995). Computer games, self-esteem and gratification of needs in adolescents. *Journal Of Community & Applied Social Psychology*, 5(3), 195-206
- Coyne, S. M., Padilla-Walker, L. M., Stockdale, L., & Day, R. D. (2011). Game on... girls: Associations between co-playing video games and adolescent behavioral and family outcomes. *Journal of Adolescent Health*, 49(2), 160-165.  
doi:10.1016/j.jadohealth.2010.11.249.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. Los Angeles: Sage Publications.
- de Kort, Y., IJsselstein, W.A., & Poels, K. (2007). Digital games as social presence technology: development of the social presence in gaming questionnaire (SPGQ). In *Proceedings of PRESENCE*, 195203.
- De Schutter, B. (2011). Never too old to play: the appeal of digital games to an older audience. *Games and culture: A Journal of Interactive Media*, 6(2), 155-170.  
doi:10.1177/1555412010364978.

- De Schutter, B., & Vanden Abeele, V. (2010). Designing meaningful play within the psycho-social context of older adults. In *Proceedings of the 3rd International Conference on Fun and Games*, 84-93.
- Deterding, S., Sicart, M., Nacke, L., O'Hara, K., & Dixon, D. (2011). Gamification: using game-design elements in non-gaming contexts. In *CHI'11 Extended Abstracts on Human Factors in Computing Systems*, 2425-2428.
- Dibbel, J. (2007). Virtual Gold Could Draw Real Taxes. *Pcworld*, 25(3), 30.
- Dillman, D. A. (2000). *Internet and mail surveys: The tailored design method*. John Wiley: New York.
- Dogruel, L. (2008). *Computer games and 50+. Acceptance and potentials for computer games among people over 50 years*. Munich: Reinhard Fischer.
- Ducheneaut, N., Yee, N., Nickell, E., & Moore, R. (2006). Alone together? Exploring the social dynamics of massively multiplayer online games. *Proceedings of CHI 2006*, 407-416.
- Durkheim, E. (1995). *The elementary forms of religious life*. Free Press.
- Durkin, K., & Barber, B. (2002). Not so doomed: Computer game play and positive adolescent development. *Journal of Applied Developmental Psychology*, 23(4), 373-392.  
doi:10.1016/S0193-3973(02)00124-7
- Emmerich, K. & Masuch, M. (2013). Helping friends or fighting foes: the influence of collaboration and competition on player experience. In *Proceedings of the 8th International Conference on the Foundations of Digital Games*, 150-157.
- Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: A general power analysis program. *Behavior Research Methods, Instruments, & Computers*, 28, 1-11.
- Erdoğan, Y. (2008). Exploring the Relationships among Internet Usage, Internet Attitudes and Loneliness of Turkish Adolescents. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 2(2), article 4.
- ESA. (2004). 2004 essential facts about the computer and video game industry. Retrieved from website: [http://www.theesa.com/facts/pdfs/ESA\\_EF\\_2004.pdf](http://www.theesa.com/facts/pdfs/ESA_EF_2004.pdf)
- ESA. (2015). 2015 essential facts about the computer and video game industry. Retrieved from website: [http://www.theesa.com/facts/pdfs/ESA\\_EF\\_2015.pdf](http://www.theesa.com/facts/pdfs/ESA_EF_2015.pdf)

- European Summary Report. (2012). Videogames in Europe: consumer study. Retrieved from website: [http://www.isfe.eu/sites/isfe.eu/files/attachments/euro\\_summary\\_-\\_isfe\\_consumer\\_study.pdf](http://www.isfe.eu/sites/isfe.eu/files/attachments/euro_summary_-_isfe_consumer_study.pdf)
- Findhal, O. (2011). *Swedes and internet 2011*. Gavle: Wii.
- Fletcher, G. J. O. (1993). Cognition in close relationships. *New Zealand Journal of Psychology*, 22(2), 69-81.
- Froming, W. J., Nasby, W., & McManus, J. (1998). Prosocial self-schemas, self-awareness, and children's prosocial behavior. *Journal of Personality And Social Psychology*, 75(3), 766-777. doi:10.1037/0022-3514.75.3.766
- Gajadhar, B. J., Nap, H. H., de Kort, Y. A., & IJsselsteijn, W. A. (2010). Out of sight, out of mind: co-player effects on seniors' player experience. In *Proceedings of the 3rd International Conference on Fun and Games*, 74-83.
- Gee, J. P. (2003). Semiotic domains: Is playing video games a "waste of time"? In *What Video Games Have to Teach Us about Learning and Literacy*. New York: Palgrave MacMillan.
- Girme, Y. U., Overall, N. C., & Faingataa, S. (2014). 'Date nights' take two: The maintenance function of shared relationship activities. *Personal Relationships*, 21(1), 125-149.
- Glaser, B. G. & Strauss, A. L. (1966). *Awareness of dying*. Chicago: Aldine.
- Goffman, E. (1961). *Encounters: two studies in the sociology of interaction*. Indianapolis: Bobbs Merrill.
- Goffman, E. (1967). *Interaction ritual: essays on face-to-face interaction*. Oxford, England: Aldine.
- Goldman, R. & Wilson, J. (1977). The Rationalization of Leisure. *Politics & Society*, 7(2), 157-187.
- Goldstein, J., Cajko, L., Oosterbroek, M., Michielsen, M., van Houten, O., & Salverda, F. (1997). Video games and the elderly: effects on reaction time, cognitive functioning and well-being. *Gedrag & Gezondheid: Tijdschrift Voor Psychologie En Gezondheid*, 25(6), 296-302.
- Golish, T. D. (2000). Is openness always better?: exploring the role of topic avoidance, satisfaction, and parenting... *Communication Quarterly*, 48(2), 137-158.
- Greitemeyer, T., Traut-Mattausch, E., & Osswald, S. (2012). How to ameliorate negative effects of violent video games on cooperation: Play it cooperatively in a team. *Computers In Human Behavior*, 28(4), 1465-1470. doi:10.1016/j.chb.2012.03.009



- Griffiths, M. (2015, February 3). Is the game to blame? Video game playing and anti-social behaviour. Retrieved March 1, 2015, from [http://www.gamasutra.com/blogs/MarkGriffiths/20150302/237700/Is\\_the\\_game\\_to\\_blame\\_Video\\_game\\_playing\\_and\\_antisocial\\_behaviour.php](http://www.gamasutra.com/blogs/MarkGriffiths/20150302/237700/Is_the_game_to_blame_Video_game_playing_and_antisocial_behaviour.php)
- Griffiths, M. D., Davies, M. N., & Chappell, D. (2003). Breaking the Stereotype: The Case of Online Gaming. *Cyberpsychology & Behavior*, 6(1), 81-91. doi:10.1089/109493103321167992
- Gutschera, K. R. (2009). Characteristics of multiplayer games. *Proceedings of the Game Developers' Conference 2009*, San Fransisco, CA, USA.
- Harwood, J., & Lin, M. (2000). Affiliation, pride, exchange, and distance in grandparents' accounts of relationships with their college-aged grandchildren. *Journal Of Communication*, 50(3), 31-47. doi:10.1111/j.1460-2466.2000.tb02851.x
- Holloway, D., Green, L. & Livingstone, S. (2013). Zero to eight. Young children and their internet use. LSE, London: EU Kids Online.
- Holman, T. B., & Jacquart, M. (1988). Leisure-activity patterns and marital satisfaction: A further test. *Journal of Marriage And The Family*, 50(1), 69-77. doi:10.2307/352428
- Huizinga, J. (1955). *Homo ludens, a study of the play-element in culture*. Oxford, England: Roy.
- Jansz, J., & Tanis, M. (2007). Appeal of playing online first person shooter games. *Cyberpsychology & Behavior*, 10(1), 133-136.
- Juul, J. (2010). *A casual revolution: reinventing video games and their players*. Cambridge, MA: MIT Press.
- Kappen, D. L., Gregory, J., Stepchenko, D., Wehbe, R. R. & Nacke, L. E. (2013). Exploring social interaction in co-located multiplayer games. In *CHI EA'13: CHI'13 extended abstracts on human factors in computing systems*. Proceedings of CHI EA'13 Paris. New York: ACM Publications.
- Kappen, D.L., Gregory, J., Stepchenko, D., Wehbe, R.R., & Nacke, L.E. (2013). Exploring social interaction in colocated multiplayer games. In *Proceedings of CHI '13 Extended Abstracts on Human Factors in Computing Systems on - CHI EA '13*, 1119. doi: 10.1145/2468356.2468556
- Kappen, D.L., Mirza-Babaei, P., Johannsmeier, J., Buckstein, D., Robb, J., and Nacke, L.E. (2014). Engaged by boos and cheers: : The effect of collocated game audiences on social player experience. *Proceedings of the first ACM SIGCHI annual symposium on Computer-human interaction in play - CHI PLAY '14*, 151–160.

- Kent, S. (2001). *The ultimate history of video games: from pong to pokemon*. New York, NY: Three Rivers Press.
- Kihlstrom, J. F., & Klein, S. B. (1994). The self as a knowledge system. In R. S. Wyer & T. K. Srull (Eds.), *Handbook of Social Cognition: Basic processes*, 153–208.
- Kimble, C. S. (1992). Playing games before an audience: social facilitation or choking. *Social Behavior & Personality: An International Journal*, 20(2), 115-120
- King, V., & Elder, G. H., Jr. (1995). American children view their grandparents: Linked lives across three rural generations. *Journal of Marriage and the Family*, 57, 165-178
- Kingston, P. W., & Nock, S. L. (1987). Time together among dual-earner couples. *American Sociological Review*, 52(3), 391-400.
- Kirkorian, H. L., Pempek, T. A., Murphy, L. A., Schmidt, M. E., & Anderson, D. R. (2009). The impact of background television on parent–child interaction. *Child Development*, 80(5), 1350-1359. doi:10.1111/j.1467-8624.2009.01337.x
- Kite, M. E., Stockdale, G. D., Whitley, B. E., & Johnson, B. T. (2005). Attitudes toward younger and older adults: an updated meta-analytic review. *Journal of Social Issues*, 61(2), 241-266.
- Koerner, A. F., & Fitzpatrick, M. A. (2002). Toward a theory of family communication. *Communication Theory*, 12, 70–91. doi:10.1111/j.1468-2885.2002.tb00260.x
- Koerner, A. F., & Fitzpatrick, M. A. (2002b). Understanding family communication patterns and family functioning: The roles of conversation-orientation and conformity orientation. *Communication Yearbook*, 26, 37–69. doi:10.1207/s15567419cy2601\_2
- Koerner, A. F., & Fitzpatrick, M. A. (2006). Family communication patterns theory: A social cognitive approach. In D. O. Braithwaite & L. A. Baxter (Eds.), *Engaging theories of family communication* (pp. 50–65). Thousand Oaks, CA: Sage.
- Kueider, A. M., Parisi, J. M., Gross, A. L., & Rebok, G. W. (2012). Computerized cognitive training with older adults: A systematic review. *Plos ONE*, 7(7), 1-13. doi:10.1371/journal.pone.0040588
- Kunkel, A., Hummert, M. L., & Dennis, M. R. (2006). Social learning theory: Modeling and communication in the family context. In D. O. Braithwaite & L. A. Baxter (Eds.), *Engaging theories in family communication: Multiple perspectives*, 260–275. Thousand Oaks, CA: Sage.

- Laurenceau, J., Barrett, L. F., & Pietromonaco, P. R. (1998). Intimacy as an Interpersonal Process: The Importance of Self-Disclosure, Partner Disclosure, and Perceived Partner Responsiveness in Interpersonal Exchanges. *Journal Of Personality & Social Psychology*, 74(5), 1238-1251.
- Lebowitz, J., & Klug, C. (2012). *Interactive storytelling for video games: A player-centered approach to creating memorable characters and stories*. Burlington, MA: Focal Press.
- Liamputtong, P. (2011). *Focus group methodology: Principle and practice*. London: Sage.
- Licoppe, C. (2004). 'Connected' presence: the emergence of a new repertoire for managing social relationships in a changing communication technoscape. *Environment & Planning D: Society & Space*, 22(1), 135-156. doi:10.1068/d323t
- Lim, S., & Reeves, B. (2010). Computer agents versus avatars: Responses to interactive game characters controlled by a computer or other player. *International Journal Of Human-Computer Studies*, 68(1-2), 57-68. doi:10.1016/j.ijhcs.2009.09.008
- Lin, M., Harwood, J., & Bonnesen, J. L. (2002). Conversation topics and communication satisfaction in grandparent-grandchild relationships. *Journal of Language And Social Psychology*, 21(3), 302-323. doi:10.1177/0261927X02021003005
- Lippert, T., & Prager, K. J. (2001). Daily experiences of intimacy: A study of couples. *Personal Relationships*, 8(3), 283-298.
- Magsamen Conrad, K., Greene, K., Banerjee, S. C., & Bagdasarov, Z. (2008). Self-disclosure in existing relationships: response and relational closeness. *Conference Papers -- National Communication Association*, 1.
- Malaby, T. (2006). Parlaying Value: Capital in and Beyond Virtual Worlds. *Games And Culture: A Journal Of Interactive Media*, 1(2), 141-162. doi:10.1177/1555412006286688
- Malaby, T. M. (2007). Beyond play: A new approach to games. *Games and Culture*, 2, 95-113. doi: 10.1177/1555412007299434
- Martin, M. M., & Anderson, C. M. (1995). The father-young adult relationship: Interpersonal motives, self-disclosure, and satisfaction. *Communication Quarterly*, 43(2), 119-130.
- Mashek, D. J., Aron, A., & Boncimino, M. (2003). Confusions of self with close others. *Personality and Social Psychology Bulletin*, 29(3), 382-392. doi:10.1177/0146167202250220
- Mason, W. and Clauset, A. (2013). Friends FTW! Friendship and competition in Halo: Reach. In *Proceedings of the 2013 conference on Computer supported cooperative work*. ACM.

- McDaniel, R., & Vick, E. H. (2010). Conceptualizing 'games for good' as cognitive technologies. *Cognitive Technology, 14*(2), 5-10.
- McKenna, K. A., & Bargh, J. A. (2000). Plan 9 from cyberspace: The implications of the internet for personality and social psychology. *Personality & Social Psychology Review (Lawrence Erlbaum Associates), 4*(1), 57-75.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook*. Los Angeles: SAGE.
- Myers, D. (2007). Self and selfishness in online social play. *Proceedings of DiGRA 2007 Conference*. Tokyo, Japan.
- Nap, H. H., de Kort, Y. W., & IJsselstein, W. A. (2009). Senior gamers: Preferences, motivations and needs. *Gerontechnology, 8*(4), 247-262. doi:10.4017/gt.2009.08.04.003.00
- National Institute of Aging. (2015). Why population aging matters: A global perspective. Retrieved from website: <https://www.nia.nih.gov/publication/why-population-aging-matters-global-perspective/overview-our-aging-world>
- Olson, C. K. (2010). Children's motivations for video game play in the context of normal development. *Review Of General Psychology, 14*(2), 180-187. doi:10.1037/a0018984
- Osmanovic, S. & Pecchioni, L. (2016). Family matters: The role of intergenerational gameplay in successful aging. In *Human aspects of it for the aged population. Design for aging*. Proceedings of HCI International 2016, Toronto. Berlin: Springer.
- Osmanovic, S., & Pecchioni, L. (2015). Beyond entertainment: Motivations and outcomes of video game playing by older adults and their younger family members. *Games and Culture: A Journal of Interactive Media, 11*(1-2), 130-149. doi:10.1177/1555412015602819
- Östlund, B. (2005). Design paradigms and misunderstood technology: The case of older users. In B. Jæger (ed), *Young technologies in old hands: an international view on senior citizen's utilization of ICT*, (pp. 25-39). Copenhagen: DJØF Forlag.
- Papini, D. R., Farmer, F. F., Clark, S. M., Micka, J. C., & Barnett, J. K. (1990). Early adolescent age and gender differences in patterns of emotional self-disclosure to parents and friends. *Adolescence, 25*(100), 959-976.
- Pearce, C. (2008). The truth about baby boomer gamers: A study of over-forty computer game players. *Games and Culture: A Journal of Interactive Media, 3*(2), 142-174. doi:10.1177/1555412008314132.

- Pecchioni, L. L., & Croghan, J. M. (2002). Young adults' stereotypes of older adults with their grandparents as the targets. *Journal of Communication*, 52(4), 715-730.  
doi:10.1111/j.1460-2466.2002.tb02570.x
- Peña, J., & Hancock, J. T. (2006). An analysis of socioemotional and task communication in online multiplayer video games. *Communication Research*, 33(1), 92-109.  
doi:10.1177/0093650205283103
- Peng, W., & Hsieh, G. (2012). The influence of competition, cooperation, and player relationship in a motor performance centered computer game. *Computers in Human Behavior*.  
Published online July 2, 2012. DOI: 10.1016/j.chb.2012.06.014
- Przybylski, A. K., & Mishkin, A. F. (2015). How the quantity and quality of electronic gaming relates to adolescents' academic engagement and psychosocial adjustment. *Psychology of Popular Media Culture*, doi:10.1037/ppm0000070
- Quandt, T., Grüninger, H. & Wimmer, J. (2009). The grey-haired gaming generation: Findings from an explorative interview study on older computer gamers. *Games and Culture*, 4, 27-46.
- Radoff, J. (2011). *Game On: Energize your Business with Social Games*. New York, NY: Wiley.
- Rao, V. (2008). Facebook applications and playful mood: the construction of facebook as a "third place". *Proceedings of MindTrek '08*, Tampere, Finland.
- Ravaja, N., Saari, T., Turpeinen, M., Laarni, J., Salminen, M., & Kivikangas, M. (2006). Spatial presence and emotions during video game playing: Does it matter with whom you play?. *Presence: Teleoperators & Virtual Environments*, 15(4), 381-392.  
doi:10.1162/pres.15.4.381
- Raybourn, E. M. (2012). Honing emotional intelligence with game-based crucible experiences. *Developments in Current Game-Based Learning Design and Deployment*, 155.
- Reissman, C., Aron, A., & Bergen, M. R. (1993). Shared activities and marital satisfaction: Causal direction and self-expansion versus boredom. *Journal of Social and Personal Relationships*, 10(2), 243-254.
- Rice, M., Yau, L., Ong, J., Wan, M., & Ng, J. (2012). Intergenerational gameplay: Evaluating social interaction between younger and older players. *CHI '12 Extended Abstracts on Human Factors in Computing Systems*, 2333-2338.
- Rittenour, C., & Soliz, J. (2009). Communicative and relational dimensions of shared family identity and relational intentions in mother-in-law/daughter-in-law relationships:

- developing a conceptual model for mother-in-law/daughter-in-law research. *Western Journal Of Communication*, 73(1), 67-90. doi:10.1080/10570310802636334
- Roberto, K. A., & Stroes, J. (1992). Grandchildren and grandparents: Roles, influences, and relationships. *The International Journal of Aging & Human Development*, 34(3), 227-239. doi:10.2190/8CW7-91WF-E5QC-5UFN
- Rojek, C. (2010). *The labour of leisure*. London: Sage.
- Roxburgh, S. (2006). 'I wish we had more time to spend together...': the distribution and predictors of perceived family time pressures among married men and women in the paid labor force. *Journal Of Family Issues*, 27(4), 529-553. doi:10.1177/0192513X05284008
- Rushdie, S. (2010, 11 29). Interview by M Miller [Web Based Recording]. Video games and the future of storytelling., Retrieved from <http://bigthink.com/ideas/25129>
- Ryan, R., Rigby, C., & Przybylski, A. (2006). The motivational pull of video games: A self-determination theory approach. *Motivation & Emotion*, 30(4), 344-360. doi:10.1007/s11031-006-9051-8
- Salen, K. & Zimmerman, E. (2004). *The Rules of Play: Game Design Fundamentals*. MIT Press: MA, USA.
- Salen, K., & Zimmerman, E. (2004). *Rules of play: Game design fundamentals*. MIT press.
- Schmierbach, M., Xu, Q., Oeldorf-Hirsch, A., & Dardis, F. E. (2012). Electronic Friend or Virtual Foe: Exploring the Role of Competitive and Cooperative Multiplayer Video Game Modes in Fostering Enjoyment. *Media Psychology*, 15(3), 356-371. doi:10.1080/15213269.2012.702603
- Schultheiss, D. (2012). "Entertainment for retirement?": Silvergamers and the internet. *Public Communication Review*, 2(3), 62.
- Segrin, C., & Flora, J. (2011). *Family communication*. New York, NY: Routledge.
- Shen, C., & Williams, D. (2011). Unpacking time online: Connecting Internet and massively multiplayer online game use with psychosocial well-being. *Communication Research*, 38(1), 123-149. doi:10.1177/0093650210377196
- Sherry, J., Lucas, K., Greenberg, B. S., & Lachlan, K. (2006). Video game uses and gratifications as predictors of use and game preference. In P. Vorderer & J. Bryant (Eds.), *Playing video games. Motives, responses, and consequences* (pp. 213–224). Mahwah, NJ: Erlbaum.

- Simmel, G. (1949). The sociology of sociability. *American Journal of Sociology*, 55, 254-261. doi:10.1086/220534
- Soliz, J. (2007). Communicative predictors of a shared family identity: comparison of grandchildren's perceptions of family-of-origin grandparents and stepgrandparents. *Journal of Family Communication*, 7(3), 177-194. doi:10.1080/15267430701221636
- Soliz, J., & Harwood, J. (2006). Shared family identity, age salience, and intergroup contact: investigation of the grandparent–grandchild relationship. *Communication Monographs*, 73(1), 87-107. doi:10.1080/03637750500534388
- Strasburger, V., & Hogan M. (2013). Policy Statement: children, adolescents and the media, *Pediatrics*, 132, 958 -961. doi:10.1542/peds.2013-265
- Sutton-Smith, B. (2001). *The ambiguity of play*. Cambridge, MA: Harvard University Press.
- Szinovacz, M. E. (1998). Grandparent research: Past, present, and future. In M. E. Szinovacz (Ed.), *Handbook on Grandparenthood*, 1–20. Westport, CT: Greenwood Press.
- Tamborini, R., & Skalski, P. (2006). The role of presence in the experience of electronic games. In P. Vorderer & J. Bryant (Eds.), *Playing video games: Motives, responses, and consequences* (pp. 225–240). Mahwah, NJ: Erlbaum.
- Taylor, D. A. (1968). The development of interpersonal relationships: Social penetration processes. *Journal of Social Psychology*, 75(1), 79-90.
- Taylor, J. & Taylor, J. (2009). A content analysis of interviews with players of massively multiplayer online role-play games (mmorpgs): motivating factors and the impact on relationships. In Ozok, A. A., & Zaphiris, P. (eds.) *Online Communities*, LNCS 5621, pp. 613-621. London: Springer-Verlag.
- The Nielsen Company. (2015). *The total audience report*. Retrieved from: <http://www.nielsen.com/content/dam/corporate/us/en/reports-downloads/2015-reports/total-audience-report-q4-2014.pdf>
- Thibaut, J. W., & Kelley, H. H. (1959). *The social psychology of groups*. Piscataway, NJ, US: Transaction Publishers.
- Thornham, H. (2009). Claiming a stake in the videogame. *Convergence: The Journal Of Research Into New Media Technologies*, 15(2), 141-159. doi:10.1177/1354856508101580
- United Nations World Population Prospects. (2015). 2015 Revision of world population prospects. Retrieved from website: <https://esa.un.org/unpd/wpp/>

- Voida, A. & Greenberg, S. (2012). Console gaming across generations: exploring intergenerational interactions in collocated console gaming. *Information Society Journal - JUAICS*, 11(1), 45-56.
- Walsh, C., & Apperley, T. (2009). Gaming capital: Rethinking literacy. In *Changing climates: Education for sustainable futures*. Proceedings of the AARE 2008 International Education Research Conference, Queensland University of Technology.
- Wheeless, L., & Grotz, J. (1976). Conceptualization and measurement of reported self-disclosure. *Human Communication Research*, 2(4), 338-346. doi: 10.1111/j.1468-2958.1976.tb00494.x
- Wittgenstein, L., (2009). *Philosophical Investigations*. Translated by Anscombe, G.E.M., Hacker, P.M.S., and Schulte, J. from *Philosophische Untersuchungen* (1953). Hoboken: Wiley-Blackwell.
- Wohn, D. Y., Lampe, C., Ellison, N., Wash, R., & Vitak, J. (2011). *The "S" in social network games: Initiating, maintaining, and enhancing relationships*. Proceedings of 44th Annual Hawaii International Conference on System Sciences. Kauai, Hi.: IEEE Computer Society. doi:10.1109/HICSS.2011.400.
- Yee, N. (2006). Motivations for play in online games. *CyberPsychology and Behavior*, 9, 772–775. doi:10.1089/cpb.2006.9.772
- Yee, N., Bailenson, J.N., & Ducheneaut, N. (2009). The Proteus Effect: Implications of transformed digital self-representation on online and offline behavior. *Communication Research*, 36 (2), 285-312.
- Zagal, J. P., Nussbaum, M., & Rosas, R. (2000). A model to support the design of multiplayer games. *Presence: Teleoperators & Virtual Environments*, 9(5), 448-462. doi:10.1162/105474600566943



## APPENDIX A

### Survey Instrument: First 3 Sections

**Note:** Questions for all four groups (gaming treatment, conversation treatment, older adults, younger adults) are listed below. The differences in the questions between surveys is marked with a slash (e.g. “With which older/younger family member do you play video games most frequently?”)

The purpose of this research is to study the effect of video game play/conversation on interpersonal relationships between young and older family members. The only requirement is that you actively play video games with older family members.

*Disclaimer: For this study, you will be asked to fill out a questionnaire online about yourself and gameplay with older family members. All of your answers will be confidential. This survey should take approximately 20 minutes to complete. Your participation is voluntary; you can stop participating at any time. You must be 18 years of age or older to complete this survey. We anticipate that your participation in this survey presents no greater risk than everyday use of the Internet.*

*This study has been approved by the LSU IRB. For questions concerning participant rights, please contact the IRB Chair, Dr. Dennis Landin, 578-8692, or [irb@lsu.edu](mailto:irb@lsu.edu).*

#### **General demographics (Survey page 1)**

##### **1. What is your biological sex?**

- ☐ Male
- ☐ Female
- ☐ Other (please specify): [text box]

**2. What is your age?**

[text box]

**3. What's your marital status?**

- ☐ Single
- ☐ In a relationship
- ☐ Divorced
- ☐ Widowed
- ☐ Engaged
- ☐ Married
- ☐ Partnered

**4. What's your job status (check all that apply)?**

- ☐ Full-Time Working
- ☐ Full-Time Student
- ☐ Part-Time Working and/or Studying
- ☐ Employed inside the home
- ☐ Unemployed
- ☐ Retired
- ☐ Other (please specify): [text box]

**5. What is your relationship with the person who will be your partner in this study?**

[text box] (e.g. grandparent, stepchild)

**A. Do you or have you in the past played video games? (*gaming treatment group only*)**

- ☐ Yes
- ☐ No
- ☐ Other (please specify): [text box]

***General gameplay (Survey page 2 for gaming treatment group)***

**6. Approximately how many hours a week do you spend playing video games?**

[text box]

**7. How many years have you played video games?**

[text box] *years*

**8. Which games do you or have you played most frequently?**

[text box] *years*

**9. Do you consider yourself:**

- ☐ a casual player
- ☐ a hardcore player
- ☐ somewhere in-between

**10. Do you play or have you played video games with older family members (age 55 and up)/younger family members?**

- ☐ Yes
- ☐ No

***Research questions - subject (Survey page 3 for gaming treatment group)***

**11. With which older/younger family member do you play video games most frequently?**

[text box]

**12. What is this person's age?**

[text box]

**15. Within the past three months, how often have you played video games with this family member?**

- ☐ Everyday
- ☐ Several times a week
- ☐ About once a week
- ☐ 2 or 3 times a month
- ☐ Once a month
- ☐ Less than once a month

***General conversation (Survey page 2 for conversation treatment group)***

**6. Approximately how many hours a week do you spend talking to your family members?**

[text box]

**7. Which family member do you talk to the most?**

[text box]

**8. Which family member do you enjoy talking to the most?**

[text box]

**9. Do you mostly talk to your family members:**

- ☐ in person
- ☐ on the phone (talking)
- ☐ through Skype, Facetime, and similar apps
- ☐ through texting
- ☐ Other (please specify): [text box]

***Research questions - subject (Survey page 3 for conversation treatment group)***

For this research, you and your older/younger family member were asked to talk to each other at least three times a week. From this point on, please answer the questions thinking only of this person.

**11. How many hours per week do you usually spend in conversation with this family member?**

[text box]

**14. What is this person's age?**

[text box]

**15. Do you mostly talk to this family member:**

- ☐ in person
- ☐ on the phone (talking)
- ☐ through Skype, Facetime, and similar apps
- ☐ through texting
- ☐ Other (please specify): [text box]

## **APPENDIX B**

### **Survey Section 4: Revised Family Communication Patterns Instrument**

The 26-item Revised Family Communication Patterns instrument (Koerner & Fitzpatrick, 2002b).

Instructions: We would like to learn more about how you communicate in your family. Please use this scale to indicate your agreement with the following statements.

- (1) = Strongly Disagree
- (2) = Disagree
- (3) = Somewhat Disagree
- (4) = Neutral
- (5) = Somewhat Agree
- (6) = Agree
- (7) = Strongly Agree

The Revised Family Communication Pattern Instrument (Younger adult version)

1. In our family we often talk about topics like politics and religion where some persons disagree with others.
2. My parents often say something like "Every member of the family should have some say in family decisions."
3. My parents often ask my opinion when the family is talking about something.
4. My parents encourage me to challenge their ideas and beliefs.
5. My parents often say something like "You should always look at both sides of an issue."
6. I usually tell my parents what I am thinking about things.
7. I can tell my parents almost anything.
8. In our family we often talk about our feelings and emotions.
9. My parents and I often have long, relaxed conversations about nothing in particular.
10. I really enjoy talking with my parents, even when we disagree.
11. My parents encourage me to express my feelings.
12. My parents tend to be very open about their emotions.
13. We often talk as a family about things we have done during the day.
14. In our family, we often talk about our plans and hopes for the future.

15. My parents like to hear my opinion, even when I don't agree with them.
16. When anything really important is involved, my parents expect me to obey without question.
17. In our home, my parents usually have the last word.
18. My parents feel that it is important to be the boss.
19. My parents sometimes become irritated with my views if they are different from theirs.
20. If my parents don't approve of it, they don't want to know about it.
21. When I am at home, I am expected to obey my parents' rules.
22. My parents often say things like "You'll know better when you grow up."
23. My parents often say things like "My ideas are right and you should not question them."
24. My parents often say things like "A child should not argue with adults."
25. My parents often say things like "There are some things that just shouldn't be talked about."
26. My parents often say things like "You should give in on arguments rather than risk making people mad."

#### The Revised Family Communication Pattern Instrument (Older Adult Version)

1. In our family we often talk about topics like politics and religion where some persons disagree with others.
2. I often say things like "Every member of the family should have some say in family decisions."
3. I often ask my child's opinion when the family is talking about something.
4. I encourage my child to challenge my ideas and beliefs.
5. I often say things like "You should always look at both sides of an issue."
6. My child usually tells me what s/he is thinking about things.
7. My child can tell me almost anything.
8. In our family we often talk about our feelings and emotions.
9. My child and I often have long, relaxed conversations about nothing in particular.
10. I think my child really enjoys talking with me, even when we disagree.
11. I encourage my child to express his/her feelings.
12. I tend to be very open about my emotions.
13. We often talk as a family about things we have done during the day.
14. In our family, we often talk about our plans and hopes for the future.
15. I like to hear my child's opinion, even when s/he doesn't agree with me.
16. When anything really important is involved, I expect my child to obey me without question.
17. In our home, the parents usually have the last word.

18. I feel that it is important for the parents to be the boss.
19. I sometimes become irritated with my child's views if they are different from mine.
20. If I don't approve of it, I don't want to know about it.
21. When my child is at home, it is expected to obey the parents' rules.
22. I often say things like "You'll know better when you grow up."
23. I often say things like "My ideas are right and you should not question them."
24. I often say things like "A child should not argue with adults."
25. I often say things like "There are some things that just shouldn't be talked about."
26. I often say things like "You should give in on arguments rather than risk making people mad."



## APPENDIX C

### Survey Section 5: Revised Self-Disclosure Scale

The 32-item Revised Self-Disclosure Scale (Wheeless, 1976, p. 57-58).

Instructions: Think about the family member with whom you are playing video games/have weekly conversations. Please mark the following statements to reflect how you communicate with this family member.

(1) = Strongly Disagree

(2) = Disagree

(3) = Somewhat Disagree

(4) = Neutral

(5) = Somewhat Agree

(6) = Agree

(7) = Strongly Agree

1. I usually disclose positive things about myself to \_\_\_\_\_.
2. On the whole, my disclosures about myself to \_\_\_\_\_ are more negative than positive.\*
3. I normally reveal "bad" feelings about myself to \_\_\_\_\_.\*
4. I normally reveal "good" feelings about myself to \_\_\_\_\_.
5. I often reveal more undesirable things about myself than desirable things to \_\_\_\_\_.\*
6. I usually disclose negative things about myself to \_\_\_\_\_.\*
7. On the whole, my disclosures about myself to \_\_\_\_\_ are more positive than negative.
8. I intimately disclose who I really am, openly and fully in my conversation with \_\_\_\_\_.
9. I often disclose intimate, personal things about myself to \_\_\_\_\_ without hesitation.
10. Once I get started, I intimately and fully reveal myself to \_\_\_\_\_ in self-disclosures.
11. I do not often talk about myself with \_\_\_\_\_.\*
12. Once I get started, my self-disclosures to \_\_\_\_\_ last a long time.
13. My statements of my feelings to \_\_\_\_\_ are usually brief.\*
14. I usually talk about myself for fairly long periods at a time with \_\_\_\_\_.
15. My conversation lasts the least time when I am discussing myself with \_\_\_\_\_.\*
16. I often talk about myself with \_\_\_\_\_.
17. I often discuss my feelings about myself with \_\_\_\_\_.
18. Only infrequently do I express my personal beliefs and opinions to \_\_\_\_\_.\*

## APPENDIX D

### Survey Section 6: Friendship Qualities Scale

The 11-item modified Friendship Qualities Scale (Bukowski, Hoza, & Boivin, 1994).

Instructions: Please think about your relationship with your family member when responding to the following questions. Where you see a “blank” please insert his or her name.

- (1) = Strongly Disagree
- (2) = Disagree
- (3) = Somewhat Disagree
- (4) = Neutral
- (5) = Somewhat Agree
- (6) = Agree
- (7) = Strongly Agree

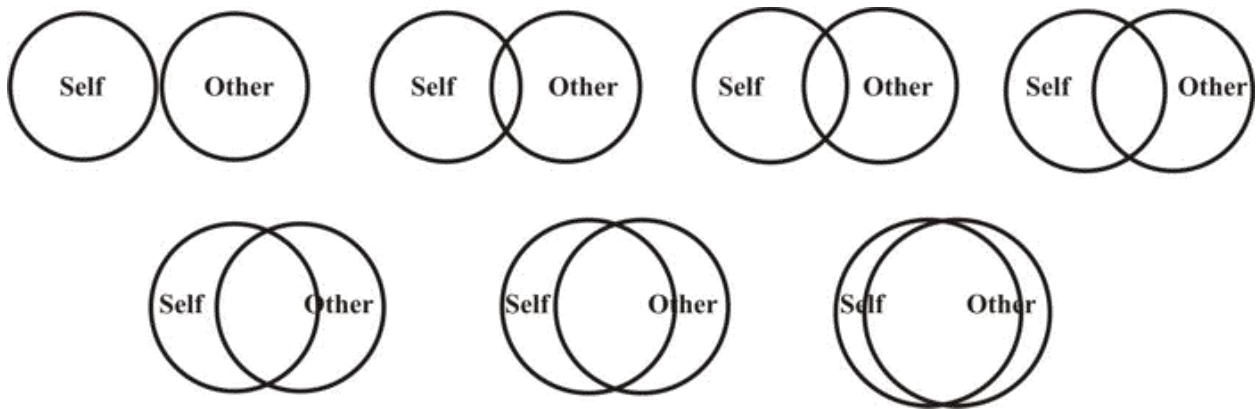
1. My relationship with \_\_\_\_\_ is close.
2. When we are apart, I miss \_\_\_\_\_ a great deal.
3. \_\_\_\_\_ and I have a strong connection.
4. \_\_\_\_\_ and I want to spend time together.
5. I'm sure of my relationship with \_\_\_\_\_.
6. \_\_\_\_\_ is a priority in my life.
7. \_\_\_\_\_ and I do a lot of things together.
8. When I have free time I choose to spend it with \_\_\_\_\_.
9. My relationship with \_\_\_\_\_ is important in my life.
10. \_\_\_\_\_ would help me if I needed it.
11. I feel happy when I am spending time with \_\_\_\_\_.
12. When I am successful at something, \_\_\_\_\_ is happy for me.

## APPENDIX E

### Survey Section 7: Inclusion of the Other in the Self

The pictographic Inclusion of the Other in the Self scale (Aron, Aron, & Smollan, 1992).

Instructions: Think of the family member with whom you play video games/have weekly conversations. Please circle the picture that best describes your current relationship with your family member.



## APPENDIX F

### Final Survey Instrument: Section 2

#### ***Research questions - subject (gaming treatment group)***

**5. Which game(s) did you play with your family member during the six-week period?**

[text box]

**6. Did you mainly play:**

- ☐ Collaboratively
- ☐ Competitively
- ☐ Other (please specify): [text box]

**7. Was your gaming mainly:**

- ☐ collocated (i.e. playing while in the same room)
- ☐ mediated (i.e. playing using phone or computer apps, or online games)
- ☐ Other (please specify): [text box]

#### ***Research questions - subject (conversation treatment group)***

**5. How many hours per week did you spend in conversation with your family member during the six-week period?**

[text box]

**6. Did you mostly talk to your family member:**

- ☐ in person
- ☐ on the phone (talking)
- ☐ through Skype, Facetime, and similar apps
- ☐ through texting
- ☐ Other (please specify): [text box]

## **APPENDIX G**

### **Final Survey Instrument: Digital Postcards**

#### **Gaming treatment group survey**

Please describe your experience playing video games with the younger adult/older adult in your family. What did you like? What you disliked? What was your normal playing ritual? What did you do while playing? Were you competitive or did you prefer cooperative playing? Will you continue to play? Please respond to each question carefully and in as much detail as possible. Please feel free to add comments beyond those covered by the questions. Thank you.

[essay text box]

#### **Conversation treatment group survey**

Please describe your experience talking three hours a week or more with the younger adult/older adult in your family. What did you like? What you disliked? What was your normal ritual? Who initiated the conversation for the most part? What did you talk about? Will you continue with this practice? Please respond to each question carefully and in as much detail as possible. Please feel free to add comments beyond those covered by the questions. Thank you.

[essay text box]

## APPENDIX H

### Institutional Review Board Approval and Extension

#### ACTION ON PROTOCOL APPROVAL REQUEST



Institutional Review Board  
Dr. Dennis Landin, Chair  
130 David Boyd Hall  
Baton Rouge, LA 70803  
P: 225.578.8882  
F: 225.578.5983  
[irb@lsu.edu](mailto:irb@lsu.edu) | [lsu.edu/irb](http://lsu.edu/irb)

TO: Loretta Pecchioni  
Communication Studies

FROM: Dennis Landin  
Chair, Institutional Review Board

DATE: November 11, 2014

RE: IRB# 3568

TITLE: Beyond Play: Role of Video Games in Successful Aging

New Protocol/Modification/Continuation: New Protocol

Review type: Full ☐ Expedited ☒ Review date: 11/10/2014

Risk Factor: Minimal ☒ Uncertain ☐ Greater Than Minimal ☐

Approved ☒ Disapproved ☐

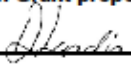
Approval Date: 11/10/2014 Approval Expiration Date: 11/9/2015

Re-review frequency: (annual unless otherwise stated)

Number of subjects approved: 100

LSU Proposal Number (if applicable): \_\_\_\_\_

Protocol Matches Scope of Work in Grant proposal: (if applicable) \_\_\_\_\_

By: Dennis Landin, Chairman 

PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –  
Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects\*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. SPECIAL NOTE:

\*All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at <http://www.lsu.edu/irb>

ACTION ON PROTOCOL CONTINUATION REQUEST



Institutional Review Board  
Dr. Dennis Landin, Chair  
130 David Boyd Hall  
Baton Rouge, LA 70803  
P: 225.578.8692  
F: 225.578.5983  
[irb@lsu.edu](mailto:irb@lsu.edu) | [lsu.edu/irb](http://lsu.edu/irb)

TO: Loretta Pecchioni  
Communication Studies

FROM: Dennis Landin  
Chair, Institutional Review Board

DATE: August 9, 2016

RE: IRB# 3568

TITLE: Beyond Play: Role of Video Games in Successful Aging

New Protocol/Modification/Continuation: Continuation

Review type: Full ☐ Expedited ☒ Review date: 8/9/2016

Risk Factor: Minimal ☒ Uncertain ☐ Greater Than Minimal ☐

Approved ☒ Disapproved ☐

Approval Date: 8/9/2016 Approval Expiration Date: 8/8/2017

Re-review frequency: (annual unless otherwise stated)

Number of subjects approved: 100

LSU Proposal Number (if applicable):

Protocol Matches Scope of Work in Grant proposal: (if applicable)

By: Dennis Landin, Chairman 

PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –  
Continuing approval is **CONDITIONAL** on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects\*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. **SPECIAL NOTE: Make sure to use bcc when emailing more than one recipient.**

*\*All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at <http://www.lsu.edu/irb>*

## **VITA**

Sanela Osmanovic received her bachelor's degree at Southeastern Louisiana University in December 2002, and her master's degree in organizational communication from the same institution in May 2004. During her schooling, she worked with the US Army on training troops sent abroad, which gave rise to her desire to become a teacher. However, before returning to academia, to pursue a Doctorate in Communication Studies at Louisiana State University, she worked for eight years in public relations for a police institution in Europe, further diversifying her knowledge and expertise. Becoming a part of the LSU community in August 2012, she worked under the auspicious tutelage of Dr. Loretta Pecchioni, researching the impact of video games on relationships, and looking for ways to use this popular activity to bring people closer. She also taught Public Speaking, Interpersonal Communication, Small Group Communication, and Fundamentals of Communication classes to the wonderful LSU students. She plans to continue caring for her students and teaching them the practical application of communication sciences. She also hopes to further her research on the use of video games in bettering relationship and communication, especially focusing on enhancing the lives of older adults.