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## Time Spent Gaming and Marital Quality: The Effect of MMORPGs

Kimberly J. Walker  
*Walden University*

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# Walden University

College of Social and Behavioral Sciences

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Kimberly J. Walker

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## Review Committee

Dr. John Deaton, Committee Chairperson, Psychology Faculty

Dr. Stephen Rice, Committee Member, Psychology Faculty

Dr. Elisha Galaif, University Reviewer, Psychology Faculty

Chief Academic Officer and Provost  
Sue Subocz, Ph.D.

Walden University  
2021

Abstract

Time Spent Gaming and Marital Quality: The Effect of MMORPGs

by

Kimberly J. Walker

M. Phil, Walden University, 2019

MS, University of Phoenix, 2010

BA, John Jay College of Criminal Justice, 2006

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Psychology

Walden University

February 2022

## Abstract

It is not known if, or to what degree, time spent playing massive multi online roleplaying games (MMORPGs) and adult attachment style affect marital quality. This study attempts to deliver a clearer image about the statistical links between MMORPGs and marital quality to better understand how MMORPGs can affect this relational area. Attachment theory is the theoretical model used in this study. The Hayes mediation analysis was used to answer the research questions. However, correlations were performed initially, to evaluate the suitability of the mediation analysis. The 240 respondents were selected using a convenience sampling approach, through the use of Amazon's MTurk. It was predicted that adult attachment style would correlate with time spent playing MMORPGs and marital quality. Results indicated that the null hypothesis was rejected for the first three research questions (whether adult attachment style correlated with marital quality operationalized as conflict, neglect, affection, or intimacy; whether adult attachment style correlated with time spent playing MMORPGs; and whether time spent playing MMORPGs correlated with marital quality operationalized as conflict, neglect, affection, or intimacy. and was not rejected for the fourth research question (whether time spent playing MMORPGs mediated the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, or intimacy). A professional, in practice, would benefit from knowing the research and acquiring the appropriate tools and resources that provide a competent understanding of gaming, specifically, MMORPGs resulting in positive social change.

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## Dedication

This is dedicated to Kevin A. Walker, my father. He didn't see or understand my path after receiving my Bachelors' but as the years went by, he became my biggest supporter. Unfortunately, he passed away about nine months before the approval of my Prospectus. Though he wasn't able to see me make it to the finish line, I know I have made him proud, and he will continue to watch over me.

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## Chapter 1: Introduction to the Study

The use of massively multiplayer online role-playing games (MMORPGs) provides its users with social interaction, enjoyment, and an escape from their day-to-day lives. MMORPG players dedicate countless hours to their games. Some players view their online relationships with other game players as just as important as their face-to-face relationships (Mozelius et al., 2016; Ng & Wiemer-Hastins, 2005). According to Brack et al. (2013), MMORPGs are a leisure activity that fosters belonging and creates social capital, but also has the potential to cultivate gaming addiction or to manifest isolation. MMORPG communities are as dynamic and complex as the real world (Brack et al., 2013; Ingram, 2016).

A comparison between MMORPG players and offline video gamers showed that though the demographic information was similar, there were statistically significant differences in overuse patterns (Mozelius et al., 2016; Ng & Wiemer-Hastins, 2005). Overuse patterns are described as players who spend more than 8 hours continuously playing in one session. MMORPG players demonstrated a higher overuse pattern than the offline video gamers. Mozelius et al. (2016) and Ng and Wiemer-Hastins (2005) found that:

“MMORPG users would prefer to spend time in the game rather than with friends, have more fun with in-game friends than people they know, found it easier to chat with people while in-game, did not find social relationships as important, and felt

happier when in the game than anywhere else compared to offline video gamers (p. 112).

Given the research that has been completed examining MMORPG players, little research has been done examining links between MMORPG use, adult attachment style, and marital quality. This is a critical aspect to explore because as these games continue to be popular, it is not clear what effect these games are having on an individual's marital relationship. Therefore, the purpose of this study was to explore links between MMORPG use, adult attachment style, and several dimensions of marital quality. I conducted this study because previous research shows that the more time individuals devote to playing MMORPGs, the more likely they are to experience trouble in their lives (such as lack of sleep, interference with work, interference with social life, arguments in the household do to time spent playing, and the neglect of important things in their life; Kiraly et al., (2017). However, the correlations were moderate in size suggesting that not everyone would have problems and factors such as personality could be contributing to the correlation (Kiraly et al., 2017).

In this study, I specifically examined whether marital quality is one of the aspects of life that are adversely affected by time spent playing MMORPGS, when moderated by adult attachment style. I examined the effect adult attachment style and time spent playing MMORPGs has on marital relationships and influences positive social change as professionals in the field of psychology develop ways to treat and work with struggling individuals.



In this chapter, I review the background of the study and discuss the problem statement and purpose of the study. I discuss the research questions, the nature of the study, and the theoretical framework. I also review the definitions, assumptions, scope, and delimitations in this chapter. This chapter concludes with the limitations, significance of the study, and chapter summary.

### **Background of the Study**

Recent studies estimated that roughly 160 million adult Americans play internet-based games (American Psychiatric Association [APA], 2018). For example, Adams (2017) and Koronczai et al. (2011) argued that excessive internet use (defined as losing the ability to stop going online to the point where it impacts other areas of life, including relationships, emotions, social life, school, etc.) is strongly associated with different somatic mental and interpersonal problems, such as recurrent difficulties in relating to others. Adult high engagement players appear to have at least some negative consequences in their lives like the repercussions of missing school, work, and lack of sleep (Griffiths et al., 2004; Kiraly et al., 2014).

Peters and Malesky (2008) and Kiraly et al. (2017) found that the amount of time spent playing MMORPGs can be seen as problematic contributing to the development of interpersonal problems. Players from World of Warcraft (WOW) in a top guild (a group of individuals who have the same goals and interests) were examined for problematic usage, which was correlated with amount of time played, and personality characteristics of agreeableness, conscientiousness, neuroticism, and extraversion (Kiraly et al., 2017).

The researchers found that the more time individuals devote to playing WOW, the more likely they are to experience trouble in their lives (such as lack of sleep, interference with work, interference with social life, arguments in the household do to time spent playing, and the neglect of important things in their life) but the correlation was moderate, suggesting that not everyone would have problems and factors such as personality could be contributing to the correlation (Kiraly et al., 2017).

Kiraly et al. (2017) and Peters and Malesky (2008) stated that one significant limitation of their study involved possible defensiveness from the participants. The researchers concluded that defensiveness is a possibility with all research that utilizes self-report in that participants may try to look socially desirable and therefore, may acknowledge fewer problems or negative attributes (Kiraly et al, 2017; Peters & Malesky, 2008). Kiraly et al. (2017) and Peters and Malesky (2008) also determined there may be concern amongst gamers that research in the area could result in restrictions to online games.

Kuss (2013) and Peng and Liu (2010) found that online gaming dependency (defined as a psychological state characterized by psychological discomfort experienced by online gamers when they are unable to play online games as they wish) was associated with maladaptive cognitions, shyness, and depression. Although gaming and internet usage are different, it is notable from current studies that excessive internet use and excessive use of MMORPGs both result in interpersonal problems.

In other studies, researchers examined frequency of playing, playing history, the favorite and least favorite aspects of playing the game, and what they sacrifice to play the game (Griffiths et al, 2004; Kiraly et al, 2014). In Griffiths et al. (2004) and Kiraly et al. (2014) study they found that adults were likely to sacrifice social events, and sacrificed sleep and further suggested that high engagement players have at least some negative consequences in their lives like missing school and work.

Though it is mentioned in the above studies that the gamers' lives are affected by the amount of time they invest in playing these games, an in-depth look at what is occurring within the quality of the family relationship was not detailed. This gap exists in the research because these studies do not focus on how the individuals' adult attachment style or family relationships are affected or a contributing component to their excessive game playing. According to Griffiths et al. (2004) and Kiraly et al. (2014) playing MMORPGs has adverse effects on a person's life, therefore, the current study is needed because it is not known what effect MMORPGs have on marital quality and if attachment style moderated this effect.

### **Problem Statement**

As evidence is developing from research and the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) about the scope of psychosocial effects from playing games, there are still questions to be answered. It is not known if, or to what degree, time spent playing MMORPGs and adult attachment style affect marital quality. Previous researchers have looked at gamers' lives and the effect of the amount of time

invested in playing MMORPGs (Brack et al., 2013; Griffiths et al., 2004; Ingram, 2016; Kiraly et al., 2014; Kiraly et al., 2017; Mozelius et al., 2016; Ng & Wiemer-Hastings, 2005 and Peters & Malesky, 2008) but there needed to be an in-depth look into adult attachment style and the quality of the individuals' marital relationship. This is because it is not known whether adult attachment style moderated the relationship between time spent playing MMORPGs and marital quality. The more time devoted to MMORPGs results in less time for real-life social interactions and neglect of real-life friends, school, work and loved ones. Determining whether time spent playing MMORPGs is mediated by adult attachment style and marital quality will aid in creating a balance between time spent playing and time devoted to their spouses.

According to Statista, 40% of people ages 18 to 29 , 43% of people ages 30 to 39, 23% of people ages 40 to 49 and 8% of people ages 50 and over of Americans play MMORPGs often (Kunst, 2019). The Entertainment Software Rating Board (ESRB) estimates 67% of American households frequently play video games. Seventy-four percent (74%) range between 18 to 49 years of age (Entertainment Software Rating Board, 2010; Forrest, 2017). Playing games together is an activity that adults enjoy and allows individuals to connect over a common interest (Coyne et al., 2014).

Forrest (2017) examined if there is an aspect of video gaming that discouraged cooperation or bonding between partners and if so, how this effects successful functioning of romantic relationships (pg. 3). Fifty-six percent of gamers play games with someone else, whether with friends (42%), family members (21%), parents (16%) or their

romantic partners (15%; ESA, 2015). Though gaming can be a social activity, there is a considerable discrepancy between the types of people that gamers choose to play with, for example, romantic partners are least likely to be chosen as gaming companions (Forrest, 2017).

A source of conflict in couples can be playing video games, though the specific reasons for conflict may vary between partners (Forrest, 2017). According to Coyne et. al (2012) men and women argue over different aspects of gaming. Time spent playing video games was linked with increased partner conflict for men, but not for women (Coyne et. al, 2012). Many of these arguments focused on how long men spent playing games versus attending to other responsibilities (Coyne et. al, 2012). Findings showed that playing video games can be a significant source of conflict in couples, playing games together can be a recreational activity for couples to do together, and it can also lead to conflict if partners disagree about how much time should be spent playing games (Forrest, 2017). Forrest (2017) stated that “the relationship between time spent playing games and perceived satisfaction in relationships is an area in need of continued research” (pg. 27). One aspect of Forrest’s (2017) study “assessed the relationship between frequency and duration of video game usage and romantic relationship satisfaction in adults aged 18-30 years old” (pg. 28). Results showed the correlation analysis between time spent playing games and the Couples Satisfaction Index (CSI) subscales did not produce any significant results (Forrest, 2017).

Forrest (2017) identified a number of limitations to their study. Limitations included a small sample size, an age restriction, the breakdown of game content into sexual versus violent themes, and the sample did not include a significant variation in the race of participants making the sample not general to larger populations (Forrest, 2017). Further limitations existed with accessibility. The study was limited to individuals with internet access and were recruited from two social media sites limiting the sample size due to restrictions on a range of gaming forums (Forrest, 2017). Forrest (2017) suggested for future studies “expanding on the relationship between gaming, relationship satisfaction, and differences in sexual orientation, relationship satisfaction in teenagers and older adults, and increasing the scope of gaming-related variables such as time spent playing games” (pg 56).

In this study, I examined whether time spent playing MMORPGs predicts marital quality when mediated by adult attachment style. My goal was to develop a clearer image about the links between MMORPGs and marital relationships to better understand how MMORPGs can affect this relational area. This gap exists in the research because previous researchers did not focus on how the individuals’ adult attachment style or family relationships are affected by excessive game playing (Griffiths et al, 2004; Kiraly et al, 2014). This study was necessary because, while it is known that playing MMORPGs affects a person’s life, it is not known what effect it has on marital quality and if attachment style moderated this effect.

### **Purpose of the Study**

The purpose of this quantitative predictive study was to explore if time spent playing MMORPGs predicts marital quality when mediated by adult attachment style. My goal was to determine MMORPGs' effect on adults and marital relationships.

### **Research Questions and Hypotheses**

Research Question 1 (RQ1): Does adult attachment style (independent variable) correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy?

Null Hypothesis ( $H_01$ ): Adult attachment style (independent variable) does not correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

Alternative Hypothesis ( $H_11$ ): Adult attachment style (independent variable) correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

Research Question 2 (RQ2): Does adult attachment style (independent variable) correlate with time spent playing MMORPGs (mediator)?

Null Hypothesis ( $H_02$ ): Adult attachment style (independent variable) does not correlate with time spent playing MMORPGs (mediator).

Alternative Hypothesis ( $H_12$ ): Adult attachment style (independent variable) correlates with time spent playing MMORPGs (mediator).

Research Question 3 (RQ3): Does time spent playing MMORPGs (mediator) correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy?

Null Hypothesis ( $H_03$ ): Time spent playing MMORPGs does not correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

Alternative Hypothesis ( $H_13$ ): Time spent playing MMORPGs correlates with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

Research Question 4 (RQ4): Does time spent playing MMORPGs mediate the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, or intimacy?

Null Hypothesis ( $H_04$ ): Time spent playing MMORPGs does not mediate the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, or intimacy.

Alternative Hypothesis ( $H_14$ ): Time spent playing MMORPGs mediates the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, or intimacy.

### **Theoretical Foundation**

Attachment is the tendency of human beings to make strong affectional bonds to particular others (Arapaci et al., 2017; Bowlby, 1977). The three models of infant



attachment include secure, avoidant, and anxious/ambivalent (Ainsworth et al., 1978; Doyle & Cicchetti, 2017). According to Hazan and Shaver (1990), Bowlby who was key in bringing attachment theory to the forefront, stated that “secure infants identify secure attachment to a caregiver and ability to use the caregiver as a secure base for exploration whereas anxious/ambivalent infants were preoccupied with their caregiver’s availability which prevented exploration.” (p. 271) Avoidant infants who are rejected or rebuffed by their want for proximity to their mothers did not seek contact with their mothers at times when attachment would ordinarily be activated (Hazan & Shaver, 1990).

Drawing on Bowlby’s theory, Bartholomew, and Horowitz (1991); Meredith et al. (2016) showed a manifestation of adult attachment style from the three patterns of infant attachment. The model of adult attachment includes four specific attachment styles: secure, preoccupied, fearful and dismissing. Secure attachment in adulthood indicates a sense of worthiness plus an expectation that other people are generally accepting and responsive (Bartholomew & Horowitz, 1991; Meredith et al., 2016). Preoccupied attachment style in adulthood indicates a sense of unworthiness combined with a positive evaluation of others (Bartholomew & Horowitz, 1991; Meredith et al., 2016). Fearful attachment style indicates a sense of unworthiness in adults combined with an expectation that others will be negatively disposed (Bartholomew & Horowitz, 1991; Meredith et al., 2016). Finally, dismissing attachment style indicates a sense of worthiness combined with a negative disposition toward other people in adulthood (Bartholomew & Horowitz, 1991; Meredith et al., 2016).

According to Allison (2006) and Demby et al.(2015), parents and children establish close and complex attachments in infancy that last a lifetime, and these attachment relationships unavoidably influence patterns within family systems in adulthood. To help a patient, therapeutically, it is necessary to consider how adult attachment style influences the amount of time spent playing MMORPGs and effects on marital quality (Bartholomew & Horowitz, 1991; Meredith et al., 2016). Based on this theory, I expected that those with greater adult attachment would have higher marital quality than those with less adult attachment, and time spent playing MMORPGs remain constant.

### **Nature of the Study**

In this study, I used a quantitative correlational design with a mediation model to address the four research questions. According to Creswell (2018); Leedy and Omrod, (2018) the quantitative design uses numeric scales. Therefore, a quantitative design was appropriate for this study because I collected responses related to gaming from gamers using a quantitative survey where respondents rated their adult attachment style, four indicators of marital quality, and time spent playing MMORPG games using numeric scales. Additionally, I analyzed the data with the purpose of determining if there was a statistically significant association between the variables of interest. My goal was to evaluate the relationships between events that have occurred in the past. In this study, I assessed the relationship between marital quality, time spent playing MMORPGs, and adult attachment style. According to Creswell (2018); Leedy and Omrod (2018) a

experimental or quasi-experimental designs are not appropriate when there are no control or experimental groups. Therefore, for this study, I did not use an experimental or quasi-experimental design because there were no control or experimental groups.

My goal was to determine if an association exists between adult attachment style and four indicators of marital quality and if the links of those variables are mediated by time spent playing MMORPGs. According to Pallant (2020) a mediation analyses can be used to determine the process through which variables are associated. Leedy and Omrod (2018); Pallant (2020) state a quantitative method is suitable when evaluating the statistical differences and relationships using numbers and statistical analyses. Therefore, I used the quantitative method for this study. The variables in this study were naturally occurring events and I did not manipulate them in any way. According to Field (2018); Pallant (2018) the qualitative research method uses open ended questions or archival data. Therefore, I did not use the qualitative research method because the data collection method I used was neither open ended questions nor archival data.

According to Creswell (2018); Leedy and Omrod (2018), a linear regression is used when predicting the linear relationship between a continuous dependent variable from a number of independent variables, therefore, I performed a Hayes mediation analyses using multiple linear regression. Additionally, I sought to determine if time spent playing MMORPG games mediated the relationship between adult attachment style and marital quality. I collected data from MMORPG gamers who are at least 18 years old and resided in the United States. I obtained the participants from Amazon's MTurk.

MTurk is a site run by Amazon which is a crowdsourcing marketplace for individuals and businesses to outsource to a distributed workforce who can perform assignments virtually which can include survey participation. I imported the data I collected into SPSS, Version 26. I used the first three research questions to test the correlations. I conducted a Hayes mediation analysis to determine if there was a significant predictive relationship between time spent playing MMORPGs and marital quality when mediated by adult attachment style.

### **Definitions**

*Achievements*: are self-contained game goals that offer challenges, satisfy goal-oriented players, and allow others to see your accomplishments (Yee, 2006; Tras, 2019).

*Affection*: any touch intended to arouse feelings of love in the giver and/or the recipient (Hill, 2009; Sakmar, 2015).

*AVATAR*: is the graphical representation of the user or the user's alter ego or character. An icon or figure representing a person in a video game, Internet forum, etc (Yee, 2006; Tras, 2019).

*Computer-mediated communication (CMC)*: is any human communication that occurs using two or more electronic devices (Caplan, 2003; Pontes et al, 2015).

*Conflict*: a state of opposition between ideas or interests (Coyne et. al, 2012).

*Damage*: a term used in many role-playing and strategy games to describe attacks or other effects that affect multiple targets within a specified area, or a role selected by a player (Yee, 2006; Tras, 2019).

*Dungeons*: in an open world game, refers to any hostile location where the player is likely to come under attack. Often these are enclosed areas such as a cave, ship, or building (Achterbosch et al., 2008; Mannikko, 2017).

*Excessive internet usage*: a behavioral addiction, which is defined as losing the ability to stop going online to the point where it impacts on other areas of life, including relationships, emotions, social life, school, etc. (Koronczai et al., 2011; Adams, 2017).

*Family Process*: describe the interactions between members of a family, including their relationships, communication patterns, time spent together, and satisfaction with family life (Demby et al., 2015).

*Frequency*: the rate at which something occurs or is repeated over a particular period of time or in a given sample (Forrest, 2017).

*Face to face (Ftf)*: communication - is social interaction carried out without any mediating technology (Caplan 2003; Pontes et al, 2015).

*Gaming*: the practice or activity of playing computer or video games (Merriam-Webster, n.d.).

*Guild*: a group of individuals who have the same goals and interests (Yee, 2006; Tras, 2019).

*Healer*: is a type of character class in video gaming. When a game includes a health game mechanic and multiple classes, often one of the classes will be designed around the restoration of allies' health, known as healing, to delay or prevent their defeat (Yee, 2006; Tras, 2019).

*Interpersonal problems:* difficulties that may stem from feelings, thoughts, and behaviors that interfere with an individual's ability to bond with others (Griffiths & Davies, 2004; Kiraly et al, 2014).

*Intimacy:* close familiarity or closeness (Hill, 2010; Sakmar, 2015).

*Latency:* is an expression of how much time it takes for a packet of data to get from one designated point to another (Achterbosch et al., 2008; Mannikko, 2017).

*MMORPG:* massively multiplayer online role-playing game (Achterbosch et al., 2008; Mannikko, 2017).

*Multi User Domain (MUD):* is a multiplayer real-time virtual world, usually text-based with combined elements of role-playing games, hack and slash, player versus player, interactive fiction, and online chat (Achterbosch et al., 2008; Mannikko, 2017).

*Neglect:* the state or fact of being uncared for (Kiraly et al., 2017).

*Problematic Internet Usage:* is urges, excessive or inadequately managed preoccupations, or behaviors involving computer use and internet access that lead to impairment or distress (Caplan 2003; Pontes et al., 2015).

*Progressions:* game mechanics in which the designer sets a course of action that a player must complete to move forward in the game such as defeating the level boss in action, adventure, and role-playing games (RPGs) (Yee, 2006; Tras, 2019).

*Psychosocial health:* is defined as a state of mental, emotional, social, and spiritual well-being (Caplan 2003; Pontes et al., 2015).

*Raid:* A type of mission in which a large number of players (larger than the normal team size set by the game) attempt to defeat a boss monster. Common in MMORPGs (Achterbosch et al., 2008; Mannikko, 2017).

*Resources:* game points, money, tokens, land, human resources, and natural resources (Yee, 2006; Tras, 2019).

*Role:* is a function assumed or part played by a player within a game's imaginary world (Kiraly et al., 2017).

*Role play game (RPG):* An RPG is a game in which the human player takes on the role of a specific character "class" and advances the skills and abilities of that character within the game environment. RPG characters generally have a wide variety of skills and abilities available to them, and much theory crafting is involved in creating the best possible form of each of these character classes (Achterbosch et al., 2008; Mannikko, 2017).

*Servers:* is the authoritative source of events in a multiplayer video game. The server transmits enough data about its internal state to allow its connected clients to maintain their own accurate version of the game world for display to players (Achterbosch et al., 2008; Mannikko, 2017).

*Social Interactions:* is an exchange between two or more individuals (Ng & Wiemer-Hastins, 2005; Mozelius et al., 2016).

*Tank:* redirect enemy attacks or attention toward themselves to protect other players and are often represented as large or heavily armored (Yee, 2006; Tras, 2019).

*User Interface*: the means by which the user and a computer system interact, in particular the use of input devices and software (Yee, 2006; Tras, 2019).

*World*: a term in which a player can roam a virtual world and approach objectives freely (Achterbosch et al., 2008; Mannikko, 2017).

### **Assumptions**

There are a number of assumptions associated with this study. First, it is assumed that the participants in the study understand the questions and can answer the survey questions accurately, relating to their gaming time, marital quality, and adult attachment style. This is important because the validity of the study is partly based on the respondents' ability to share their authentic experiences and perceptions. Second, it is assumed that the marital status and attachment style survey instruments are valid and reliable measures of marital status and adult attachment style. This is important because the data collection instruments must be able to accurately capture the perceptions and experiences of the respondents. Third, the Hayes mediation analysis, it is assumed, will be correctly specified, and will accurately estimate the paths between the time spent playing MMORPGs, adult attachment style, and marital quality operationalized as conflict, neglect, and affection. This is important because the Hayes mediation analysis is the method used to address the research questions. So, if it is not accurate, then I cannot answer the research questions.



### **Scope and Delimitations**

The scope of the study includes MMORPG gamers in the United States who are at least 18 years old and in a heterosexual marriage for at least one year. Other populations of gamers are excluded because the researcher is only interested in married couples who play MMORPG games. As such, the results of this study are only generalizable to this population. Different types of MMORPGs (such as action or tactical) exist and each has their own gameplay and lore which can appeal to different kinds of players. MMORPGs have a level of difficulty and interaction that are not found in other genres of gaming. This study excluded participants outside of the United States, persons under the age of 18 years old, marriages not defined as heterosexual, and other genres of games. No literature review will be done on the effects of MMORPGs and other dyads of family such as parent-child, single-parent, or households that include families with more than one generation, adoptive families, foster families, or families where children are raised by grandparents. Extensive research on MMORPGs players outside of the United States and persons under the age of 18 have been conducted. Based on the sample selection process, the study presumed to be generalizable to the MMORPG population in the United States, in a limited way. This is because all MMORPG players play their games over the internet. So, the sample will be selected from a population of millions of players (APA, 2018).

### **Limitations**

One limitation is self-report bias, where respondents may respond in ways that are more positive than honest, or selective recall (Creswell, 2018; Leedy & Omrod, 2018). To address self-report bias, respondents are told that their responses are anonymous, so their survey answers cannot be connected to any single respondent. Furthermore, to address possible selective recall, survey questions focus on only recent experiences, to lessen the reliance on recall. Selection bias is a limitation that occurs when the study population fails to be representative of the population. Typically, this limitation is addressed using random sampling (Creswell, 2018; Leedy & Omrod, 2018). However, a convenience sampling approach was used in this study, where the target population will be sourced from Amazon's MTurk. Selecting from large populations may minimize selection bias (Leedy & Omrod, 2018). Confounders are variables that distort the association between other variables (Creswell, 2018). To minimize confounds, previous research studies examining the relationship between time spent playing MMORPGs and quality of life and marriage, were conducted to determine if there were variables that should be included or excluded (Brack et al., 2013; Griffiths & Davies, 2004; Ingram, 2016; Kiraly et al., 2014; Kiraly et al., 2017; Mozelius et al., 2016; Ng & Wiemer-Hastings, 2005 and Peters & Malesky, 2008). I added adult attachment style as a moderator to evaluate the effect of this variable that was not included in other studies. So, reasonable attempts were made to address these limitations. Another limitation is that the study does not assess causality. Finally, researcher bias is a possible limitation.

However, researcher bias is controlled by the fact that the researcher has no contact with the respondents, the respondents are answering previously validated survey instruments, and the analysis of the data follows established guidelines and procedures that cannot be altered by the researchers.

### **Significance of the Study**

#### **Significance to Theory**

The use of the internet and participation in MMORPGs provide its users with social interaction, enjoyment, and an escape from their day-to-day lives and sometimes their online relationships are viewed as just as important as their face-to-face relationships. That said, MMORPGs take time away from face-to-face interactions and intimate relationships (Ng & Wiemer-Hastins, 2005).

The purpose of the current study was to examine whether time spent playing MMORPGs mediated the relationship between adult attachment style and four indicators of marital quality. This study helps determine to what extent their game playing is associated with their marital relationship quality and whether time spent playing MMORPGs mediated the association between adult attachment style and marital quality.

#### **Significance to Practice**

This study brings awareness of the links between time spent playing, MMORPGs and marital quality. As MMORPGs continue to grow in popularity, counseling professionals will encounter these types of players.

Based on the author's experience in a therapeutic setting, the adult attachment style for which an individual identifies can play a part in how they address and handle relationships. For example, individuals with a dismissing adult attachment style have a sense of worthiness shared with a negative disposition toward other individuals so they protect themselves by avoiding close relationships by playing MMORPGs (Bartholomew & Horowitz, 1991; Meredith et al., 2016). For a professional this could be an area to work through. Professionals will need to identify and understand the components of these type of games, so they can create therapeutic treatment plans that will help their patients who are struggling with conflict, neglect, intimacy, and affection in their marriage. The professional will need to have a thorough understanding of what lures a player to their game and whether their time spent playing is mediated by their adult attachment style and marital quality. An understanding of the patient's adult attachment style can provide information that will be useful in understanding the dynamics of the amount of time spent playing MMORPGs and the marital quality the patient is experiencing. The findings from this study will aid professionals in assessing potential socially facilitative or inhibitive effects of both MMORPGs and individual player behavior for marital quality (Brack et al., 2013; Ingram, 2016). It's also important to note that gaming relationships between spouses exist. As stated above the ESRB estimates 67% of American households frequently play video games (Entertainment Software Rating Board, 2010; Forrest, 2017) and 56% of gamers play games with someone else, 15% of which are their romantic partners (ESA, 2015). The implications of this information are that the impact of this

study could be wide ranging as a majority of American households engage in video games. Additionally, since only 15% play with a romantic partner it was interesting to see how time spent playing MMORPGs influenced marital quality.

Exploring the relationship between time spent in MMORPG gaming, adult attachment style, and marital quality problems is important for the field of psychology because gaming is a new rising concern. With World Health Organization (WHO) stating that the International Classification of Diseases (ICD) will identify gaming disorder as a new disorder and countries such as China and South Korea establishing treatment plans and growing research in the area professionals in the field of psychology need to be informed (APA, 2018).

### **Social Change Implications**

In this study I want to assist in understanding the relationship between MMORPGs and marital relationships. Awareness of how much of an effect this has on an individual and finding a way to bring families back together rather than falling apart will bring positive social change from this growing problem. The awareness of the associations between MMORPG gaming and marital quality can influence positive social change with the development of solutions that can help these players create a balance between the games they enjoy and their romantic relationships.

### **Summary and Transition**

It has been shown that users can become addicted to the internet (Mozelius et al., 2016; Ng & Wiemer-Hastins, 2005). Specifically, previous researchers have shown that

the anonymity users are provided by online chat and MMORPG fantasy gamesthrough the creation of their own self-identity, can raise their self-esteem (Mozelius et al., 2016; Ng & Wiemer-Hastins, 2005). Because the internet is used as a substitute for real social interactions and escape from reality, a combination of personality and internet application may result in relationship quality problems (Mozelius et al., 2016; Ng & Wiemer-Hastins, 2005).

Although it is clear that MMORPGs take time away from face-to-face interactions and intimate relationships, little research has been done examining how different adult attachment styles are related to frequency of use of MMORPGs. The purpose was to examine the association between time spent playing MMORPGs and attachment styles in adults and how those variables ultimately predict marital quality.

In chapter 2, I will review the literature on various topic areas. In the literature search strategy I provide a roadmap for obtaining the articles used in this study. Further, I reviewed literature related to the theoretical framework. Additionally, I also reviewed the literature onthe history of MMORPG games, social interaction, time spent playing MMORPG and marital quality problems. Finally, I concluded chapter 2 with a chapter summary.

## Chapter 2: Literature Review

### **Introduction**

MMORPG players dedicate countless hours to their games. Despite these long hours playing MMORPGs, the players are not categorized as addicted to those games (Mozelius et al., 2016; Ng & Wiemer-Hastins, 2005) despite the fact that MMORPG players can experience the same consequences as those addicted to the internet, including failing school, trouble at work, and lack of sleep (Mozelius et al., 2016; Ng & Wiemer-Hastins, 2005). Given that these consequences include a negative impact on family life (Coyne et al., 2015), there is a question as to whether MMORPGs are associated with marital quality. In this study, I sought to answer this question.

MMORPGs have been in existence for almost 30 years. The popularity of this genre of game cannot go unnoticed nor can its influence (Achterbosch et al., 2008; Mannikko, 2017). The purpose of this study was to evaluate if time spent playing MMORPGs mediated the relationship between adult attachment style and marital quality. I attempted to deliver a clearer image about MMORGP's effect on adults and marital relationships to better understand how MMORPGs can affect this relational area.

In this chapter, I will discuss my literature search strategy, a review of the theoretical foundation, and give a review of the literature, which contains the history of MMORPGs, research findings on MMORPGs, first games, frequency of gaming, links between MMORPGs and attachment style, and marital quality. This chapter concludes with the chapter summary.

### **Literature Search Strategy**

I researched the literature in the Walden University Library databases. I used the following search engines: EBSCO host, Google Scholar, ProQuest, PsyARTICLES, Search Multiple Databases. The terms I used to search the literature were as follows *MMORPGs, gaming, excessive use, problematic internet usage, addiction, addiction to games, internet gaming disorder, internet addiction, attachment theory, attachment styles, family, family relationships, history of MMORPGs, effects of gaming, effects of excessive internet usage, and effects of internet addiction*. I reviewed peer-reviewed research literature from 1969 to 2021 on the following topics:

1. Attachment and Family Therapy,
2. Attachment styles among young adults: A test of a four-category model,
3. Individual psychology on the virtual frontier: Massive multiplayer online role-playing gaming,
4. Research design: Qualitative, quantitative, and mixed method approaches,
5. The Development of the Problematic Online Gaming Questionnaire (POGQ).
6. Online computer gaming,
7. Gender differences and related factors affecting online gaming addiction,
8. Addiction to the internet and Online Gaming,
9. Online gaming dependency,



10. Problematic usage among highly-engaged players of massively multiplayer online role-playing gamers,
11. Online communication and adolescent relationships, and
12. Effects of online games on undergraduates' socioeconomic behaviors and demographic factors and playing variables in online computer gaming.

### **Theoretical Foundation**

Attachment theory is a theoretical model of social and emotional development in infancy and childhood which has lifelong implications (Bowlby, 1969; Meredith et al., 2016). There are three main attachment styles that develop between the mother and the infant in the first year of life: secure, anxious/ambivalent, and avoidant (Bowlby, 1969; Meredith et al., 2016). Secure infants had mothers who were consistently sensitive and responsive to their signals which allowed them to confidently explore their environments (Hazan & Shaver, 1990; Liu et al, 2020). Mothers of avoidant infants appeared rejecting and rebuffed their infants' bids for proximity, making these infants not seek contact with their mothers when one would ordinarily do so; because of this, the infants directed their attention toward toys (Hazan & Shaver, 1990; Liu et al, 2020). Mothers of anxious/ambivalent infants exhibited inconsistency in responding to infant's signals, making these infants preoccupied with their mother's availability and this preoccupation precluded exploration (Hazan & Shaver, 1990; Liu et al, 2020).

Attachment behavior is conceived as any form of behavior that results in an individual attaining or retaining proximity to some other differentiated and preferred

individual (Bowlby, 1969; Meredith et al., 2016). Attachment behavior characterizes human beings from birth to death but with age, the frequency and the intensity of such behavior diminishes steadily (Bowlby, 1969; Meredith et al., 2016). Behaviors include crying and calling, eliciting care, following, and clinging, and strong protest should a child be left alone or with strangers (Bowlby, 1969; Meredith et al., 2016). In adults, these behaviors are evident when an individual is distressed, ill, or afraid. The particular patterns of attachment behavior shown by an individual are due partly to their present age, sex, and circumstances and partly on the experiences they have had with attachment figures earlier in their life (Bowlby, 1969; Meredith et al., 2016).

A basic premise of attachment theory is that internal working models of attachment that develop based on the initial mother-infant bond remain relatively stable across the life span (Bartholomew & Horowitz, 1991; Meredith et al., 2016). The impact of internalized early caregiving experiences has been proposed to influence individual perceptions of oneself (Bartholomew & Horowitz, 1991; Meredith et al., 2016). The individual can have their perception as worthy of care and of caregivers as being trustworthy to provide care (Bartholomew & Horowitz, 1991; Meredith et al., 2016). In contrast, when an individual's experiences are not adequate, the individual's perceptions of themselves or others can be negative. Therefore, perceptions negative in nature that develop can reflect attachment anxiety and attachment avoidance, respectively (Bartholomew & Horowitz, 1991; Meredith et al., 2016).

As mentioned above, attachment theory proposes that the long-term effects of early experiences with caregivers are due to the persistence of *internal working models*, cognitive/affective schemas, or representations, of the self in relation to close relationship partners (Bartholomew & Shaver, 1998; Cacioppo, et al., 2019). The mentioned representations impact a person's expectations, emotions, defenses, and relational behavior in all close relationships (Bartholomew & Shaver, 1998; Cacioppo, et al., 2019). Based on early experiences, individual internal working models are formed that are assumed to impact perceptions through life (Bowlby, 1969; Meredith et al., 2016). Although the theory does not assume or require that internal working models persist without change across the life span, both theory and empirical evidence from longitudinal studies have led researchers to suspect that the effects of childhood attachment relationships extend into adulthood, where they can be seen in the domains of parenting and close peer relationships, including romantic relationships (Bartholomew & Shaver, 1998; Cacioppo, et al., 2019).

Preoccupied indicates a sense of unworthiness combined with a positive evaluation of others, indicating one would strive for self-acceptance by gaining the acceptance of valued others corresponding conceptually with Hazan and Shaver's ambivalent group (Bartholomew & Horowitz, 1991; Meredith et al., 2016). Fearful indicates a sense of unworthiness combined with an expectation that others will be negatively disposed, corresponding to the avoidant style described by Hazan and Shaver, thus giving it the label fearful/avoidant (Bartholomew & Horowitz, 1991; Meredith et al.,

2016). Dismissing indicates a sense of worthiness combined with a negative disposition toward other people, thus giving it the label of dismissing/avoidant (Bartholomew & Horowitz, 1991; Meredith et al., 2016).

The use of gaming sites are potentially related to marital quality because of the frequency of gaming. Based on the principles of attachment theory, it is expected that those with greater adult attachment (secure and preoccupied) will have higher marital quality with less conflicts and neglect related to MMORPGs. MMORPGs will have less effect on lack of intimacy and affection, with those with less adult attachment (dismissing and fearful), keeping time spent playing MMORPGs constant. It is expected that those with less adult attachment will experience lower marital quality with more conflicts and neglect related to MMORPGs and that MMORPGs will have more effect on lack of intimacy and affection. The disruption in communication between spouses caused by game playing may affect the mutuality in the family relationships and marital quality operationalized as conflict, neglect, intimacy, and affection possibly changing how the attachment relationship is shaped.

## **Literature Review**

### **History of MMORPG Games**

An MMORPG is a massively multiplayer online role-playing game. MMORPGs have existed since the late 1990s in the computer game industry (Achterbosch et al., 2008; Mannikko, 2017). This genre in the gaming industry is appealing to an extensive audience bringing together individuals who enjoy role-playing games and socializing

with other players in a virtual environment (Achterbosch et al., 2008; Mannikko, 2017). Multiplayer role-playing games (RPGs) are played online over the internet in a *persistent world* with hundreds or even thousands of individuals simultaneously connected to the same server (Achterbosch et al., 2008; Mannikko, 2017). Persistent world refers to a game world that continues to function even when players are no longer logged in and when they return, they can continue where they left off. In contrast to single-player games, MMORPG players can achieve goals collaboratively with other players or compete against other players.

Users must purchase or download the MMORPG client of their choosing and pay a monthly subscription fee to access the servers. The world is viewed by users in real-time 3D graphics that are vast, rich, and detailed. An avatar is used to interact with the environment and each other through a combination of a mouse driven user interface and keyboard commands (Yee, 2006; Tras, 2019). Users communicate through typed chat and animated gestures and expressions. It can take several hours to navigate the entire world though various types of transportation are available to get to different locations.

Users control the appearance of their avatar. For example, users can manipulate their avatar's gender, race, skin tone, eye color, hair style, hair color, and the presence of body markings (Yee, 2006; Tras, 2019). Users choose from a set of professions or roles that the MMORPG provides with varying strengths and weaknesses and have roles such as tank, damage, and healer and professions such as tailor, alchemist, blacksmith, and herbalist, etc.

Goals and rewards in MMORPGs typically use a random-ratio reinforcement schedule. Early achievements are quick, almost instantaneous, and gradually take more and more time and effort until progression becomes almost imperceptible (Yee, 2006; Tras, 2019). Advancement in MMORPGs require increasing cooperation or dependency on other users, which is oftentimes mutually beneficial for players' goals in the game. Each user is motivated by something different, whether by adventures, stories, or meaningful interactions and relationships. Functional constructs within the environment facilitate social networks: combat groups (temporary collaboration between a few users), guilds (persistent user-created membership organizations), and ideological alliances (agreements between guilds or "racial" groups; Yee, 2006; Tras, 2019). Combat collaborations in MMORPGs become multifaceted as users advance. Users are composed of a balanced combination of roles and must communicate and perform effectively as individuals using a predetermined group strategy (Yee, 2006; Tras, 2019).

More recent MMORPGs have created collaboration scenarios of an entirely entrepreneurial nature where goods are produced by users; transactions and the resulting supply, demand, and pricing of specific goods are user-driven (Yee, 2006; Tras, 2019). The environment allows users to collect resources, harvest those resources, research schematics for assembling resources into sub-components, produce finished goods, and sell those goods to the public (Yee, 2006; Tras, 2019). The process is complex, time-consuming, and distributed over several skills sets that users typically specialize in.

## **Research Findings on MMORPGs**

Previous research on MMORPGs fits into four categories. The first category consists of social interactions between players. Socializing is a large component of how the game is built, especially in an online role-playing game, due to the dynamics behind forming groups capable of defeating enemies and advancing through the game together (Achterbosch et al., 2008; Mannikko, 2017). Second category refers to build which can determine a number of different things. Some of these things include how many people can be active at the same time, how much control over the game do developers maintain or the up-front costs a developer needs before launching the game (Achterbosch et al., 2008; Mannikko, 2017). Latency describes time it takes data to get from one point to another. Delays in a game can exist if data have trouble getting from point to point. Effects of latency on MMORPGs is the third category. The fourth category involves the problems that affect MMORPGs; that if resolved; games could be more enjoyable. Problems that affect MMORPGs could include cheating, hacking, and counterfeiting.

### **The First Games**

MMORPGs began with multi-user dungeons (MUDs) and computer role-playing games (CRPGs), which were derived concepts from pen-and-paper Dungeons & Dragons (D&D). D&D was built from the epic adventures in J.R.R. Tolkien's novels *The Hobbit* and *The Lord of the Rings* series which include a variety of beings such as dwarves, elves, hobbits, and humans with stories of good and evil and villainous creatures such as orcs, goblins, and ogres (Achterbosch et al., 2008; Mannikko, 2017).

D&D was the first tabletop role-playing game and was first published in 1974 by Tactical Studies Rules. In some form, all MUDs, RPGs, and MMORPGs can be traced back to D&D (Achterbosch et al., 2008; Mannikko, 2017). Composed of a group of friends, a player leads their character through treacherous dungeons; D&D provides a main set of rules and instructions to follow, but within those rules anything is possible (Achterbosch et al., 2008; Mannikko, 2017). In D&D, the players first select a race or species for their character, which will determine some of their strengths and weaknesses. The player then selects one of many predefined classes, which will determine what a player's capacities will be.

The derivation of MUDs can be traced to 1978 and was developed by Richard Bartle and Roy Trubshaw. The developers created an entirely text-based game that could be played simultaneously by multiple users; gameplay like the D&D pen-and-paper tabletop game (Achterbosch et al., 2008; Mannikko, 2017). In MUDs, players enter and dungeon and fight monsters for experience and treasure. A character's level of play increases with experience. MUDs began with a focus on imagination and allowed multiple players the ability to interact with one another but later took a new approach employing more D&D traits and rules like grouping and class-based characters; future MMORPGs mainly follow this though socialization is also a key aspect (Achterbosch et al., 2008; Mannikko, 2017).

The development of single-player computer RPGs, which happened in the mid-1970s brought a lot of innovative features many of which continue to be used in



MMORPGs (Achterbosch et al., 2008; Mannikko, 2017). Games such as *Dungeon Master* introduced real-time mechanics; instead of taking turns, all the action was instant and in real-time. *Wasteland*, another one of the early RPGs, offered open-ended game mechanics that allowed players to complete tasks by a variety of means; *Ultima Underworld* was the first game to offer fully rotational 3D; *Elder Scrolls* RPG series tried to immerse the player into the world through the use of cultures, day and night cycles, as well as weather effects (Achterbosch et al., 2008; Mannikko, 2017). Single-player RPGs are less common, but they offer well written stories revolving around the player which is difficult for MMORPGs because of its number of players.

Multiplayer computer RPGs have in some cases inspired the developers of MMORPGs but themselves are not considered MMORPGs because they only cater to a small number of players. What may be considered the first generation of MMORPGs were the first graphical RPGs that allowed many players to play in the same universe simultaneously. The game *Neverwinter Nights* ran from 1991 to 1997. This game is sometimes credited as the first MMORPG though the server capacity of 200 players doesn't meet the term "massively multiplayer" and had basic 2D graphics. *Meridian 59* was published in 1996 by 3DO and is often credited as the first MMORPG because it had a lot of elements players associate with MMORPGs. *Meridian 59* also marks the introduction of the term massively multiplayer and the first game to have a monthly charging system, as opposed to an hourly rate (Achterbosch et al., 2008; Mannikko, 2017). Players can see everything occur on screen, a communication system that

facilitated the establishment of a community, had an interface that is still popular today and had a dialog box for chatting and actions performed (Achterbosch et al., 2008; Mannikko, 2017).

Ultima Online (UO) was released in 1997 and was the first commercially successful MMORPG. The developer ORIGIN watched Meridian 59 and quickly moved half of their team from Ultima IX which is a single-player RPG to UO; now credited with popularizing the MMORPG genre (Achterbosch et al., 2008; Mannikko, 2017). This game was largely centered on player versus player (PVP) model where players are free to kill one another, and the losing player incurs penalties. UO also offered the ability to craft which allows players to build their own armor and weapons. UO early on had some technical issues; other problems consisted of new players often surrounded and killed by other players for sport.

In 1999, EverQuest (EQ) was released, which is the second biggest game in the MMORPG genre after UO and had the backing of Sony (Achterbosch et al., 2008; Mannikko, 2017). A massive world in 3D was created that offered exploration and contemporary graphics. EQ unlike UO brought MMORPGs to the mainstream. EQ's main drive was, and is, combat, exploration, and character development; over the course of its life it has released 11 expansion packs that detail new areas to explore and conquer (Achterbosch et al., 2008; Mannikko, 2017). EQ also encouraged players to work together in a cooperative model as well as player versus environment (PVE) model where players engage in combat against a computer-controlled environment as oppose to the

PVP model. EQ introduced raids. Raids are large groups formed to overcome difficult encounters that require players to work together harmoniously to accomplish the goal.

Games such as Asheron's Call was published in 1999 by Microsoft. This game was mostly fantasy, but it used customizable interfaces. Customizable interfaces are important because MMORPGs can get very cluttered with statistics, menus, items, and information. Most second-generation-MMORPGs had their start in the new millennium (Achterbosch et al., 2008; Mannikko, 2017). Second-generation MMORPGs have generally improved on the graphics and interface of the first generation, since they were able to look back on the successes and failures of older titles and improve upon them (Achterbosch et al., 2008; Mannikko, 2017).

The first successful MMORPG of the 21st century was called the Dark Age of Camelot and was released in 2001. It quickly outpaced Asheron's Call, becoming the third most popular American MMORPG. The Dark Age of Camelot brought PvP combat back to the genre. It also required less time for players to gain a character level, meaning it was more accessible to casual players. But its most innovative feature was realm-vs-realm (RvR) combat, which allowed massive battles of human-controlled players among the three different kinds of beings (Achterbosch et al., 2008; Mannikko, 2017).

Anarchy Online was released in June 2001. It fought to eliminate problems created in other MMORPGs by creating "instanced dungeons," more commonly referred to today as "instances," which are special zones that generate a new copy, or instance, for each group that enters the zone. This allows players or groups a private copy of the zone

and ensures that there will be no competition for resources or for opportunities to kill enemies in that zone (Achterbosch et al., 2008; Mannikko, 2017). Final Fantasy XI (FFXI) was released in 2000. It scored many firsts: it was the first successful console-based MMORPG; and the first to have servers that shared populations from both console and windows-based PC users, and it divided its goals into two categories; quests and missions (Achterbosch et al., 2008; Mannikko, 2017). Quests are like ordinary jobs a player performs to acquire rewards and in game money. Missions advance the storyline and progress of the player. Players are able to choose a class which is a job; one that can be changed any time within their in-game private quarters.

Eve Online was released in May 2003. This game chose to ignore the popular fantasy-themed setting and instead based itself in a fictional galaxy 24,000 year in the future. The game revolves around space exploration, trading, and of course, space combat. Although Eve Online has not achieved the subscription records of some MMORPGs, it does have a loyal fan base that continues to grow (Achterbosch et al., 2008; Mannikko, 2017).

Star Wars Galaxies (SWG) was released in June 2003. Set in the Star Wars universe, the game attracted a large audience. SWG also had the most extensive set of emotes, moods, and associated animations, which, due to the way it allowed players to express themselves, later MMORPGs also implemented (Achterbosch et al., 2008; Mannikko, 2017). A big feature of the game is that almost every item in-game is created by players, from blasters to starships, creating a completely player-driven economy. The

unique crafting system was also SWG's undoing: players learned to go into combat with only the best equipment and enhancements, making characters more powerful than intended. A major update was done to try and balance this, which left many players with items that were now useless; SWG subscriptions have never recovered (Achterbosch et al., 2008; Mannikko, 2017).

The City of Heroes, an innovative MMORPG of the second generation, was released in April 2004. Completely avoiding all other settings, it is centered on superheroes controlled by players, battling villains. City of Heroes is said to have the most extensive character-creation system; it is able to customize everything from facial features to the superhero's outfit. Such customization allows players to be visually distinguishable from one another, which many MMORPGs fail at: many players with the same equipment end up looking the same (Achterbosch et al., 2008; Mannikko, 2017).

EverQuest II (EQ2), was released in November 2004. It was designed to keep the best features of the original and remove the worst, as well as to add new features and implement those that had become standard in the single-player games market. One of the biggest new features was that players could become tradesmen by spending all their time crafting items to sell to the game community rather than adventuring and leveling up a character class. Its graphics were also a huge improvement over first-generation titles, unfortunately hampered by the need for an extremely powerful PC, beyond the level available at the time EQ2 was published. EQ2 never achieved a large market share because, unfortunately, it was released at the same time as World of Warcraft (WoW),

which currently has 8.5 million subscribers (Achterbosch, Pierce & Simmonds, 2008; Mannikko, 2017).

### **Frequency of Gaming**

#### **Psychosocial Well Being and Internet Use**

Research on computer-mediated communication (CMC) has recognized new and unique interpersonal phenomena in cyberspace; a similarly important task includes extending previous research on face-to-face (FtF) communication to the new forms of CMC (Caplan, 2003; Pontes et al., 2015). One communication phenomenon in both popular and academic literature is the association between Internet use and psychosocial health with research from numerous disciplines reflecting a growing concern with compulsive internet use and its possible ill effects (Caplan, 2003; Pontes et al., 2015).

One study on internet use and psychosocial health administered depression and loneliness scales to participants prior to the use of the Internet for the first time and again 1 year later (Caplan 2003; Pontes et al., 2015). Results showed that overtime, both depression and loneliness increased with the amount of time a person spent online but in a follow-up study, it was reported that the observed negative effects of Internet use had faded. Problematic psychosocial tendencies lead individuals to extreme and uncontrollable computer-mediated social interaction, which, in turn, exacerbates their problems (Caplan 2003; Pontes et al., 2015). Excessive internet use is defined as the level of use which exceeds what is normal. Compulsive use is the lack of control of an individual's online activity along with feelings of guilt about the lack of control (Caplan

2003; Pontes et al., 2015). Problematic Internet use (PIU) is used to describe maladaptive cognitions and behaviors involving Internet use that result in negative professional, academic, and social consequences; the word problematic refers to usage reflecting a specific cycle of innate dysfunction leading to internet use that in turn worsens the dysfunction (Caplan, 2003; Pontes et al., 2015). The concept offered here reveals the significance of interpersonal communication research to the study of PIU and well-being by calling attention to the part that interpersonal CMC processes play in the relationship between Internet use, or misuse, and well-being (Caplan, 2003; Pontes et al., 2015).

Caplan (2003) and Pontes et al. (2015) proposes the following:

“(1) individuals who suffer from psychosocial problems (i.e., depression and loneliness) hold more negative perceptions of their social competence than people without such problems;(2) these individuals develop a preference for online social interaction as an alternative to FtF communication because they perceive it to be less threatening and perceive themselves to be more efficacious when interacting with others online; (3) a preference for online social interaction leads to excessive and compulsive computer-mediated social interaction, which, in turn, worsens their problems and also creates problems at home, school, and work” (pg 627).

The initial theoretical assumption is that persons who suffer from psychosocial distress, such as loneliness and depression, hold negative perceptions of their own social competence (Caplan, 2003; Pontes et al., 2015). Empirical evidence indicates with

loneliness there's a significant negative relationship between loneliness and both self-and observer-ratings of one's social skill (Caplan, 2003; Pontes et al., 2015).

Individuals who are lonely and depressed with self-perceptions of social incompetence may look to steer clear of FtF interactions and seek what is considered to be safer and less threatening (Caplan 2003; Pontes et al., 2015). Additionally, lonely individuals are to a certain degree more likely to feel that they can better express their real selves with others on the Internet rather than those they know offline, and they are more likely than psychosocially healthier people to develop a preference for online social interaction (Caplan, 2003; Pontes et al., 2015).

Researchers have discovered a series of unique characteristics of some synchronous CMC applications that may be particularly appealing to psychosocially distressed individuals (Caplan, 2003; Pontes et al., 2015). CMC in an online chat room involves more anonymity, more control over self-presentation, more intense and intimate self-disclosure, less perceived social risk and less social responsibility toward others and the interaction compared to traditional FtF communication (Caplan, 2003; Pontes et al., 2015). It's suggested that some types of CMC may be more beneficial to conventional FtF behavior for some interpersonal endeavors because CMC facilitates so-called hyper personal communication that exceeds normal levels of interpersonal exchange (Caplan, 2003; Pontes et al., 2015). According to Caplan (2003) and Pontes et al. (2015)

“the reduced number of available nonverbal cues increase editing capabilities, and the temporal features of CMC allow interactants to be more selective and strategic



in their self-presentation, form idealized impressions of their partners, and, consequently, engage in more intimate exchanges than people in FtF situations” (p. 630).

CMC interaction permits individuals more flexibility in self-presentation; people may omit and fabricate personal information that they perceive to be negative and there is more opportunity to falsify, embellish, or intensify more positive aspects of one’s self to others online; thus, for some, the Internet represents a place where they can exercise more control over the impressions that others form of them (Caplan, 2003; Pontes et al., 2015). The internet can be socially liberating for psychosocially distressed individuals, and it’s been argued that the Internet itself does not make people isolated; it’s loneliness or isolation that entices people to online social interaction and CMC relationships in the first place (Caplan, 2003; Pontes et al., 2015).

Caplan (2003) and Pontes et al. (2015) study consisted of 386 undergraduate students who ranged in age from 18 to 57 years old ( $M = 20$ ) in which the model presented and tested proposes that lonely and depressed individuals may develop a preference for online social interaction, which, sequentially, leads to negative outcomes associated with their Internet use. The Generalized Problematic Internet Use Scale which is a self-report measure evaluating the prevalence of cognitive and behavioral symptoms of PIU along with the degree an individual’s internet use results in negative personal, academic, or professional outcomes (Caplan, 2003; Pontes et al., 2015). For measures of

psychosocial well-being the Beck Depression Inventory-II and the UCLA Loneliness scale were used.

They found that preference for online socialization is a key contributor to the development of problematic Internet use and the theory asserts that the relationship between psychosocial health and PIU is mediated by preference for online socialization (Caplan, 2003; Pontes et al., 2015). A MANOVA showed both substantial multivariate and univariate relationships whereby preference for online social interaction predicted levels of PIU symptoms and their negative consequences (Caplan, 2003; Pontes et al., 2015). Results supported that mediating influence of preference for online socialization and PIU on the relationships between psychosocial health and negative outcomes for internet (Caplan, 2003; Pontes et al., 2015). Caplan (2003) and Pontes et al. (2015) found that loneliness played a significant role in the development of problematic Internet use and depression had little influence on the process.

Caplan (2003) and Pontes et al. (2015) identifies a number of limitations found in their study. These limitations included:

“(1) not utilizing techniques that would be needed to isolate and test communicative features that lead individuals to prefer online social interaction, (2) the sample used did not exhibit high degrees of PIU, and (3) the study did not consider the role social skill or communicative competence plays in the development of PIU” (pg 640).

Though the results of the study represent an important step in understanding PIU and its connection to interpersonal communications further research on causality, measures of communication apprehension, measures of social skills, and unwillingness to communicate is necessary (Caplan, 2003; Pontes et al., 2015).

In one study, participants consisted of players from World of Warcraft (WOW) belonging to one of the top online guilds (Kiraly et al., 2017). WOW is an MMORPG where players from around the world take on the roles of heroic fantasy characters and explore a virtual world made up of magic, mystery, and adventure. A guild is a group of individuals who have the same goals and interests. Results from their study suggest that the more time individuals devote to playing WOW the more likely they are to experience trouble in their lives (Kiraly et al., (2017). Kiraly et al. (2017) found that

“with the advantages of a large online gamer sample there were limitations with generalizability, self-report rendered the data sensitive to bias, and the models presented were based on the theoretical consideration that immersing oneself in a virtual game may provide an escape from the real world which may lead to problematic gaming” (pg 22).

The amount of time a WOW player devotes to the game can be viewed as excessive. According to Kuss (2013); Peng and Liu (2010) data showed that online gaming dependency was positively related to personal life problems. It's notable from current studies that excessive internet use and excessive gaming both result in interpersonal problems. Kuss (2013); Peng and Liu (2010) study used a small sample, the

generalizability was unclear due to lack of a large and nationally representative sample, and the cross-sectional design used prevented determining causality. For future research Kuss (2013); Peng and Liu (2010) suggest “more effective approaches to recruit online gamers, conducting longitudinal studies, and identifying contributors of maladaptive cognitions” (pg 332).

Numerous studies have been conducted outside of the United States and the male participants outnumber the female participants. Does the location and gender of the gamers have a significant impact on effects that occur between gamers and their families? One study looked to assess to what extent gender and other factors foresee the severity of online gaming addiction in Taiwanese adolescents (Ko et al., 2005; Mihara & Higuchi, 2017). The participants were evaluated on their experiences playing online games. A comparison was made between male and female on the severity of addiction, number of stressors, behavioral characteristics, and the level of satisfaction with their daily life (Ko et al., 2005; Mihara & Higuchi, 2017). Three hundred and ninety-five students were recruited which consisted of 170 men and 225 women. Out of the 395 students only 221 reported playing online games and that consisted of 139 men and 82 women. Results found that gender differences existed in the severity of online gaming addiction and reasons for playing such as older age, self-esteem, and low satisfaction in daily life were associated with more severe addiction with men (Ko et al., 2005; Mihara & Higuchi, 2017). Within this study they also found that online gaming is more prevalent among

male adolescents than among females, and that addiction to online gaming is more likely among men than women (Ko et al., 2005; Mihara & Higuchi, 2017).

A study conducted on 540 players who played Everquest found notable differences between adolescent and adult players (Griffiths et al., 2004; Kiraly et al., 2014). The survey used looked at playing frequency, playing history, the favorite and least favorite aspects of playing the game, and what they sacrifice to play the game (Griffiths et al., 2004; Kiraly et al., 2014). Results indicated adolescent gamers were significantly more likely to be male and significantly more likely to sacrifice their education or work (Griffiths et al., 2004; Kiraly et al., 2014). Another significant result found was that the adolescents' favorite aspect of the game was violence and the younger the player the more time spent playing each week. Griffiths et al. (2004) and Kiraly et al. (2014) also point out that:

“Charlton’s (2002) factor analytic study of computer addiction showed a blurring of distinction between non-pathological high engagement and addiction.

Therefore, it could alternatively be the case that there are very excessive online gamers who show few negative consequences in their life. However, Griffiths et al. (2004) and Kiraly et al. (2014) suggest that both adult and adolescent high engagement players do appear to have at least some negative consequences in their lives” (pg. 96).

A demographic look at the players of Everquest found that there were more male than female adult players. For many of the players an important factor in playing is the

social aspect. A small group of players play in excess of 80 hours a week and sacrifice important activities to play such as sleep, work, schooling, and time with family (Griffiths et al, 2004; Hussain et al., 2015).

On a more positive note, there is a quite different kind of relationship “formation” that can be explored in MMORPGs. Many MMORPG users participate in the environment with a romantic partner or family members; 15.8% of male respondents (n = 1589) and 59.8% of female respondents (n = 311) participate in the environment with a romantic partner, while 25.5% of male respondents and 39.5% of female respondents participate in the environment with a family member – a sibling, parent, or child (Yee, 2006; Tras, 2019).

Many romantic couples who participate in MMORPG together commented on how the environment highlighted their individual differences. For these users, the MMORPG environment reflected and accentuated differences in their personalities and worldviews (Yee, 2006; Tras, 2019). For other romantic partners, the MMORPG environment not only reveals individual differences, but it also comes to shape the relationship itself (Yee, 2006; Tras, 2019).

The MMORPG environment shapes these relationships but restructures them by allowing the participants to redefine the boundaries of their material world roles (Yee, 2006; Tras, 2019). MMORPG environments are not only places where new relationships are engineered, but in fact are windows into existing relationships as well as catalysts for the restructuring of roles in those relationships (Yee, 2006; Tras, 2019).

The studies above focus on several aspects of players of MMORPGs. Though it's mentioned that the gamers lives are affected by the amount of time they invest in playing these games, an in-depth look at what is occurring within their family structure is not detailed. These studies focus on the gaming and addiction to either the internet or the game itself but not how the individual's environment is affected or a contributing component to their excessive game playing.

### **Links Between MMORPGs and Attachment style**

The importance of the family system and parent-child attachment in the determination of children's developmental trajectories is well established; a child's emotional and behavioral adjustment are shaped by various system-wide processes in how the family intermingles (Demby et al., 2015).

The family systems theory involves a view of relationship patterns at individual, dyadic, and systemic levels (Demby et al., 2015). Families have a fundamental structure that organizes and guides the ways in which family members interact; comprised of smaller subsystems that are delineated by the boundaries and rules connected to them (Minuchin, 1974; Demby et al., 2015). Three primary subsystems are the marital, parental, and sibling which are affected by one another. Different patterns of relating among family can influence how they respond to developmental and situational events that thrust families into crisis. Interactions within the family system plays a substantial role in children's socialization and biopsychosocial outcomes (Demby et al., 2015).

The connection between the parent–child dyad, as a small-scale version of the larger family system, play a significant part in child development. Research has continually demonstrated that consistency and sensitivity on the part of caregivers lead to the development of secure attachment organization (Demby et al., 2015). Similarities between the concepts of attachment theory and family systems has been recently explored. Importance of mutuality, caregiving, communication, and the idea of bidirectional influence are among the shared concepts in family systems and attachment traditions (Demby et al., 2015).

Numerous studies involving children and adults have produced empirical evidence connecting attachment strategies to family patterns. One study found that higher quality interactions in mother–child dyads as well as the whole family system were related to secure attachment representations, and family interactions influenced children’s attachment beyond the effects of the dyadic relationship (Dubois-Comtois & Moss, 2008; Demby et al., 2015). One study of young adults found that secure attachment style was negatively associated to family conflict avoidance, avoidant attachment style was positively related to family disengagement and family conflict avoidance, and anxious/ambivalent attachment style was connected to cross-generational family triads (Demby et al., 2015). Hazan and Shaver conceptualized romantic love as an attachment process and created a self-report to classify adults into three categories that correspond to the three attachment styles of childhood (Bartholomew & Horowitz, 1991; Meredith et al., 2016). Results of their study showed that compared with the secure group, the two



insecure groups reported more negative experiences and beliefs about love, had a history of shorter romantic relationships, and provided less favorable descriptions of their childhood relationships with parents (Bartholomew & Horowitz, 1991; Meredith et al., 2016).

Adult Attachment style as it relates to gaming time. Individuals with a secure attachment style have strong real-world relationships and are less likely to spend time gaming or balance spouse, family, work, school, and gaming. These individuals may also be sociable, confident and focus less on impressing others.

Those who present a preoccupied attachment style strive for acceptance of valued others and are more likely to spend more time gaming. These individuals are sociable but lack confidence and will work hard to maintain their standing within their gaming community. Individuals who identify in the fearful attachment style seek to protect themselves against anticipated rejection by others and are less likely to spend more time gaming or are likely to partake in parts of the game that can be done solo. Those in the dismissing attachment style protect themselves by avoiding close relationships and keeping to themselves, therefore, less likely to spend more time gaming. Individuals who would play are likely to be confident in their game play but will not form close bonds with other players.

### ***Marital Quality***

Marital Quality can be defined as a general feeling of marital satisfaction or the

experienced evaluation of the marital relationship (Schaap et al., 1988; Taggart et al., 2019). People who were single or divorced were typically not as happy as people who were married and people who are married tend to be healthier than people who are single (Hill, 2010; Sakmar, 2015). Hill, (2010); Sakmar, (2015) state “limitations of the study relate to homogeneity of the sample which limits the generalizability of the results” (pg 67) and suggests “overlap between physical affection and love factors could be more closely examined” (pg 67). With the popularity of MMORPGs, the frequency of time playing these games and an individual’s attachment style can marital conflict, neglect or lack of affection and intimacy surface?

A positive relationship was found between married couples who participate in joint leisure activities and marital satisfaction, so if a couple is experiencing conflict in their marriage, consequently there would be less desire to participate in joint activities, which may prove to increase the level of conflict in the relationship (Ahlstrom, 2009; Richter, 2014). Marital satisfaction is lower for married couples with high concentrations of individual leisure activities which require no communication and may discourage interaction (Ahlstrom, 2009; Richter, 2014). Research has found that married couples in which one is an evening person and the other is a morning person reported significantly more marital conflict, less time spent in serious conversation, less time spent in shared activities and less frequent sexual intercourse compared to married couples where both are either evening or morning people (Ahlstrom, 2009; Richter, 2014).

Another study found that one in five participants believed that playing MMORPGs had a negative effect on their relationships with people with whom they did not play (Cole & Griffiths, 2007; Richter, 2014). The researchers also found that participants claimed they would discuss sensitive issues, such as family problems, with their MMORPG friends, that they would not relate to their real-life friends (Cole & Griffiths, 2007; Richter, 2014). According to Hill (2009); Sakmar (2015) physical affection behaviors were significantly correlated to romantic relationship satisfaction (pg. 68). Married gamers could potentially encounter a discrepancy with their spouses if the frequency of affection or types of affection are not in sync with their spouse.

### **Summary and Conclusions**

MMORPG players dedicate countless hours to their games. MMORPGs are emerging in the computer game industry from the start of the 90s with MUDs and CRPGs. These games bring individuals who enjoy role-playing and individuals who enjoy socializing into the same virtual environment. Players can create their character to their liking, choose what profession they would like and work towards goals, rewards, and achievements.

Despite the number of hours players devote to their games previous research has concluded that individuals who take part in MMORPGs are not addicted to the internet or online gaming. Individuals who spend countless hours playing online games are not classified as having PIU. Studies on internet use and social interaction look at psychosocial health and the impact it has on the individual. The appeal of CMC is users

have anonymity and the flexibility to present themselves how they want others to perceive them. Users can explore different kinds of relationships in MMORPGs. Users can make friends or find romantic interest. Many MMORPG users participate in the environment with a romantic partner or family members. The above-mentioned studies have looked at gamers' life and time invested in playing MMORPGs, attachment theory, the history of MMORPGs, findings in research on MMORPGs, but no links between adult attachment style and MMORPGs, and marital quality (Achterbosch et al., 2008; Ahlstrom, 2009; Bartholomew & Horowitz, 1991; Caplan, 2003; Demby et al., 2015; Dubois-Comtois & Moss, 2008; Griffiths et al., 2004; Hill, 2010; Kiraly et al., 2014; Kiraly et al., 2017; Ko et al., 2005; Kuss, 2013; Mannikko, 2017; Meredith et al., 2016; Mihara & Higuchi, 2017; Minuchin, 1974; Peng & Liu, 2010; Pontes et al., 2015; Richter, 2014; Sakmar, 2015; Schaap et al., 1988; Taggart et al., 2019; Tras, 2019; Yee, 2006).

The importance of the family system between parent and child, husband and wife, partner and partner, and sibling to sibling as well as individuals outside the home play a role in attachment, and how the family intermingles with one another. This study sought to determine whether attachment style impacts the frequency and intensity of game use and whether gaming is harmful to a gamers' marital relationship.

Several studies have been conducted outside of the United States with female participants outnumbered by male participants. These studies have focused on aspects of the MMORPG player with mention of how their lives are affected without an in-depth

look at the player's family structure and the impact on marital quality. Attention is given to gaming, addiction to the internet or the game but not the player's romantic relationships (Ahlstrom, 2009; Bartholomew & Horowitz, 1991; Caplan, 2003; Demby et al., 2015; Dubois-Comtois & Moss, 2008; Griffiths et al., 2004; Hill, 2010; Kiraly et al., 2014; Kiraly et al., 2017; Ko et al., 2005; Kuss, 2013; Meredith et al., 2016; Mihara & Higuchi, 2017; Minuchin, 1974; Peng & Liu, 2010; Pontes et al., 2015; Richter, 2014; Sakmar, 2015; Schaap et al., 1988; Taggart et al., 2019).

The gap in the literature that I addressed focused on how the individuals' adult attachment style or family relationships were affected or a contributing component to their excessive game playing. In this study I added adult attachment style as a moderator to evaluate the effect of this variable that was not included in other studies (Brack et al., 2013; Ingram, 2016; Griffiths & Davies, 2004; Kiraly et al, 2014; Kiraly et al., 2017; Mozelius et al., 2016; Ng & Wiemer-Hastins, 2005 and Peters & Malesky, 2008). I sought to bring awareness of the effect MMORPGs have on players and their family life within the United States. In this study I sought to bring awareness to the field of Psychology as MMORPGs continue to grow in popularity counseling professionals will begin to encounter these types of players. Professionals will need an understanding of MMORPGs and the components that make this type of game popular.

In chapter 3 I focused on the methodology of this study. This included the design of the research and rationale. I also explained the population and how sampling was done along with procedures and data collection methods.



### Chapter 3: Research Method

The purpose of the current quantitative mediation analysis study was twofold. First, I wanted to determine if there is an association between adult attachment style and time spent playing MMORPGs. Second, I sought to understand if time spent playing MMORPGs predicts four indicators of marital quality. In chapter I 3 examined a number of components of the research design in detail, including the research design and rationale, the methodology, threats to validity, ethical procedures and finally the summary of the chapter.

#### **Research Design and Rationale**

##### **Variables**

There were three variables in this study, including one dependent variable operationalized as conflict, neglect, affection, or intimacy, one independent variable, and one mediator variable. There were four research questions. For each of the four research questions, the mediator variable was time spent playing MMORPGs while the independent variable was adult attachment style. Time spent playing MMORPGs, the mediator variable, is a continuous variable where time is measured in minutes per week. Adult attachment style was the ordinal independent variable, where the four types of attachments, including secure, fearful, preoccupied, or dismissing, are ranked from highest to lowest on a 7-point Likert scale. Like all regression models, the variables can be either continuous or dichotomous (Field, 2018; Hayes, 2017; Tabachnick & Fidell, 2018) to higher ranks mean the attachment style is more prevalent, while lower scores

indicate that the attachment style is less prevalent. The attachment styles are not mutually exclusive.

For the first research question, the dependent variable was marital quality operationalized as conflict, neglect, affection, or intimacy. For the second research question, the dependent variable was time spent playing MMORPGs. The third research question contained the dependent variable marital quality operationalized as conflict, neglect, affection, or intimacy, and the fourth research question contained the dependent variable marital quality operationalized as conflict, neglect, affection, or intimacy.

I used the four research questions in this study to determine if there were associations between adult attachment style and four indicators of marital quality and whether the links of those variables were mediated by time spent playing MMORPGs. As a result, the quantitative method is most appropriate for this study, given that numbers and statistical analyses were used to evaluate statistical differences and relationships (Leedy & Ormrod, 2018; Pallant, 2020). The quantitative method I used applied statistical precision to determine with 95% confidence that there was or was not a significant difference between groups, or a relationship between variables. I did not manipulate the variables in this study. Marital relationships, time spent playing MMORPGs, and adult attachment style are naturally occurring events. As a result, the correlational methodology was appropriate for this study as I examined the linear relationship between variables, where there is no manipulation. Griffiths et al. (2004); Kiraly et al. (2014); Ko et al. (2005) and Shin et al. (2011) used quantitative and



correlational designs in their studies, therefore, these designs were appropriate for this study.

The qualitative research method, conversely, is used for exploratory research where the data collection method is either open ended survey questions, or archival data (Field, 2018; Pallant, 2020). Additionally, qualitative analyses are not meant to evaluate quantitative data (Creswell, 2018; Leedy & Ormrod, 2018).

## **Methodology**

### **Population**

According to Balalon (2021) the population of MMORPG players in the United States is roughly seven million. Therefore, the target population, the entire population from which the sample was recruited, was defined as MMORPG players in the United States. The accessible population were MMORPG players who use Amazon's MTurk. Inclusion criteria included men and women 18 years of age and older who play MMORPG games at least 30 minutes of MMORPG games per month for the past 6 months. Ideally, the sample of this study would include MMORPG gamers along the continuum of light to heavy users. However, I did not exclude participants based on the amount of game play. Additionally, to qualify for the study, respondents had to be married at least 12 months, as I designed this study to evaluate the relationship between attachment style, gaming frequency and duration and marital quality. Heterosexual marital couples were included in the study. The study was limited to English speakers who lived in the United States.

## **Sampling and Sampling Procedures**

I used a convenience sampling approach to recruit participants from Amazon's MTurk on the internet (See Appendix A for the Invitation to Participate in the Study flyer). Interested participants, first read, and clicked the "I agree" button on the informed consent page. Participants who agreed to the informed consent were directed to screener questions to see if they met inclusion criteria: heterosexual marital relationship for at least 12 months and play at least 30 minutes of MMORPGs per month. They answered questions from the link to verify they met these requirements. The specific screener questions respondents answered were as follows: First, are you married? How long have you been married? Is your marital relationship, heterosexual? How many minutes per month do you play MMORPGs? Do you live in the United States? Is your primary language English? If they met requirements, respondents were directed to the actual questionnaire, the respondents who did not meet study requirements, received a message that states, "Thank you for your interest in this study."

I limited the respondents to English speakers who live inside the United States. I obtained the sample from MTurk a crowdsourcing marketplace by Amazon where individuals and businesses look for workers to perform virtual assignments such as surveys. (See Appendix B for a specific list of the communities that will be used to recruit study participants). I provided the participants with a monetary compensation of \$.05 for completing the screener questions and if eligible for the study, a bonus of \$.20 for completing the online survey.

I built the survey instrument in SurveyMonkey.com survey tool. The survey instrument consisted of demographic questions, adult attachment style relationship questionnaire (RQ), time spent playing MMORPG games, and four indicators of marital quality, the Revised Dyadic Adjustment Scale (RDAS). According to Leddy and Omrod (2013) separate instruments can be combined into one survey, therefore the instruments used for this study were combined into one survey, as this is customary with survey research.

After study participants electronically signed the informed consent document, they completed a series of screener questions to determine if they qualify for the study. Once I collected data, participants were given a unique ID number to be tracked during the process of data collection and entry. The desired sample size is 204 participants. The information I collected was prepared for data analysis. This preparation included entering the data into SPSS v26 and checking the data for error and missing values. According to Field (2018); Pallant (2020) data preparation is considered phase one of the data analysis process, therefore, I provided a detailed description of the data preparation process in the data analysis section.

### **Power Analysis**

I conducted a power analysis to determine the minimum sample needed to have a power of .80. A power of .80 means that there is an 80% chance of detecting a significant effect if one exists (Creswell, 2018; Field, 2018). According to Erdfelder et al. (1996) a power analysis using G\*Power needs to be conducted to determine the minimum sample

size for the multiple regression with two predictor variables. I used a medium effect size,  $f = .15$ , along with an error probability of .05, and two predictor variables, with three paths. According to Cohen (1988); Field (2018) and Pallant (2020) these assumptions are standard for the social sciences. Based on the power analysis results, I needed a sample size of 204 participants for this study.

### **Procedures for Recruitment, Participation, and Data Collection (Primary Data)**

After I created the survey, the specific steps for recruitment were as follows:

Step 1: A human intelligence task (HIT) was created on Amazon's MTurk where I provided an assignment describing the study and requesting the participation of gamers. They clicked a link to be taken to the online informed consent form.

Step 2: Once the gamers reached the informed consent page, it contained information about the study and the participants' rights. This included information about the anonymity of the participants, their right to discontinue the study at any time and contact information to ask questions or file complaints. If the respondent chose to continue with the study, they clicked an "I Agree" button at the bottom of the informed consent form. This took the participant to the screener section of the questionnaire.

Step 3: The participants answered the screener questions successfully to move forward to the survey. The specific screener questions respondents answered were as follows: First, are you married? How long have you been married? Is your marital relationship, heterosexual, homosexual, or other? How many minutes per week do you play MMORPGs? Do you live in the United States? Is your primary language English? If

the respondents did not complete the screener questions successfully, they were thanked for their interest in the study and sent to the termination page.

Step 4: The demographic questions consisted of gender, age, and relationship status.

Step 5: After the demographic questions, respondents completed the remaining survey instrument, which included the RQ, and RDAS.

After they completed the entire survey, respondents were taken to the thank you page where they were thanked for their participation and provided a link to the researchers Facebook page to see the results of the study. No follow-ups to the survey were made.

### **Instrumentation and Operationalization of Constructs**

Two instruments were used in this study. They were the RDAS and the RQ. Both instruments were administered online and combined took the respondents 20 minutes (an estimated 10 minutes for each instrument). A detailed description of these instruments follows below, including validity and reliability details.

I used the RDAS in this study to assess marital quality. Busby et al. (1995); Cameron et al. (2020) created the RDAS to assess dyadic adjustment in terms of three separate factors of consensus, cohesion, and satisfaction. While the RDAS was not at first intended to be a global measure of marital satisfaction alone, it has been extensively used as such and was tested and found to be on par with the Satisfaction with Married Life (SWML), a scale designed specifically to measure marital satisfaction (Ward, et al.,

2009; Townsend et al., 2017). According to Busby et al. (1995); Cameron et al. (2020) with the RDAS marital satisfaction or distress on a range of domains can be demonstrated, therefore, I selected the RDAS for this ability. The RDAS consists of a varying point scale with degree of agreement/disagreement and level of occurrence, where all questions were measured on an interval scale. According to Busby et al (1995) and Cameron et al. (2020), “the reliability coefficients are within acceptable ranges and demonstrate that the RDAS has internal consistency and split-half reliability” (p. 300) with a Cronbach’s Alpha of 0.90 (Ward et al., 2009; Townsend et al., 2017).

The RQ is a 4-item interval scaled questionnaire designed to measure adult attachment style. The RQ extends the original three-category measure developed by Hazan and Shaver in 1987 by rewording the descriptions of each style of attachment and adding a fourth style; dismissing-avoidant (Bartholomew & Horowitz, 1991; Meredith et al., 2016), which was discussed in Chapter 2. The RQ consists of four short paragraphs describing the four attachment styles: secure, anxious-preoccupied, dismissing-avoidant and fearful-avoidant (Bartholomew & Horowitz, 1991; Meredith et al., 2016). Each respondent is asked to make ratings on a 7-point scale of the degree to which they resemble each of the four styles (Bartholomew & Horowitz, 1991; Meredith et al., 2016). The 7-point scale ranges from 1 (*disagree strongly*) to 7 (*agree strongly*).

The reliability of the RQ was tested by Scharfe and Bartholomew who administered the questionnaire twice with an 8-month interval between (Adam, 2017). The majority (75% of females and 80% of males) endorsed the same attachment style

(Adam, 2017). The validity of the RQ was established through a comparison of the respondents' chosen attachment styles with results from the Adult Attachment Interview (Adam, 2017). Match percentages consisted of 86% (secure), 94% (fearful), 100% (preoccupied and dismissing).

### **Data Analysis Plan**

The data analysis process consisted of three phases, the data preparation phase, the preliminary analysis phase, and the primary analysis phase. SPSS version 26 was used to analyze the data. After the data collection was finalized, the data were imported into SPSS version 26 and the data preparation phase began. During this phase, the data were first checked for errors and missing values using the frequencies procedure. If missing values or data errors were found, the original data source was checked to correct the errors and missing values.

In the preliminary analysis phase, which is the second phase of the data analysis process, the reliability of the RDAS was assessed. If the alpha coefficient is .7 or higher, then the scale met the minimum standards for acceptable reliability (Field, 2018; Pallant, 2020). The tests of the parametric assumptions of the statistical tests were also conducted during this phase. Specifically, research questions one through four requires that a multiple regression analysis be performed. The assumptions of the multiple regression include linearity of and multicollinearity. The assumption of linearity assumes that the plots of the standardized residuals and the standardized predicted values do not form a curvilinear pattern (Field, 2018; Pallant, 2020). If the data is non-linear, then an

antilogarithmic transformation will be applied to the data to address non-linearity (Field, 2018; Pallant, 2020). Multicollinearity assumes that variable inflation factor scores are below 10 (Field, 2018; Pallant, 2020). If multicollinearity is found, then one of the variables that are highly correlated will be kept in the model and the others will be removed. There was also an assumption of normality. The central limit theorem states that the distribution of sample means will be relatively normal when samples sizes are 30 and above (Field, 2018; Tabachnick & Fidell, 2018). Therefore, given the expected sample size of 204 respondents, there was no violation in this assumption.

The primary analysis phase consists of the statistical analyses used to answer the four research questions:

RQ1: Does adult attachment style (independent variable) correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy?

$H_01$ : Adult attachment style (independent variable) does not correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

$H_11$ : Adult attachment style (independent variable) correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

RQ2: Does adult attachment style (independent variable) correlate with time spent playing MMORPGs (mediator)?

$H_02$ : Adult attachment style (independent variable) does not correlate with time spent playing MMORPGs (mediator).



*H*<sub>12</sub>: Adult attachment style (independent variable) correlates with time spent playing MMORPGs (mediator).

RQ3: Does time spent playing MMORPGs (mediator) correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy?

*H*<sub>03</sub>: Time spent playing MMORPGs does not correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

*H*<sub>13</sub>: Time spent playing MMORPGs correlates with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

RQ4: Does time spent playing MMORPGs mediate the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, or intimacy?

*H*<sub>04</sub>: Time spent playing MMORPGs does not mediate the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, or intimacy.

*H*<sub>14</sub>: Time spent playing MMORPGs mediates the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, or intimacy.

I used the multiple regression using the Hayes process macro in SPSS to answer the four research questions. Each of the four variables were entered separately with the ratings serving as the score for each of the four adult attachment styles. The Hayes process macro is an observed variable OLS and logistic regression path analysis

modeling tool. It is widely used through the social, business, and health sciences for estimating direct and indirect effects in single and multiple mediator models (parallel and serial), two- and three-way interactions in moderation models along with simple slopes and regions of significance for probing interactions, and conditional indirect effects in moderated mediation models with a single or multiple mediators or moderators. (Field, 2018; Pallant, 2020). Full mediation occurs when the independent variable (adult attachment) is no longer significantly correlated with marital satisfaction, after the mediator (time spent using MMORPG games) is introduced (Field, 2018; Pallant, 2020).

### **Threats to Validity**

In this section I reviewed the threats to external, internal and construct validity. External validity relates to how well the results of your study are generalizable to the population from which the sample was constructed (Cresswell, 2018; Leedy & Ormrod, 2018). Internal validity relates to how well the independent variable affects an outcome, and not some other factors (Cresswell, 2018; Leedy & Ormrod, 2018). Construct validity evaluates whether the instruments are measuring what it claims and whether the definition of the variable are accurate. Below are possible threats to external, internal, and construct validity.

#### **External Validity**

Regarding external validity, selection bias may adversely affect the projectability of the results to the larger population because the sample may not be similar to the population at large. This could be ameliorated by using a random sampling approach, but

a convenience sampling approach was used for this study. Power analysis was conducted using a medium effect size in the sample size calculation. If the effect of size of the statistical analyses are actually small, the likelihood of detecting a statistical effect is low. Therefore, the results may not be projectable to the broader population.

### **Internal Validity**

Selection bias can also affect internal validity. Since the respondents are volunteering from the internet, it may be that people who are connected to gaming communities online are predisposed to have more problematic social and family relationships. So, this may explain the effect of the dependent variable as opposed to the time spent playing MMORPG games. To address these sample selection issues, the researcher provided limiting statements on the projectability of results. There are three ways that sample selection bias is being addressed from an internal validity standpoint. First, the sample size is large enough to have 80% power. The second way to address internal validity is through the central limit theorem which states that the distribution of sample means will be normal, even if the sample data were not normal (Creswell, 2018; Leedy & Ormrod, 2018). Third, the general linear models (ANOVA and regression) are robust tests (Creswell, 2018; Leedy & Ormrod, 2018; Tabachnick & Fidell, 2012). Meaning that the statistical test will yield relatively accurate p values (within  $\pm .02$  of the true p value), even with extreme violation of normality, that may be due to biased sampling.

There are biases that can affect internal validity. With self-report bias, survey participants may respond in ways that are more positive than honest, or they may exhibit selective recall. Additionally, socially desirable responses may also adversely affect internal validity of this study. To address self-report bias, respondents were told that their responses will be anonymous, so their survey answers cannot be connected to any single respondent.

### **Construct Validity**

Finally, statistical conclusion may affect construct validity. Statistical conclusions may be inaccurate due to low statistical power or violations in statistical assumptions (Field, 2018; Pallant, 2020). This will be addressed by ensuring that the sample size targets are met, so that the statistical power is at least .8. Construct validity of the survey instruments was established by only using surveys with established validity and reliability established from previous research studies on the topic.

### **Ethical Procedures**

The researcher was guided by the ethical standards indicated by Walden University's IRB. Any time human subjects are involved in research, researchers must gain informed consent (American Psychological Association, 2010). The Informed Consent Form will be posted on the first page of the survey and agreed to before moving forward. In addition, the welfare of the persons involved should remain the highest priority of the researcher throughout the study (Lolis & Goldberg, 2015). This study recruited respondents from the internet and will collect no personally identifiable

information (anonymous data). So, confidentiality is assured. Ethical considerations will also apply to statistical analysis and reporting. In quantitative research, ethical standards prevent against such things as the fabrication or falsifying of data and therefore, promote the pursuit of knowledge and truth which is the primary goal of research.

The data file I used in this study will remain on the researcher's computers during the analysis period. After the completion of the analysis of the data, I will keep the data for five years and then it will be destroyed. I will store the data on a secured password protected CD-ROMs disk, that only the researcher has access to.

### **Summary**

In the current study my purpose is to examine whether adult attachment style impacts marital quality when mediated by time spent playing MMORPGs. In chapter three I discussed several components of the research study in detail: including the research design and rationale, the methodology, threats to validity and ethical procedures. For this study the population was male and female players in the United States over the age of 18 years of age. They were given a survey. In conducting a power analysis, I determined that this study needed a sample size of 204 participants. I obtained the sample through Amazon's MTurk. The instruments for this study include the RDAS and RQ.

In chapter 4 I reintroduced the purpose of the study, research questions and hypothesis. I discuss the data collection timeframe along with recruitment response rates, discrepancies and characteristics of the sample. In chapter 4 I also presented the study results.

## Chapter 4: Results

The purpose of this quantitative predictive study was to explore if time spent playing MMORPGs predicts marital quality when mediated by adult attachment style. In this study I attempted to deliver a clearer image about MMORPGs effect on adults and marital relationships. To date, it is not known if, or to what degree, time spent playing MMORPGs and adult attachment style affect marital quality. In the literature review I presented studies that have looked at gamers' life and the effect of the amount of time invested in playing MMORPGs. The research questions being addressed in this study and the hypotheses were as follows:

RQ1: Does adult attachment style (independent variable) correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy?

$H_{01}$ : Adult attachment style (independent variable) does not correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

$H_{11}$ : Adult attachment style (independent variable) correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

RQ2: Does adult attachment style (independent variable) correlate with time spent playing MMORPGs (mediator)?

$H_{02}$ : Adult attachment style (independent variable) does not correlate with time spent playing MMORPGs (mediator).

$H_{12}$ : Adult attachment style (independent variable) correlates with time spent playing MMORPGs (mediator).

RQ3: Does time spent playing MMORPGs (mediator) correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy?

*H<sub>03</sub>*: Time spent playing MMORPGs does not correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

*H<sub>13</sub>*: Time spent playing MMORPGs correlates with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

RQ4: Does time spent playing MMORPGs mediate the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, or intimacy?

*H<sub>04</sub>*: Time spent playing MMORPGs does not mediate the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, or intimacy.

*H<sub>14</sub>*: Time spent playing MMORPGs mediates the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, or intimacy.

In chapter 4 I will address data collection, the results of this study, and a summary of the chapter.

### **Data Collection**

The data collection period (July 16, 2021, through August 2, 2021) took approximately 2.5 weeks. During the first week of data collection, after posting notices

on social media (Facebook, SecondLife, and Discord), there were only 20 completed surveys. However, after the first week, with the use of Amazon's MTurk, over 200 completed surveys were collected. I used a convenience sampling approach, as planned. There were 240 completed surveys out of 411 surveys (58% response rate) that were started. The 240 respondents reflected those who qualified and completed all the questions.

As stated previously, there were a total of 240 respondents who completed the survey. There were 104 (43.3%) women and 136 (56.7%) men. A majority of respondents were between the ages of 25 and 34 years of age and were married between 2 and 4 years (59.2%). See Table 1.



**Table 1***Descriptive Statistics of Demographic Data*

	N	%
Gender		
Male	136	56.7%
Female	104	43.3%
Age		
18-24	22	9.2%
25-34	133	55.4%
35-44	55	22.9%
45-54	21	8.8%
55-64	8	3.3%
65+	1	.4%
Years married		
1-2 years	65	27.1%
3-4 years	77	32.1%
5-9 years	47	19.6%
10 years or more	51	21.3%
Time spent playing MMORPG games		
30-59 minutes per month	87	36.3%
1-9 hours per month	78	32.5%
10-19 hours per month	41	17.1%
20 hours or more per month	34	14.2%
30-59 minutes per month	87	36.3%
1-9 hours per month	78	32.5%

The total population consists of between seven million MMORPG players in the United States (Babalon, 2021). The current sample had slightly higher percentages of females than seen in other studies (Griffiths et al, 2004; Kiraly et al, 2014; Kiraly et al, 2017; Kuss 2013; Peng and Liu, 2010 and Peters & Malesky, 2008). However, the age group distribution was relatively similar to other previous studies discussed in the

literature review (Entertainment Software Rating Board, 2010; Forrest, 2017). Therefore, the sample was reasonably representative of the larger population and I expect to have good external validity.

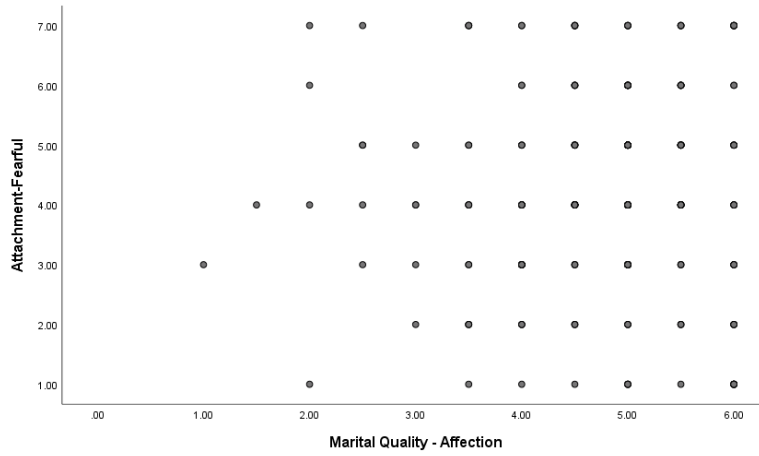
## **Results**

### **Test of Statistical Assumptions**

For RQ1, a Pearson correlation analysis was conducted. There are three assumptions of the Pearson correlation. First, the variables used in the analysis must be continuous. All the marital quality variables, including affection, neglect, conflict, and intimacy, were all continuous. Additionally, all the adult attachment style variables were also continuous, including fearful, secure, preoccupied, and dismissing. Therefore, the assumption of continuous variables was met. The second assumption of the Pearson correlation is that the relationship between the variables should be linear. Scatterplots revealed that the relationship between variables were linear. See Figures 1 thru 16.

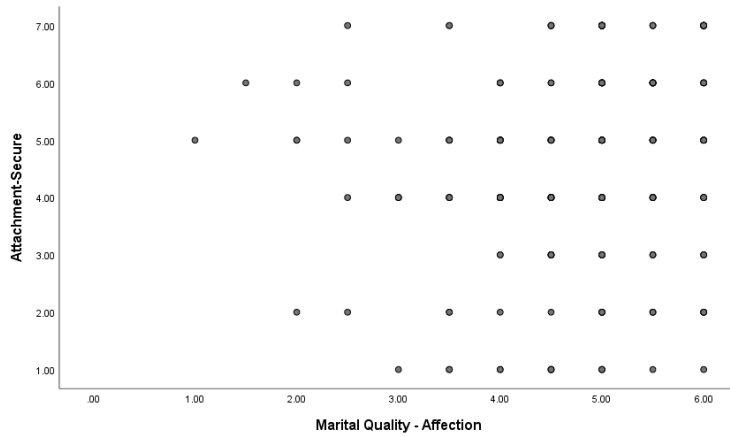
**Figure 1**

*Scatterplot of Marital Quality – Affection and Fearful Attachment Style*



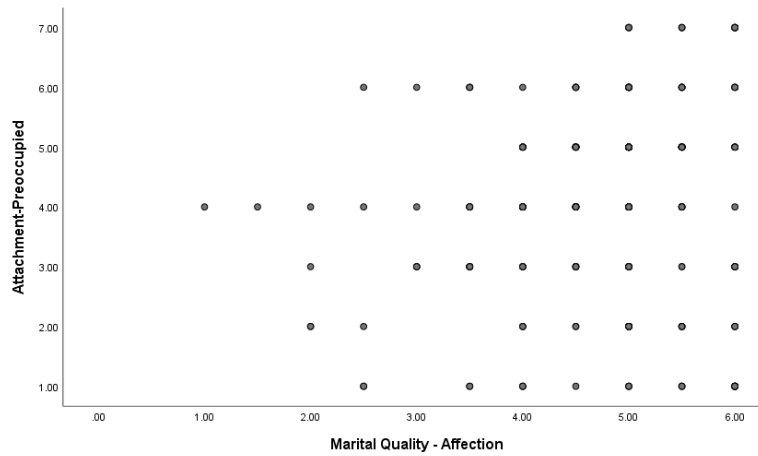
**Figure 2**

*Scatterplot of Marital Quality – Affection and Secure Attachment Style*

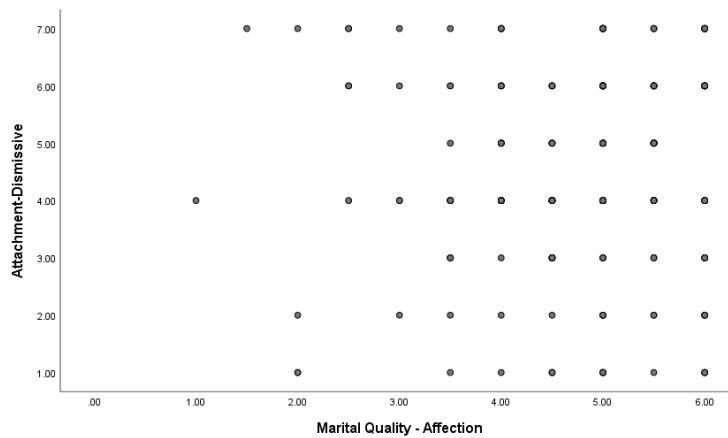


**Figure 3**

*Scatterplot of Marital Quality – Affection and Preoccupied Attachment Style*

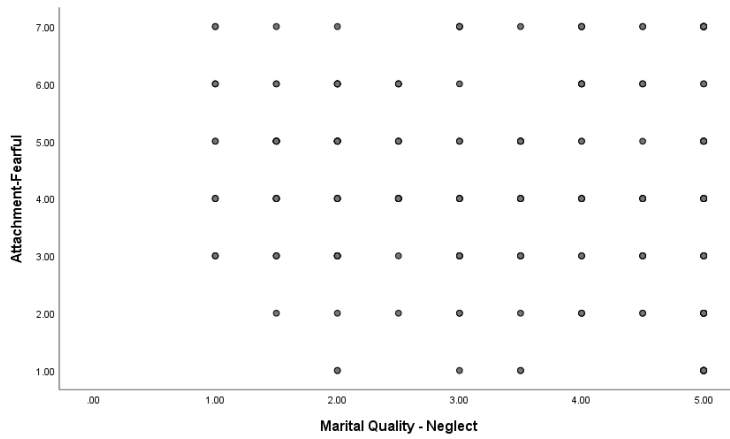
**Figure 4**

*Scatterplot of Marital Quality – Affection and Dissociative Attachment Style*

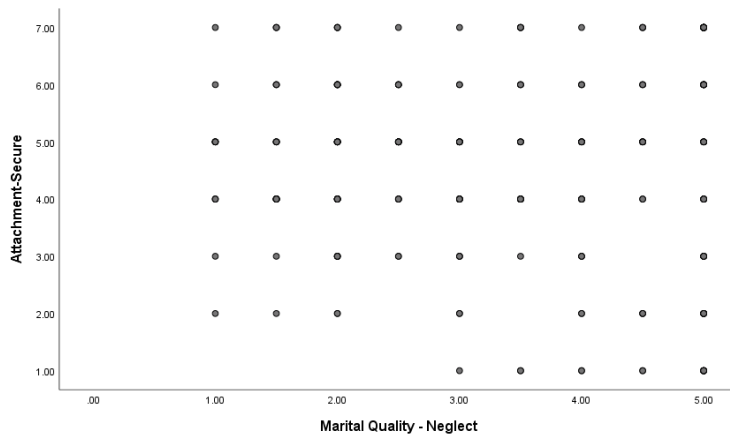


**Figure 5**

*Scatterplot of Marital Quality – Neglect and Fearful Attachment Style*

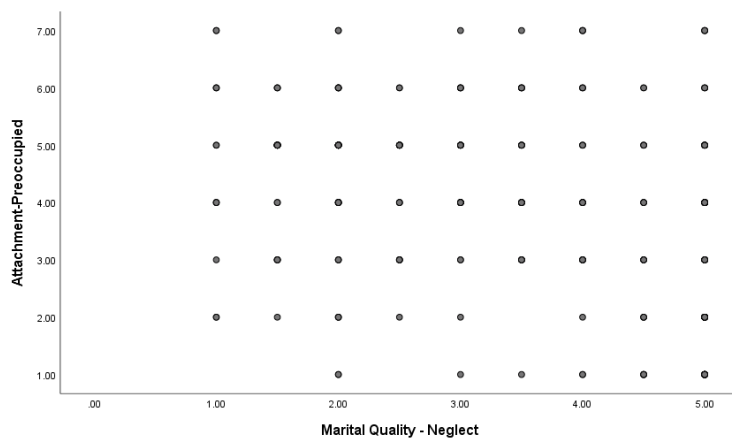
**Figure 6**

*Scatterplot of Marital Quality – Neglect and Secure Attachment Style*

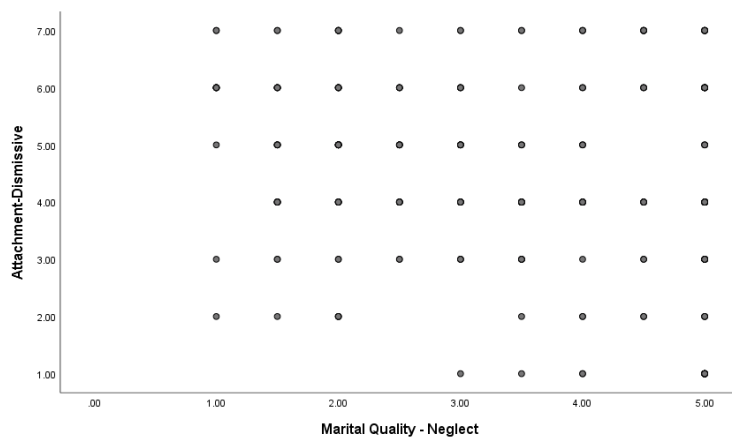


**Figure 7**

*Scatterplot of Marital Quality – Neglect and Preoccupied Attachment Style*

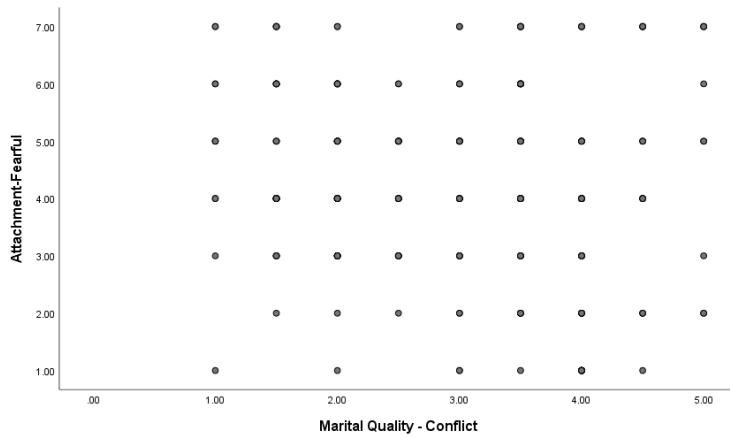
**Figure 8**

*Scatterplot of Marital Quality – Neglect and Dismissive Attachment Style*

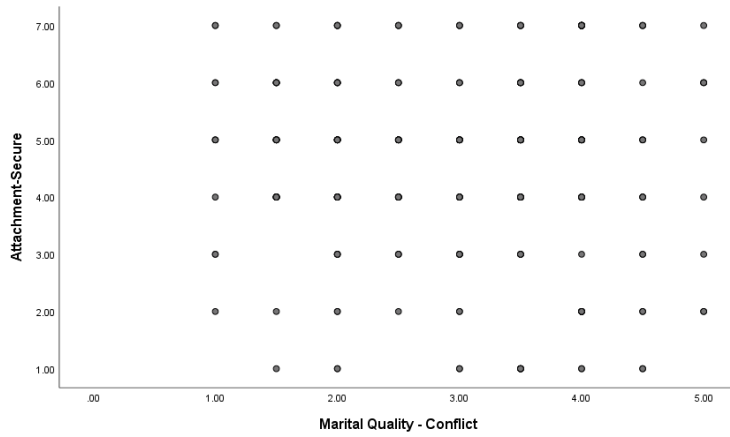


**Figure 9**

*Scatterplot of Marital Quality – Conflict and Fearful Attachment Style*

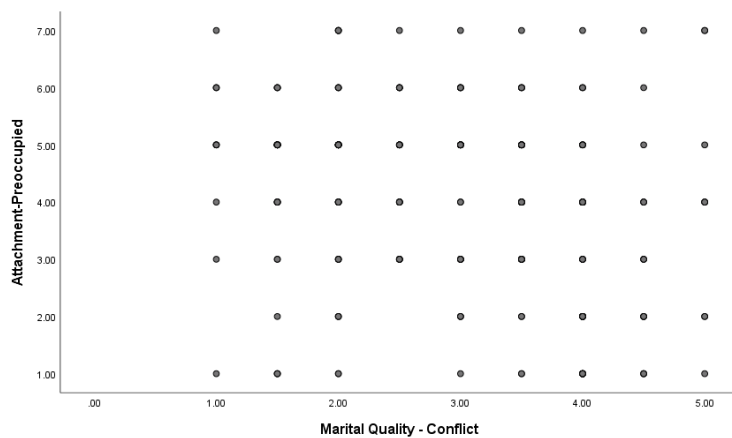
**Figure 10**

*Scatterplot of Marital Quality – Conflict and Secure Attachment Style*

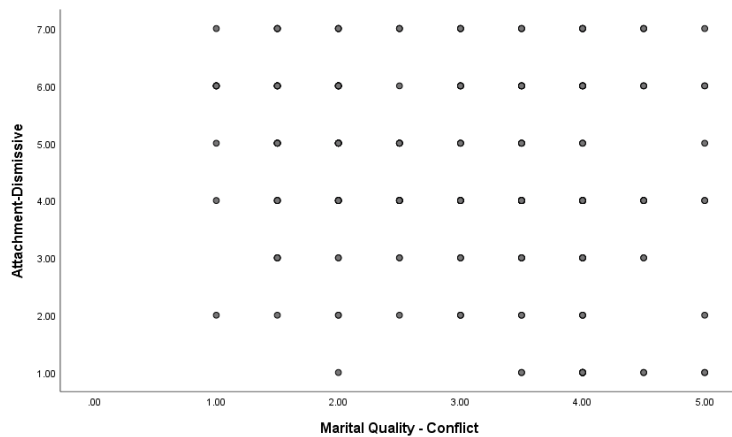


**Figure 11**

*Scatterplot of Marital Quality – Conflict and Preoccupied Attachment Style*

**Figure 12**

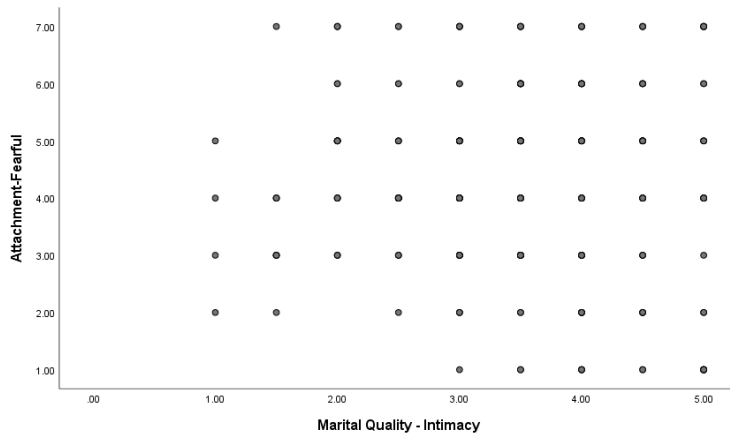
*Scatterplot of Marital Quality – Conflict and Dismissive Attachment Style*





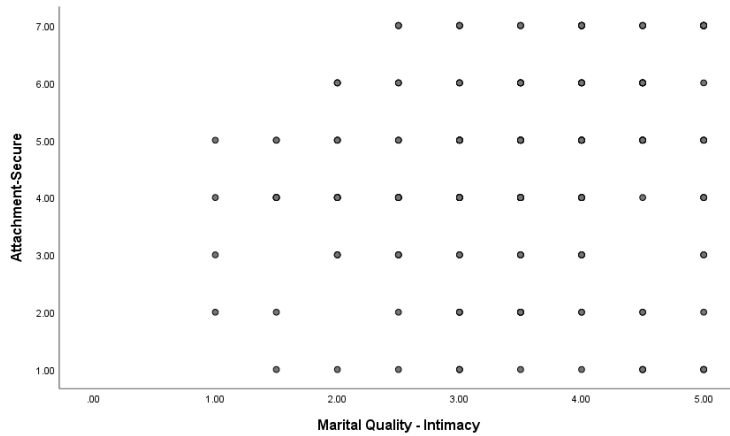
**Figure 13**

*Scatterplot of Marital Quality – Intimacy and Fearful Attachment Style*



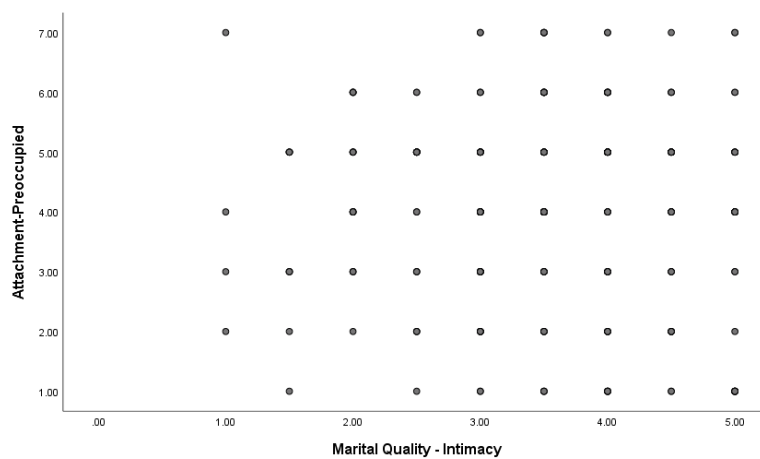
**Figure 14**

*Scatterplot of Marital Quality – Intimacy and Secure Attachment Style*

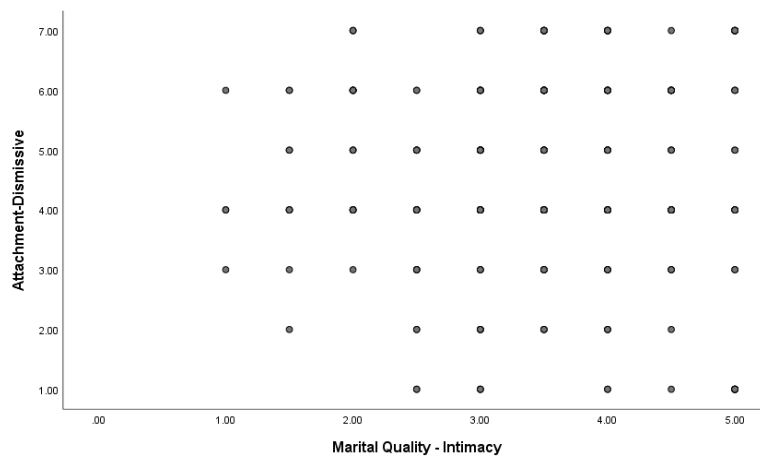


**Figure 15**

*Scatterplot of Marital Quality – Intimacy and Preoccupied Attachment Style*

**Figure 16**

*Scatterplot of Marital Quality – Intimacy and Dismissive Attachment Style*



For RQ4, multiple linear regressions were conducted. The assumptions of the multiple linear regression are fourfold. First, the predictor variables can be linear or categorical. Second, the outcome variable must be continuous. Third, the relationship between the predictor variables and the outcome variables must be linear. Fourth, there should be no high multicollinearity, meaning the variable inflation factor (VIF) should be less than 10. All the predictor variables of adult attachment style and all the marital quality variables were continuous. So, assumptions one and two were met. The previous scatterplots support the linear relationship between the predictor variables, adult attachment styles, and the outcome variable, marital quality. Therefore, the third assumption was met. Based on the results of the collinearity diagnostics, there was no violation of high multicollinearity, as the VIF factors were all below 10. See Table 2.

**Table 2***Variable Inflation Factor Valeus for Multiple Linear Regression Analysis*

Predictor Variables	Outcome Variable	VIF
Time spent playing MMORPGS Attachment - fearful	Marital Quality - Affection	1.00
Time spent playing MMORPGS Attachment - secure	Marital Quality - Affection	1.01
Time spent playing MMORPGS Attachment - preoccupied	Marital Quality - Affection	1.02
Time spent playing MMORPGS Attachment - dismissing	Marital Quality - Affection	1.00
Time spent playing MMORPGS Attachment - fearful	Marital Quality - Neglect	1.00
Time spent gaming Attachment - secure	Marital Quality - Neglect	1.01
Time spent playing MMORPGS Attachment - preoccupied	Marital Quality - Neglect	1.02
Time spent playing MMORPGS Attachment - dismissing	Marital Quality - Neglect	1.01
Time spent playing MMORPGS Attachment - fearful	Marital Quality - Conflict	1.00
Time spent playing MMORPGS Attachment - secure	Marital Quality - Conflict	1.01
Time spent playing MMORPGS Attachment - preoccupied	Marital Quality - Conflict	1.02
Time spent playing MMORPGS Attachment - dismissing	Marital Quality - Conflict	1.00
Time spent playing MMORPGS Attachment - fearful	Marital Quality - Intimacy	1.00
Time spent playing MMORPGS Attachment - secure	Marital Quality - Intimacy	1.01
Time spent playing MMORPGS Attachment - preoccupied	Marital Quality - Intimacy	1.01
Time spent playing MMORPGS Attachment - dismissing	Marital Quality - Intimacy	1.01

There were four research questions associated with this study. The results are presented under each research question. The data analysis process consisted of three phases, the data preparation phase, the preliminary analysis phase, and the primary analysis phase. During the data preparation phase, the data were checked for missing values and data errors. The current study used the frequencies procedure to check the data. The data revealed no missing values and no data errors. Also, during the data preparation phase, variables were recoded, and new variables were computed. There were no recodes that were necessary for this study. However, composite mean scores were computed for marital quality of affection (mq2 and mq4), neglect (mq7 and mq9), conflict (mq8, and mq10), and intimacy (mq12 and mq14). The scale for marital quality was 1 always agree/all the time to 6 always disagree/never. I also computed mean scores for the adult attachment styles of fearful (as2), secure (as1), preoccupied (as3), and dismissing (as4). The scale for adult attachment style was 1 not at all like me to 7 very much like me.

Cronbach's alpha reliability analysis was performed on all four marital quality scales. Alpha reliability measures of .7 or higher are considered acceptable reliability (Field, 2018; Nunnally, 1978; Pallant, 2020). The results indicated that the alpha coefficients were .644 for affection, .858 for neglect, .734 for conflict, and .716 for intimacy. Affection was the only scale with low reliability and is therefore a limitation of the study.

**RQ1: Does Adult Attachment Style (Independent Variable) Correlate with Marital Quality (Dependent Variables) Operationalized as Conflict, Neglect, Affection, or Intimacy?**

*H*<sub>0</sub>1: Adult attachment style (independent variable) does not correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

*H*<sub>1</sub>1: Adult attachment style (independent variable) correlates with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

To answer the first research question, a Pearson correlation analysis was conducted. The result of the Pearson correlation analysis indicated that a higher fear adult attachment style was associated with lower marital quality operationalized as neglect,  $r = -.141$ ,  $p = .029$ ), and lower marital quality operationalized as conflict,  $r = -.136$ ,  $p = .035$ ). There was no significant relationship between fear adult attachment style and marital quality operationalized as affection,  $r = .022$ ,  $p = .731$ , and fear adult attachment style and marital quality operationalized as intimacy,  $r = -.066$ ,  $p = .311$ . Increases in secure adult attachment style were significantly associated with increases in marital quality operationalized as affection,  $r = .132$ ,  $p = .041$ , and increase in marital quality operationalized as intimacy,  $r = .212$ ,  $p = .001$ . There was no significant relationship between secure adult attachment style and marital quality operationalized as neglect,  $r = -.049$ ,  $p = .449$ , and marital quality operationalized as conflict,  $r = -.039$ ,  $p = .543$ . Interestingly, increases in preoccupied adult attachment style were significantly related to increases in marital quality operationalized as affection,  $r = .142$ ,  $p = .028$ , but decreases

in marital quality operationalized as neglect,  $r = -.325$ ,  $p < .001$  and marital quality operationalized as conflict,  $r = -.276$ ,  $p < .001$ . However, there was no significant relationship between preoccupied adult attachment style and marital quality operationalized as intimacy,  $r = -.061$ ,  $p = .776$ . Finally, increases in dismissing adult attachment style was significantly related to decreases in marital quality operationalized as neglect,  $r = -.237$ ,  $p < .001$ , and decreases in marital quality operationalized as conflict,  $r = -.237$ ,  $p < .001$ . However, there was no significant linear relationship between dismissing adult attachment style and marital quality operationalized as affection,  $r = .041$ ,  $p = .524$ , or marital quality operationalized as intimacy,  $r = -.018$ ,  $p = .776$ . As a result, the null hypothesis was rejected, as there was a significant association between marital quality and fearful adult attachment style. See Table 3

**Table 3***Pearson Correlation between Adult Attachment Styles and Marital Quality*

	Attachment- Fearful	Attachment- Secure	Attachment- Preoccupied	Attachment- Dismissing
Marital Quality - Affection	.022	.132*	.142**	.041
Marital Quality - Neglect	-.141*	-.049	-.325**	-.237**
Marital Quality - Conflict	-.136*	-.039	-.276**	-.237**
Marital Quality - Intimacy	-.066	.212**	-.061	-.018

\* - Correlation is significant at the .05 level. \*\* - Correlation is significant at the .01 level

**RQ2: Does Adult Attachment Style (Independent Variable) Correlate with Time Spent Playing MMORPGs (Mediator)?**

*H*<sub>0</sub>2: Adult attachment style (independent variable) does not correlate with time spent playing MMORPGs (mediator).

*H*<sub>1</sub>2: Adult attachment style (independent variable) correlates with time spent playing MMORPGs (mediator).

Pearson correlations were conducted to determine if there were significant linear relationship between adult attachment style and time spent playing MMORPGs. The results of the Pearson correlation indicated that there was no significant linear relationship between time spent playing MMORPGs and fearful adult attachment,  $r = .033$ ,  $p = .607$ , secure adult attachment,  $r = .116$ ,  $p = .072$ , and dismissing adult



attachments,  $r = -.079$ ,  $r = .224$ . There was a significant negative linear relationship between preoccupied adult attachment style and time spent playing MMORPGs,  $r = -.130$ ,  $p = .044$ , were increased in preoccupied adult attachment style were associated with decreases in time spent playing MMORPGs. Therefore, the null hypothesis was rejected. See Table 4.

**Table 4**

*Pearson Correlation Table between Time Spent Playing MMORPGs and Adult Attachment Style*

	Attachment- Fearful	Attachment- Secure	Attachment- Preoccupied	Attachment- Dismissing
In the past 6 months, on average, how much time have you spent gaming each month?	.033	.116	-.130*	-.079

\* - Correlation is significant at the .05 level.

**RQ3: Does Time Spent Playing MMORPGs (Mediator) Correlate with Marital Quality (Dependent Variables) Operationalized as Conflict, Neglect, Affection, or Intimacy?**

$H_03$ : Time spent playing MMORPGs does not correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

$H_13$ : Time spent playing MMORPGs correlates with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy.

To examine if there was a significant linear relationship between time spent playing MMORPGs and marital quality, a Pearson correlation was conducted. The results indicated that increases in marital quality operationalized as neglect were associated with increases in time spent playing MMORPGs,  $r = .386$ ,  $p < .001$ . Increases in marital quality operationalized as conflict were associated with increase in time spent playing MMORPGs,  $r = .357$ ,  $p < .001$ . Marital quality operationalized as intimacy was significantly related to time spent playing MMORPGs,  $r = .249$ ,  $p < .001$ , where increases in marital quality operationalized as intimacy were associated with increases in time spent playing MMORPGs. There was no significant relationship between marital quality operationalized as affection and time spent playing MMORPGs,  $r = -.038$ ,  $p = .557$ . Based on the results, the null hypothesis was rejected. See Table 5.

**Table 5**

*Pearson Correlation Table between Time Spent Playing MMORPGs and Marital Quality*

	In the past 6 months, on average, how much time have you spent gaming each month?
Marital Quality - Affection	-.038
Marital Quality - Neglect	.386**
Marital Quality - Conflict	.357**
Marital Quality - Intimacy	.249**

\*\* - Correlation is significant at the .01 level

**RQ4: Does Time Spent Playing MMORPGs Mediate the Relationship Between Adult Attachment Style and Marital Quality Operationalized as Conflict, Neglect, Affection, or Intimacy?**

*H<sub>04</sub>*: Time spent playing MMORPGs does not mediate the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, or intimacy.

*H<sub>14</sub>*: Time spent playing MMORPGs mediates the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, or intimacy.

To evaluate if time spent playing MMORPG games moderated the relationship between adult attachment style and marital quality, a mediation analysis using the Hayes process SPSS macro was performed. In order to have mediation, certain conditions must exist (Field, 2018; Hair et al., 2018; Tabachnick & Fidell, 2018). First, there must be a significant relationship between the independent variable and the dependent variable. Second, there must be a significant relationship between the mediation variable and the dependent variable. If all these conditions do not exist, mediation cannot exist.

***Marital Quality Affection as the Dependent Variable***

Before the mediation analyses were conducted, multiple regressions were conducted to determine if adult attachment style (independent variable) and time spent playing MMORPGs (mediation variable) were significant predictors of the marital quality. If both variables are significant, then mediation analysis was performed. The first

regression analysis explored whether fearful adult attachment style and time spent playing MMORPGs were significant predictors of marital quality operationalized as affection. The results indicated that neither time spent playing MMORPGs ( $\beta = -.039$ ,  $p = .550$ ) nor fearful adult attachment,  $\beta = .024$ ,  $p = .717$ , were significant predictors of marital quality operationalized as affection. Therefore, time spent playing MMORPGs cannot mediate the relationship between fearful adult attachment style and marital quality operationalized as affection. See Table 6.

**Table 6**

*Regression Coefficients Table for Fearful Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	4.802	.243		19.741	.000
	Attachment-Fearful	.014	.037	.024	.363	.717
	In the past 6 months, on average, how much time have you spent gaming each month?	-.035	.059	-.039	-.599	.550

Note: Dependent Variable: Marital Quality – Affection

The second multiple regressions indicated that secure adult attachment style ( $\beta = .138$ ,  $p = .034$ ) was a significant predictor of marital quality operationalized as affection. However, time spent playing MMORPGs,  $\beta = -.054$ ,  $p = .404$ , was not a significant predictor of marital quality operationalized as affection. Therefore, time spent playing

MMORPGs cannot mediate the relationship between secure adult attachment style and marital quality operationalized as affection. See Table 7.

**Table 7**

*Regression Coefficients Table for Secure Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	4.544	.239		18.986	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	-.049	.058	-.054	-.837	.404
	Attachment-Secure	.078	.037	.138	2.132	.034

Note: Dependent Variable: Marital Quality – Affection

A regression analysis was conducted to determine if time spent playing MMORPGs and preoccupied adult attachment style were significant predictors of marital quality operationalized as affection. The results indicated that time spent playing MMORPGs ( $\beta = -.020$ ,  $p = .758$ ) was not a significant predictor of marital quality operationalized as affection. Preoccupied adult attachment style  $\beta = .139$ ,  $p = .032$ , was a significant predictor of marital quality operationalized as affection. Given there was no significant relationship between, time spent playing MMORPGs and marital quality operationalized as affection, then there can be no mediation between preoccupied adult attachment style and marital quality operationalized as affection. See Table 8.

**Table 8**

*Regression Coefficients Table for Preoccupied Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	4.478	.258		17.334	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	-.018	.058	-.020	-.308	.758
	Attachment-Preoccupied	.082	.038	.139	2.151	.032

Note: Dependent Variable: Marital Quality - Affection

A multiple regression revealed that time spent playing MMORPGs ( $\beta = -.035$ ,  $p = .590$ ), and dismissing adult attachment,  $\beta = .039$ ,  $p = .554$ , were not significant predictors of marital quality operationalized as affection. Therefore, time spent playing MMORPGs was not a mediator between dismissing adult attachment style and marital quality operationalized as affection. See Table 9.

**Table 9**

*Regression Coefficients Table for Dismissing Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	4.747	.265		17.922	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	-.032	.059	-.035	-.539	.590
	Attachment-Dismissing	.022	.038	.039	.592	.554

Note: Dependent Variable: Marital Quality - Affection

### ***Marital Quality Neglect as the Dependent Variable***

The results of the multiple regression revealed that both time spent playing MMORPGs ( $\beta = .391$ ,  $p < .001$ ), and fearful adult attachment,  $\beta = .391$ ,  $p = .010$ , were significant predictors of marital quality operationalized as neglect. So, a mediate analysis was conducted. The results indicated that the indirect effect, meaning the paths from the independent variable to the mediation variable, and the mediation variable to the dependent variable, were not statistically significant, total indirect effect = .011, [- .03:.06]. This is because the lower-level confidence interval (-.03) and the upper level confidence interval (.06) of the total indirect effect contained 0.

**Table 10**

*Regression Coefficients Table for Fearful Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	2.286	.313		7.305	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	.498	.075	.391	6.616	.000
	Attachment-Fearful	-.125	.048	-.154	-2.603	.010

Note: Dependent Variable: Marital Quality - Neglect

A multiple regression indicated that time spent playing MMORPGs ( $\beta = .397$ ,  $p < .001$ ) was a significant predictor of marital quality operationalized as neglect, but secure adult attachment,  $\beta = -.10$ ,  $p = .113$ , was not a significant predictor of marital quality operationalized as neglect. Therefore, time spent playing MMORPGs cannot mediate the relationship between secure adult attachment style and marital quality operationalized as neglect.



**Table 11**

*Regression Coefficients Table for Secure Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	2.087	.314		6.655	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	.506	.076	.397	6.617	.000
	Attachment-Secure	-.076	.048	-.095	-1.589	.113

Note: Dependent Variable: Marital Quality - Neglect

The regression analysis showed that both time spent playing MMORPGs ( $\beta = .350, p < .001$ ) and preoccupied adult attachment,  $\beta = -.280, p < .001$ , were significant predictors of marital quality operationalized as neglect. Therefore, a mediation analysis was conducted. The result of the mediation analysis indicated that the total indirect effect (indirect effect =  $-.038, [-.090:.001]$ ) was not significant, as the lower-level confidence interval and the upper level confidence interval contain 0. See Table 12.

**Table 12**

*Regression Coefficients Table for Preoccupied Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	2.855	.324		8.799	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	.446	.073	.350	6.067	.000
	Attachment-Preoccupied	-.231	.048	-.280	-4.859	.000

Note: Dependent Variable: Marital Quality - Neglect

A multiple regression showed that time spent playing MMORPGs ( $\beta = .370$ ,  $p < .001$ ) and dismissing adult attachment,  $\beta = -.208$ ,  $p < .001$ , were significant predictors of marital quality operationalized as neglect. The mediation analysis indicated that the total indirect effect (total indirect effect =  $-.023$ ,  $[-.067;.021]$ ), was not significant, as the confidence intervals contain 0. Therefore, the time spent playing MMORPGs does not mediate the relationship between preoccupied adult attachment style and marital quality operationalized as neglect. See Table 13.

**Table 13**

*Regression Coefficients Table for Dismissing Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	2.611	.337		7.748	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	.471	.075	.370	6.310	.000
	Attachment-Dismissing	-.169	.048	-.208	-3.549	.000

Note: Dependent Variable: Marital Quality - Neglect

***Marital Quality Conflict as the Dependent Variable***

Both time spent playing MMORPGs ( $\beta = .362$ ,  $p < .001$ ), and fearful adult attachment,  $\beta = -.148$ ,  $p < .001$ , are significant predictors of marital quality operationalized as conflict, based on the multiple regression. The results of the mediation analysis indicated that the total indirect effect was not significant, (total indirect effect = .008, [-.024:042]). This is because the confidence interval included 0. Therefore, there was no mediation effect. See Table 14.

**Table 14**

*Regression Coefficients Table for Fearful Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	2.236	.256		8.736	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	.372	.062	.362	6.031	.000
	Attachment-Fearful	-.097	.039	-.148	-2.471	.014

Note: Dependent Variable: Marital Quality - Conflict

The time spent playing MMORPGs ( $\beta = .366$ ,  $p < .001$ ) was a significant predictor of marital quality operationalized as conflict. Secure adult attachment style ( $\beta = -.082$ ,  $p < .179$ ) was not a significant predictor of marital quality operationalized as conflict. Therefore, time spent playing MMORPGs cannot mediate the relationship between secure adult attachment style and marital quality. See Table 15.

**Table 15**

*Regression Coefficients Table for Secure Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	2.056	.256		8.017	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	.376	.063	.366	6.016	.000
	Attachment-Secure	-.053	.039	-.082	-1.348	.179

Note: Dependent Variable: Marital Quality - Conflict

Based on the multiple regression, both time spent playing MMORPGs ( $\beta = .326$ ,  $p < .001$ ), and preoccupied adult attachment,  $\beta = -.233$ ,  $p < .001$ , were significant predictors of marital quality operationalized as conflict. So, a mediation analysis was conducted and showed, that the total indirect effect (total indirect effect =  $-.03$ ,  $[-.061 : .001]$ ) was not significant, as the confidence interval contains 0. Therefore, there was no significant mediation effect. See Table 16.

**Table 16**

*Regression Coefficients Table for Preoccupied Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	2.565	.269		9.527	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	.335	.061	.326	5.503	.000
	Attachment-Preoccupied	-.155	.040	-.233	-3.932	.000

Note: Dependent Variable: Marital Quality - Conflict

Both time spent playing MMORPGs ( $\beta = .340$ ,  $p < .001$ ), and dismissing adult attachment,  $\beta = -.210$ ,  $p < .001$ , were significant predictors of marital quality operationalized as conflict, based on the multiple regression. The mediation analysis indicated that time spent playing MMORPGs was not a significant mediator between dismissing adult attachment style and marital quality operationalized as conflict, (total indirect effect =  $-.018$ ,  $[-.050:.016]$ ). See Table 17.

**Table 17**

*Regression Coefficients Table for Dismissing Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	2.520	.275		9.156	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	.349	.061	.340	5.732	.000
	Attachment-Dismissing	-.138	.039	-.210	-3.542	.000

Note: Dependent Variable: Marital Quality - Conflict

***Marital Quality Intimacy as the Dependent Variable***

Fearful adult attachment style ( $\beta = -.074$ ,  $p = .239$ ) was not a significant predictor of marital quality operationalized as intimacy. Though time spent playing MMORPGs ( $\beta = .251$ ,  $p < .001$ ) was a significant predictor of marital quality operationalized as intimacy, the criterion of mediation was not met as fearful adult attachment style was not significant. See Table 18.

**Table 18**

*Regression Coefficients Table for Fearful Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	2.911	.246		11.828	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	.237	.059	.251	4.000	.000
	Attachment-Fearful	-.045	.038	-.074	-1.179	.239

Note: Dependent Variable: Marital Quality - Intimacy

The multiple regression revealed that time spent playing MMORPGs ( $\beta = .074$ ,  $p < .001$ ), and secure adult attachment style,  $\beta = .186$ ,  $p = .003$ , were significant predictors of marital quality operationalized as intimacy. Therefore, a mediation analysis was conducted. The results indicated that the total indirect effect was not significant, (total indirect effect = .016, [-.002:.039]). Based on this result, time spent playing MMORPGs was not a significant mediator between secure adult attachment style and marital quality operationalized as intimacy. See Table 19.



**Table 19**

*Regression Coefficients Table for Secure Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	2.291	.241		9.521	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	.214	.059	.227	3.650	.000
	Attachment-Secure	.110	.037	.186	2.987	.003

Note: Dependent Variable: Marital Quality - Intimacy

The multiple regression indicated that time spent playing MMORPGs ( $\beta = .245$ ,  $p < .001$ ) was a significant predictor of marital quality operationalized as intimacy, but preoccupied adult attachment style,  $\beta = -.029$ ,  $p = .645$ , was not a significant predictor. Therefore, time spent playing MMORPGs was not a mediator between preoccupied adult attachment style and marital quality operationalized as intimacy. See Table 20.

**Table 20**

*Regression Coefficients Table for Preoccupied Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	2.814	.264		10.640	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	.231	.060	.245	3.860	.000
	Attachment-Preoccupied	-.018	.039	-.029	-.462	.645

Note: Dependent Variable: Marital Quality – Intimacy

The final multiple regression examined whether time spent playing MMORPGs and dismissing adult attachment style were significant predictors of marital quality operationalized as intimacy. The results indicated that time spent playing MMORPGs ( $\beta = .249$ ,  $p < .001$ ) was a significant predictor of marital quality operationalized as intimacy, and dismissing adult attachment style,  $\beta = -.001$ ,  $p = .985$ , was not a significant predictor of marital quality operationalized as intimacy. Therefore, time spent playing MMORPGs was not a mediator between dismissing adult attachment style and marital quality operationalized as intimacy. See Table 21.

**Table 21**

*Regression Coefficients Table for Dismissing Adult Attachment Style and Time Spent Playing MMORPGs*

Model		Unstandardized Coefficients		Standardized	t	p
		B	Std. Error	Coefficients		
1	(Constant)	2.727	.269		10.143	.000
	In the past 6 months, on average, how much time have you spent gaming each month?	.235	.060	.249	3.941	.000
	Attachment-Dismissing	.001	.038	.001	.019	.985

Note: Dependent Variable: Marital Quality – Intimacy

### Summary

There were 240 completed surveys out of 411 surveys that were started. There were four research questions in this study. The first research question asked, does adult attachment style (independent variable) correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy. Based on the results of the correlation analyses, the null hypothesis was rejected. The second research question asked, does adult attachment style (independent variable) correlate with time spent playing MMORPGs (mediator). Based on the results of the correlation analyses, the null hypothesis was rejected. The third research question asked, does time spent playing MMORPGs (mediator) correlate with marital quality (dependent variables) operationalized as conflict, neglect, affection, or intimacy? Based on the results of the correlation analyses, the null hypothesis was rejected.

The final research question asked, does time spent playing MMORPGs mediate the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, or intimacy. Based on the results of the analyses, the null hypothesis was not rejected, as time spent playing MMORPGs was not a significant mediator for any of the marital quality variables.

Chapter 5 will discuss the interpretation of findings, limitations of study, recommendations, implications, positive social change, and conclusion.

## Chapter 5: Discussions, Conclusions, and Recommendations

The purpose of this quantitative study was for this researcher to explore if time spent playing MMORPGs mediated the relationship between adult attachment style and four indicators of marital quality. In this study I attempted to provide a clearer image about the effects of MMORPGs on adults and their marital relationships using a quantitative correlational design with a mediation model to address the four research questions. I analyzed the data with the aim of establishing if there is a statistically significant association between the variables of interest. According to Pallant (2020) multiple linear regression is a process through which it can be determined variables are related, therefore, I used a mediation analyses using multiple linear regression for this study. The variables in this study were naturally occurring events and were not controlled in any way. In RQ1 through RQ3 the null hypothesis was rejected, and the null hypothesis was not rejected for RQ4. The mediator variable, time spent playing MMORPGs, was not a significant mediator for any of the marital quality variables. Both adult attachment style and time spent playing MMORPGs correlated with marital quality.

I conducted this study to bring awareness to the links between time spent playing MMORPGs, adult attachment style and marital quality. The growing popularity of MMORPGs will require counseling professionals to have the research, tools, and resources to provide therapeutic help to this population.

### **Interpretation of Findings**

Previous studies discussed in this paper have looked at players of specific games, problematic use of games, the consequences of game usage, and marital satisfaction (Achterbosch et al., 2008; Ahlstrom, 2009; Bartholomew & Horowitz, 1991; Caplan, 2003; Demby et al., 2015; Dubois-Comtois & Moss, 2008; Forrest, 2017; Griffiths et al., 2004; Hill, 2010; Kiraly et al., 2014; Kiraly et al., 2017; Ko et al., 2005; Kuss, 2013; Mannikko, 2017; Meredith et al., 2016; Mihara & Higuchi, 2017; Minuchin, 1974; Peng & Liu, 2010; Pontes et al., 2015; Richter, 2014; Sakmar, 2015; Schaap et al., 1988; Taggart et al., 2019; Tras, 2019; Yee, 2006). Adult attachment style adds a component to assessing marital quality and the amount of time devoted to playing MMORPGs.

Findings confirmed a correlation exists between adult attachment style and marital quality operationalized as conflict, neglect, affection, and intimacy. Results indicate a higher fearful adult attachment style was linked with lower marital quality operationalized as conflict and neglect. This indicates that adults who have a sense of unworthiness in themselves and look at others as untrustworthy experienced conflict and neglect in their marriage (Bartholomew & Horowitz, 1991; Meredith et al., 2016). Adults who identify with fearful adult attachment style avoid close involvement with others as a way to protect themselves from rejection (Bartholomew & Horowitz, 1991; Meredith et al., 2016). There was no significant link between fearful adult attachment style and marital quality operationalized as affection and intimacy.

Higher secure adult attachment style was significantly related to increases in marital quality operationalized as affection and intimacy. Individuals who identify with a secure adult attachment style have a sense of worthiness and expectation of others is generally accepting and responsive (Bartholomew & Horowitz, 1991; Meredith et al., 2016). No significant links were found between secure adult attachment style and marital quality operationalized as conflict and neglect. This indicates that individuals who identify as secure adult attachment did not identify conflicts and neglect in their marital relationship.

Increases in preoccupied adult attachment style were significantly related to increases in marital quality operationalized as affection but decreased in marital quality operationalized as neglect and conflict and no significant link was found with marital quality operationalized as intimacy. Adults who identify as preoccupied adult attachment style have a sense of unworthiness but have a positive evaluation of others (Bartholomew & Horowitz, 1991; Meredith et al., 2016). An individual who identifies as preoccupied strives for self-acceptance by gaining the acceptance of respected others (Bartholomew & Horowitz, 1991; Meredith et al., 2016).

Increases in dismissing adult attachment style was significantly related to decreases in marital quality operationalized as conflict and neglect. There was no significant link between dismissing adult attachment style and marital quality operationalized as affection and intimacy. Individuals who identify with dismissing adult attachment style have a sense of worthiness but have a negative disposition towards other

people (Bartholomew & Horowitz, 1991; Meredith et al., 2016). These adults protect themselves against disappointment by avoiding close relationships and maintaining a sense of independence and invulnerability (Bartholomew & Horowitz, 1991; Meredith et al., 2016).

Findings disconfirmed that a correlation exists between time spent playing MMORPGs and secure, fearful, and dismissing adult attachment style. Results showed no significant linear relationship between time spent playing MMORPGs and secure, fearful, and dismissing adult attachment style. Findings showed a significant negative linear relationship between preoccupied adult attachment style and time spent playing MMORPGs. Increased preoccupied adult attachment style was linked with decreases in time spent playing MMORPGs. An individual's adult attachment style could not be used as an indicator of how much time an individual spends playing MMORPGs.

Findings confirmed that a correlation exists between time spent playing MMORPGs and marital quality operationalized as conflict, neglect, and intimacy. The results showed that increases in marital quality operationalized as neglect and conflict were linked with increases in time spent playing MMORPGs. This would indicate that the amount of time spent playing MMORPGs is a source of conflict and neglect in an individual's marriage. Time spent playing MMORPGs was significantly related to marital quality operationalized as intimacy. Increases in intimacy were linked with increases in time spent playing MMORPGs. This could indicate that the individual has a balance between the time spent playing MMORPGs and their marital relationship or that



their intimacy is heightened through gaming. No significant relationship was found between time spent playing MMORPGs and marital quality operationalized as affection. This indicates that time spent playing MMORPGs has no effect on an individual's level of affection within their marital relationship.

Findings disconfirmed that time spent playing MMORPGs mediates the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, and intimacy. This suggests that time spent playing MMORPGs does not have an effect on the relationship between adult attachment style and marital quality. A correlation was found between adult attachment style and marital quality as well as a correlation between time spent playing MMORPGs and marital quality, but time spent playing MMORPGs had no correlation to adult attachment style.

### **Limitations of Study**

To participate in this study required access to the internet either by the use of a computer, tablet, or phone. This research included a number of exclusions. This study was limited to participants that live in the United States and are English speakers. Individuals who were not married were not included in this study. Participants married fewer than 12 months were excluded. Participants not in a heterosexual marriage did not meet inclusion criteria. Individuals who do not play MMORPGs were excluded. Participants were excluded if they played MMORPGs less than 30 minutes per month.

Initially, I recruited participants from Facebook, SecondLife, and Discord making the sample population limited to users of these sites. I anticipated recruiting a range of

participants while navigating restrictions such as limitations on how many times you can post and requesting permissions from group and channel administrators. Due to slow recruitment I moved to recruiting participants on MTurk. The use of MTurk has a monetary compensation incentive offered to individuals interested in participating in surveys. Participants who did not meet the inclusion criteria were not able to continue on through the survey and therefore were not able to identify completion of the survey to receive compensation.

A confounder in this study was the mediator variable: time spent playing MMORPGs. Results of this study showed that time spent playing MMORPGs did not mediate the relationship between adult attachment style and marital quality operationalized as conflict, neglect, affection, and intimacy. The results of the data analyses indicate that marital quality operationalized as affection was the only scale with low reliability and therefore, was a limitation of this study.

### **Recommendations**

Though this study had a number of exclusions, there are a number of opportunities for future research to expand on the research questions of this study. For future studies, I would first recommend finding another scale to assess affection. Participants outside of the United States, other language speakers, differences in race and ethnicity, participants who meet other marital classifications (homosexual, etc.), different relationship statuses (divorced, separated, domestic partnership, common law, or single

cohabitating with a significant other) and participants who play other genres of games could be explored.

Different types of MMORPG gamers are potential populations to explore because individuals play at different levels from noob (a term used to describe a novice or newcomer) to professional. MMORPGs provide variations in fun, activity, and interest, so what appeals to one gamer may not appeal to another. Future research focused on these populations could provide further insight into time spent playing MMORPGs, adult attachment style, and various indicators of marital quality.

Additional areas for future research include couples who either play MMORPGs together or couples who both play MMORPGs but play separately. This population could provide a different dynamic to the research in relation to time spent playing MMORPGs, adult attachment style, and marital quality.

A qualitative research study could be interesting. Qualitative data could provide a more in depth look as to why the results of this study were what they were. Interviews with respondents would not only provide more context regarding time spent playing MMORPGs, adult attachment style, and marital quality but also what tools and resources would be the most helpful to aid in any discord the respondent is having in their marital relationship.

## **Implications**

### **Positive Social Change**

This study offers the potential impact for positive social change for individuals and married couples where one or both individuals play MMORPGs. As previously mentioned, the WHO has stated that the ICD will recognize gaming disorder as a new disorder (APA, 2018). New research has found more than 214 million people in the United States today play video games (ESA, 2021). Though there is no indication of whether these video games are internet based like the 160 million adult Americans who play internet-based games (APA, 2018), it's still significant. Gaming is popular and as the industry continues to expand it is necessary for mental health professionals such as psychologists and therapists to understand MMORPGs and their impact on its gamers. Gamers or their spouses who seek out counseling about gaming and other topics related to gaming such as time spent playing would gain from working with professionals who understand gaming and the impact it can have on a gamer and their marital quality. MMORPG gamers dedicate countless hours to their games and how a professional approach this subject matter with a gamer either from the gamer's concern or a spouse's concern could have an impact on how effective the professional and their therapy will be. A professional who has tools and resources to work with this population would be an asset therapeutically.

In practice, a professional would benefit from knowing the research and acquiring the appropriate tools and resources that provide a competent understanding of gaming,

specifically, MMORPGs, their lure, and the influence they have on a gamer and their life. A professional should be equipped with what questions to ask and what assessments would provide the best information necessary to create a treatment plan that would meet the MMORPG gamer, or the MMORPG gamer and their spouse's needs.

The quantitative methodology I used in this study addressed the research questions. The theoretical implications for this study were not met in that adult attachment style correlated with marital quality but no significant effect was present for time spent playing MMORPGs.

### **Conclusion**

There were 240 participants for this study. Based on the results of the correlation analyses, the null hypothesis was rejected for RQ1, RQ2 and RQ3. For RQ4 the null hypothesis was not rejected because time spent playing MMORPGs was not a significant mediator for any of the marital quality variables. Correlations were found between adult attachment style and marital quality operationalized as conflict, neglect, affection, and intimacy. These findings provide an opportunity for future research with a different mediator variable in regard to MMORPGs. Correlations were found between time spent playing MMORPGs and marital quality operationalized as conflict, neglect, affection, and intimacy. Both adult attachment style and time spent playing MMORPGs have a correlation with marital quality. Future research can aid in determining what variable mediates the relationship between adult attachment style and marital quality and what

variable mediates the relationship between time spent playing MMORPGs and marital quality.

## References

- Achterbosch, L., Pierce, R., & Simmons, G. (2008). Massively multiplayer online role-playing games: the past, present, and future. *Computers in Entertainment (CIE)*, 5(4), 1-33. <https://doi.org/10.1145/1324198.1324207>
- Adams, A. N. (2017). Social networking sites and online infidelity (Doctoral dissertation, Walden University).
- Ahlstrom, A. M. E. (2009). Marital satisfaction among married couples in which one or both members play a massively multiplayer online role-playing game (MMORPG). Brigham Young University.
- Ainsworth, M. D. S, Blehar, M. C, Waters, E, & Wall, S. (1978). Patterns of attachment: A psychological study of the strange situation. Erlbaum.
- Ainsworth, M. S. (1989). Attachments beyond infancy. *American Psychologist*, 44(4), 709–716. <https://doi.org/10.1037//0003-066x.44.4.709>
- Allison, S., (2006). Attachment and Family Therapy. *Australian & New Zealand Journal of Family Therapy*, 27(2), iii – iv.
- American Psychological Association. (2010). Publication manual of the American Psychological Association. (6th ed.).
- APA. (2018, June). *Internet Gaming*. <https://www.psychiatry.org/patients-families/internet-gaming>
- Arpaci, I., Baloğlu, M., Kozan, H. İ. Ö., & Kesici, Ş. (2017). Individual differences in the relationship between attachment and nomophobia among college students: The

mediating role of mindfulness. *Journal of medical Internet research*, 19(12), e8847. <https://doi:10.2196/jmir.8847>

Babalon (2021, January 1). Top 6 Most Popular MMORPGs Sorted by Population. Altar of Gaming. <https://altarofgaming.com/all-mmos-sorted-by-population-2018/>

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: a test of a four-category model. *Journal of personality and social psychology*, 61(2), 226–244. <http://doi=10.1.1.332.3652&rep=rep1&type=pdf>

Bartholomew, K., & Shaver, P. R. (1998). Methods of assessing adult attachment. *Attachment theory and close relationships*, 1998, 25-45.

Bowlby, J. (1969). *Attachment and Loss* (Vol. 1). Basic Books.

Bowlby, J. (1977). The making and breaking of affectional bonds: I. Aetiology and psychopathology in the light of attachment theory. *The British journal of psychiatry*, 130(3), 201-210.

Brack, G., Lassiter, P. S., Kitzinger, R., Hill, M., McMahon, H. G., & Fall, K. A., (2013). Individual psychology on the virtual frontier: Massive multiplayer online role-playing gaming. *The Journal of Individual Psychology*, 69(1), pp. 24-40.

Busby, D. M., Christensen, C., Crane, D. R., & Larson, J. H. (1995). A revision of the Dyadic Adjustment Scale for use with distressed and nondistressed couples: Construct hierarchy and multidimensional scales. *Journal of Marital and family Therapy*, 21(3), 289-308.

Cacioppo, M., Barni, D., Correale, C., Mangialavori, S., Danioni, F., & Gori, A. (2019).



Do attachment styles and family functioning predict adolescents' problematic internet use? A relative weight analysis. *Journal of Child and Family Studies*, 28(5), 1263-1271.

Cameron, E. E., Joyce, K. M., Delaquis, C. P., Reynolds, K., Protudjer, J., & Roos, L. E. (2020). Maternal psychological distress & mental health service use during the COVID-19 pandemic. *Journal of affective disorders*, 276, 765–774.

<https://doi.org/10.1016/j.jad.2020.07.081>

Caplan, S. E. (2003). Preference for Online Social Interaction A Theory of Problematic Internet Use and Psychosocial Well-Being. *Communication Research*, 30(6), 625-648. <https://doi.org/10.1177/0093650203257842>

Cohen J. (1977). *Statistical power analysis for the behavioral sciences* (Rev. ed.). New York, NY: Academic Press.

Cole, H., & Griffiths, M. D. (2007). Social interactions in massively multiplayer online role-playing gamers. *CyberPsychology & Behavior*, 10(4), 575-583.

<https://doi.org/10.1089/cpb.2007.9988>

Coyne, S. M., Busby, D., Bushman, B. J., Gentile, D. A., Ridge, R., & Stockdale, L. (2012). Gaming in the game of love: Effects of video games on conflict in couples. *Family Relations*, 61, 388-396.

<https://doi.org/10.1111/J.1741-3729.2012.00712.X>

Coyne, S. M., Padilla-Walker, L. M., & Howard, E. (2015). Media uses in emerging adulthood. *In The Oxford Handbook of Emerging Adulthood*. (pp 1-10).

<http://dx.doi.org/10.1037/dev0000128>

- Creswell, J. W. (2018). *Research design: Qualitative, quantitative, and mixed method approaches*. Thousand Oaks, CA: Sage Publications.
- Demby, K. P., Riggs, S. A., & Kaminski, P. L. (2017). Attachment and family processes in children's psychological adjustment in middle childhood. *Family process*, 56(1), 234-249..
- Demetrovics, Z., Urbán, R., Nagygyörgy, K., Farkas, J., Griffiths, M. D., Pápay, O., ... & Oláh, A. (2012). The development of the problematic online gaming questionnaire (POGQ). *PloS one*, 7(5), e36417.  
<https://doi.org/10.1371/journal.pone.0036417>
- Doyle, C., & Cicchetti, D. (2017). From the cradle to the grave: The effect of adverse caregiving environments on attachment and relationships throughout the lifespan. *Clinical Psychology: Science and Practice*, 24(2), 203.  
<https://doi: 10.1111/cpsp.12192>
- Dubois-Comtois, K., & Moss, E. (2008). Beyond the dyad: do family interactions influence children's attachment representations in middle childhood?. *Attachment & Human Development*, 10(4), 415-431.
- Entertainment Software Rating Board. (2010). Video Game Industry Statistics.  
<http://www.esrb.org/about/>
- Entertainment Software Rating Board. (2016). ESRB Ratings Guide.  
[http://www.esrb.org/ratings/ratings\\_guide.aspx](http://www.esrb.org/ratings/ratings_guide.aspx)
- Entertainment Software Association. (2015). 2015 Sales, demographic and usage data:

essential facts about the computer and video game industry.

<http://www.theesa.com/wp-content/uploads/2015/04/ESA-Essential-Facts-2015.pdf>

Entertainment Software Association. (2021). 2020 Essential facts about the video game industry. <https://www.theesa.com/resource/2020-essential-facts/>

Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: A general power analysis program. *Behavior Research Methods, Instruments, & Computers*, 28 (1), 1–11. <https://doi.org/10.3758/BF03203630>

Field, A. P. (2012), *Discovering statistics using SPSS*. London, England: SAGE.

Forrest, E. (2017). *The relationship of frequency and duration of video game usage, level of sexual and violent game content and level of satisfaction in romantic relationships in emerging adults* (Doctoral dissertation, William James College).

Griffiths, M. D., Davies, M. N., & Chappell, D. (2004). Online computer gaming: a comparison of adolescent and adult gamers. *Journal of adolescence*, 27(1), 87-96. <https://doi.org/10.1016/j.adolescence.2003.10.007>

Griffiths, M. Davies, M. & Chappell, D. (2004). Demographic factors and playing variables in online computer gaming. *CyberPsychology & Behavior*; 7, pp. 479-487. <https://doi.org/10.1089/cpb.2004.7.479>

Hair, J. F., Babin, B. J., Anderson, R. E. (2018). *Multivariate Data Analysis: A Global Perspective. 8th ed.* Upper Saddle River: Prentice Hall.

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process*

analysis: A regression-based approach. Guilford publications.

- Hazan, C., & Shaver, P. R. (1990). Love and Work: An Attachment-Theoretical Perspective. *Journal of Personality and Social Psychology*, 59(2), 270-280.  
<http://doi=10.1.1.1057.8034&rep=rep1&type=pdf>
- Hill, M. T. (2009). *Intimacy, passion, commitment, physical affection and relationship stage as related to romantic relationship satisfaction* (Doctoral dissertation, Oklahoma State University).
- Hussain, Z., Williams, G. A., & Griffiths, M. D. (2015). An exploratory study of the association between online gaming addiction and enjoyment motivations for playing massively multiplayer online role-playing games. *Computers in Human Behavior*, 50, 221-230. <https://doi.org/10.1016/j.chb.2015.03.075>
- Ingram, J. M. (2016). Online Usage Among College Students: A Comparison of Online Gaming and Facebook Users. *All Master's Theses*. 320.  
<https://digitalcommons.cwu.edu/etd/320>
- Király, O., Nagygyörgy, K., Griffiths, M. D., & Demetrovics, Z. (2014). Problematic online gaming. In *Behavioral addictions* (pp. 61-97). Academic Press.  
<https://doi.org/10.1016/B978-0-12-407724-9.00004-5>
- Király, O., Tóth, D., Urbán, R., Demetrovics, Z., & Maraz, A. (2017). Intense video gaming is not essentially problematic. *Psychology of Addictive Behaviors*, 31(7), 807. <https://doi:10.1037/adb0000316>
- Ko, C., Yen, J., Chen, C., Chen, S. & Yen, C. (2005). Gender differences and related

- factors affecting online gaming addiction among Taiwanese adolescents. *The Journal of Nervous and Mental Disease*; 193(4), pp. 273-277. [https://doi:10.1097/01.nmd.0000158373.85150.57](https://doi.org/10.1097/01.nmd.0000158373.85150.57)
- Koronczai, B., Urban, R., Kokonyei, G., Paksi, B. Papp, K., Kun, B., Arnold, P., Kallai, J., & Demetrovics, Z., (2011). Confirmation of the three-factor model of problematic internet use on off-line adolescent and adult samples. *Cyberpsychology, Behavior, and Social Networking*, 14(11), 657-664. [https://doi:10.1089/cyber.2010.0345](https://doi.org/10.1089/cyber.2010.0345)
- Kunst, A. (2019, September 3). Percentage of gamers playing multiplayer online games in the United States as of December 2016, by age group. <https://www.statista.com/statistics/662270/share-gamers-play-mmo-games-usa-age/#statisticContainer>
- Kuss, D. J. (2013). Internet gaming addiction: current perspectives. *Psychology Research and Behavior Management*. [https://doi:10.2147/PRBM.S39476](https://doi.org/10.2147/PRBM.S39476)
- Liu, Z., Venkatesh, S., Murphy, S. E., & Riggio, R. E. (2021). Leader development across the lifespan: A dynamic experiences-grounded approach. *The Leadership Quarterly*, 32(5), 101382. [https://doi:10.1016/j.leaqua.2020.101382](https://doi.org/10.1016/j.leaqua.2020.101382)
- Lolis, M. S., & Goldberg, D. J. (2015). Legal issues related to human subjects for research. In *Clinical Dermatology Trials 101* (pp. 135-142). Springer, Cham.
- Männikkö, N. (2017). Problematic gaming behavior among adolescents and young adults. *Acta Universitatis Ouluensis, D Medica*, 429.

- Meredith, P. J., Bailey, K. J., Strong, J., & Rappel, G. (2016). Adult attachment, sensory processing, and distress in healthy adults. *American Journal of Occupational Therapy, 70*(1), 7001250010p1-7001250010p8.
- Merriam-Webster. (n.d.). Gaming. In Merriam-Webster.com dictionary.  
<https://www.merriam-webster.com/dictionary/gaming>
- Mihara, S., & Higuchi, S. (2017). Cross-sectional and longitudinal epidemiological studies of Internet gaming disorder: A systematic review of the literature. *Psychiatry and Clinical Neurosciences, 71*, 425–444.  
<https://doi:10.1111/pcn.12532>
- Mozelius, P., Westin, T., Wiklund, M., & Norberg, L. (2016, October). Gaming habits, study habits and compulsive gaming among digital gaming natives. In *The 10th European Conference on Games Based Learning (ECGBL), Paisley, United Kingdom, 6th to 7th October 2016. Academic Conferences Publishing.*
- Ng, B. D., & Wiemer-Hastings, P. (2005). Addiction to the internet and Online Gaming. *CyberPsychology & Behavior, 8*(2), 110-113.  
<http://dx.doi.org/10.1089/cpb.2005.8.110>
- Peng, W. & Liu, M., (2010). Online gaming dependency: A preliminary study in China. *Cyberpsychology, Behavior, and Social Networking, 13*(3), 329-333. <https://doi:10.1089=cyber.2009.0082>
- Peters, C. S. & Malesky, A., Jr., (2008). Problematic usage among highly-engaged players of massively multiplayer online role-playing gamers. *Cyberpsychology &*

*Behavior*, 11(4), 481-484. <https://doi: 10.1089/cpb.2007.0140>

- Pontes, H. M., Caplan, S. E., & Griffiths, M. D. (2016). Psychometric validation of the generalized problematic internet use scale 2 in a Portuguese sample. *Computers in Human Behavior*, 63, 823-833.
- Richter, L. L. (2014). Internet Infidelity A Phenomenological Study of Critical Issues, Treatment and Assessment. *Graduate School of Humanities and Social Sciences* (Doctoral dissertation, Nova Southeastern University).
- Sakmar, E. (2015). Testing The Vulnerability-Stress-Adaptation Model in Turkey: A Dyadic Model.
- Schaap, C., Buunk, B., & Kerkstra, A. (1988). Marital conflict resolution. In P. Noller & M.A. Fitzpatrick (Eds.), *Perspectives on Marital Interaction* (pp.203-244). Philadelphia, P A: Multilingual Matters.
- Shin, S., Kim, N., & Jang, E., (2011). Comparison of problematic internet and alcohol use and attachment styles among industrial workers in Korea. *Cyberpsychology, Behavior, and Social Networking*, 14(11), pp. 665-672
- Spatz-Widom, C., Czaja, S. J., Sepulveda-Kozakowski, S., & Chauhan, P. (2017). Does adult attachment style mediate the relationship between childhood maltreatment and mental and physical health outcomes? *Child Abuse and Neglect*, 76, 533–545. <https://doi: 10.1016/j.chiabu.2017.05.002>
- Tabachnick, B.G., & Fidell, L.S. (2018). Using multivariate statistics (7th edn). Boston: Pearson Education.

- Taggart, T. C., Bannon, S. M., & Hammett, J. F. (2019). Personality traits moderate the association between conflict resolution and subsequent relationship satisfaction in dating couples. *Personality and Individual Differences, 139*, 281-289.
- Townsend, J. A., Van Puymbroeck, M., & Zabriskie, R. B. (2017). The Core and Balance Model of Family Leisure Functioning: A Systematic Review. *Leisure Sciences An Interdisciplinary Journal, 39(5)*, 436-456.  
<https://doi.org/10.1080/01490400.2017.1333057>
- Tras, Z. (2019). Internet addiction and loneliness as predictors of internet gaming disorder in adolescents. *Educational Research and Reviews, 14(13)*, 465-473.  
[https://doi: 10.5897/ERR2019.3768](https://doi:10.5897/ERR2019.3768)
- Ward, P. J., Lundberg, N. R., Zabriskie, R. B., & Berrett, K. (2009). Measuring marital satisfaction: A comparison of the revised dyadic adjustment scale and the satisfaction with married life scale. *Marriage & Family Review, 45(4)*, 412-429.
- Yee, N. (2006). The psychology of massively multi-user online role-playing games: Motivations, emotional investment, relationships and problematic usage. In *Avatars at work and play* (pp. 187-207). Springer, Dordrecht.  
<https://doi=10.1.1.87.4729&rep=rep1&type=pdf>



## Appendix A: Invitation to Participate in the Study

Online survey study seeks married participants who play MMORPGs

There is a new study called “Time Spent Gaming and Marital Quality: The Effect Massively Multi-Player Online Role-playing Games on Marital Relationships” that could help care providers like psychologists and counselors better understand and help their patients. For this study, you are invited to take a survey and answer questions about your gaming frequency and duration, attachment in relationships, and marital quality.

This survey is part of the doctoral study for Kimberly J. Walker, a Ph.D. student at Walden University.

About the study:

- One 20-minute online survey
- To protect your privacy, no names will be collected

Volunteers must meet these requirements:

- 18 years old or older
- Reside in the United States
- Speak English
- Married (heterosexual) at least 12 months
- Play at least 30 minutes of MMORPGs per month for the last six months

To confidentially volunteer, click the following link

## Appendix B: List of Communities

1. Facebook
2. Discord
3. Secondlife
4. Amazon's MTurk