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# Aggression Predictors in Video Games: Is Catharsis to Blame?

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Robert Craig Vaughn, Student

Dr. Anthony M. Limperos, Major Professor

Dr. Bobi Ivanov, Director of Graduate Studies

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AGGRESSION PREDICTORS IN VIDEO GAMES: IS CATHARSIS TO BLAME?

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THESIS

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A thesis submitted in partial fulfillment of the requirements for the degree of  
Master of Arts in the College of Communication and Information  
at the University of Kentucky

By

Robert Craig Vaughn

Lexington, Kentucky

Director: Director: Dr. Anthony M. Limperos, Assistant Professor of Communication

Lexington, Kentucky

2015

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## ABSTRACT OF THESIS

### AGGRESSION PREDICTORS IN VIDEO GAMES: IS CATHARSIS TO BLAME?

The majority of research tends to focus on the effects of violent video games, and as a result the motivations to play games are understudied. This study used the uses and gratifications theory as a framework for investigating game player's motivation to play video games for the purpose of catharsis. This study also proposed that in-game variables, such as level of difficulty and content of the video game, all be investigated to see the effects they have on the achievement of catharsis or the development of aggression through other mediating variables such as enjoyment, control, and frustration with the game. It was found that difficulty of the game predicted frustration with the game and that those with more game playing experience reported greater feelings of catharsis, enjoyment, and feelings of control. None of the independent variables were found to attribute to feelings of aggression, including game content. Feelings of control within the game were found to be predicted by game type. Although there were relatively few main effects with the independent variables, correlations show trends in the data between variables that would support the achievement of catharsis through greater feelings of control, enjoyment, and decreased frustration.

**KEYWORDS:** Catharsis, Uses and Gratifications Theory, Frustration Aggression Hypothesis, Control

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AGGRESSION PREDICTORS IN VIDEO GAMES: IS CATHARSIS TO BLAME?

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## **Chapter One: Introduction**

There is a persistent belief that the playing of violent video games results in negative effects on those who play them. However, the research in this area has yet to produce definitive proof for or against violent video games in regards to their negative influence on consumers (Lee, Peng, & Park, 2009). In spite of a lack of solid evidence, the perception that exposure to violent video games has the potential to lead to aggressive tendencies continues to endure (Bushman, Rothstein, & Anderson, 2010). Others argue against these claims and say that video games can have positive effects on players (Lucas & Sherry, 2004; Ferguson, 2007). Although a persistent amount of research has been dedicated to the cause of establishing whether or not video games produce positive or negative effects, there is deficit of research which explains why people seek out and play video games in the first place (Ferguson & Olson, 2013). Therefore, it is plausible that a gamer player's motivation to play may be the crucial indicator of whether the video game's influence will be positive or negative.

The uses and gratifications theory addresses the motivations of why people search for certain media. According to the theoretical approach of uses and gratifications, people seek media to fulfill certain social and psychological needs (Rubin, 2009). While there has been some research focused on motivations for playing video games (Lucas & Sherry, 2004; Yee, 2006), it has been relatively limited (Ferguson & Olson, 2013). Part of this is because video games are a relatively new media, which means that many of the motivations to play them are not fully understood or have even been discovered (Sundar & Limperos, 2013). The ability to fulfill cathartic needs through video games is a relatively new notion; however, the research on this topic has yielded inconclusive results (Gentile, 2013; Griffiths, 1999; Ferguson & Olson, 2013).

Catharsis can be described as the releasing of pent up negative emotions through discharging these emotions (Lewis & Bucher, 1992). Many believe that the achievement of catharsis is not possible through exposure to and interactivity with violent media (Gentile, 2013; Lewis & Bucher, 1992), while others believe that video games can help people realize their needs to reduce stress or lack of control in their own lives (Ferguson & Olson, 2013; Reinecke, 2009). What could make video games cathartic in the first place? One plausible explanation that has received little research attention is the possibility that in-game factors that are interacting with game player experiences and differentially impacting one's ability to achieve catharsis while playing video games.

In-game factors such as difficulty level affect one's ability to enjoy the game (Juul, 2009; Schmierbach, Chung, Wu, & Kim, 2014). Juul (2009) found that if the game was deemed too easy by the player, it was considered boring; but if it was deemed too difficult, then the player was more likely to become frustrated. Difficulty can affect the player's sense of control because if the game is found to be overly difficult or unfair (programming glitches etc.), then players will not be able to enjoy the game, and frustration is likely to occur (Juul, 2009). According to Ferguson and Olson (2013), achieving catharsis with video games is reliant upon reducing stress and gaining a sense of control that is often stifled in one's real life. When in-game factors, such as difficulty, deny feelings of control, it is possible that catharsis cannot be achieved and frustration is likely to take place. Berkowitz (1989) states that frustration is likely to form when one's goals are blocked by extenuating circumstances and that this frustration is only increased the more the person wishes to obtain the benefits of said blocked goal. It is therefore possible that when players wish to seek catharsis/stress reduction from video games and

they are blocked because of in-game factors (difficulty), that they become frustrated as a result of not obtaining the gratifications they sought in the first place. The purpose of this research was to explore the impact of these in-game factors and see if it is the responses to in-game factors or the content (violent or non-violent) that results in aggression or catharsis in players. This question was explored by using the obtainment or denial of catharsis as a lens to examine this process. This research also looked to see what was more positively associated with aggression – frustration or violent content.

### **Organization**

This thesis is organized into five different chapters. The first chapter has introduced the problem of limited research on the motivations for playing video games and the potential cathartic effect of games. The theoretical rationale used to guide this research is the uses and gratifications theory and frustration aggression hypothesis. The second chapter is the literature review, which further explores the following: the motivations for playing video games through the uses and gratifications theory, the factors that result in such motivations, control, catharsis, and the in-game factors that impact feelings of control and achieving one's goals. Finally, the literature review discusses frustration aggression hypothesis as a way of understanding how in-game factors can block the attainment of catharsis/stress reduction and result in frustration. The third chapter will discuss the research methods and measures employed in this study. Choices regarding instruments, participants, procedures, and data collection, and data collection are also discussed within this chapter. Chapter four will discuss the results of the study and the analyses processes used to decipher these results. Finally, the fifth

chapter will discuss the implications of the results, theoretical and practical implications of the study, limitations of the study, and the direction future research should take.

## **Chapter Two: Literature Review**

### **Controversy about Video Game Exposure**

Amidst all the controversy that surrounds the viewing of violent media and the effects of its consumption, the playing of violent video games is perhaps the most controversial. This is partially due to their interactive nature (Lee, Peng, & Park, 2009). The primary reason for this debacle, however, is that research on violent video games and aggression has continued to yield results which are inconsistent (Lee et al., 2009). The majority of research on video games has focused on the negative effects that playing violent games can have, which include anti-social behavior, aggressive thoughts, and physical arousal (Lee et al., 2009). Bushman, Rothstein, and Anderson (2010) claim that while the significant levels of video game effects estimate towards aggression may seem small, they are actually comparable in effect size with other potential and well known health hazards, including exposure to lead and secondhand smoke. Bushman et al., (2010) also assert that the small-to-medium effect size they have found in regards to video game aggression is akin to effect sizes found with poverty and substance abuse in connection with aggressive behavior.

Still others would argue that the effect sizes found in regards to aggression and violent video games are minimal and insignificant (Lee et al., 2009). Those who dispute these significant effects claim that the methodology used in these studies has not been consistent enough to produce valid findings and that outside variables such as gender, personality, and environmental factors are not often taken into consideration (Ferguson & Killburn, 2010). Ferguson (2007) and Sherry (2001) even go as far as to state that violent video games can have positive effects and that the evidence for negative effects is not

strong enough to connect with aggressive tendencies. Lee et al. (2009) cite the Office of the Surgeon General when they state, “Accordingly, the statistical effect size from these studies is relatively too small for physical aggression, and moderate at best for aggressive thinking” (p. 554). While each side of the argument can be considered valid, the problem is that the mission to negate or solidify the negative effects of video games has all but consumed the research. As a result of this intense focus on negative effects, little research has been conducted to understand why people seek out and play games in the first place, signaling the need for continued research in this area (Ferguson & Olson, 2013).

### **Uses and Gratifications Theory**

A theoretical perspective that explains why people seek certain media is known as uses and gratifications. Uses and gratifications makes the assumption that audience members actively select mediums to obtain certain social and psychological needs (Rubin, 2009). Uses and gratifications theory also asserts that the audience member has more input on the media that is selected than it has on them. The theory also proposes that the audience consciously knows which needs they are trying to meet with the selection of the given media. According to Rubin (2009):

Behavior is largely goal directed and purposive. People typically choose to participate and select media or messages from an array of communication alternatives in response to their expectations and desires. These expectations and desires emanate from, and are constrained by, personal traits, social context, and interaction (p. 167).

Media use, therefore, is dependent upon human needs, social influences, and individual differences. According to Lucas and Sherry (2004), none of these features alone are responsible for media selection/use, but instead it is the case that these factors interplay in their influence on which media are ultimately selected/used.

Media can be used to fulfill an assortment of needs which can include escape, information gathering/surveillance, entertainment, building relationships, cultural comparison, social comparison, and socializing; and the needs that the person is trying to accomplish through selection of media are dependent upon personal traits and factors as mentioned above (Rubin, 2009). Finally, it is important to note that according to Rayburn and Palmgreen (1984), the theory of uses and gratifications is reliant upon audiences' expectations being fulfilled by their selected media. When these needs are gratified, the audience member is satisfied; however, when these needs are not met, the belief that the media can fulfill their needs is skewed or they are left dissatisfied (Rayburn & Palmgreen, 1984).

Although uses and gratifications offers much insight into the motivations of media selection, the theory is geared more towards conventional media such as newspapers and television. Newer forms of media, like the internet and video games, offer new challenges to the uses and gratifications perspective because they offer more interactivity to the audience/user and consequently can fulfill gratifications that cannot or were not easily met by the conventional forms of media (Sundar & Limperos, 2013). Unlike television, video games require a higher amount of concentration and interaction in order to stay connected with the story and game play, which sets them apart from all other media (Sherry, 2001; Reinecke, 2009).

According to Sundar and Limperos (2013), new technology allows for new gratifications, and the ability to achieve these needs drives people to select the newer mediums. Although the plethora of new media available offers new and unique gratifications, many of the gratifications present in new media were also present within the old media. Sundar and Limperos (2013) also argue that it is possible that newer media allow for better fulfillment of needs than what past/conventional media were capable of. YouTube, for example, would allow for more co-viewing of a video through shared hyperlinks and other methods than would watching the same video on a television because the information/experience can be spread to a larger group of people, creating more accessibility and possibly more social interaction.

While it is possible that new media help people to better realize social and psychological needs than their older counterparts, it is also possible that many of the needs now being fulfilled were always present (Sundar & Limperos, 2013). Sundar and Limperos (2013) cite the cell-phone as creating the need for mobility, which can now be seen in other mediums such as portable handheld gaming devices. People may have not realized that there was the need for mobility in communication, but that does not mean that the need was nonexistent. As technology advances, existent forms and new forms of media alike will continue to gratify existing needs, create new needs, and meet needs that were not always attainable through the selection of media (Sundar & Limperos, 2013).

Video games are an example of how technology has allowed for the realization of existent needs to be gratified through media. Competition has always been a social need within society, whether it was the gladiator games, competing in sports, or playing chess; video games allow this need for competition to be achieved through media. Through the

uses and gratifications perspective, video games can be seen as a means to obtaining a number of gratifications. According to Lucas and Sherry (2004), people seek video games for numerous reasons including competition, social interaction, challenge, diversion, entertainment, fantasy and arousal (p. 503). Sundar and Limperos (2013) discuss that there are numerous gratifications possible for each medium that have not been discussed or discovered; innovations and advancements will only further support this statement due to the ever-evolving nature of media. As mentioned previously, the motivations and reasons for playing video games are an understudied issue, and as a result of this, there are many undeveloped topics that need exploration. One of these being the fulfillment of cathartic needs through playing video games. However, before catharsis is looked at in more depth, it is important to understand one of the primary needs that video games help fulfill and that is control.

### **The Need for Control Fulfilled by Video Games**

According to Lucas and Sherry (2004), there are three basic interpersonal needs that govern most social interaction - inclusion, affection, and control. These basic needs, along with individual differences and social influences (uses and gratifications theory), determine the selection of media and the motivations behind the selection (Lucas & Sherry, 2004). However, Ryan and Deci (2000) have shown that there are three basic psychological needs that underlie motivations, which are competence, social relatedness, and autonomy needs. These psychological needs have also been shown to be predictors of motivations to play video games (Ferguson & Olson, 2013). Although these two viewpoints both offer valid points, they differ in their approaches; however, what is interesting about this is that both the interpersonal and psychological motivators include

control within their schema to some degree (Lucas & Sherry 2004; Ferguson & Olson, 2013).

Tamborini, Grizzard, Bowman, Reineicke, Lewis, and Eden (2011) define autonomy needs as "...the desire to feel that behaviors are internally derived and independent of outside influence" (p. 1027). In other words, a sense of autonomy means that people's behaviors, actions, and mood are not being affected by their environment or others around them. While the preexistent need for control can be described as one's desire to have influence over one's own environment and the actions of others (Lucas & Sherry, 2004, p. 504), Ferguson and Olson (2013) state that people often seek video games as a way of fulfilling their needs for autonomy because playing them can give them a sense of control when they have no, limited, or less than desired amounts of control within their own lives. By this reasoning, seeking the fulfillment of control can be seen as a way of fulfilling some of the needs for autonomy. Due to the increased level of interactivity found within them, video games are proposed to allow for more control than other mediums (Sherry, 2001; Sundar & Limperos, 2013). Tamborini et al. (2011) found that video games with greater levels of interactivity provided higher levels of control, which in turn led to higher fulfillment of autonomy and competence.

Furthermore, Reinecke (2009) notes that video games allow players to have abilities that no other media can provide. Video games grant players the ability to create their own characters, choose which tasks and missions they will play, and to control the outcome of the game itself. These capabilities allow for the player to apply greater amounts of control than other media can provide, which according to Reinecke (2009), leads to a greater sense of autonomy. Video games help people fulfill their needs for control, and

in relation, autonomy; this is important because the need for catharsis/stress reduction can be impacted by one's ability to achieve a feeling of control and autonomy (Lucas & Sherry, 2004; Ferguson & Olson, 2013).

### **Catharsis and Video games**

Catharsis in relation to video games can be described as when "...individuals turn to video games to reduce stress, or meet needs for control not met in their real lives" (Ferguson & Olson, 2013, p. 155). According to Whitaker, Melzer, Steffgen, and Bushman (2013), those who are angry or stressed often seek out violent video games as a way of trying to achieve catharsis to alleviate their negative emotions. Gentile (2013) describes catharsis as the belief that "...playing violent video games or watching violent TV/movies allows people to "vent" their aggressive inclinations and therefore behave less aggressively after playing/watching" (p. 492). Catharsis has generally been viewed as a way of releasing pent up negative feelings in a healthy non-aggressive manner (Lewis & Bucher, 1992). Catharsis is nearly as controversial of a topic as violence in video games (Gentile, 2013). Much like the belief that video games produce numerous negative side effects, the idea that catharsis can be achieved by venting rage through use and interaction with violent media continues to persist. However, both of these notions are lacking significant empirical results (Griffiths, 1999; Lee et al., 2009; Gentile, 2013). Gentile (2013) asserts that the majority of research has shown that catharsis cannot be achieved through violent media or playing violent video games and that viewing/using these mediums only increases anger and aggression. In accordance to the concept of catharsis, Gentile (2013) states "...viewing, thinking about, or performing aggressive acts tends to increase later aggressive behavior, not reduce it" (p. 502). Despite Gentile's

(2013) assertions, there are still numerous studies that support the proposition of the achievement of catharsis through viewing and use of violent media (Ferguson & Olson, 2013; Griffiths, 1999).

While Griffiths (1999) analyzes studies that find both aggression and non-significant effects as results of playing violent video games, he also highlights one study that is of particular interest in regards to catharsis. Griffiths (1999) cites Winkel, Novak, and Hopson's (1987) work as support for the catharsis effect. In the discussed study, teenagers who played violent video games displayed no aggression towards their peers after the study. Griffiths (1999) explains that the results of this study are "...entirely consistent with the catharsis hypothesis; that is, it might be precisely the fantasy aggression that releases the energy that would otherwise be expressed as aggressive behavior" (p. 206). Ferguson and Olson (2013) also support the notion that catharsis can be a beneficial outcome of playing video games. To that end, Ferguson and Olson (2013) argue that there is not enough research looking at individual factors that influence people to seek violent video games.

### **Stress as a Motivator for the Fulfillment of Catharsis**

Noting this problem, Ferguson and Olson (2013) looked at stressed/unhappy and unstressed/happy players then asked them their motivations for playing/seeking violent video games using surveys. Ferguson and Olson (2013) found that catharsis was a major motivator for playing violent video games, especially among stressed/unhappy players. As mentioned earlier, sense of control is a part of catharsis because when people feel they are struggling with control in their lives, it produces stress (Ferguson & Olson, 2013; Reinecke, 2009). According to Reinecke (2009), gaining a sense of control is one of the

key factors in achieving stress alleviation. As Reinecke (2009) notes, stress can be caused by a number of factors; but one of the most prevalent sources of stress comes from unpleasant demands from one's environment, whether socially constructed or otherwise (p. 129). When one fails to have influence in their environment, a lack of perceived control is the result, and autonomy suffers (Lucas & Sherry, 2004; Reinecke, 2009). As mentioned earlier, people play video games partially for the experience of exerting control over the in-game environments, possibly due to a deficiency of control in their own lives (Reinecke, 2009). Within Reinecke's (2009) study, it was found that participants regularly play video games as a means of recovering from stress and frustrating experiences and that those who reported receiving more stress relief from playing video games played more. Similarly, the children in Ferguson and Olson's (2013) study believed that playing violent video games was a constructive way of fulfilling their need of catharsis/stress reduction. Unfortunately, regardless of these findings, the research on catharsis and playing violent video games is marred with conflicting results, and not enough research has been established on the topic to lay this argument to rest (Ferguson & Olson, 2013). It is possible that there are in-game factors, such as enjoyment and frustration, which affect the fulfillment of catharsis, and whether catharsis is achieved or not could possibly lead to post-game aggression.

### **Difficulty and Enjoyment of Video Games**

As Lee et al. (2009) notes, many variables are often unaccounted for when looking at aggression and exposure to violent video games. A video game's difficulty often influences the amount of enjoyment or frustration a player derives from it (Juul, 2009; Schmierbach, Chung, Wu, & Kim, 2014). Difficulty can affect both a player's

sense of competency (Schmierbach et al., 2014) and their sense of control/autonomy (Juul, 2009). A person's ability to fulfill autonomy and competence needs have been found to be derivative of enjoyment (Tamborini, et al., 2011). While autonomy needs have been described as a person feeling independent of outside influence, competence needs refer to one feeling efficient or capable of handling the situations within their environment (Tamborini, et al., 2011). Although these needs are often looked at separately, some researchers consider them as one and the same, or at the very least dependent upon one another. Lucas and Sherry (2004) discuss that challenge is "...the ability to beat or control the game..." (p. 508); this is why they assert that an individual's need for control can be met by seeking the need for challenge in video games. Mastery of the game, therefore, might be seen as a way of fulfilling both one's needs to assert control over an environment and to feel competent/skilled within that environment by displaying one's gaming skills within said environment (Lucas & Sherry, 2004; Schmierbach et al., 2014).

To this end, Jansz (2005) attests that one of the most incremental parts of enjoying a video game is winning or doing well in it. However, it is too often assumed that winning is everything to enjoyment (Juul, 2009). According to Juul (2009), gamers require challenge/competition in their games, and without a true sense of this, the game is often not enjoyable. Video games must be challenging, but not too challenging; and at the same time, they must not be too easy. Lucas and Sherry (2004) discuss that what is appropriately challenging to one player may be too difficult or easy for another; resultant of this, they state, "Thus, video games offer different satisfaction of the interpersonal orientation of control to different people based on their individual ability to master the

game” (p. 508). Within the context of video games, Lucas and Sherry (2004) define challenge as a player’s ability to master or affirm dominance over the game itself, the progression of game-play, in-game enemies, and other players. However, if the game is too difficult, the player will become frustrated, especially if it is the game’s fault; if the game is too easy, though, the player will become bored and unsatisfied with the game (Fraser, Katchabaw, & Mercer, 2013). If a player is solely responsible for a failure within the game, then the player is more likely to accept this as a challenge and get further enjoyment from having to develop new strategies (Juul, 2009). Williams (2009) notes that in most video games, as game play progresses, the game often becomes more difficult and failure of the player to be able to adapt to this difficulty can result in frustration. Some players become frustrated just by not being able to progress to the next level/setting of difficulty. However, according to Juul (2009), failure is mainly frustrating to a player when it is the game’s fault that the failure occurs; examples of this could include enhanced/unfair difficulty levels, unresponsive control mechanisms, or glitches within the programming. The aforementioned examples are all “external factors” that are outside of the player’s control, and hence lead to frustration/stress, or quitting the game (Fraser et al., 2013). Juul (2009) found that players who completed the game and lost some during the course of the game experienced more enjoyment than those who found the game too easy and those who found it too difficult.

The results of Juul’s (2009) study offers further insight upon the results of Limperos, Schmierbach, Kegerise, and Dardis’ (2011) study. Limperos et al. (2011) found that control scheme was dependent upon enjoyment of the game for players. Limperos et al. (2011) tested a modernized control scheme against the standardized

scheme and hypothesized that enjoyment would be higher for the modernized. Contrary to their predictions, Limperos et al. (2011) found that the standardized control scheme granted more enjoyment. Several reasons were listed for this, but the overwhelming and most significant factor was the fact that the standardized controller offered the most in-game control for players. It is possible that when players were using the new control scheme that they did not feel as if they were in control and that they felt their failures were not their own but that of the control scheme or on the game itself (Limperos et al., 2011; Juul, 2009). Therefore, it can be seen that for players to derive enjoyment from a video game, there must be a balanced level of challenge and a feeling of responsibility/control for one's own fate/failure (Juul, 2009). As stated earlier, control is a crucial component of achieving catharsis, and without this feeling of control, it may not always be possible to reach a cathartic state (Ferguson & Olson, 2013).

### **Frustration and Aggression**

Frustration may also play a role in one's ability to reach catharsis while playing violent video games or video games in general. According to Berkowitz (1989), frustration occurs in the presence of personal attack, aggressive reactions, or when the attainment of a goal/gratification is impeded. The denial of this goal or gratification can be from external forces such as another person or environmental factor; what matters is that the goal is not being fulfilled. As has been discussed earlier, the need for control is the desire to affect other's actions and one's environment; failure to do so can lead to frustration (Lucas & Sherry, 2004; Berkowitz, 1989). The frustration-aggression hypothesis proposes that frustration is in many cases likely to lead to aggression (Berkowitz, 1989). Frustration, and therefore aggressive disposition, is said to be made

worse the higher the expectation of the anticipated satisfaction to result from the impeded/blocked goal is thought to be. According to Berkowitz (1989), the resultant aggression of having one's goals blocked is dependent upon partial gratifications and frequency of unfulfilled needs. Acting upon aggression often comes with negative consequences, and in lieu of this, it is not always carried out. Berkowitz (1989) asserts that it is often socially unacceptable to take one's aggression out on the perpetrator who is causing the frustration, and as a result, the pent up aggression is likely to be transferred upon another party. In instances where there is no physical party to blame one's frustration, such as video games, the aggression is most likely to be taken out on a bystander or non-involved party.

One could then argue that in regards to violent video games, what is actually taking place is excitation transfer, where the person is excited by the first stimulus and that the next proceeding stimulus is heightened by the residual excitation of the first stimulus (Zillmann, 1971). However, Ivory and Kalyanaraman's (2007) study shows that this may not be the case and that frustration may be the true catalyst for aggression. Ivory and Kalyanaraman (2007) found in their study that exposure to non-violent games actually produced more aggressive thoughts than did exposure to violent games. Although this effect was not found to be significant, this finding still disproved their hypothesis that violent video game exposure would result in more aggressive thoughts since the violent video games were higher in excitement levels (Ivory & Kalyanaraman, 2007). Ivory and Kalyanaraman (2007) noted that one of the only practical reasons that could account for this result is that frustration was a factor in the nonviolent video game

condition, and therefore caused aggression/aggressive thoughts. The results of Williams' (2009) study offer more insight on to this possibility.

Williams (2009) makes the assertion that “aggressive cues, such as violent content, serve to weaken or strengthen the emotional displeasure and therefore only serve a facilitative role” (p. 294). As a result of this proposition and Berkowitz's (1989) work, Williams (2009) makes the assumption that a non-violent frustrating video game could lead to aggression when a goal/gratification is blocked or hindered. Within Williams' (2009) study, he manipulated both content (violent or not) and frustration (difficulty level) to see the effects this would have on participants' levels of aggression. The impediment of goals was blocked in this study as a way of creating frustration for the participants playing in the frustration conditions. Williams (2009) manipulated difficulty and told players that higher performance would result in monetary rewards. The increased difficulty hindered participants' performance within the game. Williams (2009) found that a non-frustrating violent video game could lead to aggressive tendencies, despite the lack of violent content, when there was denial of a reward/satisfaction. Although violent frustrating video games produced the highest aggressive responses, Williams (2009) discovered that there was no significant difference in violent and nonviolent video games in regards to aggression/hostility when frustration was not a factor. These results indicate that the presence of frustration may be a better predictor for aggression than the content of the media itself.

When control is taken away by external forces, then frustration is likely to occur. In the frustration conditions in Williams' (2009) study, participants were allowed to be acquainted with the video game during a tutorial/training session; however, before the

players started the actual game, the difficulty was manipulated to be much harder. This took control away from the players in Williams' (2009) study, and although these players did not seek the game for the purpose of catharsis, they still faced frustration as a result of the enhanced difficulty inhibiting their performance, which in turn blocked them from earning the monetary reward. As mentioned earlier, uses and gratifications theory is reliant upon media fulfilling audience members' expectations (Rayburn & Palmgreen, 1984), and when these needs are not fulfilled people either become frustrated or quit use of the media. Berkowitz (1989) has shown that when a goal is blocked/impeded that frustration is likely to occur as a result of not gaining the wanted satisfaction. Berkowitz (1989) also proposes, therefore, that more than the blocking of one's goals it is that "...the unexpectedness of the thwarting is the feature most likely to provoke aggressive reactions..." (p. 63). Many researchers show that people play video games expecting to relieve stress and achieve a cathartic state (Whitaker et al., 2013; Ferguson & Olson, 2013; Reinecke 2009); yet much of the research shows that a cathartic state is unlikely to be achieved through violent media (Lewis & Bucher, 1992; Gentile, 2013; Griffiths, 1999). Although the results are controversial, and there is evidence to both sides of the catharsis argument, it may be possible that something else is happening. It may be the case that video game players are seeking video games hoping to achieve a cathartic state, but the interference of in-game factors, such as difficulty and personal skill, are negating their efforts by causing frustration from a lack of perceived control. Therefore, it may be the case that video game players are frustrated not only because of in-game influences denying them a sense of control, but also because they were expecting to fulfill a sense of

cathartic release. The denial of the unexpected gratification of catharsis may be the real cause for frustration and aggression, not the content of the media itself.

Based upon the previous research and the aforementioned arguments, the following hypotheses and research questions are proposed:

H1: Increased difficulty within the game and the presence of pre-exposure frustration/stress will predict increased frustration with the game.

H2: Increased difficulty (hard mode) and the presence of pre-exposure frustration/stress will predict lower feelings of catharsis.

H3: The hard difficulty and the presence of pre-exposure frustration/stress will predict increased feelings of aggression.

RQ1: How is enjoyment impacted by frustration, difficulty, and content of a video game?

RQ2: How is aggression impacted by content of a video game?

RQ3: How is control impacted by frustration, difficulty, and content of a video game?

## Chapter Three: Methods

### Participants

The participants that took part in this study were undergraduate students recruited via volunteer sampling from communication courses at a large Southeastern University. In order to be eligible for participation in the experiment, students had to be at least 18 years of age. The sample comprised of a total of 155 total participants ( $N = 155$ ). Participant ages ranged from 18 to 35, with an average age of 20.52 years old ( $SD = 2.27$ ). The sample was made up of a population that consisted of 27.1% ( $n = 42$ ) freshmen, 32.9% ( $n = 51$ ) sophomores, 29% ( $n = 45$ ) juniors, and 11% ( $n = 17$ ) seniors or older. In order for desirable power for statistical testing to be achieved, it was hoped that each condition would have at least 20 participants; while half the conditions had 20 participants, the other half had 19 or 18 (Frey, Botan, & Kreps, 2000). Lee et al. (2009) cite the Entertainment Software Association (2007) when they state that over one-third of the video game playing population is female and that just under two-thirds are male. Although the recruitment process was done through volunteer sampling, the sample was proportional to the game playing population. Female participants made up 38.1% ( $n = 59$ ), while male participants made up 61.9% ( $n = 96$ ) of the sample.

### Experimental Design

The participants were randomly assigned into one of the eight conditions as a result of the 2 (stress/non-stress) x 2 (violent/nonviolent) x 2 (easy/hard) manipulation in accordance with the design of the experiment. The nature of the experiment allowed for random assignment of participants into equally distributed groups (Frey et al., 2000). Due to the random assignment and lack of a pre-test, the specific design format of this

experiment was that of a full experimental posttest-only equivalent groups factorial design. Using this design allowed the researcher to see the effects of each independent variable; because this study has three independent variables, this was crucial (Frey et al., 2000).

### **Description of Manipulations, Checks, and Stimulus Material**

Stress/frustration was manipulated in this study via quiz performance.

Participants were recruited from the College of Communications, and as such were given a quiz on basic knowledge that is covered within courses in the major (See Appendix A).

This quiz was given before exposure to any of the other experimental conditions.

Participants were either separated into the stress inducing or non-stress inducing quiz condition. Those who were assigned to the stress inducing quiz condition were told they did poorly on the quiz regardless of their actual score, while those who were assigned to the non-stress inducing condition were told they had done well regardless of their score. It was hoped that failure to do well on this quiz, which was particularly easy, would stress the participant. Participants in the non-stress inducing condition were told they have received a good score, while participants who were in the stressed condition were told that they had only correctly answered a few questions and that they had performed below average.

Frustration/stress from the stress induction task/quiz was measured by using a two-item scale (e.g. “How did you feel upon learning your feedback from the quiz you just took?” and “How did you feel once you learned the feedback of the quiz you just took?”) along a 7-point Likert-type scale ranging from *not frustrated* (1) to *very frustrated* (7) and *very bad* (1) to *very good* (7). The second question was reverse coded,

and then both questions were analyzed using an independent sample t-test. The independent sample t-test revealed a significant difference between groups:  $t(137) = 15.53, p < .001$ . The mean for participants who received negative feedback ( $M = 4.66, SD = 1.29$ ) was significantly different from the mean of participants who received positive feedback ( $M = 1.85, SD = .92$ ). Participants had to wait till the end of the study to find out that their quiz results were arbitrary (debriefing).

All games, both violent and nonviolent, had to have selectable difficulty to be used in this study. Games for both conditions (violent versus nonviolent) were played on Xbox 360, which uses standardized controllers. This was done in the hopes of replicating similar control schemes in both conditions so that control scheme is therefore not dependent upon enjoyment based on difficult learning curves from having to use an unconventional control scheme, such as that of the Wii or Wii U systems (Limperos et al., 2011). *Left 4 Dead 2*, was used for the violent conditions because of its violent content and multiple difficulty settings, while *Forza Horizon 2* was used in the nonviolent group due to its nonviolent nature and interchangeable difficulty settings. *Left 4 Dead 2* is an apocalyptic first person shooter in which characters are forced to fight zombies and other infected humans in order to advance. This game contains intense violence in the forms of dismemberment, decapitation, and other gratuitous acts of violence. Due to this wanton violence, *Left 4 Dead 2* received an M for mature rating (“Left 4 Dead 2”, 2015). According to the Entertainment Software Ratings Board (ESRB), an M for mature means that the game is only suitable for audiences who are 17 and older and that the game may contain extreme levels of violence (“ESRB Ratings Guide,” 2014). *Left 4 Dead 2* also has multiple difficulty settings and even a setting past

the hard difficulty. As difficulty settings advance in *Left 4 Dead 2*, enemies deal more damage to players and become much more resistant to damage themselves, and are therefore harder to kill as a result. To summarize, this is why *Left 4 Dead 2* was used as the violent “condition” in this study. *Forza Horizon 2*, on the other hand, is a realistic racing game which only contains mild violence in the form of threats or taunts from characters within the game; however, there is no actual physical violence in the game other than cars wrecking. *Forza Horizon 2* received an E for everyone rating (“Forza Horizon 2,” 2014). According to the ESRB, a rating of E means that a game is suitably appropriate for all audiences, and any violence that is contained therein is mild or cartoonish (“ESRB Ratings Guide,” 2014). *Forza Horizon 2* is appropriate for the non-violent condition due to the limited violence and interchangeable difficulties within the game. The higher difficulty settings within the game make it more difficult to control the car but add more challenge and in-game rewards in exchange for playing on a higher difficulty.

As mentioned previously, violence was manipulated by having participants either play a violent video game or a nonviolent video game. Although certain video games allow players to turn off the gore (blood, deaths, etc.), the actions the player performs are still violent in most cases, even if they do lack the grisly consequences. As a result of the potential confounding nature of the presentation of violence, separate games were used that completely differed in content (*Left 4 Dead 2*, *Forza Horizon 2*). By manipulating the violent content of the video game, the researcher hoped to see the relationship between violence level and frustration to that of aggression and determine what the stronger predictor of aggression was.

Changing the settings to easy or hard varies the difficulty of each game. To make sure that there was even further discrepancy between these two conditions, the medium setting of difficulty was not used for either video game. It was hoped that the presence of harder difficulty settings would impede player control and only add to the presence of frustration for the participants within the stressed condition and also to test if it created frustration for those not within the stressed condition. An independent sample t-test was conducted to see if a harder difficulty setting would indeed be viewed as more challenging by the participants (e.g. “How difficult was the game?”). The t-test revealed a significant difference between groups:  $t(145) = 4.07, p < .05$ . The mean for participants who played in the hard difficulty conditions ( $M = 4.53, SD = 1.46$ ) was significantly different from the mean of participants who played in the easy setting conditions ( $M = 3.44, SD = 1.84$ ). Manipulating difficulty allowed the researcher to see how players in the stressed or non-stressed conditions reacted to a lack of control created by harder difficulty.

## **Procedure**

Subjects were recruited through SONA and other communication courses. Upon arrival to the research lab, participants were informed generally about the purpose of the study and filled out the necessary consent forms. After completion of these forms, the experiment started with participants being randomly assigned to either the non-stressed or stressed condition. Participants were told that the main experiment about playing video games would take a moment to prepare; while setup was taking place, they were asked to complete a short quiz as a way of gauging their intelligence and communication skills. Depending on which condition the participant was in (stressed/non-stressed), they were

told that they had either performed well (non-stressed) or performed poorly (stressed). After learning of their results, participants were then asked to complete a demographic form; this asked the participants to disclose their age, gender, academic standing, game experience, and whether they found the quiz to be stressful or not. After the fulfillment of this part of the experiment, participants were exposed to video games that vary by difficulty and violent content in one of several conditions depending on random assignment. Ultimately, participants were exposed to one of eight conditions including: stressed, violent content, hard setting; stressed violent content, easy setting; stressed nonviolent content, hard setting; stressed nonviolent, easy setting; non-stressed, violent content, hard setting; non-stressed, violent content, easy setting; non-stressed, nonviolent content, hard setting; and non-stressed, nonviolent content, easy setting. The participants played for ten minutes or at least enough time for them to complete a single player level or match of the game they were playing. Finally, once participants had completed the stress/non-stress assignment and were exposed to the conditions of game-play, they filled out the posttest surveys measuring enjoyment, control, aggression, frustration with the game, and catharsis.

## **Measurement**

**Demographics, Quiz Rating, and Video Game Experience.** After completion of the stress manipulation task, participants were asked to fill out demographic information for the study. This questionnaire asked participants to list their age, gender, academic standing, gaming experience, and whether they deemed the previous quiz (frustration/stress manipulator) to be frustrating or not (see Appendix B). Individual differences (gender, console experience ,and gaming experience) were measured due to

the possibility of them yielding significant results or that they could “compromise any causal relationship found between the independent variable and dependent variable” (Frey et al., 2000, p. 181).

**Dependent Measures.** The dependent variables within this study include enjoyment, aggression, frustration, perceived difficulty, control, and catharsis. All dependent variables were measured using likert-type scales.

**Enjoyment.** The first dependent variable, enjoyment, was measured using a modified scale of video game enjoyment validated by Limperos et al. (2011) (see Appendix C). The seven-item scale measured the participants’ enjoyment of the game they played (e.g., “I would describe playing as enjoyable”) on a 7-point likert-type scale ranging from *strongly disagree* (1) to *strongly agree* (7). The responses to the items were summed and averaged to create the scale, which was found to be reliable (Cronbach’s  $\alpha = .95$ ,  $M = 4.92$ ,  $SD = 1.40$ ).

**Control.** Control and frustration were also measured using Limperos et al. (2011) modified scale (see Appendix C). Control was measured on a six-item scale which measured the participants’ feelings of control with the game they had just played (e.g., “I had a feeling of total control”) on a 7-point likert-type scale ranging from *strongly disagree* (1) to *strongly agree* (7). Cronbach’s  $\alpha$  for the six-item control measure was .88. Total scores ranged from 1.00 to 7.00 ( $M = 4.53$ ,  $SD = 1.38$ ).

**Frustration.** Frustration was measured on a four-item scale which measured the participants’ feelings of frustration with the game they had just played (e.g., “Playing the game made me feel frustrated”) on a 7-point likert-type scale ranging from *strongly*

*disagree* (1) to *strongly agree* (7). Cronbach's alpha for the four-item frustration measure was .74. Total scores ranged from 1.00 to 6.25 ( $M = 2.91$ ,  $SD = 1.31$ ).

**Aggression.** Aggression was measured with Buss and Perry's (1992) aggression questionnaire which is a 29-item scale which accounts for multiple dimensions of aggression (see Appendix D). The questionnaire measures four dimensions of aggression which include physical aggression, verbal aggression, anger, and hostility. Participants rated their agreement using a 7-point likert-type scale *extremely uncharacteristic of me* (1) to *extremely characteristic of me* (7). Responses were summed and averaged to arrive at a composite overall aggression score. The overall aggression measure had a Cronbach's alpha of .90; while total scores ranged from 1.17 to 5.24 ( $M = 2.73$ ,  $SD = 0.83$ ). Physical aggression was measured using the first nine items of the questionnaire. The physical aggression measure had a Cronbach's alpha of .83; while scores ranged from 1.11 to 5.33 ( $M = 2.65$ ,  $SD = 1.05$ ). Verbal aggression was measured using items 10-14 of the scale. The verbal aggression measure had a Cronbach's alpha of .80; while scores ranged from 1.20 to 6.80 ( $M = 3.50$ ,  $SD = 1.20$ ). Anger was measured using items 15-21. The anger measure had a Cronbach's alpha of .80; yet scores ranged from 1.00 to 5.29 ( $M = 2.49$ ,  $SD = .989$ ). Hostility was measured using items 22-29. The hostility measure had a Cronbach's alpha of .89; where the scores from this measure ranged from 1.00 to 6.00 ( $M = 2.56$ ,  $SD = 1.22$ ).

**Catharsis.** Catharsis was measured using a scale developed by the researcher, due to a lack of available catharsis measures (Bushman, Baumeister, & Phillips, 2001) (see Appendix E). Participants rated feelings of catharsis on a ten-item measure (e.g. after playing the game I felt less stressed) using a 7-point likert-type scale *strongly agree*

(1) to *strongly disagree* (7). All 10 items were submitted to a principal components analysis with varimax rotation (EFA) to explore the factor structure. The test indicated a strongly loading univariate solution. As a result, all items were used to construct the catharsis scale. The catharsis measurement was found to be highly reliable (Cronbach's alpha of .95,  $M = 3.84$ ,  $SD = 1.57$ ).

### **Control Variables**

Despite the fact that random assignment to condition would likely take care of any meaningful individual differences, a host of other variables were measured in order to control for extraneous explanations. Some of these factors include general game play experience and experience with specific games/systems. Amount of hours of game play was asked of participants to get a general idea of their playing habits and experience. The mean for game play hours per week was found to be 3.23, and the standard deviation was found to be 4.24. Game play experience was also asked of the two games used for the study, due to the fact that experience/familiarity with these games by the participant could alter one's perception of difficulty as well as enjoyment and other variables. The experience measure for *Left 4 Dead 2* showed overall low familiarity ( $M = 2.21$ ,  $SD = 1.93$ ); while the experience measure for *Forza Horizon 2* showed even less experience ( $M = 1.81$ ,  $SD = 1.51$ ). Both games were played on the Xbox 360, and experience with console systems was measured due to the fact that more experience with consoles may account for greater sense of control within the confines of this study. It was found that participants had a generally high level of experience with console games ( $M = 4.95$ ,  $SD = 1.98$ ).

## **Chapter Four: Results**

Within the confines of this study, in-game factors and pre-exposure to frustration were investigated to see the effects these variables would have on enjoyment, control, frustration, aggression, and catharsis. The uses and gratifications theory as well as the frustration aggression hypothesis were used as overarching frameworks to guide the research of this study. Three hypotheses and three research questions emerged from the literature review and the theories guiding this research. The hypotheses and research questions guided the data collection and analysis procedures that were implemented for this study. In sum, the research was concerned with discovering how in-game factors and pre-exposure to frustration/stress could impact feelings of enjoyment, control, frustration, aggression, and catharsis. Several control variables were also investigated because of the possibility that their presence could impact the results. Game play experience and console experience were included as control variables due to the fact that greater experience with games/gaming systems likely resulted in greater sense of control for participants with higher experience. Gender was also controlled for because of the known differences between male and female participants (Brown, Holtzer, Brown, & Brown, 1997; Lucas & Sherry, 2004). The findings of the study are reported according to the hypotheses and research questions.

### **Hypothesis One**

The first hypothesis (H1) sought to understand the impact that increased game difficulty setting (hard mode) and pre-exposure to frustration (negative feedback with the stress induction task) would have on frustration while playing the game. A 2 x 2 ANCOVA (Frustration X Difficulty) was conducted to examine the impact of pre-

exposure frustration and game difficulty on feeling of post-exposure frustration (while controlling for gender, game play experience, and console experience). The effect of pre-exposure frustration/stress (positive or negative feedback) on frustration with the game was not significant,  $F(1, 148) = 2.48, p = .12, \eta^2 = .02$ . However, there was a significant main effect of difficulty on post-exposure frustration,  $F(1, 148) = 5.57, p < .05, \eta^2 = .04$ . Respondents reported the game was more frustrating when they were in the hard condition ( $M = 3.15, SE = .14$ ) relative to the easy condition ( $M = 2.68, SE = .14$ ). This partially supports H1, showing that as game difficulty increases, so does frustration from the game play. This is consistent with previous research (Fraser, et al., 2013; Juul, 2009). The quiz feedback and difficulty interaction term was also tested, and there was not a significant main effect,  $F(1, 148) = .974, p = .33, \eta^2 = .01$ . On a final note, none of the covariates in the model were significant.

## **Hypothesis Two**

The second hypothesis (H2) sought to understand the impact of increased game difficulty setting (hard mode) and pre-exposure frustration (negative feedback) would have on feelings of catharsis. To test for this, an analysis of covariance (ANCOVA) was conducted to examine the impact of pre-exposure frustration and difficulty on feelings of catharsis (while using the same covariates as the previous analysis). No significant main effects were found for quiz feedback  $F(1, 148) = .43, p = .51, \eta^2 = .003$ , difficulty  $F(1, 148) = .72, p = .40, \eta^2 = .005$ , and the interaction between the two factors,  $F(1, 148) = .31, p = .58, \eta^2 = .002$ . However, two significant covariates emerged. Both system/console experience  $F(1, 148) = 28.67, p < .001, \eta^2 = .16$  and game play experience  $F(1, 148) = 5.27, p < .001, \eta^2 = .03$  were significant. This suggests that

those who play video games more and have more experience with console games (traditional gamers) are potentially seeking catharsis through their play. To conclude, H2 was not supported by the data.

### **Hypothesis Three**

Hypothesis three (H3) sought to understand how pre-exposure frustration and increased difficulty setting would impact feelings of aggression. A multivariate analysis of covariance (MANCOVA) was implemented to see if aggression was impacted in any significant way by difficulty and pre-exposure to frustration (quiz feedback). The MANCOVA was a 2 x 2 (Difficulty X Quiz Feedback) predicting feelings of aggression and controlling for covariates (gender, game play experience, and console experience). There were no significant multivariate main effects on quiz feedback, Wilk's  $\Lambda = .99$ ,  $F(4, 145) = .42$ ,  $p = .79$ ,  $\eta^2 = .01$ , or difficulty Wilk's  $\Lambda = .99$ ,  $F(4, 145) = .46$ ,  $p = .77$ ,  $\eta^2 = .01$ . There was also no significant multivariate main effect with the interaction of quiz feedback and difficulty in regards to aggression either, Wilk's  $\Lambda = .97$ ,  $F(4, 145) = 1.32$ ,  $p = .26$ ,  $\eta^2 = .04$ . On a final note, no significant covariates emerged in this model. To summarize, H3 was not supported.

### **Research Question One**

Research question one (RQ1) sought to examine how enjoyment of the game was impacted by pre-exposure to frustration (positive or negative quiz feedback), difficulty of game (easy or hard), and content of the video game (nonviolent or violent). To investigate the question, a 2 x 2 x 2 (Quiz feedback x Difficulty x Content) ANCOVA was conducted to see how these factors impacted enjoyment and in light of several covariates (gender, game play experience, and console experience). Analysis of the

results showed that there were no main effects of quiz feedback  $F(1, 144) = .07, p = .80, \eta^2 = .00$ , difficulty  $F(1, 144) = .49, p = .49, \eta^2 = .00$ , and content of the video game  $F(1, 144) = 2.16, p = .14, \eta^2 = .02$  on enjoyment. Even though there were no main effects, there was a significant interaction between feedback and content of the video game,  $F(1, 144) = 4.57, p < .05, \eta^2 = .03$ . Further investigation of this finding showed that people who received bad quiz feedback and were in the violent condition ( $M = 5.25, SE = .20$ ) enjoyed the game more than those in any other condition. Those who received bad feedback and were in the nonviolent condition ( $M = 4.55, SE = .19$ ), received good feedback and in the violent condition ( $M = 4.89, SE = .19$ ), and received good feedback and were in the nonviolent condition ( $M = 5.02, SE = .19$ ) were not significantly different from one another. The analysis of data also showed that console experience was a significant predictor of enjoyment:  $F(1, 144) = 26.76, p < .001, \eta^2 = .16$ .

### **Research Question Two**

Research question two (RQ2) sought to understand how feelings of aggression were impacted by the content of the video game (violent or nonviolent). To investigate the question further, an MANCOVA was conducted to see if aggression was impacted in any significant way by content of the game, while controlling for covariates (gender, game play experience, and console experience). There were no significant multivariate main effects on content of the game and aggression: Wilk's  $\Lambda = .97, F(4, 147) = .96, p = .43, \eta^2 = .03$ . The MANCOVA also found no significant multivariate main effects on covariates either, meaning that no evidence was found to really support the idea that content of the video game impacted aggression one way or another.

### Research Question Three

Research question three (RQ3) explored the effects that pre-exposure to frustration (quiz feedback), difficulty of the game, and content of the game would have upon feelings of control for the game. To investigate the question, a 2 x 2 x 2 (Quiz feedback x Difficulty x Content) ANCOVA was conducted to understand the relationship between the independent factors and feelings of control, while controlling for several covariates (gender, game play experience, and consoled experience). Analysis of the data showed that there were no significant main effects of quiz feedback,  $F(1, 144) = .01, p = .93, \eta^2 = .00$ , and difficulty,  $F(1, 144) = 2.01, p = .16, \eta^2 = .01$  on feelings of control. However, there was a significant main effect with content of the game and feelings of control  $F(1, 144) = 10.71, p < .001, \eta^2 = .07$ . Continued investigation of this finding provided evidence that people who played in the violent condition ( $M = 4.80, SE = .11$ ) had greater feelings of control than those who played in the nonviolent condition ( $M = 4.29, SE = .11$ ). There was also a significant interaction between quiz feedback and content of the game,  $F(1, 144) = 5.48, p < .05, \eta^2 = .04$ . Further exploration into this finding showed that people who received bad quiz feedback and were in the violent condition ( $M = 4.99, SE = .16$ ) experienced greater feelings of control in the game than those in any other condition. Those who received bad feedback and were in the nonviolent condition ( $M = 4.11, SE = .15$ ), received good feedback and in the violent condition ( $M = 4.61, SE = .16$ ), and received good feedback and were the nonviolent condition ( $M = 4.47, SE = .15$ ) were not significantly different from one another. The analysis of data also showed that console experience was a significant predictor of

feelings of control  $F(1, 144) = 40.94, p < .001, \eta^2 = .22$ ; while gender was also a significant predictor of feelings of control  $F(1, 144) = 4.26, p < .05, \eta^2 = .03$ .

### **Additional Considerations: Bivariate Correlations**

As discussed previously, certain control variables were accounted for in the ANCOVAs and MANCOVAs used to analyze the data because of their potential to impact the hypothesized relationships outlined in this study. Since I did not find many experimental main effects, I looked at the correlations between all variables to understand some of the general relationships between the control, dependent, and independent variables within the study. Gender was found to be a significant factor when looking at relationships between the variables. When looking at gender, female participants had significantly less game play experience than male participants:  $r = -.39, p < .001$ . Based on the previous finding, it was not surprising to see that that female participants had significantly less console experience than male participants:  $r = -.69, p < .001$ . Possibly due to more experience, male participants were found to have reported significantly higher levels of control while playing the game than their female compatriots:  $r = -.55, p < .001$ . Female participants (possibly due to their inexperience) reported experiencing more frustration while playing the games than male participants:  $r = .26, p < .001$ . Female participants also enjoyed playing the game significantly less than male participants ( $r = -.39, p < .001$ ); this may be resultant upon female participants reporting higher levels of frustration. Within the sample, men were found to be significantly more aggressive than female participants:  $r = -.23, p < .001$ . Male students were also found to be more physically ( $r = -.31, p < .001$ ) and verbally aggressive ( $r = -.31, p < .001$ ) than

women. Possibly coinciding with the findings on aggression, male participants reported greater feelings of catharsis than female participants:  $r = -.41, p < .001$ .

Like gender, game play experience and console experience were found to be correlated with several of the dependent variables as well. As expected, console experience was positively correlated with game play experience:  $r = .48, p < .001$ . Higher game play experience was related with greater sense of control within game ( $r = .34, p < .001$ ), as was higher console experience ( $r = .68, p < .001$ ). As with control, enjoyment with the game also went up for participants as game play experience was found to be higher ( $r = .23, p < .001$ ) and as console experience was found to be higher ( $r = .54, p < .001$ ). However, those with less game play experience ( $r = -.18, p < .05$ ) and console experience ( $r = -.30, p < .001$ ) were found to be more frustrated with the game. Interestingly, those higher in game play experience were also found to be more verbally aggressive than those with less experience:  $r = .26, p < .001$ . Possibly due to reporting higher levels of verbal aggression, and therefore having a greater need, those who had higher game play experience also reported experiencing greater levels of catharsis:  $r = .41, p < .001$ .

Perhaps most interestingly, some of the dependent variables in the study were related to one another in line with theoretical predictions. A greater sense of control within the game was linked to a greater sense of enjoyment with the game:  $r = .74, p < .001$ . Students who were more frustrated with the game also found it to be less enjoyable than those who did not:  $r = -.27, p < .001$ . Whereas it was shown that control and enjoyment were correlated, frustration was also found to be correlated with control; in so much that those who had less feelings of control were more frustrated with playing

the game  $r = -.39, p < .001$ . Participants who reported higher levels of enjoyment also reported significantly higher levels of catharsis as well:  $r = .64, p < .001$ ; in addition to this, those who had greater levels of control within the game also reported having higher feelings of catharsis:  $r = .64, p < .001$ . Those experiencing a lesser sense of control exhibited more anger:  $r = -.19, p < .05$ . In addition, participants who experienced lower feelings of control with the game reported more hostility as well:  $r = -.18, p < .05$ . It was also found that higher levels of frustration were correlated with lower reported levels of catharsis:  $r = -.24, p < .001$ . Participants who played the game on the hard setting experienced significantly more frustration than those who played it on the easy setting:  $r = -.17, p < .05$ .

## **Chapter Five: Discussion**

### **Purpose**

As more and more video games are produced, some of them more violent than ever, questions will continue to be raised in regards to their effects on consumers. As mentioned earlier, there is no definitive consensus as to whether or not the consumption and use of video games leads to aggressive thoughts/actions or benefits in those who play them (Lee et al., 2009; Bushman et al., 2010; Lucas & Sherry, 2004; Ferguson, 2007). The uses and gratification theory is often used as a lens to investigate why people use certain media and how media might impact users (Rubin, 2009). Currently, there is not an abundant amount of research on players' motivations of stress relief for playing video games (Ferguson & Olson, 2013). However, this study sought to understand game players' motivation to play video games for the purpose of catharsis/stress relief as well as what variables impact the ability to achieve catharsis. This study also explored whether other in-game factors besides content could be responsible for aggression in game players; this was examined due to research which has shown that aggressive tendencies only increase in those using violent media trying to achieve catharsis (Gentile, 2013). This study also sought to understand how pre-exposure to frustration and the in-game variables of difficulty and content would impact feelings of enjoyment, control, frustration, aggression, and catharsis for game players. It was hoped that by discerning relationships between these variables, that further understanding of the influences video games have on their consumers would be achieved.

## Overview and Explanation of Hypotheses and Research Questions

**Hypothesis One.** The first hypothesis (H1) found that pre-exposure to frustration did not significantly predict frustration with playing the game. Although the pre-exposure to frustration manipulation was shown to work, it is possible that the residual frustration created from hearing one's negative feedback did not transfer to the stimulus of the game; and therefore participants did not report frustration with the game regardless of having been exposed to frustration beforehand (Zillman, 1971). It is conceivable that by having the participants fill out the demographic information upon completion of the frustration manipulation task that the initial frustration weakened during this time lapse, miniscule as it was.

Although H1 was not fully supported, there was a significant main effect with difficulty level and frustration with the game. Specifically, those who played on the hard difficulty setting reported significantly higher levels of frustration than those who played it on easy. This finding is consistent with previous research, which shows that increases in difficulty are often correlated with increases in player frustration (Juul, 2009; Fraser et al., 2013). According to Fraser et al. (2013), "When the game's difficulty is not correctly matched to the player's ability, the player could become bored or frustrated..." (p. 270). It is possible that many of those who played it on the hard setting found the game too difficult, and as a result had lower competency with the game which led to frustration (Juul, 2009; Fraser et al., 2013; Schmierbach et al., 2014). This is entirely possible with the sample population for this study, because overall, the population had rather low experience with *Forza Horizon 2* and *Left 4 Dead 2*. Schmierbach et al. (2014) found that overall game players/student populations prefer minimal initial challenge/difficulty,

which may explain why the students within my study found the hard setting so much more frustrating than the easier setting. This possibility seems even more likely given the significant correlation between frustration, console experience, and game play experience as reported in this study. Participants who had less general game play experience and less console play experience reported greater levels of frustration.

**Hypothesis Two.** Hypothesis two (H2) showed no main effects for pre-exposure frustration and difficulty with feelings of catharsis; however, there were some significant covariates. Participants who were found to have higher levels of console experience and game play experience were much more likely to have reported achieving catharsis with video games. This is consistent with Reinecke's (2009) research, which showed that participants who experienced stress relief from video games were found to play them more than participants who did not. Within the current study, higher game play experience and console experience were both found to be significantly correlated with increased feelings of control. As mentioned previously, gaining a sense of control/autonomy is a crucial component of achieving catharsis (Ferguson & Olson, 2013; Reinecke, 2009). Although H2 was not supported, since there were no main effects in regards to catharsis with pre-exposure frustration and difficulty, the findings would still suggest that game players with higher game play and console experience believe they can achieve catharsis through the use of video games. While the correlations trend in the expected directions based on the previously mentioned operationalization of catharsis, they are not due in part to the manipulations. These are merely broad generalizations that suggest evidence of the obtainment of catharsis; more evidence would be needed to make any definitive statements.

**Hypothesis Three.** For hypothesis three (H3) it was found that aggression could not be predicted positively or negatively by game difficulty and pre-exposure to frustration; as a result H3, was not supported. Interestingly enough, H1 found that frustration with the game was found to be higher in those who played the game on the hard setting. It could have therefore been assumed that the presence of frustration would be enough to predict the presence of aggression based on the frustration aggression hypothesis. However, Berkowitz (1989) states that frustration is more likely to occur when a goal is blocked, yet even then aggression is only likely to occur when that goal is something strived for. It is possible that although participants found the harder setting to be more frustrating, that the mere presence of frustration was not aggravating enough to lead to aggression because the participants may not have been truly striving to complete/win the level and were most likely indifferent towards the outcome of their game play session.

**Research Question One.** The results for research question one (RQ1) showed that there were no significant main effects on enjoyment with the game in regards to pre-exposure frustration, difficulty, and content of the video game. This is interesting due to the findings of H1, which showed that harder difficulty led to more frustration. Frustration often negatively impacts enjoyment in video games (Schmierbach et al., 2014); however, video games must be challenging and not too easy (Juul, 2009). Unfortunately, there were no significant main effects with enjoyment in regards to difficulty or any of the other independent variables. Therefore, no further light can be shed on this relationship based on the omnibus test. Although it is worth noting that the mean for enjoyment within the study was rather high, it can be speculated that this may

have been a result of getting to play video games rather than writing a paper or filling out surveys, which are typical extra credit or SONA activities.

Even though there were no main effects for RQ1, a significant interaction between pre-exposure to frustration and content of the video game and enjoyment was found. Those who received negative feedback and were in the violent condition enjoyed playing the game significantly more than people in any of the other conditions. It is conceivable that those participants who received the negative feedback were more stressed/frustrated and therefore enjoyed taking out their frustration against the zombies in the violent condition (Ferguson & Olson, 2013). This also agrees with Whitaker et al's. (2013) findings which show that those who are stressed will seek out violent video games as a way of alleviating said stress. The racing game really offered participants no way to take out their aggression on other racers, as crashing into them barely affected the racers and went against the objective of the game (winning the race). Although this is not definitive proof of catharsis, the research tends to lightly support this notion. Lastly, console experience was also shown to be a significant predictor of enjoyment. This is not surprising, especially since those who had more console experience within the study were more likely to be familiar with console controls and therefore reported having greater feelings of control. This notion supports previous research which has established that feeling in control is vital to experiencing enjoyment with video games (Limperos et al., 2011; Juul, 2009)

**Research Question 2.** In response to research question two (RQ2) there were no significant main effects on aggression regardless of the content of the game (violent or nonviolent). Unfortunately, the results from the testing of RQ2 do not really shed any

light on the current debate about video games and whether or not their consumption produces aggressive tendencies. It is interesting, though, that there were no significant differences in reported aggression based on game content.

**Research Question Three.** Research question three (RQ3) sought to understand how the independent variables of the study would impact feelings of control with the game. Pre-exposure to frustration and difficulty of game were found to have no significant impact on feelings of control. However, content of the game (violent or nonviolent) was found to be a significant predictor for feelings of control. Specifically it was found that those who played in the violent conditions found the game significantly easier to control. There are several possible explanations for this finding. The first is that overall, participants were found to have more experience with first person shooters (*Halo*,  $M = 3.57$ ,  $SD = 2.36$ ; *Call of Duty*,  $M = 4.01$ ,  $SD = 2.31$ ; *Left 4 Dead 2*,  $M = 2.21$ ,  $SD = 1.94$ ) than racing games (*Forza Horizon 2*,  $M = 1.81$ ,  $SD = 1.52$ ; *Need for Speed*,  $M = 2.72$ ,  $SD = 1.90$ ). The second is that *Left 4 Dead 2* uses energy punishment; that is, the enemies take more damage from players, and the enemies are also harder to kill as the difficulty goes up. The character the player controls in *Left 4 Dead 2* does not become any more difficult or easy to control when the difficulty has been adjusted. However, in *Forza Horizon 2*, the car actually becomes harder to steer/control as the difficulty goes up. Changes like these in control are much more noticeable to the player than energy punishment (Juul, 2009).

Also in response to RQ3, there was a significant interaction between pre-exposure frustration and content in regards to control. Those who received bad feedback and were in the violent condition reported having greater levels of control within the game than

participants in the other conditions. It is possible that those participants who were in the negative feedback condition felt like their autonomy was compromised from hearing their poor feedback; therefore when playing the game allowed them to assume a sense of control that was not present for them at the moment (Ferguson & Olson, 2013). It is possible that the interaction between control and negative quiz feedback and violent content exists, because as Whitaker et al. (2013) mention, those who are more stressed seek out violent video games as a way of alleviating that stress. Again it must be noted that this is just a possible interpretation, and the evidence here is rather small in suggesting that catharsis was at play. Console experience was a significant predictor of control. This is not surprising as those who have played on consoles would be expected to have greater familiarity with the controls. Finally, male participants also reported significantly higher levels of control than female participants; but this is to be expected being that male participants have higher levels of game play experience in general (Lucas & Sherry, 2004).

**Correlations.** As mentioned in the previous chapter, due to a lack of significant main effects, the correlations were examined in order to be able to look at relationships between the variables in the study. Gender was found to be a significant predictor in many relationships. When analyzing the correlations it was found that men had significantly more game play experience than female participants, in that they played more hours than women. Further analysis by use of an independent samples t-test revealed significant difference between groups:  $t(136) = 6.28, p < .001$ . The mean for male participants in terms of game play hours were significantly higher ( $M = 4.53, SD = 4.74$ ), than the mean for female participants ( $M = 1.12, SD = 1.90$ ). These findings

mirror previously established work done by Lucas and Sherry (2004), which also found that men play significantly more hours per week than women play. Male participants also reported higher levels of console experience than females; this was to be expected as higher game play experience (hours) was significantly correlated with higher console experience.

Also, male participants experienced greater feelings of control while playing the games as well. Lucas and Sherry (2004) cite Kimura (1999) in stating that women have much greater difficulty with “mental rotation of three-dimensional objects, navigation through a route or maze, and target directed motor skills...” (p. 508). Lucas and Sherry (2004) therefore posit that women are disadvantaged at their ability to be able to control video games. Female participants within my study also reported greater feelings of frustration while playing the game. Lucas and Sherry (2004) propose that because women have greater difficulty achieving a sense of control with video games, that they are therefore unable to meet their need/gratification for control with them. Resultant upon this fact, women are less likely to seek video games to meet certain gratifications (Lucas & Sherry, 2004; Rayburn & Palmgreen, 1984). When needs are not fulfilled by a certain media, the user becomes frustrated or quits the media altogether (Rayburn & Palmgreen, 1984). As mentioned earlier, when one fails at having influence/control over their environment, frustration is likely to occur (Reinecke, 2009; Lucas & Sherry, 2004). The women in my study reported having less feelings of control and therefore reported higher feelings of frustration. Consequently female participants reported enjoying the games significantly less than their male counterparts. As previously stated, Limperos et al. (2011) found that control scheme was one of the most influential factors of enjoyment.

Enjoyment and control were found to be positively correlated within the confines of this study. The female participants within the study reported lower levels of control, and therefore it is not surprising that they reported lower levels of enjoyment, as well, because enjoyment with video games is often based on a person's ability to gain a sense of control/autonomy within the virtual environment (Lucas & Sherry, 2009; Tamborini et al., 2011). Finally, Lucas and Sherry (2004) discovered that men enjoy games that require mental rotation such as fighter, shooter, and racing games; while females reported greater enjoyment for games that did not require mental rotation such as puzzle and trivia games. However, in my study, both games required mental rotation being that they were a racing and shooter game; therefore this may have been somewhat responsible for women enjoying the study less than men. As mentioned previously, for game players to obtain enjoyment, they must feel in control while playing (Juul, 2009).

Within the study men were found to have significantly higher overall, physical, and verbal aggression scores than women; this finding supports previous research which shows that men are more aggressive than women (Adachi & Willoughby, 2011). However, male participants did report greater feelings of catharsis in regards to video games. According to the literature, catharsis is most commonly sought by those experiencing more anger; this finding is logical based on the fact that male participants within my study reported greater levels of aggression and greater catharsis (Lewis & Bucher, 1992; Whitaker et al., 2013). Male participants also reported higher levels/feelings of control and enjoyment, which are both crucial components for achieving catharsis (Ferguson & Olson, 2013). Within the data of this study, increased frustration was found to be correlated with decreased feelings of catharsis; this may be

why female participants reported lower levels of catharsis. Although my research did not show pre-exposure frustration or difficulty to be predictors of the ability to achieve catharsis, it did show that a belief in the ability to achieve catharsis through video games still perseveres despite what research has shown.

### **Theoretical Implications**

The uses and gratifications theory was used within this study as a framework for understanding how game players could achieve catharsis/stress relief with video games and the effects that exposure to video games could have upon game players' aggressive tendencies. Despite this being an experimental study, the independent/manipulated variables had little to no significant main effects on the dependent variables, and it was found that most of the significant correlations were dependent upon, or could be traced back to, individual characteristics (gender, game play experience, etc.). This is in line with uses and gratifications research, which has shown that media effects may be more derivable upon individual characteristics within the game player (Rubin, 2009). The data from this experiment shows that uses and gratifications perspective can be applied to experimental research; this is interesting because random assignment of participants into experimental conditions was used in this study. Random assignment should eliminate all traces of individual differences from participants (Frey & Botan, 2000); however within my study, it was found that participants' experience with the media (feelings of enjoyment, control, and frustration with the game) were more influenced by individual characteristics than the actual manipulations. The uses and gratifications perspective allowed for interpretation of individual differences, which was found to be consistent within previous literature.

Pre-exposure frustration was manipulated in this study in the hopes that those who were stressed/frustrated would be more likely to need/obtain catharsis by playing the video games (Ferguson & Olson, 2013). This thinking was based on frustration aggression hypothesis, which posits that frustration occurs when a goal that is strived for is blocked. Berkowitz (1989) attests that aggression is likely to grow from this frustration when a highly anticipated or sought after goal is deprived. Berkowitz (1989) states that frustration also can take place in personal attack, hence why participants in certain conditions were told they did poorly. It was hoped that students would want to do well on the frustration manipulator task/quiz; while this task was found to frustrate participants in the negative feedback condition, this frustration did not translate into any significant main effects in regards to aggression. Therefore it can only be assumed that doing well on the quiz was not a goal that the participants were too worried about achieving. Williams (2009) was able to successfully use frustration aggression hypothesis to predict aggression in video games based on frustration; however, he told participants that their performance could earn them monetary rewards. Williams (2009) inhibited participants' performance by manipulating the difficulty after letting them play a warm up/tutorial that was much easier. Williams (2009) therefore denied them the goal of the monetary rewards by altering the difficulty, thereby frustrating and angering his participants. Those in support of the frustration aggression hypothesis would say that the need to perform well on the quiz was not a rewarding enough gratification to actually incite frustration, when that gratification was denied. Theoretically, it would be best to incite frustration while at the same time impeding/denying goals. However, certain factors limited the means by which the current design could account for this; these will be

discussed in further detail in the limitations section. It should also be noted that ecologically speaking, advancement in the game/completion of the level would be considered the goal that was is being blocked by difficulty; but it is doubtful that players within this study were too invested in the game, being that they did not truly have enough time to immerse themselves in the media (Limperos et al., 2011).

### **Practical Implications**

The findings from this study have real world applications that could help game designers better develop more enjoyable games. As mentioned earlier, participants found the hard mode on games to be significantly more frustrating than the participants in the easy condition. Higher frustration was correlated with less enjoyment from players. As Juul's (2009) research points out, game designers face a difficult challenge of making the game challenging, but not overly challenging. The findings from the current study only further the notion that game players prefer minimal initial challenge when playing (Schmierbach et al. (2014). Game designers would be wise to make sure that their games start with minimal levels of challenge, otherwise they may frustrate their players too early.

Feelings of control were positively correlated with enjoyment, while feelings of frustration resulted in lower reported control with the game. Interestingly, participants who played in the violent game reported having greater feelings of control than those who played in the nonviolent game. As I discussed earlier, this may have been resultant upon *Left 4 Dead 2* using energy punishment, whereas *Forza Horizon 2* actually made the vehicle more strenuous to control as difficulty went up. It would have been thought that the violent game, which had a much more complex control scheme, would have been

reported as being more difficult for participants to control; however, this was not the case in my study. This finding offers a unique challenge for game designers in that they must make nonviolent games have higher difficulty settings without making the increased difficulty seem resultant upon the game being unfair or it being the players' fault (Juul, 2009). Unfortunately, this is difficult for game designers because they cannot really use energy punishment in most nonviolent games because these games by definition have no violence and therefore there should not be energy/health to lose in the first place. Juul (2009) states that energy punishment is often used "because it makes the cause of failure less obvious: If the game is over due to a single, identifiable mistake, it is straightforward for the player to attribute failure to his or her own performance or skill" (p. 239). As mentioned, when the player is found to be responsible for the failure, it encourages the player to often accept this as a challenge; but if the game is found to have nonresponsive controls, then the player is more likely to become frustrated (Juul, 2009). Game designers must think of new ways to make nonviolent games have greater difficulty/challenge that does not impede controls in a way that becomes frustrating or readily noticeable by the player.

### **Limitations**

First, the study was limited by the sample population in several ways. The fact that the experiment had to rely on a volunteer sampling to get participants was a limitation in and of itself. The sample was not as large as originally intended; it was hoped that at the very minimum 160-200 participants would be recruited. However, the study only had 155 participants, which means the desired power for statistical analysis was not as high as originally hoped (Frey et al., 2000). Although the research pool at the

University of Kentucky is primarily female, our sample population was made up of mostly male participants; this is likely due to self-selection. While the research was ecologically sound in terms of gender in the gaming population, it is likely that the population was made up of greater experienced players because the correlations showed males had greater game play experience than female participants. Higher game play experience was found to be correlated with greater levels of control and enjoyment, which may have been why there was no significant relationship between difficulty and enjoyment. Also it may have been possible that participants enjoyed the prospect of playing a video game in a research/school setting regardless of the difficulty, content, and other variables. This self-selection may have also been responsible for some of the individual differences that seemed to define the findings, rather than the manipulations/independent variables. It was also the case that some participants had no experience with video games at all, and therefore reported no belief in the ability to achieve catharsis with video games. The most obvious weakness of the sample population is that it is not representative of the entire game playing population, which ranges from children to senior citizens. The volunteer sample obviously brings weaknesses with it; however, it was a necessary means for recruiting participants in this study (Frey et al., 2000).

Second, the study lacked true ecological validity because of the laboratory setting. Although players usually play at their own homes or with other friends, it would not have been possible to collect the data and make sure that participants engaged in all conditions outside of the lab. Third, this study does not measure all gaming variables that could impact the gaming experience. It is possible that the narrative, immersion, character

archetypes, graphics, music, competition, and overall mood of the game could impede or accentuate one's enjoyment or frustration of the videogame (Limperos et al., 2011; Adachi & Willoughby, 2011).

Fourth, the implementation of frustration aggression hypothesis was limited by budget constraints. It was not possible for me to offer rewards (monetary or otherwise) to the participants; these rewards would have had to be given to the participants at the end of the session to remain ethical. Therefore, I was not truly able to deny the participants of a wanted or strived after goal. As previously noted, it was hoped that the participants would strive to do well on the manipulation task/quiz, but this ultimately was not a strong enough impediment of goals (doing well) to produce any significant levels of aggression (Berkowitz, 1989). I also had no real way of measuring the participants desire to complete the level. It is possible that if I had offered monetary rewards based on performance (Williams, 2009), the inability to complete the level based on altered difficulty alone would have been a strong enough to predict frustration and therefore aggression (Berkowitz, 1989).

Fifth, time and game constraints were also issues within the current study. Level selection and the amount of time participants were allowed to play were also limited due to the confines of the study. The experiment had to be relatively short, otherwise students would not have signed up to participate; therefore, this meant that time of play for the participants had to be limited. In note of this, I had to select relatively short/beginner levels that the participants could complete in a ten minute session; this meant that the levels (despite difficulty setting) were easier than some of the more challenging and farther along levels in the game. As Juul (2009) notes, games often

increase in difficulty further into the story/campaign. It was also difficult to find longer levels in nonviolent games, which are usually shorter in nature due to fewer obstacles (enemies, computer players, hazards). I also did not measure difference in participants who completed the levels versus those who failed to complete/win the level. Although I did not measure this, it is unlikely the results would have been comparable due to the different natures of the game and what it means to win/complete the level in each game (*Forza Horizon 2* come in first place, *Left 4 Dead 2* survive to the end of level).

Finally, there were some limitations based on measures used within the study. Unfortunately, there are no previously established measures of catharsis (Bushman et al., 2001); this meant that I had to create my own measure for catharsis. My measure primarily dealt with the achievement of catharsis with video games, but in hindsight I could have measured for belief in catharsis in general. I also should have measured for general frustration, and not just frustration with the game; this would have allowed me to see if there were any correlations with pre-exposure frustration, frustration with game, and overall frustration. And last, my aggression measure was a trait measure rather than a state measure, which tends to measure personality traits rather than the current state someone is in; this may have been why I did not see the most robust affects in regards to aggression (Bus & Perry, 1992).

### **Future Research**

Future studies should continue to look at outside variables and even more so at in-game variables. This study, along with previous studies using the uses and gratifications perspective have shown that individual differences impact the way that media are consumed and experienced. In-game variables such as narrative and other storytelling

devices may impact one's enjoyment and ability to attain catharsis. Lewis and Bucher (1992) found within their study that those who were able to engage in catharsis by discussing their frustrating experiences with a therapist or to enact them through role play were less aggressive (although the evidence was weak) than those who enacted in discharge of catharsis. Sundar and Limperos (2013) state that as media continue to become more technologically advanced, that new and undiscovered uses and gratifications of media will arise and become apparent. Although videogames allow players to engage in some degrees of role-play already, it is possible that ever increasing interactivity will only increase the immersive forces of role-play, meaning players may eventually be able to work out their frustrations through virtual simulations without necessarily having to discharge negative emotions in violent contexts. Virtual simulations may advance to the point to where people can recreate scenarios within their own lives and play through alternate scenarios of different situations. It is also possible that games that contain horror elements may also have undesired affects or frustration due to the excitement or nervousness that the horror facet creates (Zillmann, 1971).

While this study looked at single player experiences, much of the gaming experience revolves around multiplayer experiences, and future research should look at how social interaction affects levels of enjoyment and frustration. Future research should also look at competition in videogames because competition has been found to be related to one's perceptions of competency, and it is possible that not being able to beat one's opponent may negate feelings of control as well (Tamborini et al. 2011). Competition may also be resultant upon frustration and aggression due to taunting and other forms of interaction (Adachi & Willoughby, 2011); so future studies should look at the possibility

of including confederates who range from being polite to rude and inexperienced to experienced (Limperos et al., 2011). As Whitaker et al. (2013) state stressed game players often seek violent video games hoping to achieve catharsis; future research could actually have a number of games, nonviolent and violent, ready for the participant to select to test this presumption.

Researchers, who have more time and resources could implement many more manipulations and control measures. Prescreening of frustration and aggression would allow the researcher to compare the results from beginning to post-exposure with the stimulus. Researchers with more technological proficiency and funds could also modify games to have glitches/unfair programming (bad controls, unbeatable levels/enemies) that would make the game unbearably difficult for the participants. Players are more likely to become frustrated with the game if it is the game's fault rather than their own (Fraser et al., 2013; Juul, 2009); so manipulating the programming may be a more efficient means of increasing the difficulty rather than just adjusting the setting from easy to hard. Finally, researchers should look at ways of better blocking/denying goals in order to test frustration aggression hypothesis. The aforementioned idea of giving rewards for performance may be the best way of doing this, but there may also be solutions that do not require material rewards. Although the research is far from being complete, the only way to alleviate this gap in knowledge is to continue exploring new variables and underrepresented areas of research involving video games.

### **Summary and Conclusion**

The purpose of this study was to provide a clearer look at the muddled topic of catharsis in videogames. It was hoped that by looking at in-game variables, such as

difficulty and content and their relationship with enjoyment, control, and frustration that a more comprehensive understanding would have been found on not only the topic of catharsis, but the subject of aggressive tendencies with video games, as well. Although it was found that there were no main effects on frustration based on pre-exposure frustration, or with catharsis based on pre-exposure frustration and difficulty, it was found that frustration with the game could be predicted by difficulty setting and that more experienced gamers felt they could achieve catharsis with video games. None of the independent variables, including content of the game, were found to have any impact on aggression, which only further adds to the inconsistent and insignificant findings on aggressive tendencies and games. Interestingly it was found that content of the game, was able to predict feelings of control with the game. While the findings of this study were limited, it is important to remember that this was just one piece of the puzzle in a large research paradigm and that future research can learn from these findings.

## Appendix A: Stress Manipulation Task

1. **True** or False: Public speaking is the number one fear for most people.
2. True or **False**: The environment is the medium through which a message passes from sender to receiver. (Channel is real answer)
3. **True** or False: Mediated communication always occurs through technology, rather than in face-to-face.
4. True or **False**: High context cultures are cultures that use language to articulate thoughts and ideas in a direct fashion.
5. True or **False**: It is possible to not communicate.
6. True or **False**: Interpersonal communication occurs between two people or more. (only two people)
7. **True** or False: Any barrier (physical or otherwise) that blocks the achievement of shared meaning in communication can be referred to as interference or noise.
8. True or **False**: Nonverbal communication is universally understood.
9. **True** or False: The “leanness” of a message refers to the lack of nonverbal cues, which can provide more clarity of the meaning of a message.
10. True or **False**: Sympathy is the ability to experience another person’s point of view, rather than comparing what one would do in a similar situation. (Empathy is real answer)

Appendix B: Demographics and Game Playing Experience

Measurement Instruments

Questionnaire 1 (Pre-experiment)

*Please read the instructions for each section and answer the corresponding questions as honestly and as best as you can.*

**Indicate your biological sex (gender) by circling one of the following choices:**

Male                      Female

**Please indicate your age:** \_\_\_\_\_

**Academic Standing:**

Freshman \_\_\_\_\_

Sophomore \_\_\_\_\_

Junior \_\_\_\_\_

Senior (+) \_\_\_\_\_

**To the best of your abilities, please indicate the amount of time you spend playing video games during a typical WEEK (Monday through Friday). Please provide two numeric values (example: 3 Hours, 15 Minutes).**

Hours \_\_\_\_\_

Minutes \_\_\_\_\_

**To the best of your abilities, please indicate the amount of time you spend playing video games during a typical WEEKEND (Saturday through Sunday). Please provide two numeric values.**

Hours \_\_\_\_\_

Minutes \_\_\_\_\_

**The following questions ask you to rate your experience with specific video game systems. Please select the number which best represents your experience each game console:**

**Smartphone App games**

No experience

Very Experienced

1-----2-----3-----4-----5-----6-----7

**PC (personal computer) games**

No experience

Very Experienced

1-----2-----3-----4-----5-----6-----7

**Console games**

No experience Very Experienced  
1-----2-----3-----4-----5-----6-----7

**Handheld games**

No experience Very Experienced  
1-----2-----3-----4-----5-----6-----7

**The following questions ask you to rate your experience with specific video games. Please circle the number which best represents your experience with each of these particular games:**

**Left 4 Dead 2**

No experience Very Experienced  
1-----2-----3-----4-----5-----6-----7

**Halo**

No experience Very Experienced  
1-----2-----3-----4-----5-----6-----7

**Call of Duty**

No experience Very Experienced  
1-----2-----3-----4-----5-----6-----7

**Forza**

No experience Very Experienced  
1-----2-----3-----4-----5-----6-----7

**Need for Speed**

No experience Very Experienced  
1-----2-----3-----4-----5-----6-----7

**Mario Brothers**

No experience Very Experienced  
1-----2-----3-----4-----5-----6-----7

**The following questions will ask you about your experience with the quiz you have just completed. Please select the number which best represents your experience with the quiz:**

How did you feel upon learning your feedback from the quiz that you just took?  
Not Frustrated Very Frustrated  
1-----2-----3-----4-----5-----6-----7

How did you feel once you learned the feedback from the quiz you just took?  
Very Bad Very Good  
1-----2-----3-----4-----5-----6-----7

## Appendix C: Enjoyment, Control, and Frustration Measurement

### Questionnaire 2 (Post-experiment)

#### Enjoyment Items (1 strongly disagree – 7 strongly agree)

1. While I was playing the game I was thinking about how much I enjoyed it.  
1-----2-----3-----4-----5-----6-----7
2. I found playing the game very interesting.  
1-----2-----3-----4-----5-----6-----7
3. Playing was fun.  
1-----2-----3-----4-----5-----6-----7
4. I enjoyed playing very much.  
1-----2-----3-----4-----5-----6-----7
5. I thought playing the game was boring (reverse coded).  
1-----2-----3-----4-----5-----6-----7
6. I thought playing the game was interesting.  
1-----2-----3-----4-----5-----6-----7
7. I would describe playing as enjoyable.  
1-----2-----3-----4-----5-----6-----7

#### Control and Frustration Items:

1. I was challenged, but I believed my skills would allow me to meet the challenge.  
1-----2-----3-----4-----5-----6-----7
2. I was completely focused on the task at hand.  
1-----2-----3-----4-----5-----6-----7
3. I had a feeling of total control.  
1-----2-----3-----4-----5-----6-----7
4. I felt like I could control what I was doing.  
1-----2-----3-----4-----5-----6-----7
5. I felt I was competent enough to meet the high demands of the situation.  
1-----2-----3-----4-----5-----6-----7
6. The challenge and my skills were at an equally high level.  
1-----2-----3-----4-----5-----6-----7
7. Playing the game made me feel frustrated.  
1-----2-----3-----4-----5-----6-----7
8. I found myself getting angry while I was playing the game.  
1-----2-----3-----4-----5-----6-----7
9. During the game I was feeling anxious.  
1-----2-----3-----4-----5-----6-----7
10. I found myself thinking of ways the game could have turned out differently.  
1-----2-----3-----4-----5-----6-----7

Appendix D: Aggression Measurement

Questionnaire 3 (Post-experiment)

**Buss-Perry Scale**

**Please rate each of the following items in terms of how characteristic they are of you. Use the following scale for answering these items.**

|   |          |          |          |          |          |                                       |
|---|----------|----------|----------|----------|----------|---------------------------------------|
| <b>1</b>                                | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b>                              |
| <b>Extremely uncharacteristic of me</b> |          |          |          |          |          | <b>Extremely characteristic of me</b> |

- 1) Once in a while I can't control the urge to strike another person.
- 2) Given enough provocation, I may hit another person.
- 3) If somebody hits me, I hit back.
- 4) I get into fights a little more than the average person.
- 5) If I have to resort to violence to protect my rights, I will.
- 6) There are people who pushed me so far that we came to blows.
- 7) I can think of no good reason for ever hitting a person.
- 8) I have threatened people I know.
- 9) I have become so mad that I have broken things.
- 10) I tell my friends openly when I disagree with them.
- 11) I often find myself disagreeing with people.
- 12) When people annoy me, I may tell them what I think of them.
- 13) I can't help getting into arguments when people disagree with me.
- 14) My friends say that I'm somewhat argumentative.
- 15) I flare up quickly but get over it quickly.

- 16) When frustrated, I let my irritation show.
- 17) I sometimes feel like a powder keg ready to explode.
- 18) I am an even-tempered person.
- 19) Some of my friends think I'm a hothead.
- 20) Sometimes I fly off the handle for no good reason.
- 21) I have trouble controlling my temper.
- 22) I am sometimes eaten up with jealousy.
- 23) At times I feel I have gotten a raw deal out of life.
- 24) Other people always seem to get the breaks.
- 25) I wonder why sometimes I feel so bitter about things.
- 26) I know that "friends" talk about me behind my back.
- 27) I am suspicious of overly friendly strangers.
- 28) I sometimes feel that people are laughing at me behind me back.
- 29) When people are especially nice, I wonder what they want.

1-9 Physical Aggression; 10-14 Verbal Aggression; 15-21 Anger; 22-29 Hostility

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## Appendix E: Catharsis Measure

### Questionnaire 4 (Post-experiment)

Please rate each of the following items, in terms of how characteristic they are of you.

1. After playing the game I felt less stressed.

Strongly Agree

Strongly Disagree

1-----2-----3-----4-----5-----6-----7

2. Playing the game allowed me to assume a sense of control.

Strongly Agree

Strongly Disagree

1-----2-----3-----4-----5-----6-----7

3. After playing the game I felt relaxed.

Strongly Agree

Strongly Disagree

1-----2-----3-----4-----5-----6-----7

4. Playing the game allowed me to release some of my frustration

Strongly Agree

Strongly Disagree

1-----2-----3-----4-----5-----6-----7

5. Playing video games allows me to vent my aggressive tendencies in a therapeutic manner.

Strongly Agree

Strongly Disagree

1-----2-----3-----4-----5-----6-----7

6. Venting my stress/frustration through playing video games allows me to alleviate much of my pent up aggression, and therefore improve my mood.

Strongly Agree

Strongly Disagree

1-----2-----3-----4-----5-----6-----7

7. When I am stressed/frustrated I am less likely to be stressed/frustrated, after playing video games

Strongly Agree

Strongly Disagree

1-----2-----3-----4-----5-----6-----7

8. Playing video games allows me to express my aggressive tendencies in a constructive way that does not affect others.

Strongly Agree

Strongly Disagree

1-----2-----3-----4-----5-----6-----7

9. I got a sense of enjoyment after engaging in aggressive or competitive behaviors from playing the game.

Strongly Agree

Strongly Disagree

1-----2-----3-----4-----5-----6-----7

10. When a video game allows me to have a sense of control, my stress is alleviated.

Strongly Agree

Strongly Disagree

1-----2-----3-----4-----5-----6-----7



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