EFFECTS OF CHARACTER CUSTOMIZABILITY ON AGGRESSION IN VIOLENT VIDEO GAME PLAY

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Abstract

This study examined aggression and avatar appearance in video games by applying a social identity perspective. This study advances research by exploring how avatar identification affects aggression during and following violent video game play. It was predicted that similarity in appearance between one's avatar and other gamers would influence perceptions of ingroup and outgroup membership, which in turn would influence the view of verbal aggression as a normative group behavior, leading to increased overt aggressive behavior. Participants were brought into a laboratory and played a video game with a confederate. The experimental test produced mixed results for the application of avatar identification and self-categorization theory on aggression in video games. Identification with one's avatar predicted intent to verbally aggress. However, counter to expectations, participants experienced more hostility when their avatar was similar in appearance to the other player's avatar and the other player did not engage in verbal aggression. Theoretical and practical implications of these results are discussed.

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CHAPTER 1. INTRODUCTION AND REVIEW OF LITERATURE

Video games are a source of enjoyment in many people's lives. According to the Entertainment Software Association (ESA; 2014), approximately 59% of Americans play video games in some form. Video game users over the age of 13 spend an average of 6.3 hours playing each week (Nielson, 2014). Although many different video game devices exist (e.g., computers, handheld consoles, mobile devices), a common way to play video games is through consoles, such as PlayStation, Xbox, and Wii. Specifically, 68% of households whose members own a video game device use consoles (ESA, 2014).

Video games are available in many genres, but games with violent themes are one of the most popular. Violent video games (VVGs) are considered "games in which the player can harm other characters in the game" (Gentile & Anderson, 2003, p. 133). The high revenue generated by VVGs is a reflection of their popularity. In 2013, four of the best-selling video games, *Grand Theft Auto V*, *Call of Duty: Ghosts*, *Battlefield 4*, and *Assassin's Creed IV: Black Flag*, were part of the VVGs genre (ESA, 2014). Two of these games fall into a specific category of VVGs called first-person shooter games (FPSGs). FPSGs involve a player who uses the perspective of his or her character to navigate through a virtual world with the goal of finding and shooting targets (Schneider, Lang, Shin, & Bradley, 2004). Accounting for 51.9% of video game sales in 2013, action and shooter games were the most popular types of video game sold (ESA, 2014).

A wide range of positive and negative outcomes from VVG play can be experienced for players. Gamers, for instance, can experience enjoyment by playing VVGs and entering into a state of psychological flow (Cowley, Charles, Black, & Hickey, 2008). Flow occurs when people become immersed in an activity and lose consciousness of everything else

(Csikszentmihalyi, 1990). For flow to occur, individuals' skills and the challenge of the task must be balanced (Czikszentmihalyi, 1990; Weber, Tamborini, Wescott-Baker, & Kantor, 2009). Possessing skills too advanced for the task at hand results in boredom, whereas tasks too difficult for given skills produce anxiety. Video games serve as a hospitable context for the development of flow because their tasks can often be customized to increase or decrease their difficulty. Characteristics of video games such as clear game goals, feedback on progress, and increased levels of difficulty as the player improves make it more likely that video game players will enter flow (Sherry, 2004).

Video games with violent themes can benefit players because they require high visual acuity (Green & Bavelier, 2006). Visual acuity is described as the ability to see clearly and visually distinguish changes in one's surrounding. Distinguishing relevant from irrelevant stimuli is another important characteristic of video games. This skill involves being able to identify relevant objects (e.g., another player, weapon, resources) in the environment of the player's character and ignore irrelevant objects that could otherwise distract the player. Exposure to video games, which require visual acuity and identification of relevant items, increases visuospatial attention over time (Ferguson, 2007; Green & Bavelier, 2006). This acute visuospatial attention is associated with increased levels of resources to aid attention and quick reaction times when searching for objects within one's environment (Castel, Pratt, & Drummond, 2005). Increasing visuospatial attention sensitivity is useful for everyday tasks, such as driving, that require selective attention and quick reaction times.

Despite the positive outcomes of playing video games, researchers have been mainly preoccupied with their negative outcomes. A negative outcome associated with exposure to

VVGs is desensitization to violence. Carnagey, Anderson, and Bushman (2007) found that people exposed to VVGs have lower physiological responses (e.g., heart rate and galvanic skin response) to violence outside the game than people exposed to nonviolent video games. Aggression, a specific form of negative arousal, has also received a great deal of attention in research on VVGs. VVG exposure is related to various types of aggression in both males and females (Anderson & Murphy, 2003; Bartholow & Anderson, 2002). The amount of aggression exhibited by video game players can be influenced by a number of situational factors, including the number of other gamers present (Eastin, 2007).

Some video games include a social component, allowing gamers to play with others online or in person. Multiplayer modes in video games are popular among gamers; approximately 62% of them play video games with others (ESA, 2014). Because individuals must work collaboratively or competitively with others in these games, social or task-oriented message exchange becomes a major element of the experience. The presence of characters controlled by others can affect how gamers communicate. In a competitive environment, players must determine at minimum whether other characters are in one's primary ingroup or outgroup. Such a determination can influence the amount of aggression exhibited during video game play. Although group membership may play a role in the expression of aggression in multiplayer games, research has not yet examined this issue.

The purpose of the current study is to examine the association between VVG use and aggression from a social identity perspective. Self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) and the general aggression model (Anderson & Bushman, 2002; Bushman & Anderson, 2002) are used to theorize about the effects of character customization on gamers' aggressive behaviors in multiplayer FPSGs. This study

specifically investigates whether categorization based on having similar or dissimilar avatars with another gamer affects the expression of aggression video gamers exhibit while playing FPSGs.

Video Games

Controversies about video game violence emerged after the release of Exidy's *Death Race* in 1976 (Kent, 2001; Kocurek, 2012). *Death Race* allowed players to drive on a course and hit gremlins with their cars (Kocurek, 2012). A number of other VVGs were available at the time, but *Death Race* was one of the few games during the period to receive negative attention from the public. The concern surrounding *Death Race* brought greater public attention to VVGs. As newer VVGs were released, it became clear that this genre was becoming increasingly popular. *Mortal Kombat*, a fighting tournament game, released two versions in 1993: the violent Genesis version, which included graphics similar to the original arcade game, and the censored Super NES version, which removed some of the gore (Kent, 2001). The violent version of the game sold three times more copies than the censored version. Public concern about the pervasive sales of VVGs prompted the creation of the Entertainment Software Ratings Board that put regulations on video games by establishing age ratings to indicate how old children should be to play games (Kohler, 2009). These ratings were created with the intent of preventing children from being exposed to violent content.

Concerns about VVGs persisted despite measures taken to prevent children from being exposed to violent content in video games. Video games received significant attention after news media sources speculated that exposure to VVGs played a role in a series of school shootings, including the Thurston High School shooting in 1998 and the Columbine

High School shooting in 1999 (Kurt, 2001; Lawrence & Birkland, 2004). News sources drew the connection between the school shootings and the shooters' exposure to violent media. Concerted efforts were made in the U.S. to censor video game violence following these shootings. The courts, however, determined that the content of these video games is not considered "obscene," suggesting that violent materials were protected under the First Amendment (see Brown v. Entertainment Merchants Association, 2011).

Aggression in Video Games

Research has examined the effects of exposure to VVGs on aggression (e.g., Anderson, 2004; Bushman & Anderson, 2002; Willoughby, Adachi, & Good, 2012). In these studies, aggression is described as "any behavior directed toward another individual that is carried out with the proximate (immediate) intent to cause harm" (Anderson & Bushman, 2002, p. 28). Subtypes of aggression, such as hostility, physical aggression, and verbal aggression, can be identified. Hostile aggression is typically a thoughtless and unplanned reaction (Anderson & Bushman, 2002). Hostility is the cognitive expression of aggression; the content of the thoughts are directed at harming a target. The goal of physical aggression is to use physical force, such as hitting, kicking, or shooting, to harm others (Anderson, Gentile, & Buckley, 2007). Verbal aggression is enacted with the intent of harming a target through spoken words (e.g., name-calling in person) or writing (e.g., e-mail). The relationship between exposure to VVGs and aggression has been supported in both cross-sectional (e.g., Anderson & Murphy, 2003; Barlett, Harris, & Baldassaro, 2007; Fischer, Kastenmüller, & Greitemeyer, 2010) and longitudinal (e.g., Anderson et al., 2008; Willoughby et al., 2012) studies. Meta-analyses have also provided support for the association between video game violence and aggressive affect, cognitions, and behavior

(Anderson, 2004; Anderson et al., 2010). In one meta-analysis, Sherry (2001) found that the relationship between aggression and VVG exposure was moderated by the duration of video game play. Children and adolescents exposed to VVGs for long periods exhibited less aggression than those exposed to VVGs for short periods. Sherry (2001) interpreted the decline of aggression over time as a function of catharsis, or decreased arousal from long-term video game play.

A number of attempts have been made to theorize about why VVG use causes aggression. These theories include cognitive neoassociation theory (Berkowitz, 1989), social learning theory (Bandura, 1977), script theory (Huesmann, 1986), excitation transfer theory (Zillmann, 1988), and social interaction theory (Tedeschi & Felson, 1994). Tenets of these theories have been synthesized under a single theoretical framework of the general aggression model (GAM; Anderson & Bushman, 2002; Bushman & Anderson, 2002).

General Aggression Model

GAM was developed to understand aggressive expression following exposure to violent stimuli. GAM explains that personal and situational factors are inputs that affect one's internal state, which includes affect, arousal, and cognitions (Anderson & Bushman, 2002). This internal state then affects the decision-making process that individuals undergo to determine an appropriate response, such as exhibiting aggression, to the inputs. GAM can explain why individuals aggress in various circumstances, but the context of most interest in this investigation is VVG play.

Many different inputs can influence aggression (Anderson & Bushman, 2002; Bushman & Anderson, 2002). These inputs can be categorized into personal factors and situational factors. Personal factors can include attitudes, personality, and genetic

predispositions, all conditions specific to one's demography or personality. Sex, for example, can affect the amount of aggression expressed following exposure to violent stimuli. Males have a tendency to exhibit more physical aggression, whereas females tend to exhibit more indirect aggression (Archer, 2004). Archer explains that indirect aggression involves socially excluding others and causing them harm through ostracism. Sex differences in the expression of aggression are also present in video game play. VVGs cause their users to be more aggressive, but VVG exposure has a stronger effect on aggression in males than females (Bartholow & Anderson, 2002).

Situational factors originate from context or environment and can affect one's internal state (Anderson & Bushman, 2002). Examples of situational factors include aggressive cues (e.g., weapons, violence), provocation, and frustration. VVGs have multiple situational inputs that can change individuals' internal state, making it more likely that they will express aggression of some form (Anderson & Bushman, 2002; Bushman & Anderson, 2002). Certain elements of VVGs can be interpreted by players as aggressive cues (Anderson & Bushman, 2002). One aggressive cue in FPSGs is the weapon used to inflict violence on in-game enemies. The mere presence of weapons, like guns, can cause people to act more aggressively toward others (Berkowitz & LePage, 1967). In VVG play, the video game controller itself can also act as an aggressive cue. Video game players' aggression and hostility increase more after playing with a controller that resembles a gun than with a more traditional controller (Barlett et al., 2007). Another situational factor specific to multiplayer VVGs is verbal provocation from other players. Verbal provocation can lead to increased levels of aggression in both males and females (Bettencourt & Miller, 1996).

Personal and situational inputs affect video game players' internal state by increasing the accessibility of aggressive schema. These aggressive schema can result in hostile cognitions, changes in mood or affect, and arousal (Anderson & Bushman, 2002; Bushman & Anderson, 2002). The internal state is responsible for regulating appraisal and decision-making functions, which control impulsive or thoughtful actions. The internal state determines individuals' evaluations of environmental stimuli, such as others' behaviors, and the appropriate responses based on the appraisal. For example, after being exposed to VVGs, players can become primed to feel hostile, shift into a hostile mood, and become more psychologically or physiologically aroused. Changes within people can then affect subsequent stimuli in their environment. Those provoked by playing VVGs look to their present internal state to determine how to respond to the provocation. GAM is therefore cyclical and the outcomes become new inputs in the next cycle. The outcomes from actions to environmental stimuli can influence future personal and situational inputs by making previous stimuli more salient to the individual. The tenets of GAM can be used to explain why VVG use is related to aggression by looking at social dynamics and cues in VVGs as a situational input.

Avatars and Characters

One aspect included in many video games is the use of avatars. An avatar is a representation of a player in the game (Wolf, 2008), and players generally create avatars to look and act like them (Bailenson, Yee, Merget, & Schroeder, 2006). Some video games provide players with an avatar they must use or give them the option to choose from a set of predetermined avatars (Trepte & Reinecke, 2010). Other games allow players to customize their avatar by altering different features (e.g., skills, ancestry, physical

appearance). Gamers who can customize their avatars are likely to create characters that represent themselves (Vasalou & Joinson, 2009) or idealized versions of themselves (Bessière, Seay, & Kiesler, 2007).

The ability to customize the appearance of avatars can encourage players to create characters they will like. Avatars are important in online contexts because they are the initial cues used in identifying other players (Yee & Bailenson, 2007). Customized avatars can make individuals feel greater psychological presence and emotional connections during video game play (Bailey, Wise, & Bolls, 2009). Lee (2004) described presence as "a psychological state in which virtual (para-authentic or artificial) objects are experienced as actual objects in either sensory or nonsensory ways" (p. 37). Games that allow players to customize their avatars are more immersive than ones that do not allow customization because players see objects in the game, such as avatars, as more realistic (Bailey et al., 2009).

Avatars in video games can change the behaviors of gamers. The characteristics of an avatar can encourage gamers to take on the persona of their characters, which can lead gamers to act in ways that differ from how they behave outside of the games (Bessière et al., 2007; Yee & Bailenson, 2007). As players advance in games using their avatar, they build a psychological connection with their character (Bessière et al., 2007). Because identification with characters in media tends to heighten media effects (Anderson & Murphy, 2003), an important factor in VVGs that can affect aggression exhibited is an individual's identification with his or her character in the game (Eastin, 2006; Konijn, Bijvak, & Bushman, 2007; Lin, 2013). The customized traits of a character can lead gamers

to increase their identification with the character in the game and this identification moderates the relationship between VVG play and aggression (Lin, 2013).

The appearance of others' avatars can also affect one's behaviors during game play. Yee, Bailenson, and Ducheneaut (2009) found that people's behaviors (i.e., cooperation and fairness) were influenced by the appearance of their and others' avatars. The behaviors of individuals in virtual environments differed depending on how their avatar looked in relation to others' avatars even after transitioning from a virtual to face-to-face context. Palomares and Lee (2010) demonstrated that identification with the gender of one's avatar can also affect linguistic behaviors. These studies suggest that avatar appearance can influence behaviors in and out of the game being played.

Avatar customizability has also been found to affect the expression of behaviors closely related to aggression when differences between avatars are appraised. In a study conducted by Fischer and his colleagues (2010), gamers were either given a default avatar that did not resemble the gamer or were allowed to personalize a character to use in the game. The gamers were also given either an aggressive or a nonaggressive game to play. After playing the game, players were asked to give an indirect form of punishment to another person. Video gamers were willing to administer larger amounts of punishment to a person after playing an aggressive game with a personalized character compared to those who did not personalize a character. Character personalization increased self-activation (i.e., the amount that players reflect on themselves and their levels of aggression) in the game, which then increased the amount of aggression exhibited by the gamer.

Perceived similarity of others' avatars in a game can also affect communicative behaviors. Kim (2011) suggested that having similar avatars to other people in computer-

mediated discussion groups increases group identity, possibly the result of a reduced focus on the individuality of each group member. Long-term group membership is not necessary to promote group identity; the same effects can occur in recently formed groups (Kim, 2011). Similarities of characters with others can have an impact on group identity. Multiplayer video games are similar to discussion groups in that they both include social aspects and require cooperation among members. Therefore, teams in VVGs may be affected by avatar similarity among group members. Because behaviors change as a result of avatar appearances in groups, theories of intergroup processes may in part provide insight into the relationship between VVG use and aggression in multiplayer FPSGs.

The Social Identity Perspective

Many gamers use multiplayer video games, which allow gamers to play with others to accomplish group and/or individual goals, but not much is known about this form of game play in research. It is unclear how having other players present in multiplayer settings, with or without character customizability, can affect aggression. Different aspects of group membership, including group norms and depersonalization, can affect individuals' behaviors (Turner et al., 1987), such as aggression. Because group membership and its effects on behaviors are implicated in multiplayer modes of VVG play, self-categorization theory (SCT; Turner et al., 1987) is an appropriate framework for examining the effects of multiplayer games on the individual player. SCT can aid in explaining expressions of aggression in multiplayer settings.

SCT, a part of the social identity family of theories, is used to explain intergroup behaviors (Hogg & Reid, 2006; Hornsey, 2008). SCT is an attempt to move beyond social identity theory (SIT; Tajfel & Turner, 1979, 1986) and specific group behaviors to reach an

understanding of how people from cognitively created groups act as group members (Turner et al., 1987). According to SCT, three levels of self-categorization, organized by hierarchy, are important to one's identity: human identity, social identity, and personal identity. Human identity is how an individual identifies himself or herself as a human being. Social identity is concerned with how the individual categorizes himself or herself into social groups and differentiates these groups from outgroups given the particular context. Personal identity focuses on the unique characteristics of a person as an individual, separate from any specific group. Categorization of one's identity is a function of fit and accessibility. Fit is the "extent to which the social categories are perceived to reflect social reality" (Hornsey, 2008, p. 208). Prototypes are created for categories and these prototypes are comprised of characteristics that create an ideal representation of a group in a given context (Turner et al., 1987). Closer fit is recognized when the prototype of a group matches the individual identity of the person. Accessibility is described as the availability of a particular stimulus used for categorization, and it can affect the likelihood a category is used as the basis for self-definition, whether the category is momentarily or chronically accessible (Turner et al., 1987). A category can become increasingly accessible if the information about a group is primed or if the information was learned and reinforced over time.

The categorization of individuals into a group causes them to think of themselves less as unique individuals and more as members of their group (Hornsey, 2008). This process is called depersonalization, a concept important to SCT (Turner et al., 1987). Depersonalization is "the process of 'self-stereotyping' whereby people come to perceive themselves more as the interchangeable exemplars of a social category than as unique

personalities" (Turner et al., 1987, p. 50). Once people recognize that they are similar to other group members, the group becomes salient and the individual is more likely to view group members as ideals of the group prototype and less as individuals.

Depersonalization has also been explained in the social identity model of deindividuation effects (SIDE; Reicher, Spears, & Postmes, 1995). SIDE originated from research on crowd behaviors and aided in explaining deindividuation that people encounter in crowd or anonymous situations (Lee, 2004, 2006; Postmes, Spears, & Lea, 1998; Postmes, Spears, Sakhel, & Groot, 2001). Because individuals in crowds or in anonymous settings perceive power in increasing group size, they lose their individuality. The responsibility of these individuals decreases when individual personality becomes divorced from group personality. Multiplayer video games can represent a nearly anonymous setting because avatars are used as a proxy for a player's actual physical presence. The anonymity of video games can foster deindividuation during game play (Yee & Bailenson, 2007).

Belonging to a particular group determines normative behaviors, attitudes, and emotions to which a group member should subscribe. Because people in groups experience depersonalization and are viewed as prototypes of a group instead of individuals, they are likely to behave in accordance with the social norms of the group (Turner et al., 1987). According to SCT, gamers should expect certain behaviors from others, depending on the level of affiliation they feel toward others. If individuals see their game character as being similar to another player's character, they may view the other as an ingroup member and hold specific expectations about normative behaviors in the game. Aggression may be the outcome of intergroup dynamics because gamers who observe other ingroup players

aggression may come to believe that aggression is a socially normative behavior. Viewing the expression of aggression as a normative behavior in intergroup video game contexts could explain the prevalence of aggression in these video games.

Hypotheses

Avatars have become an integral part of many video games, and these games allow players to customize their avatars. The identification that people develop with their avatar can affect their behaviors (e.g., Bessière et al., 2007; Palomares & Lee, 2010; Yee & Bailenson, 2007). Customization of avatars in VVGs can lead to increased identification with one's avatar, which can affect a gamers' behaviors, such as aggression (Fischer, et al, 2010). Because the customization of avatars allows players to build characters that represent themselves (Vasalou & Joinson, 2009) or idealized representation of themselves (Bessière et al., 2007), they are likely to view avatars as realistic objects (Bailey et al., 2009). Gamers may feel strong identification with their avatars because these characters are seen as realistic, tangible representations of players. Identification with a game character can lead players to emulate the character, causing game players to process aggression toward the game characters as aggression toward them.

H1: As the level of identification with video game players' characters increases, the amount of (a) hostility, (b) verbal aggression, and (c) intent to physically aggress they express will also increase.

In addition to identification with avatars, group categorization of gamers' avatars can affect the amount of aggression exhibited in a VVG. Because avatars are used as a cue for identification online (Yee & Bailenson, 2007), the appearance of gamers' avatars could be the primary cue a person uses to make ingroup and outgroup categorizations. Thus, if a gamer notices that another player customized an avatar to look similar to his or her avatar,

the gamer may be more likely to categorize the other player as an ingroup member. Similarly, if a gamer notices that the other player customized an avatar that looks different from his or her avatar, the player may view the other player as an outgroup member.

H2: Video gamers are more likely to identify with another player as an ingroup member when the other's avatar is of similar appearance to their avatar than different in appearance.

According to SCT (Turner et al., 1987), once group membership becomes salient, depersonalization occurs. Individuals think of another group member as a prototype of the group instead of individuals and expect group members to behave in accordance with group norms. Therefore, if gamers view another player to be an ingroup member and this player exhibits aggression throughout the game, gamers may view aggression as normative and feel comfortable engaging in aggression. However, if gamers view another player to be an outgroup member and this player exhibits aggression, gamers may view aggression as a normative behavior of outgroup members. This can lead the gamer to avoid exhibiting aggression to accentuate outgroup behavioral differences.

H3: Video gamers will express more (a) feelings of hostility, (b) verbal aggression, and (c) intent to physically aggress when the other player's character looks similar and they use verbal aggression than when the characters are dissimilar or similar and do not use verbal aggression.

CHAPTER 2. METHODS

Recruitment

Undergraduate students at the University of Hawai‘i at Mānoa were recruited through Sona, an online tool used for research coordination. On Sona, students are able to view different studies conducted in the Communicology Department available to them. After reading the descriptions and requirements of the study, students can choose studies in which they would like to participate. For this study, the only participation requirement is that students must be at least 18 years of age. Students interested in participation made a laboratory appointment through the Sona website. Participants received research credit or extra credit for their participation.

Participants

Participants were undergraduate students enrolled in Communicology courses at the University of Hawai‘i at Mānoa. In total, 82 students participated in this study, with a total of 54.9% males (n = 45) and 45.1% females (n = 37). The average age of the participants was 20.23 years (SD = 2.73, range = 18-34). The sample comprised mostly of Chinese, 19.5% (n = 16). The ethnicities of the remaining participants were Caucasian, 18.3% (n = 15), Filipino, 18.3% (n = 15), Japanese, 12.2% (n = 10), Korean, 6.1% (n = 5), Hawaiian or part Hawaiian, 3.7% (n = 3), Hispanic/Latino, 3.7% (n = 3), and Samoan, 1.2% (n = 1). The remaining 17.1% (n = 14) of the participants identified themselves as mixed. The sample recruited had a wide range of experience with and exposure to video games. Participants played video games was an average of 10.10 years (SD = 5.58, range = 0-30 years, median = 11.50). They played an average of 6.66 hours (SD = 10.34, range = 0-60 hours, median = 2.50) per week.

Procedures

Students who chose to participate in the study were asked to read the consent form (Appendix A). After participants gave their consent to participate in the study, they completed a brief questionnaire that included measures of trait aggression and exposure to video games in general and violent video games (Appendix B). This questionnaire also included items asking for demographic information. Participants came to the laboratory during their scheduled appointment. Before starting the session, they read the consent form again and were told that they would be playing a video game with another player in a different location. The other player was a confederate who was in a nearby room. Although the room is near the laboratory, participants were unable to hear the confederate playing. Before the game began, the researcher gave each participant a three-minute standardized tutorial regardless of his or her familiarity with the game. Participants were told to create an avatar and play the game with the other player for ten minutes.

The game used for this study was *Call of Duty: Ghosts*. This game, the most recent version of the *Call of Duty* series at the time, was chosen in part because it is one of the most popular FPSGs, according to the Entertainment Software Association (2014). This game was also selected because players are able to control its settings, customize their characters, and work together or against each other in a multiplayer game mode. The multiplayer game mode used for this study was Team Deathmatch. The primary goal of Team Deathmatch is for two teams to get the most kills in a given time period. This game-play mode allows players to alter the numbers of bots (i.e., computer-controlled opponents) and the difficulty of killing these opponents. Two teams were constructed, with the participant and confederate working on one team against the opposing team of bots.

Participants were told that the goal of the game was to have a higher amount of kills than the opposing team during a ten-minute period. In previous experiments, participants' exposure to video games ranged from 5 to 75 minutes (Sherry, 2001). Ten minutes was chosen for this study because it is the standard time for Team Deathmatch, owing to the ecological validity of the study.

Players were asked to customize their avatar before beginning game play. Players could choose from a number of different customizations. The players started with a standard avatar and customized it to their preference. Players could have made their character unique in five different ways: special (e.g., specialized full-body camouflage suits), sex (i.e., male, female), head (e.g., ethnicities, disguises), headgear (e.g., hats, headsets, helmets), and uniform (e.g., clothing, gear being carried). The character customizations were observed by the researcher, who used this information to provide the confederate with information about how he or she should customize his or her avatar. Two confederates (one male, one female) were used throughout the experiment.

Two features of game play, avatar similarity (similar/dissimilar) and verbal aggression expressed by the confederate (present/absent), were manipulated. In the avatar similarity conditions, the confederate made his or her avatar appear exactly the same as the participant (for examples, see Appendix G). In the dissimilarity condition, the sex of the avatars was the same, but the confederate's avatar was customized to look very different (for examples, see Appendix G). The confederate's avatar was made to look very different through differences in the avatar's head, headgear, and uniform. Confederates were instructed to use a head with a different ethnicity from the participant (e.g., an Black man's head for a participant who used a Caucasian head for his avatar) and to have headgear if

the participant does not have headgear. The confederate's uniform differed from the participant's avatar by color and bulk of the uniform (e.g., a dark colored, slim uniform for a participant with a light colored, bulky uniform). To manipulate the presence or absence of verbal aggression, the confederate was instructed to use or refrain from using verbal aggression during game play. In the verbal aggression conditions, confederates were given a list of ten different verbally aggressive phrases (see Appendix D) to use, Each phrase was used only once, and the confederates were told to use one verbally aggressive statement every minute. The order of the verbally aggressive statements was randomized. The phrases were chosen by the researcher to resemble verbally aggressive phrases that might be heard in actual online game play without being too offensive to the participants. Participants were randomly assigned to one of four conditions (i.e., similar avatars with verbal aggression [n = 21]/similar avatars without verbal aggression [n = 21]/dissimilar avatars with verbal aggression [n = 20]/dissimilar avatars without verbal aggression [n = 20]). The researcher was in the laboratory during the game play.

After the participant and confederate finalized their avatars, they played a game against the bots. Each participant was told that although he or she is on the same team as the confederate, the researcher was also interested in how well he or she did in comparison to the other player. Participants were instructed to record their teammate's kill-death ratio (KDR) and their own at the end of the game. Adding a competitive element ensured that the participants' feelings of ingroup or outgroup membership with the confederate is a result of the avatars' appearances and not because they are on the same team. Before the game began, participants were shown their and the confederate's avatars and screen names. At the beginning of the game, the participant and confederate were instructed to look at each

other and indicate the direction in which they will first be going. These directions ensured that participants observed the confederate's avatar. The game had a ten-minute limit after which time it automatically ended.

An audio recording of participants was taken during the game play to measure the amount of verbal aggression participants exhibited. In the sample, 72 participants consented to their voices being recorded. At the end of the game, participants and the confederates recorded both players' KDR (participants: $M = 0.68$, $SD = 0.66$; male confederate: $M = 0.88$, $SD = 0.34$; female confederate: $M = 1.07$, $SD = 0.20$). Participants were then instructed to complete an Internet-based questionnaire on a computer located in the laboratory. The questionnaire included measures of participants' identification with their avatar, ingroup identification with the other player, state hostility, intention to verbally aggress, and intention to physically aggress. An enjoyment scale was also added to this questionnaire to conceal the aims of this study.

Instruments

Trait aggression. The Trait Aggression Scale (TAS), created by Buss and Perry (1992), was used to measure one's baseline aggressive feelings. The TAS is comprised of 29 items that asked participants to rate their level of agreement with statements that addressed how likely they were to act aggressively in different scenarios. The TAS uses a 7-point Likert-type scale to evaluate the statements, with anchors at 1 (*strongly disagree*) and 7 (*strongly agree*). Example items of this scale include "Given enough provocation, I may hit another person" and "When frustrated, I let my irritation show" (see Appendix B). Higher scores on the TAS reflect a greater desire to aggress in general situations. Cronbach's alpha for this measure indicates reliability of this scale ($\alpha = .92$, $M = 2.92$, $SD = 0.83$).

Exposure and experience. The items, taken from Lin's (2011) study, measured how many hours weekly participants play video games, how long the participants have been playing video games, and what perceived skill level participants have for specific video games. The first two items were fixed-alternative items wherein participants chose answers that best fit their video game exposure and experience. The first item asked participants to indicate how much time they spend playing video games every week. Because the examples of different types of video game devices provided in the item used in Lin's study were outdated, they were modified to reflect current video game devices. For example, instead of including the example of the PlayStation Portable (PSP) for portable devices, the more current PS Vista device was listed. The last item, which measured perceived skill levels of different games, included a variety of computer and video games. The list reflected the most popular games of 2013 reported by the Entertainment Software Association. The list included Call of Duty: Ghosts, the game used in this study. Participants rated their perceived skill level for each game on a 7-point Likert-type scale from 1 (strongly disagree) to 7 (strongly agree). The complete list of items can be found in Appendix B.

Verbal aggression. Verbal aggression was measured by coding utterances made by the participants during game play using the audio recordings. Similar to the scheme used by Eastin (2007), aggressive utterances made by the participant were counted and the number of aggressive statements was compared to the overall number of utterances made by the participant. A verbally aggressive utterance was characterized as "having hostile connotation and, more specifically, expressions of negative affect, verbally abusive utterances including character and competence attacks, negative comparisons, profanity,

or references to destruction or physical harm" (Eastin, 2007, p. 457). Higher proportions of aggressive utterances to total utterances indicate larger expressions of verbal aggression. Initially, the researcher coded all the audio recordings. A research assistant, trained using a coding scheme, a subset of the recordings (i.e., 12.2%) to determine reliability of the researcher's coding. Cohen's kappa indicated sufficient intercoder reliability between the researcher and assistant ($\kappa = .78$). The proportions of aggressive utterances to total utterances fell within the normal parameters of -2 to +2 for skewness and kurtosis, with skewness of 1.53 ($SE = .28$) and kurtosis of 1.97 ($SE = .56$).

Character identification. Character identification was measured using a modified version of Lin's (2011) identification scale, a combination of Cohen's (2001) Observational Identification Scale (OIS) and the Dyadic Identification Scale (DIS; Hefner, Klimmt & Vorderer, 2007). Six items were taken from the OIS (Cohen, 2001) and five items were taken from the DIS (Hefner et al., 2007). The modified instrument evaluated the extent to which a player loses self-awareness and assumes the perspective of a media persona, which in this case is the video game character. Participants rated their level of agreement to the statements on a 7-point Likert scale, with the endpoints at 1 (*strongly disagree*) and 7 (*strongly agree*). These items were modified to fit the context of video game play. Examples of items on this scale include "The game character's goals became my goals" and "I think I have a good understanding of the game character" (see Appendix C). Higher scores on this scale indicate participants' strong feelings of identification with their character. Cronbach's alpha for this measure indicates reliability for this scale ($\alpha = .88$, $M = 3.86$, $SD = 1.23$).

Ingroup identification. Participants' ingroup identification with the other player was measured using a subscale of McKinley's (2010) Character Involvement Measure. The eight-item identification subscale measured participants' level of agreement with statements about the other player on a 7-point Likert-type scale, with endpoints at 1 (*strongly disagree*) and 7 (*strongly agree*). The items of the original scale were modified to reflect a video game context and identification with a specific referent (i.e., the other player). Example items of this measure include "I think I have a good understanding of the other player" and "When I played with the other player, I felt I was a part of his or her social world" (see Appendix C for items). Higher scores indicate stronger identification with the other player. Cronbach's alpha for this measure indicates reliability of this scale ($\alpha = .89$, $M = 3.94$, $SD = 0.67$).

Ingroup identification in the post-hoc analysis was measured using a subscale of the Perceived Homophily Measure (McCroskey, Richmond, & Daly, 1975). Six semantic differential items were used to measure attitude and background dimensions of homophily with the other player. Participants rated on a scale of 1 to 7 to what extent they agreed with two opposing statements. Example items from this measure include "Doesn't think like me/Thinks like me" and "Status like mine/Status different from mine" (see Appendix C). Higher scores on this scale indicated a higher sense of participants' identification with the other player (i.e., the confederate). Cronbach's alpha for this measure indicates reliability of this scale ($\alpha = .71$, $M = 3.84$, $SD = 0.20$).

An ingroup and outgroup manipulation check was also included. The ingroup manipulation check included four items from the Relational Distance Scale (Leung & Kim, 2007) and two items adapted from Gudykunst et al.'s (1992) ingroup manipulation check.

The four items from the Relational Distance Scale were measured on a 7-point Likert-type scale, with endpoints at 1 (*strongly disagree*) and 7 (*strongly agree*). Example items from the Relational Distance Scale include "I care about the welfare of the other player" and "When I am playing with the other player, I feel comfortable showing my true self." Higher scores on this scale indicated stronger feelings of ingroup membership with the other player. The two items from the manipulation check were measured on a 7-point Likert-type scale, with endpoints at 1 (*strongly disagree*) and 7 (*strongly agree*). As a direct measure of ingroup membership, participants also rated their agreement with the statement "The other player is a member of my ingroup." The manipulation check was reliable ($\alpha = .73$). The outgroup manipulation check consists of two items rated on a 7-point Likert-type scale. These item asked participants to rate "The other player is a member of an outgroup" and "To what extent is the other player an outgroup member?" A higher score indicates that the other player was viewed as an outgroup member. The outgroup manipulation check was reliable ($\alpha = .78$). A complete list of items for the manipulation check is available in Appendix C.

State hostility. The State Hostility Scale (Anderson et al., 1995) measured participants' aggressive cognitions. This scale included 32 statements concerning one's present state, rated on a 7-point Likert scale, with endpoints at 1 (*strongly disagree*) and 7 (st*rongly agree*). Items from this scale include statements such as "I feel furious" and "I feel aggravated" (see Appendix C). Higher scores on this scale indicated higher levels of hostility. Cronbach's alpha for this measure indicates reliability for this scale ($\alpha = .92$, $M = 2.54$, $SD = 0.78$).

Intent to verbally aggress. Intent to verbally aggress was measured using a subscale of Buss and Perry's (1992) Aggression Questionnaire and a subscale of the State-Trait Anger Expression Inventory (Spielberger et al., 1985). Five items of the Aggression Questionnaire were used to measure players' intentions to aggress verbally. Example items from this subscale include "I would tell the other player openly when I disagree with him or her" and "I feel like getting into an argument with the other player." Eight items from the anger expression subscale of the State-Trait Anger Expression Inventory (Spielberger et al., 1985) were also adopted. These items asked participants to rate their level of agreement on a series of statements using a 7-point Likert scale, with endpoints at 1 (*strongly disagree*) and 7 (*strongly agree*). The measure included statements such as "I feel like arguing with the other player" and "I want to say nasty things to the other player." Items on the two measures were collapsed into a single measure of verbal aggression (see Appendix C), with higher scores indicating stronger intentions to verbally aggress. Three items were removed to increase the reliability of the scale. The final intent to verbally aggress scale was reliable (Cronbach's $\alpha = .73$, $M = 1.99$, $SD = 0.70$).

Intention to physically aggress. Intent to physically aggress was measured using a subscale of Buss and Perry's (1992) Aggression Questionnaire. The items from the physical aggression subscale of the Aggression Questionnaire (Buss & Perry, 1992) were used for this scale. This subscale included nine items that ask participants to rate their level of agreement on a series of scenarios using a 7-point Likert-type scale, with anchors at 1 (*strongly disagree*) and 7 (*strongly agree*). Some items were modified to assess participants' current desire to engage in physical violence. Example items include "I can't control the urge to strike another person" and "If I have to resort to violence to protect my rights, I

will" (see Appendix C). Larger scores on this scale indicated a stronger desire to exhibit physical aggression. Cronbach's alpha for this measure indicates scale reliability ($\alpha = .81$, $M = 2.44$, $SD = 0.99$).

CHAPTER 3. RESULTS

A variety of statistical procedures were required to test the hypotheses of this study. Hypothesis 1, which examined the relationship between identification with one's avatar and aggression, was tested with multiple regression. Multiple regression allows for the examining of the associations between character identification, the predictor variable, and hostility, verbal aggression, and physical aggression, separate criterion variables, while holding game experience and exposure (i.e., hours of video game play per week, years of video game experience) and trait aggression constant. Hypothesis 2, which posited a difference in ingroup identification between participants with similar avatars and dissimilar avatars was examined with *t* tests. Finally, Hypothesis 3a to 3c were measured using a 2 avatar appearance (similar/dissimilar) x 2 verbal aggression (present/absent) ANCOVA. The factorial ANCOVAs were used to compare the means of expressed hostility, verbal aggression, and physical aggression of the four conditions.

Manipulation Check

Two ANOVAs were conducted to examine whether the avatar manipulation invoked feelings of ingroup or outgroup membership. The 2 avatar appearance (similar/dissimilar) x 2 verbal aggression (present/absent) ANOVA was used to examine the effects of avatar appearance on ingroup identification. The results indicated no significant differences between participants with similar (M = 3.60, SD = 1.23) and dissimilar (M = 3.53, SD = 1.07) avatars on feelings of ingroup membership, $F(1,78) = 0.08$, $p = .15$, $\eta^2 = .001$. The interaction between avatar appearance and verbal aggression on ingroup membership was also nonsignificant, $F(1,78) = 0.08$, $p = .78$, $\eta^2 = .001$.

A second test was conducted to examine the effects of avatar appearance and verbal aggression on feelings of outgroup membership. The results of the 2 x 2 ANOVA demonstrated no significant main effect between participants with similar (M = 3.60, SD = 1.42) and dissimilar avatars (M = 3.26, SD = 1.39) on feelings of outgroup membership, $F(1,78) = 1.15$, $p = .29$, $\eta^2 = .01$. The interaction between avatar appearance and verbal aggression was also nonsignificant, $F(1,78) = 0.08$, $p = .78$, $\eta^2 = .001$. These results suggest that the manipulated avatar appearance did not affect perceptions of ingroup or outgroup membership. Because group membership based on avatar appearance was the foundation of Hypothesis 3, its results should be interpreted with caution.

Hypothesis 1: Identification in Avatar Selection

Hypothesis 1 was based on the prediction that the level of identification with the video game players' character is associated with hostility (H1a), verbal aggression (H1b), and intent to physically aggress (H1c). Because the hypotheses ask about the linear relationship between identification with one's avatar and different forms of aggression, multiple regression was used, with game exposure and experience (i.e., hours of video game play per week, years of video game experience) and trait aggression included in the regression model as control variables.

In testing Hypothesis 1a, the results demonstrated that the linear combination of character identification, game experience, and trait aggression was significant, $F(4,77) = 2.79$, $p = .03$, $R^2 = .13$. There was a significant negative association between years of video game experience and hostility ($\beta = -.30$, $SE = 0.02$, $p = .01$), which suggests individuals with greater game experience feel lower hostility. The associations between hostility and hours played weekly ($\beta = -.12$, $SE = 0.01$, $p = .31$), trait aggression ($\beta = .17$, $SE = 0.09$, $p = .13$), and

character identification (β = .14, *SE* = 0.07, *p* = .22) were nonsignificant. Because character identification was not associated with hostility, Hypothesis 1a was not supported.

For Hypothesis 1b, the results indicated that the combination of character identification, video game experience, and trait aggression on intent to verbally aggress was significant, $F(4,77) = 5.44$, $p = .001$, $R^2 = .22$. There was a significant positive association between character identification and intent to verbally aggress (β = .24, *SE* = 0.06, *p* = .02). Stronger identification with one's avatar increases the likelihood that players intend to verbally aggress against others. The relationships between intent to verbally aggress and hours played weekly (β = .20, *SE* = 0.01, *p* = .06), years of experience (β = .12, *SE* = 0.01, *p* = .25), and trait aggression (β = .17, *SE* = 0.08, *p* = .11) were nonsignificant. Additionally, character identification, video game experience, and trait aggression did not predict the actual use of verbal aggression during game play, $F(4,67) = 0.50$, $p = .74$, $R^2 = .03$. The predicted association between expressed verbal aggression and character identification was not supported (β = -.04, *SE* = 0.03, *p* = .74). Therefore, support for Hypothesis 1b was mixed.

In testing Hypothesis 1c, the results demonstrate that the effects of character identification, video game experience, and trait aggression on intent to physically aggress against others were significant, $F(4, 77) = 13.43$, $p < .001$, $R^2 = .41$. Years of experience (β = .18, *SE* = 0.02, *p* = .04) and trait aggression (β = .60, *SE* = 0.10, *p* < .001) predicted intent to physically aggress following VVG play. The associations between intent to physically aggress and hours played weekly (β = -.06, *SE* = 0.01, *p* = .55) and character identification (β = .02, *SE* = 0.07, *p* = .79) were nonsignificant. Because the character identification and intent to physically aggress were not associated, Hypothesis 1c was not supported.

Hypothesis 2: Ingroup Identification

Hypothesis 2 proposed that players would have higher ingroup identification with other players when their avatars are similar in appearance than when they are different. Avatar similarity was manipulated, based on the researcher's instructions to the confederate, by intentionally making the confederate's avatar look similar or dissimilar to participants' avatars. Individuals whose avatars were similar in appearance to the other player's avatar (M = 3.96, SD = 1.17) did not have higher ingroup identification to their fellow player than individuals with avatars different in appearance from the other player (M = 3.92, SD = 1.15), $t(80) = 0.15$, $p = .88$. Thus, no support was found for Hypothesis 2.

Hypothesis 3: Aggression

Hypothesis 3a predicted that individuals playing with another person who has a similar looking avatar and uses verbal aggression would express more hostility than individuals playing with another person who has a dissimilar avatar or a similar avatar but does not exhibit verbal aggression. Specifically, avatar similarity and partner's expression of verbal aggression were predicted to influence hostility. To test this hypothesis, a 2 avatar appearance (similar/dissimilar) x 2 verbal aggression (present/absent) ANCOVA was conducted, with hours of video games played per week, years of video game experience, and trait aggression treated as the covariates. The results did not demonstrate a significant difference between similar avatars (M = 2.60, SD = 0.85) and dissimilar avatars (M = 2.49, SD = 0.70) in the amount of hostility felt, $F(1, 75) = 1.14$, $p = .29$, $\eta^2 = .01$. The results also did not demonstrate a main effect between the presence (M = 2.45, SD = 0.64) and absence of verbal aggression (M = 2.64, SD = 0.90) on hostility, $F(1, 75) = 0.65$, $p = .43$, $\eta^2 = .01$.

The results pointed to an interaction effect between avatar appearance and verbal aggression on hostility, $F(1,75) = 8.68$, $p = .004$, $\eta^2 = .09$. The means for each group indicate that participants reported the most hostility when the avatars were similar and verbal aggression was not present ($M = 2.95$, $SD = 0.97$), followed by participants with dissimilar avatars and verbal aggression present ($M = 2.63$, $SD = 0.67$), and participants with dissimilar avatars and verbal aggression absent ($M = 2.33$, $SD = 0.71$). Hostility was the lowest for participants with similar avatars and verbal aggression present ($M = 2.27$, $SD = 0.57$). Appendix H illustrates the decomposition of the interaction. Therefore, Hypothesis 3a was not supported.

Hypothesis 3b proposed that individuals playing with another person who has an avatar similar in appearance to them and uses verbal aggression would express a larger intent to verbally aggress against other than individuals playing with another person who has a dissimilar avatar or a similar avatar but does not exhibit verbal aggression. Specifically, avatar similarity and the presence of verbal aggression predicted participants' intent to verbally aggress. To test Hypothesis 3b, a 2 avatar appearance (similar/dissimilar) x 2 verbal aggression (present/absent) ANCOVA was conducted, with hours of video games played per week, years of video game experience, and trait aggression included as covariates. There was no difference between participants with similar avatars ($M = 1.95$, $SD = 0.63$) and dissimilar avatars ($M = 2.04$, $SD = 0.77$) on intent to verbally aggress, $F(1, 75) = 0.36$, $p = .55$, $\eta^2 = .004$. The results also did not demonstrate any significant difference between participants who heard verbal aggression ($M = 1.88$, $SD = 0.68$) and those who did not hear their partners utter any verbal aggression ($M = 2.11$, SD

= 0.70), $F(1, 75) = 2.04$, $p = .24$, $\eta^2 = .02$. The interaction effect between avatar appearance and presence of verbal aggression was nonsignificant, $F(1, 75) = 1.39$, $p = .24$, $\eta^2 = .01$.

Hypothesis 3b was also tested by examining participants' actual verbal aggression in addition to intent to verbally aggress. The results did not demonstrate significant differences between participants with similar avatars ($M = 0.20$, $SD = 0.27$) and participants with dissimilar avatars ($M = 0.20$, $SD = 0.22$) on verbal aggression, $F(1, 65) = 0.02$, $p = .90$, $\eta^2 < .001$. The results also demonstrated no significant main effect for expression of verbal aggression, $F(1, 65) = 0.80$, $p = .38$, $\eta^2 = .01$,between participants exposed to verbal aggression ($M = 0.23$, $SD = 0.26$) and those not exposed to verbal aggression ($M = 0.18$, $SD = 0.23$). The interaction between avatar appearance and presence of verbal aggression was nonsignificant, $F(1, 65) = 2.05$, $p = .16$, $\eta^2 = .03$. Therefore, Hypothesis 3b was not supported.

Hypothesis 3c predicted that individuals playing who have avatars similar in appearance to another player who uses verbal aggression would express more intent to physically aggress than individuals playing with another person who has a dissimilar avatar or a similar avatar but does not exhibit verbal aggression. Avatar similarity and the presence or absence of verbal aggression was predicted to affect participants' intent to physically aggress. A 2 x 2 ANCOVA was conducted, holding hours of video games played per week, years of video game experience, and trait aggression constant in the model. The results did not demonstrate a significant mean difference between participants with similar avatars ($M = 2.46$, $SD = 0.92$) and dissimilar avatars ($M = 2.43$, $SD = 1.07$) on intent to physically aggress, $F(1, 75) = 0.48$, $p = .49$, $\eta^2 = .004$. Additionally, the results did not demonstrate a significant mean difference between participants exposed to verbal

aggression (M = 2.30, SD = 0.86) and participants not exposed to verbal aggression (M = 2.60, SD = 1.10) on intent to physically aggress, $F(1, 75) = 0.99$, $p = .32$, $\eta^2 = .01$. The interaction between avatar appearance and presence of verbal aggression was not significant, $F(1, 75) = 0.12$, $p = .73$, $\eta^2 < .001$. Thus, Hypothesis 3c was not supported.

Post-hoc Analysis

Perceived homophily and verbal aggression expression. Because the manipulations failed to produce differences in ingroup and outgroup identification, post hoc tests were conducted to examine the effects of perceived homophily with the other player and verbal aggression on participants' aggression. Perceived homophily, in effect, serves as a proxy for feelings of ingroup identification with the other player as a measured, not manipulated, variable. Several hierarchical regressions were conducted using hostility, intent to verbally aggress, verbal aggression, and intent to physically aggress as separate criterion variables. The control variables (i.e., hours of video games played per week, years played, and trait aggression) were entered in Step 1 of the regression models, perceived homophily and the manipulated exposure to verbal aggression variable (coded 0 for absence of verbal aggression and 1 for presence) were entered in Step 2, and the interaction between homophily and exposure to verbal aggression was entered in Step 3.

The results from the first hierarchical regression, using hostility as the dependent variable, indicated that the control variables accounted for 10.9% of the variance. In the second step, perceived homophily (β = -.08, p = .50) and the presence or absence of verbal aggression (β = -.08, p = .48) did not collectively explain a significant proportion of the variance in hostility, $\Delta R^2 = .01$, $\Delta F = 0.54$, $p = .58$. The inclusion of the interaction term between homophily and verbal aggression expression (β = .16, p = .76) did not account for

a significant proportion of the variance in hostility, $\Delta R^2 = .001$, $\Delta F = 0.09$, $p = .76$. Therefore, the supplemental analyses to support Hypothesis 3a was not supported.

Findings from the second hierarchical regression, with intent to verbally aggress treated as the criterion variable, indicated that the exposure, experience, and trait aggression accounted for 16.5% of the variance in intent to verbally aggress. Neither perceived homophily (β = .09, $p = .41$) nor verbal aggression (β = -.16, $p = .14$) predicted intent to verbally aggress, $\Delta R^2 = .03$, $\Delta F = 1.35$, $p = .27$. In step 3, the inclusion of the interaction term (β = -.30, $p = .56$) did not account for a significant proportion of the variance in intent to verbally aggress, $\Delta R^2 = .004$, $\Delta F = 0.35$, $p = .56$. Thus, perceived homophily and verbal aggression was not associated with intent to verbally aggress.

The results from the third posthoc regression, treating overt verbal aggression as the dependent variable, demonstrated that the control variables accounted for 2.7% of the variance in the first step of the hierarchical regression. Perceived homophily (β = .12, $p = .36$) and verbal aggression (β = .10, $p = .43$) did not explain significant variance in verbal aggression, $\Delta R^2 = .02$, $\Delta F = .81$, $p = .45$. The inclusion of the interaction term (β = .31, $p = .61$) was not a significant predictor of verbal aggression expressed by the participant, $\Delta R^2 = .004$, $\Delta F = 0.27$, $p = .61$, in the third step of the hierarchical regression.

Finally, the results from the hierarchical regression addressing intent to physically aggress indicated the control variables accounted for 41.0% of the variance in the first step. In the second step, the inclusion of perceived homophily (β = .03, $p = .76$) and verbal aggression (β = -.09, $p = .30$) did not significantly contribute to explaining variance in intent to physically aggress, $\Delta R^2 = .01$, $\Delta F = 0.55$, $p = .58$. The inclusion of the interaction term (β = .001, $p > .99$) in step 3 did not account for a significant proportion of the variance in intent

to physically aggress, $\Delta R^2 = .00$, $\Delta F = 0.00$, $p = .997$. Therefore, the post hoc analysis of Hypothesis 3c was not supported.

Avatar similarity, verbal aggression expression, and gender. Post hoc analyses examined whether the interaction between avatar appearance and verbal aggression on hostility, verbal aggression, and intent to physically aggress depended on participant's gender. The follow-up test for Hypothesis 3 was undertaken by considering gender as an additional independent variable in the 2 avatar appearance (similar/ dissimilar) x 2 verbal aggression (present/absent) x 2 participant gender (male/female) ANOVA.

The results demonstrated that males ($M = 2.36$, $SD = 0.70$) experienced significantly less hostility than females ($M = 2.77$, $SD = 0.81$), $F(1,74) = 7.54$, $p = .01$, $\eta^2 = .07$. The results also pointed to an interaction effect between similarity and aggression on hostility, $F(1,74) = 11.25$, $p = .001$, $\eta^2 = .11$ already explained in discussing the main results of Hypothesis 3. The interaction effects between avatar appearance and sex, $F(1,74) = 2.74$, $p = .10$, $\eta^2 = .03$, and verbal aggression and sex, $F(1,74) = 0.16$, $p = .69$, $\eta^2 = .002$, were nonsignificant. The three-way interaction effect among avatar appearance, verbal aggression, and sex on hostility was significant, $F(1,74) = 4.27$, $p = .04$, $\eta^2 = .04$. The means for the eight conditions, presented in Appendix F and plotted in Appendix I, indicate an ordinal interaction between avatar appearance and verbal aggression for males and a disordinal interaction between avatar appearance and verbal aggression for females. For males, there appeared to be no main or interaction effects, but for females, the presence or absence of the confederate's verbal aggression seemed to moderate the relationship between homophily and hostility such that the relationship was positive when the confederate verbally aggressed but was negative when verbal aggression was absent.

A main effect between males (M = 2.12, SD = 0.76) and females (M = 1.84, SD = 0.59) on intent to verbally aggress could not be detected, $F(1,74) = 3.80$, $p = .06$, $\eta^2 = .04$. The results indicated no significant interaction between avatar similarity and verbal aggression on intent to verbally aggress, $F(1,74) = 0.17$, $p = .69$, $\eta^2 = .002$. No significant interactions between avatar similarity and sex, $F(1,74) = 2.98$, $p = .09$, $\eta^2 = .04$, and verbal aggression and sex, $F(1,74) = 0.63$, $p = .43$, $\eta^2 = .01$, on intent to verbally aggress could also be found. The three-way interaction among avatar similarity, verbal aggression, and sex on intent to verbally aggress was nonsignificant, $F(1,74) = 0.78$, $p = .38$, $\eta^2 = .01$, as well.

There was no significant difference between males (M = 0.16, SD = 0.21) and females (M = 0.26, SD = 0.27) on participants' verbal aggression, $F(1,64) = 3.03$, $p = .09$, $\eta^2 = .04$. The results did not point to an interaction between avatar similarity and verbal aggression, $F(1,64) = 2.12$, $p = .15$, $\eta^2 = .03$, or between avatar similarity and sex, $F(1,64) = 0.13$, $p = .72$, $\eta^2 = .002$, on actual verbal aggression. The results did not indicate a significant interaction effect between verbal aggression and sex on verbal aggression, $F(1,64) = 0.05$, $p = .82$, $\eta^2 = .001$. The three-way interaction among avatar appearance, verbal aggression, and sex was also nonsignificant, $F(1,64) = 0.25$, $p = .62$, $\eta^2 = .004$.

For the ANOVA addressing factors that affect intent to physically aggress, a significant main effect between males (M = 2.76, SD = 1.02) and females (M = 2.06, SD = 0.82) was found, $F(1,74) = 13.68$, $p < .001$, $\eta^2 = .13$. The means indicate that males intended to physically aggress more than females. The results demonstrated no significant interaction effects between avatar appearance and verbal aggression, $F(1,74) = 1.47$, $p = .23$, $\eta^2 = .01$, or verbal aggression and sex, $F(1,74) = 1.99$, $p = .16$, $\eta^2 = .02$, on intent to physically aggress. A significant interaction between avatar appearance and sex, $F(1,74) =$

10.51, $p = .002$, $\eta^2 = .10$ was uncovered in the results. The means indicate that intent to physically aggress was highest in male participants with dissimilar avatars ($M = 3.03$, $SD = 1.03$), followed by male participants with similar avatars ($M = 2.49$, $SD = 0.96$) and female participants with similar avatars ($M = 2.41$, $SD = 0.89$). Intent to physically aggress was lowest in female participants with dissimilar avatars ($M = 1.74$, $SD = 0.60$). These means suggest that as male game players' avatars grow in similar appearance to another's avatar, their intent to physically aggress goes down but female game players intent to physically aggress rises as the similarity between their and others' avatars increase. The three-way interaction among avatar appearance, verbal aggression, and sex was not significant, $F(1,74) = 1.39$, $p = .24$, $\eta^2 = .01$.

CHAPTER 4. DISCUSSION

The purpose of this study was to test self-categorization theory in the context of violent video game play. This study examined how avatar similarity and the use of verbal aggression by others affect one's expression of aggression. Specifically, this study examined whether the appearance of an avatar influences perceptions of ingroup and outgroup membership and if these perceptions affect normative behavior involving verbal expressions of aggression. Self-categorization theory (Turner et al., 1987) suggests that when group membership becomes salient, group members are viewed as prototypes of the group rather than unique individuals. Viewing individuals as prototypical group members leads to behavioral expectations according to group norms. In the context of VVGs, ingroup and outgroup categorizations based on avatar appearance and the effects of these categorizations on aggression were examined.

Key Findings and Implications

The findings from this study that applied self-categorization theory and avatar appearance to aggression in violent video game play were mixed. The results for Hypothesis 1 indicated that identification with one's avatar corresponds to one's intent to verbally aggress. This result is consistent with previous research that found a relationship between identification with players' characters and aggression (e.g., Eastin, 2006; Konijn et al., 2007; Lin, 2013). Customizing avatars can increase the amount of identification with that avatar (Lin, 2013). Because avatars in violent video game play enact aggressive behaviors, players experience increased levels of hostile cognitions when using avatars with which they strongly identify.

The association between intent to verbally aggress and character identification found in this study further supports previous research on the effects of avatar appearance on players (e.g., Bessière et al., 2007; Yee & Bailenson, 2007). Customized avatars facilitate identification with avatars player come to view these game characters as more realistic (Bailey et al., 2009). Identification can lead to aggression because players identify with an avatar that is engaging in aggressive acts. The results from this study support propositions of GAM that explain the relationship between violent stimuli and aggression (Anderson & Bushman, 2002; Bushman & Anderson, 2002). Experiencing the aggressive behaviors of one's avatar acts as a situational input and affects an individual's internal state, as observed with the increased intent to verbally aggress in this study.

The results from the third hypothesis indicate that people experience more hostility when their avatars are similar to another player and he or she does not use verbal aggression than all other conditions, which contradicts the prediction of this investigation. This result suggests that the appearance of avatars and the absence of verbal aggression were related to hostile cognitions experienced by the player; however, not in the way that would be explained by the social identity perspective. There were no differences in verbal or physical aggression among the four conditions (i.e., similar avatars with verbal aggression, similar avatars without verbal aggression, dissimilar avatars with verbal aggression, and dissimilar avatars without verbal aggression). Therefore, the overall results from Hypothesis 3 are inconsistent with the application of self-categorization theory to avatar use and group play in VVGs.

The unexpected results of the third hypothesis can be explained by other unsupported findings in this investigation. The predictions made in Hypothesis 3 were

contingent on participants perceiving the other player as an ingroup member when avatars are similar and an outgroup member when the avatars are dissimilar. However, avatar similarity was found not to be a strong predictor of group membership perceptions, indicating that evaluations of whether someone is considered an ingroup or outgroup member in VVG play, if such perceptions even arise, may be predicated on other factors in the game. Therefore, the differences between groups in the results from the third hypothesis may be explained by factors other than group identification.

The results from the third hypothesis may be explained by specific circumstances that make some individuals feel more hostile. Participants in the similarity without verbal aggression condition may be in an ideal situation where they view the other person as similar in appearance and are being influenced more by aggressive content in the game than the other person, causing them to feel more hostility. Feeling similar to the other player may lead the video game player to feel comfortable with aggressing and may also be amplified by the amount of attention spent on the game stimuli. Because VVGs include a variety of violent stimuli, aggression was assumed to be salient in this context.

Participants in the similarity without verbal aggression condition may have been frustrated and felt more hostile because their expectations of the other player were not met. In the similarity condition, participants may have felt more liking toward the other player. From a young age, people have shown more liking to others that are similar to them than different (Fawcett & Markson, 2010) and liking can occur because of similarities in appearance (Berscheid, Dion, Walster, & Walster, 1971), attitudes (Byrne & Griffitt, 1966), and behaviors (Burleson & Samter, 1996). If an individual's avatar is similar to another player's, he or she may perceive that player to be similar and view the other player as more

likeable. However, if that individual expects the other player to talk to him or her and the other player violates this expectation by being quiet during gameplay, that individual may become upset with the other player. Players in the similarity with no verbal aggression condition may have viewed the other person to be similar and likeable; however, players in conditions without verbal aggression were rarely ever spoken to by the confederate during gameplay. Thus, if the confederate violated the expectations of the players, players in this condition may have had some negative feelings (e.g., anger). If the confederates did speak to players in the similarity without verbal aggression, confederates did not engage in any verbal aggression. This could have also violated expectations of the players if they find verbal aggression to be normative in VVG contexts. Therefore, the expectation violations from similar, likeable others in the similarity without verbal aggression could have triggered negative feelings, leading to the increase in hostility found in this study.

Contrary to what was expected in Hypothesis 1, other forms of aggression, including hostility, actual verbal aggression, and physical aggression, were not significantly associated with avatar identification. These findings are inconsistent with previous research that has reliably identified a relationship between identification with players' characters and aggression (e.g., Eastin, 2006; Konijn et al.; Lin, 2013). The results from this study suggest that character identification in VVGs may be only related to specific forms of aggression rather than aggression as a whole. After playing the game, players may have expressed intent to verbally aggress over other forms of aggression because verbal aggression may be seen as a normative, yet less severe, form of aggression. Players may feel aggressive after playing games but actual verbal aggression or intent to physically harm others may be out of their comfort zone. Because hostility is generally a thoughtless

reaction (Anderson & Bushman, 2002), the lack of difference in levels of hostility may indicate that participants may have been more aware of their aggression rather than feeling aggressive unconsciously.

These results also indicate that although character identification is associated with intent to verbally aggress, players may not actually carry out verbally aggressive behaviors during game play. The absent link between behavioral intention and overt behavior can be explained by the players' perceptions of whether or not they felt comfortable engaging in verbal aggression with the physical presence of another person. The presence of the researcher could have made it uncomfortable for participants to engage in verbal aggression. In anonymous environments, deindividuation, or a state in which a person is seen as a part of a group and not an individual (Festinger, Pepitone, & Newcomb, 1952), may occur. Deindividuation can causes people to lower the amount they engage in self-evaluation and feel comfortable with engaging in antinormative behaviors (Diener 1980; Zimbardo, 1969). Therefore, in contexts where participants can play a video game with another but cannot be identified, they may engage in antinormative behaviors, such as verbal aggression. In this study, however, the presence of the researcher individuated participants, causing them to feel less comfort in verbally aggressing.

The results also indicated that players who had avatars similar in appearance (e.g., similar clothes, hair color, etc.) to other players had similar feelings of ingroup and outgroup membership in comparison to those players who had avatars that appeared dissimilar. A lack of difference between these two groups of players suggests that within the parameters of this study, avatar appearance may not dictate categorize other players into their ingroup or outgroup member. Although avatars are the initial cues for identifying

other players (Yee & Bailenson, 2007), it is possible that other situational cues (e.g., competitive vs. cooperative modes) are more important for determining group membership throughout gameplay. Because self-presentation is dynamic and can change throughout an interaction (Schwämmlein & Wodzicki, 2012), avatars may become less important in making judgments about the identity of the other player over the course of a game. These results call for future research on group identity cues in video game contexts.

The lack of difference in feelings of ingroup and outgroup membership between participants with similar and dissimilar avatars could have also occurred because participants were not aware of any similarities or differences between the avatars. There was no manipulation check to indicate whether participants were aware of any differences between their avatar and the other player's avatar, so it is impossible that participants did not see the other's avatar as similar or different despite instructions to look at the avatars.

Practical Implications

The findings from this study have practical implications for both video game raters and consumers. First, the association between character identification and intent to verbally aggress, found in this study, should be considered when making ratings of future video games. Because these results are consistent with previous findings on the relationship between character identification and aggression, the Entertainment Software Rating Board (ESRB) should consider avatar customizability features in video games when creating ratings for VVGs. The ESRB creates ratings for video games to inform consumers about appropriate audience age ranges for video games and the content (e.g., blood and gore, cartoon violence, mature humor) and interactive features (e.g., shares info, shares location) in the game that led to these ratings (ESRB, n.d.). Currently, avatar customizability

is not included in the types of content descriptors used to inform consumers about game features although the results indicate that it should be at least taken into consideration.

Second, video game consumers should be aware that verbal aggression from other players might not necessarily elicit aggressive cognitions in other players. Instead, violations of behavioral norms may be a better predictor of hostility. The results of this study were not aligned with predictions made about how avatar similarity and verbal aggression from a teammate affect aggression. Players were predicted to express the most aggression when they viewed the other player as an ingroup member given similar looking avatars and when the other player engaged in verbal aggression. However, the results did not support these predictions. Instead, the most hostility was expressed when the avatars were similar but verbal aggression was not present. Therefore, verbal aggression does not need to be present for a player to feel increased levels of hostility. Players may have been more hostile in the similarity without verbal aggression condition because they initially felt the other person was likeable due to similarities, but the verbal behaviors of the other person did not meet players' expectations. If a player expects everyone to be verbally aggressive in a VVG, they may become upset when a person they initially liked does not engage in verbal aggression during the game. This information is important for video game consumers concerned with avoiding increased levels of aggression. Understanding normative behaviors in particular video games and adhering to these norms may be more important for decreasing hostility than simply avoiding verbal aggression altogether.

Limitations and Directions for Future Research

This study has several limitations that should be considered when interpreting the results of this investigation. First, the participants' variable levels of experience playing

VVGs could have affected the results. Players with less experience, who presumably lack the skills to be effective in the game, may not observe their avatar being aggressive. If participants identify with and feel a psychological connection to their avatar but the avatar is not aggressive, participants will have no referent to model their own aggressive behaviors. Therefore, experience with video games could be a factor in how much aggression is exhibited following violent video game play. The effect of video game experience was controlled across all statistical tests to avoid spurious relationships.

Second, the amount of concentration required by participants could have contributed to the levels of aggression exhibited by participants. Because the majority of participants (67.1%) were unfamiliar with the specific game used in this investigation, some of their cognitive resources may have been dedicated to remembering the controls and learning how to play the game. At the beginning of the game, some participants had difficulties walking and looking around at the virtual environment. For these inexperienced participants, the cognitive resources allocated to learning how to play the game may have made it difficult to attend to making judgments about the other player. One participant, for instance, apologized for not speaking during the game because he was too consumed with learning the functions of the controllers. Future research that attempts to look at similar principles of this study should consider including a scale to measure cognitive effort exerted during game play or limit the study to only those who have prior experience with the game. Recruiting participants familiar with the game or controlling for level of cognitive effort needed to play the game could produce more robust effects.

Third, the isolation of verbal messages from nonverbal behaviors when measuring participants' aggressive behaviors could be problematic. When verbal messages are

examined alone as communicative acts, the message may not being interpreted in the context in which it was uttered, thereby possibly decreasing accuracy in trying to interpret the messages. For example, when people observe another person's nonverbal communication cues in concert with verbal cues, it results in more accurate judgments of rapport than relying on verbal communication cues alone (Grahe & Bernieri, 1999). Therefore, accuracy of detecting whether the verbal aggression in this study was reduced by divorcing what was said from other important nonverbal cues (e.g., hand gestures). Likewise, during game play, some participants may have expressed their aggression exclusively through nonverbal aggression. For instance, one participant held his fists in the air and directed it toward the television screen after dying. Additionally, another person used their entire body to express her emotions after dying by kicking her legs in the air and throwing her arms up and to the side. Because there were instances of participants expressing their emotions through their body rather than their vocal expressions, it may be problematic to examine verbal aggression in absence of nonverbal aggression. Future research should consider coding nonverbal behaviors along with verbal behaviors to obtain a better measure of participants' aggression.

Fourth, the researcher's presence during participants' game play may have affected the results of this study. Students in the department of the primary researcher may have refrained from using verbal aggression to manage a favorable impression for the researcher (i.e., social desirability). Other participants may also have controlled their verbal aggression because the researcher was female. Generally, females are expected to express direct forms of aggression less than males (Archer, 2004) and participants may have altered their behaviors if they are aware of this. It was apparent that some

participants were conscious of the things coming out of their mouths during game play. Several participants asked the researcher if they were allowed to use profanity before they played the game. One participant stated during game play that he had to control his swearing and did proceed to stop himself at times. Therefore, the presence and possible the sex of the researcher overseeing this study could influence the results. Future investigations should be conducted without the researcher present during game play. The absence of the researcher in the laboratory during the game play may make participants feel more comfortable expressing aggression. If a researcher must be present in the room during the experiment, counterbalancing the researcher's sex to avoid to avoid threats to internal validity is warranted.

Fifth, gender of avatars in the dissimilarity condition could be a potential cause for the failed manipulation check. In conditions where the participant's and confederate's avatars were dissimilar, gender was kept constant. The decision to use same-sex avatars could be problematic when attempting to facilitate feelings of outgroup membership. According to SCT (Turner et al., 1987), if gender is salient to a participant, he or she may categorize the other person as an ingroup or outgroup member based on the gender of the avatar. If players remember the gender of the avatars but do not remember other features of the avatars, gender may be the most salient feature. Because the gender of the avatars were always the same, the decision to use same-sex avatars could explain the lack of difference in feelings of outgroup membership between participants with similar and dissimilar avatars.

Sixth, a limitation of this study is the group size used for the teams. Each participant was on the team with only one other person (i.e., the confederate). Although other studies

examining group communication have used small group sizes (e.g., Palomares & Lee, 2010; Wang, Walther, & Hancock, 2009), having only two people on a team may weaken the perception that a group exists when one person is dissimilar from the other (Wang et al., 2009). Including another confederate on the team could strengthen the ingroup and outgroup manipulation. Participants might be more likely to notice differences or similarities between their avatar and the avatars of others on the team if there are more players visible. The addition of other players on the participants' team is another concern for future consideration. By adding another person or two to the team, group identity might become more salient to participants. Future research could vary the amount of people on the participants' team to examine any differences that may occur from increased salience and group identification.

Finally, future research should focus on identifying other possible explanations for differences in aggressive behaviors of VVG players, including the use of script theory (Tomkins, 1987). Script theory suggests that people and their behaviors can be understood through "scripts," or the sets of rules that organize scenes and relationships among scenes that people learn throughout life. Gamers may acquire scripts about normative behaviors of other gamers in VVG contexts, such as the appropriateness of aggression expression. These learned scripts might explain why gamers exhibit certain types of aggression more than others. For example, observing other gamers engaging in verbal aggression and viewing verbal aggression as normative could explain why some might be more inclined to verbally aggress than physically aggress despite their avatar engaging in physical aggression. Therefore, exploring other theories could provide clearer explanations for the link between VVG contexts and specific types of overt aggression.

Conclusion

Video games provide a unique context for exploring a variety of media effects, including perceptions of group membership and aggression. The results of this study show that character identification is positively associated with intent to verbally aggress, providing further support for character identification research. Additionally, the results indicate hostility is the highest when people have similar avatars to the other player and the other player does not use verbal aggression than when people have similar avatars and verbal aggression is present or when people have dissimilar avatars. This information indicates avatar appearance and the presence of verbal aggression may have an effect on hostility, although this relationship may not be interpreted through the lens of the social identity approach. Overall, this study is a step forward in video game aggression research and provides additional avenues for researchers interested in examining the relationship between avatars and aggression in video games.

APPENDIX A
Consent Form

University of Hawai‘i
Consent to Participate in Research

Study of Media Effects

My name is Jaymian Urashima, and I am a graduate student at the University of Hawai‘i at Mānoa (UHM). I am conducting a research project examining media effects related to video gameplay. Participation in this study will involve you completing an initial online questionnaire, coming into our laboratory to play a video game and completing a second questionnaire, and completing a third questionnaire two days after coming into the laboratory. You must be at least 18 years old to participate in this research project.

Project Description – Activities and Time Commitment: If you decide to take part in this project, you will be asked to complete an online questionnaire. After completing the questionnaire, you will set an appointment to come into the laboratory. During your scheduled time, you will play a video game and complete a questionnaire immediately after playing. While you are playing, your voice will be recorded. This recording will be used strictly for this study and will be deleted upon completion of the study. Two days after the laboratory portion is complete, you will be sent one last questionnaire to complete. Completion of the entire study will take a total of approximately one hour. Approximately 160 people will take part in this project. As incentive for your participation in this study, you will receive Sona research credits.

Benefits and Risks: There will be no direct benefit to you for participating in this survey. The results of this project may contribute to a better understanding of what effects video games have on people. There may be some risk with participating in this project. You should know that although unlikely, you may experience psychological discomfort during your laboratory appointment.

Confidentiality and Privacy: All personal contact and identifying information will remain strictly confidential. Following the completion of this research project, this information will be permanently deleted. We will not ask you to provide any other personal information that could be used to identify you personally. Likewise, please do not include any personal information, such as your name, in your survey responses.

Voluntary Participation: Participation in this project is voluntary. You can freely choose to participate or to not participate in this survey, and there will be no penalty or loss of benefits for either decision. If you agree to participate, you can stop at any time without any penalty or loss of benefits to which you are otherwise entitled.
Participation in the recording of your voice is also voluntary. Please indicate if you are willing to have your voice recorded by initialing a box below.

☐ Yes, I am willing to be recorded ☐ No, I am not willing to be recorded

Questions: If you have any questions about this study, you can contact me at jaymian@hawaii.edu or at 808-956-8202. You can also contact the faculty member assisting with this study, Dr. Robert Tokunaga at rstokuna@hawaii.edu or at 808-956-8202. If you have any questions about your rights as a research participant, you can contact the UH Human Subjects Program at (808) 956-5007 or uhirb@hawaii.edu.

To Access the Survey: Please continue to the following page (click next) for access to the survey and instructions for completing it. Submittal of the survey will be considered as your consent to participate in this study.

Please print a copy of this page for your reference.

APPENDIX B
Pre-test Questionnaire

Video Game Exposure and Experience (Lin, 2011)

The following questions refer to your current video gameplay. Please answer the following questions to best describe your current video gameplay.

1. On a weekly basis, how many hours do you spend playing games (including console games played on Xbox, Playstation, or Wii, computer games, casual games on the web, games played on portable devices such as PS Vita, Wii U, or Nintendo DS, etc.)?

2. How many years have you played video/computer games?

For the following question, choose the number that best describes your skill level for each game.

3. On a scale from 1 to 7, what is the game play skill level you think you have on the following games?

	Have never played before	Not very good at the game at all					Very good at the game	
Grand Theft Auto	0	1	2	3	4	5	6	7
Starcraft	0	1	2	3	4	5	6	7
Call of Duty	0	1	2	3	4	5	6	7
The Sims	0	1	2	3	4	5	6	7
Madden NFL	0	1	2	3	4	5	6	7
World of Warcraft	0	1	2	3	4	5	6	7
Battlefield	0	1	2	3	4	5	6	7
Diablo	0	1	2	3	4	5	6	7
Call of Duty: Ghosts	0	1	2	3	4	5	6	7

Trait Aggression Scale (Buss & Perry, 1992)

For the following items, please indicate on a scale from 1 to 7 how much you agree or disagree with the characteristics of your personality.

Strongly disagree — Strongly agree
1 2 3 4 5 6 7

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 have 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 my back.
29. When people are especially nice, I wonder what they want.

Demographic Information

Please provide some background information about yourself.

1. What is your age (in years)?
2. What is your sex?
    a. Male
    b. Female
3. What is your race/ethnicity?
    a. Caucasian
    b. Japanese
    c. Filipino
    d. Hawaiian or Part Hawaiian
    e. Chinese
    f. Korean
    g. African American
    h. Samoan
    i. Hispanic/Latino
    j. Mixed (without Hawaiian)
    k. Other: _____

Appendix C
Post-Test Questionnaire

Character Identification (Cohen, 2001; Hefner, Klimmt, & Vorderer, 2007; Lin, 2011)

Please indicate the extent to which you agree or disagree with each of the following mood statements based on how you feel after playing the game you just completed.

Strongly disagree Strongly agree
1 2 3 4 5 6 7

1. I am able to understand the events in the game in a manner similar to that of my game character.
2. I have a good understanding of my game character.
3. While playing the game, my game character and I share the same emotions.
4. At key moments of the game, I felt I knew exactly what my game character was going through.
5. I wanted my game character to succeed in achieving his or her goals while I was playing the game.
6. When my game character succeeded, I felt joy, but when he or she failed, I was sad.
7. I almost had the feeling of actually being my game character.
8. I literally had the feeling I was in my character's skin.
9. I completely forgot about my self because I was focusing so much on the game character's actions.
10. I had the feeling I was my game character more so than myself.
11. My game character's goals became my goals.

Character Involvement Measures (McKinley, 2010)

Please indicate the extent to which you agree or disagree with each of the following statements about the other player on your team.

Strongly disagree Strongly agree
1 2 3 4 5 6 7

1. I think I have a good understanding of the other player.
2. I tend to understand the reasons why the other player did what he or she did.
3. While playing the game, I could feel the emotions the other player portrayed.
4. At key moments in the game, I felt I knew exactly what the other player was going through.
5. When I played with the other player, I felt I understood the way he or she felt.
6. When I played with the other player, I imagined myself doing the same thing he or she was doing.
7. When I played with the other player, I really felt as if we were taking part in the action.
8. When I played with the other player, I felt we were part of the same social world.
9. The other player is the type of person I want to be like.
10. Sometimes, I wish I could be like the other player.
11. The other player is someone I would like to emulate.
12. I'd like to play the way the other player does in the game.
13. I would never want to act the way the other player did in the game.

Perceived Homophily Measure (McCroskey, Richmond, & Daly, 1975)

On the scale below, please indicate your feelings about the other player. Choose the number that best represents your feelings.

1.	Doesn't think like me	1	2	3	4	5	6	7	Thinks like me
2.	From social class similar	1	2	3	4	5	6	7	From social class different from mine to mine
3.	Behaves like me	1	2	3	4	5	6	7	Doesn't behave like me
4.	Economic situation	1	2	3	4	5	6	7	Economic situation like mine different from mine
5.	Similar to me	1	2	3	4	5	6	7	Different from me
6.	Status like mine	1	2	3	4	5	6	7	Status different from mine
7.	Unlike me	1	2	3	4	5	6	7	Like me
8.	Background different from mine	1	2	3	4	5	6	7	Background similar to mine

Ingroup/Outgroup Manipulation Check (Leung & Kim, 2007; Gudykunst et al., 1992)

Please indicate the extent to which you agree or disagree with each of the following statements about the other player on your team.

Strongly disagree Strongly agree
1 2 3 4 5 6 7

1. I would miss the other player if I seldom played with him/her again.
2. I care about the welfare of the other player.
3. When I am playing with the other player, I feel comfortable showing my true self.
4. I would help the other player without expecting something in return.
5. The other player is a member of my ingroup.
6. The other player is a member of an outgroup.

Not at all 1 2 3 4 5 6 7 Totally

7. To what extent is the other player an outgroup member?

Immersion Scale (Fu, Su, & Yu, 2009)

Please indicate the extent to which you agree or disagree with the following statements based on how you NOW feel after playing the game.

Strongly disagree						Strongly agree
1	2	3	4	5	6	7

1. I forget about time passing when I play games.
2. I become unaware of my surroundings while playing games.
3. I temporarily forget worries about everyday life while playing games.
4. I experience an altered sense of time.
5. I can become involved in games.
6. I feel emotionally involved in games.

State Hostility Scale (Anderson, Deuser, & DeNeve, 1995)

Please indicate the extent to which you agree or disagree with the following statements based on how you NOW feel after playing the game.

	Strongly disagree						Strongly Agree
	1	2	3	4	5	6	7

1. I feel furious.
2. I feel like I'm about to explode.
3. I feel friendly.
4. I feel aggravated.
5. I feel understanding.
6. I feel amiable.
7. I feel stormy.
8. I feel mad.
9. I feel polite.
10. I feel mean.
11. I feel discontented.
12. I feel bitter.
13. I feel like banging on a table.
14. I feel burned up.
15. I feel irritated.
16. I feel like yelling at somebody.
17. I feel frustrated.
18. I feel cooperative.
19. I feel kindly.
20. I feel like swearing.
21. I feel unsociable.
22. I feel cruel.
23. I feel outraged.
24. I feel good-natured.
25. I feel agreeable.
26. I feel disagreeable.
27. I feel angry.
28. I feel outraged.
29. I feel offended.
30. I feel sympathetic.
31. I feel disgusted.
32. I feel tame.

Verbal Aggressiveness Scale (Buss & Perry, 1992; Spielberger, 1999)

Please indicate on a scale from 1 to 7 how much you agree or disagree with the following statements

Strongly disagree						Strongly agree
1	2	3	4	5	6	7

1. I would tell the other player openly when I disagree with him or her.
2. I feel like openly disagreeing with the other player.
3. I feel like telling the other player what I think of him or her.
4. I feel like getting into an argument with the other player.
5. The other player would say that I am somewhat argumentative.
6. I feel like verbally expressing my anger.
7. I keep things in.
8. I'm apt to tell the other player how I feel if he or she annoys me.
9. I feel like making sarcastic remarks to the other player.
10. I boil inside but I don't show it.
11. I feel like arguing with the other player.
12. I want to say nasty things to the other player.
13. I'm irritated a great deal more than the other player is aware of.

Physical Aggression Questionnaire (Buss & Perry, 1992)

For the following items, please indicate on a scale from 1 to 7 how much you agree or disagree with the following statements.

At present, I feel…

Strongly disagree						Strongly Agree
1	2	3	4	5	6	7

a. I feel the urge to strike another person.
b. Given enough provocation, I feel like hitting another person.
c. If somebody hit me, I would hit back.
d. I would get into a fight a little more than the average person.
e. If I have to resort to violence to protect my rights, I will.
f. There are people who can push me so far that we will come to blows.
g. I can think of no good reason for ever hitting a person.
h. I would threaten someone I know.
i. I am so mad, I could break things.

APPENDIX D

Confederate Verbally Aggressive Statements

1. Are you shitting me?
2. Dumb bitches
3. Stupid asshole
4. Son of a bitch
5. Holy shit
6. What the hell?
7. This is bullshit
8. You piece of shit
9. Oh my God, you dipshit
10. What a bunch of bitches

APPENDIX E

Table 1. *Zero-Order Correlation Matrix*

Variable	1	2	3	4	5	6	7
1. Similarity condition	--						
2. Verbal aggression condition	.00	--					
3. Character identification	.14	.24*	--				
4. Ingroup identification	-.02	.05	.60**	--			
5. Hostility	-.08	.12	.11	-.02	--		
6. Intent to verbally aggress	.06	.16	.33**	.33**	.23*	--	
7. Verbally aggressive utterances	-.01	-.10	.01	-.03	.23*	.13	--
8. Intent to physically aggress	-.01	.15	.13	.08	.12	.51**	-.01

Notes: * $p < .05$, ** $p < .01$

APPENDIX F

Table 2. Means and Standard Deviation for Three-Way Interaction

Avatar Appearance	Verbal Aggression	Sex	*M*	*SD*
Similar	Present	Male	2.09	0.44
Similar	Present	Female	2.51	0.64
Similar	Absent	Male	2.53	0.87
Similar	Absent	Female	3.47	0.86
Dissimilar	Present	Male	2.40	0.59
Dissimilar	Present	Female	2.95	0.67
Dissimilar	Absent	Male	2.44	0.86
Dissimilar	Absent	Female	2.23	0.55

APPENDIX G
Avatar Appearances

Figure 1. Similar male avatars

Figure 2. Dissimilar male avatars

Figure 3. Similar female avatars

Figure 4. Dissimilar female avatars

APPENDIX H

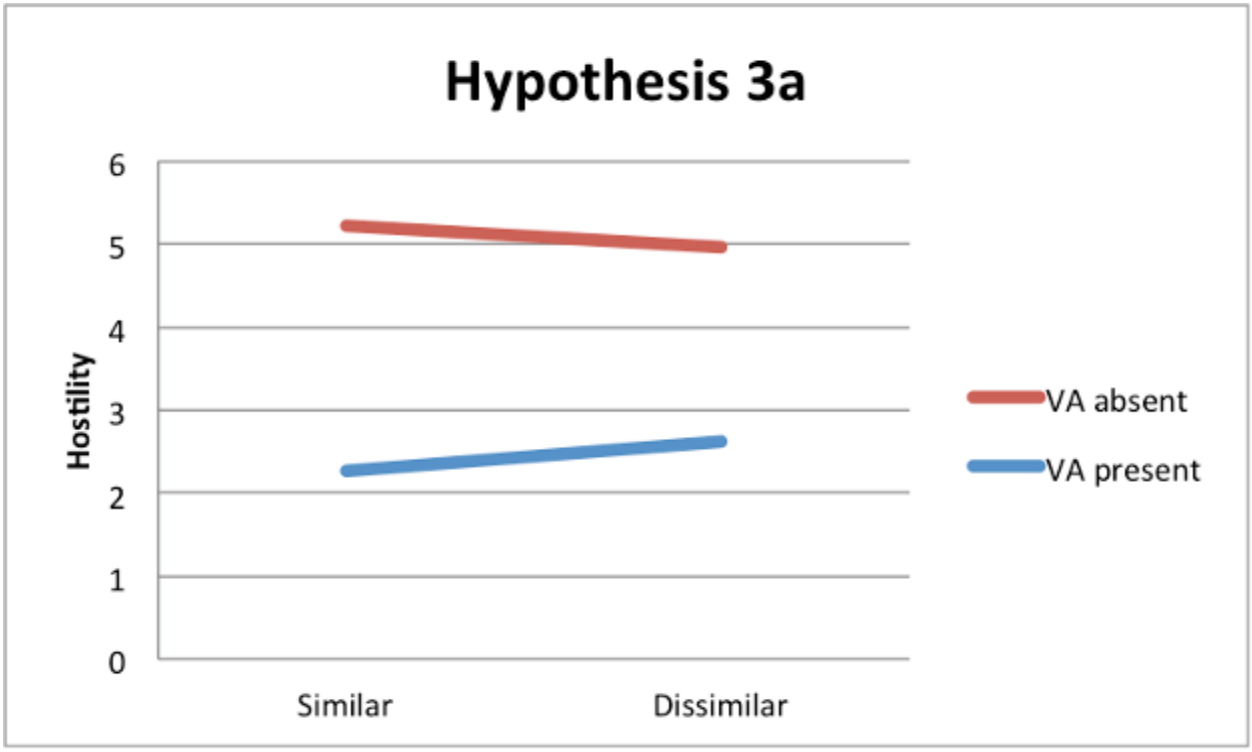

Figure 5. Decomposition of the interaction in hypothesis 3a

APPENDIX I

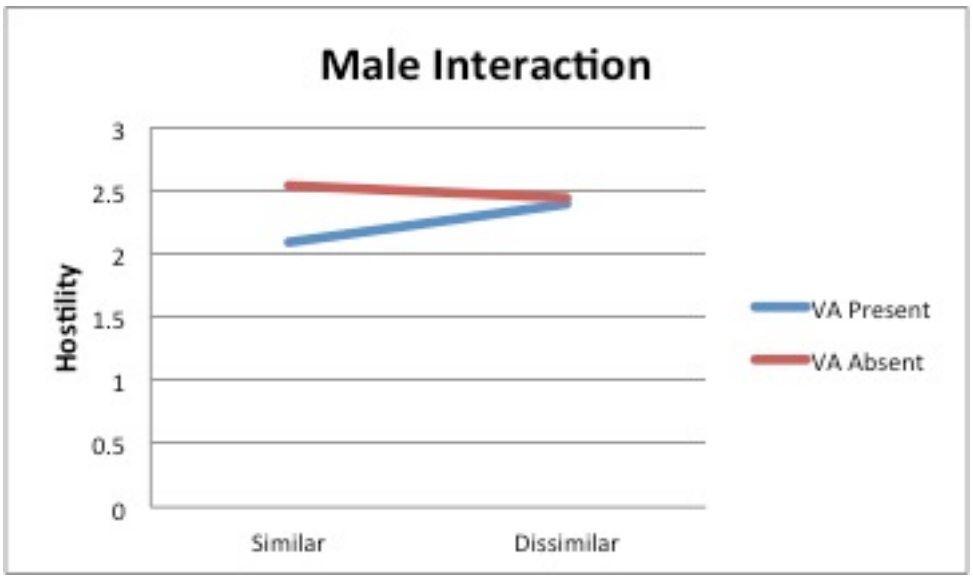

Figure 6. Decomposition of interaction for males in post-hoc analysis

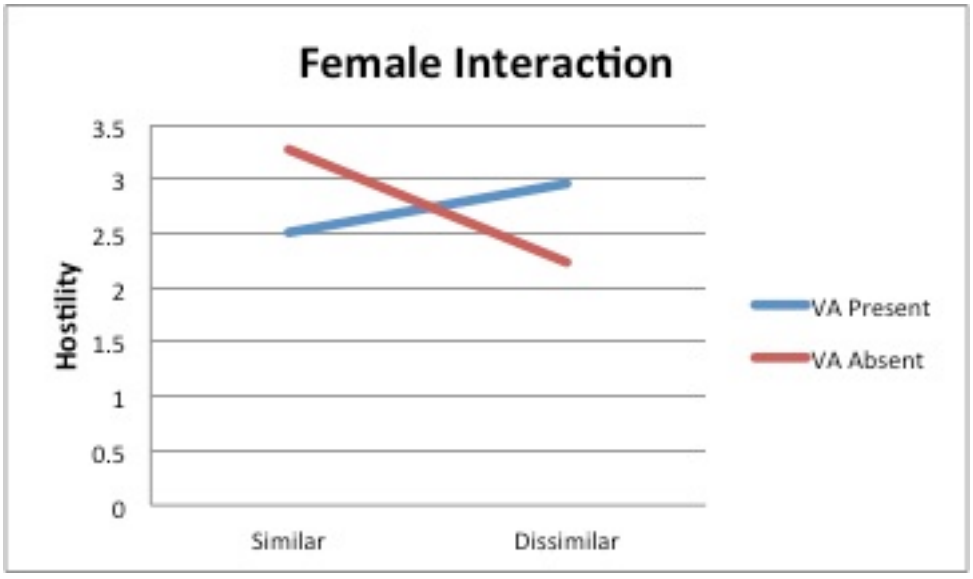

Figure 7. Decomposition of interaction for females in post-hoc analysis

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