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Investigating the Role Video Game Players' Supportive Communication Plays in Moderating the Effects of Toxicity in Online Gaming

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INVESTIGATING THE ROLE VIDEO GAME PLAYERS' SUPPORTIVE COMMUNICATION PLAYS IN MODERATING THE EFFECTS OF TOXICITY IN ONLINE GAMING

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Video game players, especially women, find themselves victimized by verbal abuse and trash talk from their opponents in competitive online gaming. Therefore, video game players may choose to communicate in a supportive fashion toward other players or engage in toxic behaviors due to increased aggression and masculine norms. While scholars have been investigating supportive messages in a computer-mediated context, past research inquiries into supportive communication and video gaming have remained separate. The present study will connect these disparate lines of research. This study explores different levels of verbal person-centeredness (VPC) of support messages, combined with the sex of the message producer, and how these factors impact several video game-based relational outcomes, namely relational closeness, aggression, communication satisfaction, and overall quality of gameplay experience. Participants were presented with one of the six randomly assigned scenarios based on a 3 (high, moderate, and low VPC messages) x 2 (male vs. female voices) factorial design, then asked to answer survey questions. Results indicated that VPC were more effective than the sexes of the message providers through voice recognition at affecting changes in the dependent variables, and having a teammate communicating in HPC messages is effective at improving the participants' relationship with their teammates and gaming quality. However, there were no significant

differences in aggression between groups. Implications and directions for future research are then discussed.

KEYWORDS: online video game players, aggression, verbal person-centeredness, verbal harassment, supportive communication, mediated communication

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CHAPTER I: LITERATURE REVIEW

Mediated communication researchers are now discovering remarkable findings as people increasingly rely on technology as an instrument of communication and entertainment. Within this vast field, video game research is a popular area of research for communication scholars because people are now enjoying video games more than ever, and technological advances have allowed video game players to communicate with each other while engaging in gameplay. Video game culture is user-generated, as video game players create their own rules and norms within games (Shaw, 2010). With video gamers having freedom in the way they communicate to other players online, certain demographics of video game players may have dominance over others, with some groups imposing power on other players. Therefore, during video gameplay, players are drawn into another world, where they may have to abandon their personal beliefs and conform to the rules set by others. As a result, players often find themselves either on the giving or receiving end of online harassment. Toxic behaviors such as racial, sexual, and homophobic slurs, death threats, and invasion of privacy are prevalent among online video game players, especially in a competitive environment (Maher, 2016).

Video games are attracting an increasingly diverse player demographics, including age, sex, race, gender identities, and sexual orientations. However, online games are not known as a welcoming environment as they can be a place for public discrimination. For example, games with queer content have received backlash from the audience. This then influences game developers to remove LGBTQ-related content, thus taking away representation of diversity from video game content (Krobová et al., 2015). In fact, video game research has concluded that online games are generally a hostile environment for players, especially for non-White, female, and LGBTQ participants (Gray, 2012; Kuznekoff & Rose, 2013; Pew Research Center, 2014;

Yee, 2014). This means that online video games are not welcoming of female players, despite the fact that women players make up about half the number of overall video game players (Chalk, 2014), nor for players of color or of non-straight sexual orientation.

Online gaming is considered to be a masculine space, with players often manifesting toxic masculine behaviors such as verbal harassment, aggression, and swearing. Players engage in video games, sometimes obsessively so, as an outlet for negative emotions and as a form of escapism (Blasi et al., 2019), and verbal aggression may be one of the ways players reduce their stress. Tang and Fox (2016) discovered that social dominance orientation and sexism tendency were two predictors of men's aggressive behaviors in online gaming environment, including general harassment and sexual harassment. Moreover, competition between groups of players also contributes to hostility in online video games as massively-multiplayer online games are becoming increasingly popular (Wright et al., 2002). Since online video games is a collaborative activity, analyzing production and reception of supportive messages among players is important because players may choose either to show verbal support to one another or blame each other in the event of losing.

However, while video game studies are rising in popularity within the communication discipline, there is a lack of quantitative research in verbal support among video game players. Thus, there is not much discovered about the effects of verbal support among video game players, including how it can be processed as a way to counteract the toxicity encountered in online gaming. Furthermore, past research showed that support receivers perceived messages differently based on the sex of the message providers (Burleson et al., 2009), but these differences have not been tested in a video gaming context. Combining this aspect of person-centered verbal communication and the sex of the person showing support, this study

investigates how different levels of verbal support provided by different sexes of video game players can potentially affect several outcomes, namely aggression, communication satisfaction, relational closeness, and perceived overall gameplay quality.

Verbal Person-centeredness in Supportive Communication

Because verbal person-centeredness (VPC) is one of the many variables within supportive communication, we first need to define supportive verbal communication as a broad concept in which VPC presents itself. Supportive verbal communication is conceptualized as "verbal and nonverbal behavior produced with the intention of providing assistance to others perceived as needing that aid" (Burleson & MacGeorge, 2002, p. 374). Supportive communication has been researched and applied to many facets of the communication discipline, including health communication, instructional communication, and online communication (Gist-Mackey et al., 2017; High & Buehler, 2019; Matsunanga, 2011; Rubinsky et al., 2020). Previous studies have explored how people provide social support to others in difficult times to alleviate stress and improve positive emotional outcomes and found that supportive messages were used to expand one's social networks as well as to provide psychological comfort.

Burleson (2009) suggested that there are four factors in determining the effectiveness of support messages: message content, source, context, and recipient. Effective message content depends on whether it addresses the stressor, immediacy in the respondents' nonverbals (Jones & Guerrero, 2001), relationships between the message providers and receivers, and various characteristics of the message recipients, including demographic traits and personality dimensions. To organize the factors into a coherent supportive communication theory, Burleson (2009) proposed a dual-process approach to researching supportive communication, which states that there are a number of factors influencing the extent of thought given to process support

messages, and these differing depths of cognitive process impact the outcomes of support messages (Moskowitz et al., 1999). Thus, encoding and decoding support messages are complicated processes that depend largely on the message providers, the listeners, and various contextual factors. As research on supportive communication keeps advancing, it is apparent that the effects of supportive messages are more complicated than just facilitating social relationships and providing emotional support. In fact, message providers' intentions are sometimes not sufficient to ensure expected outcomes, and supportive messages are uneven in quality—some messages are productive, but some are counterproductive depending on the message receivers' perceptions (Goldsmith, 2004).

Burleson (1982) established that VPC, which refers to how a message addresses and acknowledges a person's feelings, is a quality that separates effective supportive messages from ineffective ones. Furthermore, VPC is categorized into three levels that represent the extent to which supportive messages are centered around a person's feelings and individual characteristics (Burleson, 2003, 2008). Low person-centered (LPC) messages condemn, ignore, and downplay one's emotions, while high person-centered (HPC) messages acknowledge and legitimize their emotions. Moderate person-centered (MPC) messages fall somewhere in the middle of the spectrum: They implicitly mention the person's feelings and attempt to divert their attention away from the stressor. Messages at the lowest level of VPC are thought to be the least effective at providing social support as these messages ignore and condemn the listeners' feelings, while messages at the highest level are thought to be the most effective as the message provider actively tries to understand and legitimize the listener's emotions. Supportive messages depend on both the providers and the receivers as the providers have the burden of producing quality messages, while the receivers need to understand the intention of the message providers to

effectively process the support messages. A meta-analysis of previous studies on supportive communication suggests a positive linear association between a message's person-centered quality and perceived effectiveness (High & Dillard, 2012). The findings from this meta-analysis corroborate the assumption about VPC at large—the higher a message is in VPC, the more effective it is perceived to be.

Exploring gender differences in supportive communication is one of the most common areas in VPC research. Women are generally more capable of producing and processing supportive messages than men because they show more advanced emotional development and cognitive complexity in evaluating supportive messages than men (Burleson et al., 2009). Similarly, men are generally less comfortable with producing comforting messages, especially to other men, and their comforting messages are often not well-received by other men (Burleson et al., 2005). There are two possible explanations for this finding. One is that men's supportive messages are not as effective as those made by women, and the other is that men are less welcoming of supportive messages sent from other men (Burleson et al., 2005).

However, focusing solely on gender differences has left research in VPC with considerable gaps. Exploring supportive communication in Chinese culture, Burleson et al. (2006) found that there were some gender differences between how men and women perceived the importance of supportive communication, but insignificant gaps in production and evaluation skills of supportive messages. Nevertheless, studies like these are few and far in between as this area of research is still largely monolithic and heteronormative. Most of the studies in this area had a predominantly White American participants and focused on men-women interactions in heterosexual relationships. Thus, future studies in supportive communication should explore

multicultural interactions and communication in same-sex relationships to broaden knowledge in this area.

Moreover, differences in one's attachment style, or how a person bonds with other people, can result in differences in the evaluation of supportive messages (Bodie et al., 2011). Bodie et al.'s (2011) study discovered that, while VPC does affect the reception of supportive messages, this effect is moderated by attachment styles. In particular, individuals with low avoidance attachment style—more independent individuals, tend to receive VPC messages more positively than those with high avoidance style. However, there is no significant effect found between attachment anxiety—how much an individual needs reassurance about their relationships--and evaluation of supportive messages. Overall, this study indicates a potential theoretical expansion to the existing model on supportive communication, that there are additional variables that impact the evaluation of supportive messages and the effectiveness of VPC in supportive communication.

Existing research on supportive communication reveals that it is a dual process, involving the production and processing of support messages. It has been found that people with higher cognitive complexity, motivation, and empathy produce more effective support messages (Burleson, 1983, 1985; Jones & Burleson, 1997). In terms of processing support messages, highly supportive messages improve peoples' affection toward the message provider, reduce stress, and increase psychosocial well-being (Bodie et al., 2011; Burleson & MacGeorge, 2002). Meanwhile, LPC messages result in negative consequences such as an unfavorable perception of the message provider, low affection, and low quality of messages (Bodie et al., 2011; High & Dillard, 2012). However, these studies only investigate the effects of VPC messages in face-to-

face contexts, so it cannot be guaranteed that these effects will replicate themselves in mediated contexts.

Relational Closeness

Relational closeness, defined as the degree to which a person feels affinity toward another in an interpersonal relationship (Parks & Floyd, 1996), is increasingly examined as one of the outcomes for social support and relationships formed within a computer-mediated environment. Exploring how paralinguistic digital affordances—one-click tools that send socially supportive messages applied across various social media platforms such as likes on Facebook and hearts on Instagram—affect relationships between the senders and the receivers, Carr et al. (2016) found a negative correlation between relational closeness and automaticity in providing these one-click cues: Social media users perceive a less close relationship with the person who likes their social media posts if that person is more indiscriminate with leaving these cues on social media. In a family communication study, Warren and Aloia (2018) established that communication via mobile devices can actually help strengthen family bonds in that family members can reach each other more easily through cellphones.

Applying this factor to video game communication, Ledbetter and Kuznekoff (2012) investigated relational maintenance of video gamers communicating through Xbox Live and offline. Results indicated that relational closeness between video game players is predicted by both Xbox Live communication and offline communication. The implication of these results is that video gamers will develop friendships outside of video game co-play if they communicate frequently both online and offline. Overall, the study's conclusion seems to support the claim that frequent computer-mediated communication (CMC), combined with self-disclosure and the

players' attitude to the communication channel, is beneficial to the development and maintenance of friendships and relational closeness.

Past research involving video game player communication does not explicitly acknowledge the impact of verbal abuse on relational closeness, but findings do suggest a pattern that excessive verbal harassment can inhibit video gamers from developing friendships with one another. For example, Cote (2017) found that female video gamers had to resort to various defense mechanisms to avoid being verbally harassed online, which suggests that female players' priority is to protect themselves, not to actively seek out communication with other players. Furthermore, video game players reported an increase in negative comments and insults when they are perceived to underperform, a phenomenon known as "fairweather friends"—the idea that productive communication between video gamers disappears when one of them starts to underperform (Fox et al., 2018, p. 4066). This finding indicates that the idea of verbal harassment for poor performance is a barrier to fostering a meaningful interaction among video gamers, thus inhibiting relational closeness.

Not much has been investigated on the effects of supportive communication on relational closeness, let alone in a video game environment. However, as previous studies (Cote, 2017; Fox et al., 2018; Warren & Aloia, 2018) suggest, the use of technology seems to benefit relational closeness as computer-mediated communicators are able to use these channels to maintain relationships with others. Thus, it can be assumed that video gamers can develop closeness to one another via communication through video games if both parties engage in constructive communication. However, this is not always the case as past research implies that online verbal abuse negatively affects relational closeness. It is possible that increasing supportive communication in online gameplay can actually mitigate the influence of verbal abuse and

promote relational closeness. Since no study has directly addressed the matter, the relationship between supportive communication and relational closeness remains unexplored, until the present study.

Communication Satisfaction

Communication satisfaction was originally developed by Downs and Hazen (1977) to measure the success of the communication processes in organizational contexts. Downs and Hazen's measure contained items intended to conceptualize communication satisfaction in various organizational settings: employee-employer communication, organizational communication processes, ability to voice concerns and complaints, and communication openness and willingness. Overall, the variable of communication satisfaction was initially concerned with job satisfaction, specifically how the content and quality of communication among different levels of workers and management influence the contentment of employees at their workplaces, but it was later developed to investigate emotional outcomes of relationships. In an interpersonal context, Hecht (1978) developed the interpersonal communication satisfaction scale to measure satisfaction as an emotional response to communication in relationships.

Communication satisfaction has been examined primarily in workplace settings to assess how happy professionals are with the way their organizations fulfill their need to communicate and be communicated with. For instance, Akkirman and Harris (2005) found that workers in a computer-mediated workplace are generally more satisfied with the communication processes than those in a traditional work environment because companies offering virtual workplaces are more effective in establishing and maintaining communication between workers and management. Furthermore, communication satisfaction was found to be the mediating factor

between internal communication practices and job satisfaction, implying that communication satisfaction is the indicating factor of employees' job satisfaction and employers' effective organizational management (Carriere & Bourque, 2009). Studies investigating communication satisfaction in close relationships show that the quality of parent-child relationships improves as children age and become more mature as both adult children and parents rated their satisfaction in their family relationships extremely positively (Shimkowski & Schrodt, 2012; Sweet & Bumpass, 2002). Additionally, communication satisfaction has been applied to a broader range of contexts, including communication education and health communication. For example, in studying patient-provider communication, Jensen et al. (2010) found that a variation in age, race, literacy level, and optimism influences communication satisfaction among low-income adults. Young, white, and literate patients with low optimism tended to be less satisfied with healthcare providers' communication with them. In classroom environments, communication satisfaction is believed to be one of the desired outcomes of successful communication instruction. In that light, Ramsey et al. (2019) discovered that reducing identity gaps—the discrepancy between students' self-perception and self-representation in regard to specific identities, can reduce communication apprehension and increase communication satisfaction.

Since video game development allows people to experience the presence of other players through co-play and therefore perceive gaming experience to be a social activity (Ecklund, 2015; Schroeder, 2006), video game players engage in communication with other players through mediated channels and develop expectations for these interactions. Thus, communication satisfaction is one of the necessary components in the investigation of the communication processes among video game players. In this case, the interpersonal aspect of communication satisfaction best fits the purpose and research objectives of the present study because it examines

the communication behaviors of video game players. Putting this into a supportive communication framework, it can be deducted that manipulating levels of VPC will influence the levels of communication satisfaction among video game players.

Online Video Game Players and Identity

It is important for studies involving video gamer identities to closely analyze the basis of typical video gamer behaviors and what it takes for a person to consider themself to be a video game player to see whether hostile verbal exchanges would constitute a part of the gamer identity. Exploring what constitutes gamer identity, De Grove et al. (2015) found that having friends who play video games and exhibiting stereotypical gamer behaviors is a strong predictor of gamer identity. Self-categorization as a gamer is developed through friendship networks because being surrounded by video gamers causes individuals to reveal their typical video game players' behavioral patterns. Furthermore, self-categorization of video gamer identity may be considered normative for certain demographic groups. Age and gender are two important indicators of the identity, with male and younger people more likely to address themselves as video game players. Since some players see online verbal harassment as an integral part of the gaming experience (Fox et al., 2018), it seems understandable that engaging in typical toxic behaviors, such as trash talk, represents a part of the video gamer identity.

Video games are not just a place for entertainment, but also an environment to engage in discourses about ideologies and identities of video game players (Leonard, 2003). In other words, video game players often find their ethnicities, gender identities, and sexual orientations as subjects for hostility and abuse. While there were an increasing number of games that feature queer characters and storylines, they were met with criticism from the gamer community, and were oppressed by a heteronormative and "straight-washing" mindset, which aligns with the

majority of the gamers' demographic traits being cisgender, straight males (Ruberg, 2018, para. 15). This shows that video game players have established a power structure within their community and become aware of who gains power over others.

Most competitive online video game content is made to suit only a White, straight, and male perspective, which marginalizes other groups of players. As most of the gaming content is considered heteronormative, LGBTQ gamers find their identities disconnected from the games' content and employed strategies to tailor the content to better suit their orientations (Krobová et al., 2015). Despite video game makers' effort to create more content for LGBTQ players, these players still perceived the gaming community as generally heteronormative and lacking in representation of sexually diverse characters (Shaw, 2009). Because competitive online video games are seen as a male-only and masculine-oriented space, players who are not White, heterosexual, or male often find themselves being bullied during these games (Ballard & Welch, 2017; Fenaughty & Harre, 2003). This claim is substantiated by many past studies that investigate the behaviors of non-traditional video game players, such as Black, women, and gay/transgender players, when they interact with the video game player community that is consisted of primarily heterosexual white men (Cote, 2017; Fox & Tang, 2017; Fox et al., 2018; Krobová et al., 2015; Kuznekoff & Rose, 2012).

Representation of race in video games is also problematic in many ways. Racism seems to have become a norm among video game players, with African-American players accepting the racist comments and racial stereotypes during online interactions with other players (Gray, 2012). Furthermore, the content of certain games tends to feature racial stereotypes and indoctrinate players with unconscious racial biases. Analyzing the content of one of the most popular massively-multiplayer online games—*World of Warcraft*, Nakamura (2009) argues that

this game, while consciously trying to avoid racial stereotypes and racism, still racially divided the players into roles, the implication of which is that Asian culture threatens the property of the majority of players coming from a Western perspective. Therefore, it is important to explore how identities of video game players influence their interactions and interpersonal communication.

There are a number of challenges in the representation of women in mainstream media as women are constantly sexualized in movies and television shows, which communicates a belief that women should only be evaluated on their sex appeal (De Laurentis, 1984; Hollett, 2019). Moreover, female characters in popular media are generally stuck in a double bind between masculinity and femininity; they are criticized for being either too feminine or masculine (Clover, 1992; Lewis, 2011). As the entertainment industry that is predominantly occupied by men, female presence in video games is constantly undermined and received with negativity (Kuznekoff & Rose, 2012). Particularly, female video game players receive derogatory remarks, such as "whore" or "stupid slut," from male players as soon as they reveal their gender identity (p. 551). Interestingly, female players receive these kinds of insult regardless of whether they try to be friendly or aggressive. Not only are female video game players treated like outsiders of their own games, they also perceive themselves to be spectators, even during active gameplay (Cote, 2017). Overall, the available evidence indicates a general attitude of hostility and sexual aggression toward female players, which seems to stem from normalized toxic masculinity behaviors perpetuated by male video game players. Since victims of verbal attacks in online games experience a number of negative outcomes, such as lower enjoyment of gaming, emotional distress, or even total withdrawal from gaming (Cote, 2017; Fox & Tang, 2017), it is important to examine possible solutions to make gaming safer and more enjoyable for players

perceived as *others*, especially female players, hence the focus of the present study on supportive communication in gaming.

Video Game Players and Online Verbal Harassment

Online video game players have reported harassment and verbal abuse as the main problems of online interaction among players, believing toxic masculinity to be one of the causes, which makes their experiences more frustrating (Fox et al., 2018). Problematic behaviors online, such as trolling and hate comments, are prevalent and have been shown to be predicted by negative social reward motivation (Craker & March, 2016). Online verbal abuse is also known as flaming, which is conceptualized as "the act of posting or sending offensive messages over the Internet" ("Flaming," n.d.). Hostile messages using profanity language are called "flames," which are intended to inflict harm to a person or an organization resulting from uninhibited behavior" (Alonzo & Aiken, 2004, p. 205). Flaming is not unique to the gaming community, but online gamers have normalized this kind of toxic behavior, forcing other players to accept this situation as the status quo (Liukkonen, n.d.). Trash talk is considered a norm in the video game experience as interviews with gamers revealed that one of the reasons they engage in gameplay was to verbally abuse others (Ortiz, 2019). Interestingly, the roles of bully and victim are interchangeable, which means one can both victimize others and be victimized at the same time (Ballard & Welch, 2017).

Past research reveals that verbal harassment, especially sexual harassment against female players, is common in an online gaming environment because male players outnumber female ones, and there is little to no repercussion for the perpetrators of online harassment (Fitzgerald et al., 1997; Ritter, 2014). Online gaming harassment is reported to be a problem with female players, with women gamers using strategies such as gender neutralization, concealment of

gender identity, and seeking online and offline support to cope with the stress of being verbally harassed online (Fox & Tang, 2017). As a result, female players assume the burden of frequently defending themselves against verbal abuse they engage in online gaming, which causes many to withdraw from playing (Fox & Tang, 2017) or lose enjoyment in playing (Cote, 2015). This problem only worsens as female players see verbal and sexual harassment as inevitable when engaging in online gameplay, and verbal abuse is perceived as one of the prototypical video game player behaviors (De Grove et al., 2015; Ortiz, 2019). These studies show not only that verbal and sexual harassment is a major problem among video game players but that it is also an accepted norm among them.

On the other hand, there has been evidence that negative verbal exchange between players can be productive in some cases. Verbal abuse or trash talk in a competitive environment has been shown to relate to more negative emotional reactions but also relates to increased self-efficacy (Conmy et al., 2013). Engaging in trash talk can be an emotional release for players that helps them become more confident in their prowess, especially in a competitive environment. However, such benefits may not justify hateful messages against non-traditional video game players as trash talk does not necessarily mean using violent, sexist, homophobic, and racist language. In other words, trash talk may be beneficial in certain cases because it is not as intense and personally insulting as verbal abuse and hate messages.

Hostile game behaviors may be facilitated by violent content, which causes aggression and toxic behaviors. Meta-analyses of aggression models have revealed that violent content in video games increases aggression level in some players (Anderson & Bushman, 2001; Greitemeyer & Mugge, 2014). Additionally, competition is also shown to positively correlate to player aggression (Adachi & Willoughbi, 2011). Moreover, frustration and lowering of

competence in video games also contribute to player aggression (Prysbylski et al., 2014), which can help explain verbal abuse in competitive games. It has been shown that repeated exposure to gaming content, especially violent video games, can cause emotional desensitization among players, implying that playing games for an extended period of time reduces players' guilt when engaging in toxic and destructive behaviors (Grizzard et al., 2017). The longer players are accustomed to playing violent video games, the more comfortable they are with engaging in toxic behaviors. Considering verbal harassment is already an accepted behavior among online video game players, emotional desensitization only exacerbates the problem. All in all, violent content, competition among video game players, and negative emotions are among factors that can foster aggression and flaming among players.

While it is true that video game players are subject to hate speech and verbal abuse regularly, they can also form and sustain meaningful friendships through online communication other players (Ledbetter & Kuznekoff, 2012). Since verbal aggression and verbal harassment make online video games generally a hostile environment for players, video game players who want to have a healthy experience either refrain from communicating with others altogether when playing video games or seek out supportive relationships within the community. Video game players can successfully show support for their teammates by providing HPC messages, or hurt their feelings by providing LPC messages, intentionally or unintentionally. However, this connection is currently not substantiated as previous research did not explore supportive communication among online video game players. To address this gap in research, this study examines a more supportive side of video game communication and its effects on several relational and psychological outcomes.

Aggression

Research supports a well-defined association between video game engagement and aggression, as evident by many previous studies focusing on the subject. Particularly, violence in video games has been found to cause an increase in aggressive affect and behavior, as well as physiological arousal (Anderson & Bushman, 2001, 2002). Increased exposure to violent video games, especially first-person shooter games, can cause an escalation in hostility and aggression (Barlett et al., 2007). Personality traits also come into play, with shy individuals being more susceptible to changes in behaviors with exposure to violent video games (Tian et al., 2019). Furthermore, a meta-analysis of previous video game research by Anderson and Bushman (2001) reveals that playing violent video games is positively associated with an increase in aggressive thoughts, feelings, and behaviors in children and adolescents. Not only does violent content in video games increase aggression, this effect also occurs when players identify with violent characters in video games (Konijn et al., 2007). Since being surrounded by aggressive peers normalizes aggressive behaviors (Jung et al., 2018), it is reasonable to assume that playing violent video games around friends can potentially lead to an increase in aggression.

Past research involving video games and aggression has led to the creation and application of the general aggression model (Anderson & Bushman, 2002; Bushman & Anderson, 2002). The model proposes that person factors, such as trait aggression and attitudes toward violence, along with situational factors, such as exposure to media violence, can have an effect on a person's physiological arousal, aggressive thoughts, and feelings. These thoughts and feelings then influence a person's decision-making processes, which in turn influences how thoughtful or impulsive the outcome behavior will be. Moreover, the general aggression model

involves a feedback loop, which means any outcome behavior can reenter the model as a situational factor that acts as a catalyst for future aggressive thoughts and feelings.

However, the popular belief that exposure to violent video game causes aggression and violent acts has been challenged. Ferguson et al. (2008) found that playing violent games is not an indicator of future violent crimes, nor does past exposure to video game violence predict future trait aggression. Nevertheless, an overwhelming number of studies supports the proposition that violent video game content increases aggressive behaviors (Anderson & Bushman, 2001, 2002), and Ferguson et al. (2008)'s study is among the few presenting a contradictory finding against the established path between video game playing and aggression. In other words, there is much to be determined about the relationship between video games and aggression. Moreover, studies examining video game behaviors and aggression by far only considered video gaming as a solitary activity, whereas it is in fact a social activity (Eklund, 2015). Future studies should consider investigating how communication between video game players is related to aggressive behavior.

Perceived Overall Quality of Gameplay

The game experience has been defined as "an ensemble made up of the player's sensations, thoughts, feelings, actions, and meaning-making in a gameplay setting" (Ermi & Mäyrä, 2005, p. 2). In developing an instrument to measure users' experience in services that take a gamified approach, Högberg et al. (2019) found that the game experience is a multidimensional instrument that accounts for the overall player experience during gaming. Specifically, Högberg et al. identified 11 dimensions that partially account for overall player experience: playfulness, affect, enjoyment, flow, immersion, challenge, skill, competition, social experience, presence, and sensory experience. *Playfulness* refers to a gaming state of mind where

players are aware of the game rules, objectives, and become fully invested in the video games, which is closely related to immersion. Being immersed in the gaming experience can bring out emotional responses, both positive and negative, from the players toward the games. If players have a positive experience from the games, they will spend more time playing and eventually see the games as a source of enjoyment. Good video games are perceived to have components of challenge and skill; they have to pose a considerable challenge so that players are motivated to become more skilled to be successful in the games. A major indicator in building successful video games is the players' social experience (Högberg et al., 2019). Not only do video game players ask for quality gaming content, such as storyline, graphics, and in-game features, they also require communication with other players. With competition comes social experience; video game players get competitive when they play against each other. This sense of competition is essential in making a good video game because players need to feel competitive to enjoy the games. According to Högberg et al., if all of these components are present in a video game, players will feel completely enveloped in the computer-generated world that they see themselves actively participating in and will play with a purpose (e.g., presence and flow), leading to a fully realized gaming experience (e.g., sensory experience).

Not much has been researched about how video gamers perceive their overall experience. However, studies about video game player communication have suggested the effects of problematic communication on video gamers' overall experience (Cote, 2017; Fox et al., 2018; Gray, 2012; Krobová et al., 2015). Investigating how female video game players deal with online verbal harassment and sexism, Cote (2017) discovered that women players adopted a number of strategies to help them feel safer in the context of, or even combat against online verbal harassment, such as using gender-neutral gamer tags or engaging in online arguments with male

players. Cote also discovered that using these coping strategies helped improve women players' experience in video games, suggesting that verbal abuse had a negative effect on the gameplay experience of female players.

From these previous studies (Cote, 2017; Högberg et al., 2019), it is clear that prosocial behaviors, such as social support, only accounts for a part of the whole gaming experience. Even though it is suggested that supportive messages have the potential of improving video game players' experience, the communication aspect only accounts partially for the overall game experience. Thus, effective supportive communication may potentially better video gamers' experience, but it is unclear how much it improves players' overall impression with gaming.

Computer Mediated Communication

The social identity model of deindividuation effects (SIDE; Lea & Spears, 1991) offers a theoretical explanation to why people may behave differently in an online environment than a face-to-face context. Investigating group behaviors, Lea and Spears discovered that group members in online-groups experience an increase in conformity in group decision-making compared to face-to-face contexts as a result of the deindividuation effect. SIDE suggests that a lack of visual and nonverbal cues allow online users to change their behaviors to modify their self-representation and control other people's perceptions of them. Since video gaming is a social activity (Eklund, 2015), the SIDE model suggests that online video gamers, due to a lack of physical representation and nonverbal cues, would deindividuate themselves to conform to the larger norms of the gaming community, which may include trash talk and verbal harassment (De Grove et al., 2015; Ortiz, 2019). Video game players can verbally abuse others and perpetuate problematic behaviors without feeling guilty because they are not physically interacting with other players. Furthermore, a lack of nonverbal cues and consequences for problematic online

behaviors causes people to experience the online disinhibition effect (Suler, 2004), where individuals feel less bound by expectations for face-to-face interactions, and thus feel more freedom to engage in deviant behaviors in a computer-mediated environment.

Due to the anonymity and lack of nonverbal cues in a mediated environment, online users frequently experience flaming. In fact, consistent with the assumptions of the SIDE model and online disinhibition effect (Lea & Spears, 1991; Suler, 2004), flaming has been discovered to be positively associated with anonymity as the online environment allows users to act more aggressively (Cho & Kwon, 2015). For example, Johnson et al. (2019) discovered that flaming invokes anger in online negotiators that inhibits the communication process between online users. Similarly, exposure to flaming increases the use of offensive language, which then increases physical and relational aggression among adolescents (Coyne et al., 2011). Thus, both the SIDE model and the online disinhibition effect explain why video game players may feel permitted to be verbally abusive towards each other during gameplay.

Comparing between CMC and face-to-face communication, it is suggested that online communication is not as effective as face-to-face communication at developing meaningful relationships because of the lack of visual and nonverbal cues (Dubrovsky et al., 1991). However, Walther (1996) argues that CMC offers unique advantages over offline communication as partners get choices over projecting their desired self to the receivers, and the asynchronous nature of CMC allows for less stress in maintaining strict timing in communication. As Walther (1992) suggests, it is possible for people to develop social relationships through computer-mediated channels. Group communication through computer-mediated channels shows a trajectory toward positive relational outcomes over time, suggesting that CMC can also yield similar outcomes to face-to-face communication (Walther & Burgoon,

1992). Moreover, virtual gameplay can be an environment where people have an easier time making friends and developing interpersonal relationships (Cole & Griffiths, 2007). Thus, it is reasonable to speculate that video game players are capable of communicating and developing relationships through synchronous gaming with limited visual cues.

VPC in Video Game Communication

After three decades of research on supportive verbal messages, many communication scholars have evolved from researching a face-to-face context to investigating supportive messages in a computer-mediated environment. In fact, many argue that online communication is more beneficial for both providers and receivers of supportive messages than face-to-face contact (Wright, 2000). At the same time, the message provider's sex seems to play an important role in message production and process. Women have been shown to provide more emotional support than men and are thus able to produce more HPC messages (Burleson, 1982). When processing supportive messages, women generally favor HPC messages than LPC counterparts (Kunkel & Burleson, 1999), while men have a higher tolerance threshold for LPC messages than women (Burleson et al., 2009). Similarly, HPC messages are perceived to be associated with femininity because men generally are less inclined to produce HPC messages due to masculinity norms (Burleson et al., 2009; Eagly et al., 2000). Overall, men seem to be less comfortable with producing HPC messages than women due to socialized norms about masculinity.

At the same time, previous studies typically only investigate sex differences in a face-to-face context as women are perceived more negatively in a computer-mediated context (Burleson et al., 2009; Eagly et al., 2000; Kunkel & Burleson, 1999). In an online environment, men communicating HPC messages were perceived more positively than women who do, while women communicating LPC messages were perceived more negatively than their male

counterparts (High & Solomon, 2014). Considering these factors, evaluating how video game players associate between levels of supportive messages and sex differences is a valid research focus because their perception of sex in supportive communication may change in an online context compared to an offline context. This study will examine how the sexes of both the senders and receivers of supportive messages influence their evaluation of the outcome variables as the research design investigates the dyadic communication process between two online game players.

The present study incorporates voice recognition into the research design in that participants will be exposed to a situation in which they can only make assumptions about their teammates through voice identification. Even though the study examines gender cues solely through voice recognition, people in reality make assumptions about many aspects of others' identity only through their voices, including assumptions about race, ethnicity, age, national origin, and sexual orientation, as each person has a unique voice and humans are capable of detecting differences between voices (McGettigan & Lavan, 2017). However, past research has indicated that humans' ability to recognize voices was not very reliable as ear-witness testimonies were often inaccurate (Clifford, 1980). Moreover, while people are generally successful at identifying familiar voices, they have a difficult time making accurate judgments on strangers' identity, especially in realistic situations when people's voices are subject to variations in sound, pitch, and tone (Lavan et al., 2016). Overall, these studies suggest that people can make many assumptions about others' identities through their voices only, but these assumptions should be taken with a grain of salt.

Research Questions and Hypotheses

Although scholars have branched out to research supportive communication in mediated contexts, few studies have converged the research topics of supportive communication and interaction among video game players. Since video game players actively seek out friendships with other players and maintain them through in-game communication features (Ledbetter & Kuznekoff, 2012), it is useful to explore how different levels of supportive communication can help develop or hinder relationships with other players. Overall perception of gameplay quality and aggression are also considered because studies have shown that hostile behaviors contribute to player aggression and low quality of experience (Anderson & Bushman, 2001; Fox et al., 2018). Therefore, these following research questions are asked:

RQ_1: How do VPC messages differ in influencing players' aggression level (RQ_{1a}), relational closeness with other players (RQ_{1b}), communication satisfaction (RQ_{1c}), and perceived overall quality of gameplay experience (RQ_{1d})?

RQ_2: Does perceived sex through voice recognition affect differences in players' aggression level (RQ_{2a}), relational closeness with other players (RQ_{2b}), communication satisfaction (RQ_{2c}), and perceived overall quality of gameplay experience (RQ_{2d})?

RQ_3: Do VPC messages and perceived sex through voice recognition interact to affect differences in players' aggression level (RQ_{3a}), relational closeness with other players (RQ_{3b}), communication satisfaction (RQ_{3c}), and perceived overall quality of gameplay experience (RQ_{3d})?

RQ_4: Does the sex of the message receiver affect differences in players' aggression level (RQ_{4a}), relational closeness with other players (RQ_{4b}), communication satisfaction (RQ_{4c}), and perceived overall quality of gameplay experience (RQ_{4d})?

Conclusion

Previous research has established that online video game environment can be toxic to certain groups of players, namely women, as a consequence of excessive verbal abuse and sexual harassment (Cote, 2017; Fox & Tang, 2017; Fox et al., 2018; Gray, 2012; Krobová et al., 2015; Kuznekoff & Rose, 2012). This form of problematic behavior is perpetuated by the lack of physical interaction and nonverbal cues made available by the online environment (Lea & Spears, 1991; Suler, 2004). Moreover, video game players consider verbal harassment to be part of the gaming experience and inadvertently marginalize non-traditional groups of video game players as a result. Supportive communication between players is important because it offsets the negativity usually experienced in online gameplay with an aim to change the current climate in online games. The present study seeks to discover the effects of supportive communication on several relational outcomes as it applies to online video game players. The study design involves a 3 (high, moderate, and low VPC levels) x 2 (male versus female teammate voices) factorial design that helps answer research questions about how VPC levels and gender cues affect relational and game-related outcomes, namely aggression, relational closeness, communication satisfaction, and overall game experience. Since few previous studies examined supportive communication in an online gaming context, this study should contribute original ideas to the research areas and stimulate future studies in mediated communication.

CHAPTER II: METHODS

Participants

Participants were 18 years old or older and had previously engaged in online video games as a team player. All levels of video game commitment (e.g., casual players, moderate players, and professional players) were eligible to participate. Surveys were collected from participants at a public Midwestern university and through invitations from the researcher's social media accounts.

There were 180 individuals who participated in the study, but only 164 people completed the entire survey. Among these 164 participants, 61 (37.2%) identified male, 101 (61.6%) identified as female, and two (1.2%) identified as non-binary. The mean age was 21.01 (*SD* = 3.11), ranging from 18 to 39 years old. Participants primarily identified as Caucasian/White (66.5%), followed by Black/African American (11%), Hispanic/Latinx (10.4%), Asian (4.9%), Bi-racial (4.3%), multiracial (2.4%), and other (.6%). In terms of sexual orientations, participants primarily identified as heterosexual (83.3%), followed by bisexual (6.2%), other (4.3%), gay/lesbian (3.7%), prefer not to say (1.9%), and pansexual (.6%). The mean number of hours of video game play is 10.19 (*SD* = 12.63), ranging from 0 to 100 hours of video game play.

Procedures

After obtaining informed consent, participants were randomly assigned to read one of six scenarios. These scenarios described the same context, being a player engaging in competitive online games as part of a team of players. In each scenario, participants were asked to imagine that they were in communication with other players on the team through voice chat, and they just lost against their opponents. Upon the loss, their opponents showed verbal aggression toward the participants, where the participants' teammates provided emotional support through supportive

messages. However, the scenarios manipulated the independent variables, differing in the three levels of VPC (high, moderate, and low) and the sex of their teammate through voice recognition (male versus female). The levels of VPC were manipulated through the messages that the participants saw after reading the scenarios, which already indicated the sex of the message providers through written text. After reading the scenarios, participants were prompted to answer follow-up questions to measure the dependent variables, Specifically, participants answered for measures of their own aggression level, relational closeness with other players, communication satisfaction, and perceived overall quality of the gameplay experience. Finally, participants were asked to provide demographical information, specifically about their age, gender identity, education level, and frequency of playing video games.

Manipulation Check

Through an iterative exploratory factor analysis (EFA) procedure, original item 6 was eliminated in that sequence. In the initial EFA, item 6 was eliminated because it had a .33 primary factor loading. The EFA procedure produced an acceptable one-factor solution. Both the KMO measure (.88) and Bartlett's test [$\chi^2 = 1006.03$ (10), $p < .001$] were acceptable. One factor had an eigenvalue greater than 1.00, which was confirmed by the scree plot. The single factor solution, consisting of five items in total, collectively explained 79.57% of the variance. The scale produced very good reliability ($\omega = .95$). See Table 1 for the factor loadings.

To ensure the participants are able to distinguish among different levels of supportive messages, six manipulation check items were developed. They are arranged on a 7-point Likert-type scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Example items include "My teammate was supportive" and "My teammate cared about my feelings." See Appendix for full survey instrument. The original research design compared among high, moderate, and low VPC

conditions. However, after the data collection and analysis processes were complete, only the high and low VPC conditions were used because there was not a significant difference between the moderate and high conditions, meaning the manipulation for the moderate condition did not work as expected. It is possible that the manipulation check failing for the moderate VPC condition was due not to the moderate VPC scenario but rather the manipulation check questions. Oneway ANOVA results indicated a statistically significant difference between groups ($F(3, 117) = 53.98$, $p < .01$, $\eta^2 = .58$). The post hoc Tukey test revealed that significant differences between groups were found between the low and high VPC conditions for both sexes of the teammates, but not between the male and female teammate scenarios in the same VPC conditions. Specifically, the LPC male group ($M = 2.62$, $SD = 1.24$) scored significantly lower than the HPC group ($M = 5.44$, $SD = 1.42$ for male; $M = 5.95$, $SD = 1.20$ for female) for both male and female teammate conditions, $p < .01$, 95% CI [-3.76, -1.86]; for LPC male versus HPC male comparison, $p < .01$, 95% CI [-4.23, -2.41] for LPC male versus HPC female comparison. Likewise, the LPC female group ($M = 2.55$, $SD = 1.54$) scored significantly lower than the high VPC group ($M = 5.44$, $SD = 1.42$ for male; $M = 5.95$, $SD = 1.20$ for female) for both male and female teammate conditions, $p < .01$, 95% CI [-3.80, -1.96]; for LPC female versus HPC male comparison, $p < .01$, 95% CI [-4.27, -2.51] for LPC female versus HPC female comparison.

Measures

Aside from communication satisfaction, which was developed with inspiration from the Communication Satisfaction Questionnaire (Downs & Hazen, 1977), the three remaining variables, namely aggression, relational closeness, and perceived overall quality of gameplay, were created for this study to measure the dependent variables. A pool of items was created for each scale based on a review of relevant literature and in consultation with expert reviewers.

These scales, which were created for the purpose of this study, were subjected to EFA and reliability estimates. See Appendix for the full survey instrument.

Table 1

Factor Loadings for Manipulation Check

Survey Item	
1. My teammate cared about my feelings.	.954
2. My teammate tried to make me feel better about the situation.	.947
3. My teammate was supportive.	.932
4. My teammate was sensitive to how I feel in the situation.	.891
5. My teammate was blaming me for the loss. [Recoded]	.714
Eigenvalue	3.97
% of Variance	79.57
McDonald's Omega	.95

Note. Underlined factor loadings met the 60/40 retention criteria.

Aggression

The scale for aggression consisted of 15 items, all of which are rated on a 7-point Likert-type scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). The items measure the participants' level of verbal aggression and anger after receiving the message in the scenario. Examples items include "I will voice my disagreement immediately upon receiving this message" and "I have no problems telling my teammate how frustrated I feel about what they just said."

Through an iterative EFA procedure, original items 3, 14, and 15 were eliminated in that sequence. In the initial EFA, item 3 was eliminated because it had a .55 primary factor loading.

In the next EFA procedure, item 14 was eliminated because it double-loaded at .69 primary loading and .42 secondary loading. In the final EFA procedure, item 15 was eliminated because it had a .36 primary factor loading. The final EFA procedure produced an acceptable two-factor solution. Both the KMO measure (.88) and Bartlett's test [$\chi^2 = 1240.655$ (66), $p < .001$] were acceptable. Two factors had eigenvalues greater than 1.00, which was confirmed by the scree plot. The two-factor solution, consisting of 12 items in total, collectively explained 59.97% of the variance.

The first factor explained 35.95% of the variance with a 4.31 eigenvalue, while the second factor explained 24.01% of the variance with a 2.88 eigenvalue. The first factor, which was labeled the defensive aggression subscale, consisted of seven items related to players' intention to react against flaming messages. The second factor, which was labeled the arousal subscale, consisted of five items related to players' intention to direct their aggression toward their opponents. The items that comprised the defensive aggression factor ($\omega = .91$) and the items that comprised the arousal factor ($\omega = .86$) each produced very good reliabilities. See Table 2 for the factor loadings.

Relational Closeness

The scale for relational closeness measures how much the participants like their gaming buddy in the scenario as well as how likely they are to develop a friendship with their online gaming buddy. There are 15 items in the scale, which are all rated on a 7-point Likert-type scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Example items include "I perceive this person as one of my friends" and "I like my teammate."

Through an iterative EFA procedure, original survey items 29 and 30 were eliminated in that sequence. In the initial EFA, item 29 was eliminated because it had a .35 primary factor

loading. In the final EFA procedure, item 30 was eliminated because it had a .56 primary factor loading. The final EFA procedure produced a one-factor solution. Both the KMO measure (.94) and Bartlett's test [$\chi^2 = 2258.51$ (78), $p < .001$] were acceptable. The scale had an eigenvalue greater than 1.00, which was confirmed by the scree plot. The one-factor solution, consisting of 13 items in total, explained 67.15% of the variance with an 8.73 eigenvalue. The final one-factor solution produced an overall omega coefficient reliability of .96. See Table 3 for factor loadings.

Table 2

Factor Loadings for Aggression Scale

Survey item	Defensive	Arousal
12. My opponents deserve to be verbally attacked for what they said to me.	.840	.110
13. I feel inclined to retaliate against my opponents by sending them the same verbal messages as the ones I received.	.824	.110
11. I do not feel bad attacking the opponents' feelings if my feelings were hurt.	.805	.105
9. I would enjoy verbally attacking my opponents.	.805	.189
10. When my opponents trash talked me, I want to attack my opponents' intelligence.	.719	.266
1. I would want to engage in a trash talk against my opponents if they said these things to me.	.717	.031
2. I feel the need to express my anger by directing it at others.	.644	.259
6. I am easily angered with this kind of language from the opponents.	.233	.809
4. Hearing offensive comments from my opponents makes me angry.	.025	.770
7. I feel physically upset by what the opponents said.	.132	.742
5. I want my teammate to know how frustrated I feel when receiving insulting messages from the opponents.	.079	.659
8. My opponents' messages made me feel hostile toward them.	.332	.657
Eigenvalue	4.31	2.88

% of variance	35.95	24.01
McDonald's Omega	.91	.86

Note. Underlined factor loadings met the 60/40 retention criteria.

Table 3

Factor Loadings for Relational Closeness Scale

Survey item	
26. I look forward to playing more games with this person.	.932
24. I want to spend more time playing video games with my teammate.	.897
21. I look forward to having more gaming sessions with my teammate.	.888
19. I would like to develop a closer relationship with my teammate.	.860
27. My teammate and I work well together.	.858
28. I feel in sync with my teammate.	.826
18. If I receive this message, I will tell my teammate how much I appreciate them.	.824
17. I like my teammate.	.822
22. My teammate is empathetic.	.811
23. I would like to get to know my teammate better through other activities than video games.	.752
25. Interacting with my teammate is a big reason why I play this game.	.734
16. I perceive teammate as one of my friends.	.714
20. I perceive teammate as one of my friends.	.695
Eigenvalue	8.73
% of variance	67.15
McDonald's Omega	.96

Note. Underlined factor loadings met the 60/40 retention criteria.

Communication Satisfaction

Inspired by the Communication Satisfaction Questionnaire (Downs & Hazen, 1977), the scale for communication satisfaction used in this study measures how satisfied the participants

are with the communication aspect of the gaming experience. There are 15 items in the scale, all of which are rated along a 7-point Likert-type scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Example items include "The communication aspect with my teammate makes my gaming experience more positive" and "Communication with my teammate is positive in that it motivates me to play the game well."

Through an iterative EFA procedure, original survey item 44 was eliminated in that sequence. In the initial EFA, item 44 was eliminated because it had a .02 primary factor loading. As a result, the EFA procedure produced an acceptable one-factor solution with 14 items. Both the KMO measure (.96) and Bartlett's test [$\chi^2 = 2688.67$ (91), $p < .001$] were acceptable. The one-factor scale had eigenvalues greater than 1.00, which was confirmed by the scree plot. The one-factor solution, consisting of 14 items in total, explained 71.98% of the variance with a 10.08 eigenvalue. The final one-factor solution produced an acceptable overall omega coefficient reliability of .97. See Table 4 for factor loadings.

Perceived Overall Quality of Gameplay

The final scale measures how the participants feel about their gaming experience in its entirety. This includes how much they enjoy their experience, how likely they are to keep playing the game, and how this game compares to other games they have played. There are 15 items in the scale, all rated on a 7-point Likert-type scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Example items include "I am really satisfied with my experience" and "I feel this game experience was worth my time."

Through an iterative EFA procedure, original survey items 47, 48, 49, 51, and 55 were eliminated in that sequence. In the initial EFA, item 51 was eliminated because it had a .41 primary factor loading. In the next EFA procedure, item 55 was eliminated because it had a .56

primary factor loading. In the third EFA procedure, item 47 was eliminated because it double-loaded at .67 primary factor loading and .58 secondary factor loading. In the fourth EFA procedure, item 48 was eliminated because it double-loaded at .67 primary factor loading and .51 secondary factor loading. In the final EFA procedure, item 49 was eliminated because it double-loaded at .66 primary factor loading and .47 secondary factor loading. The final EFA procedure produced an acceptable three-factor solution. Both the KMO measure (.85) and Bartlett's test [χ^2 = 977. 433 (45), $p < .001$] were acceptable. The three factors had eigenvalues greater than 1.00, as confirmed by the scree plot. The three-factor solution, consisting of ten items in total, collectively explained 67.63% of the variance.

The first factor explained 31.47% of the variance with a 3.14 eigenvalue; the second, 20.53% of the variance with a 2.05 eigenvalue; and the third, 15.63% of the variance with a 1.56 eigenvalue. The first factor, which was labeled the enjoyment subscale, consisted of five items related to how much players enjoyed the gaming experience. The second factor, which was labeled the motivation subscale, consisted of three items related to players' motivation to perform better in future gaming experiences. The last factor, which was labeled the partiality scale, consisted of two items related to the how much players thought this stand-alone gaming experience affected their gaming behavior. The final three-factor solution produced an overall alpha coefficient reliability of .83 for the scale. The items that comprised the enjoyment factor (ω = .90) and the items that comprised the motivation factor (ω = .83) each produced very good reliabilities. However, since the third factor only had two items, omega reliability could not be calculated, instead having an alpha coefficient reliability of .81. See Table 5 for full factor loadings.

While the overall gaming experience scale had three subscales as revealed by the EFA process, the third subscale was not used to report results because it consisted of only two items. Thus, the results from the MANOVA were not strong and would not add anything beneficial to the model.

Table 4

Factor Loadings for Communication Satisfaction Scale

Survey item	
42. I perceive my teammate as understanding.	.923
45. I like how my teammate and I communicate.	.915
40. I perceive my interaction with my teammate to be of high quality.	.913
39. I do not feel overwhelmed when communicating with my teammate.	.895
34. I am satisfied with how my teammate conveys the emotional content of the message.	.887
32. Communication with my teammate is positive in that it motivates me to play the game well.	.872
38. I feel like I can have constructive discussions with my teammate.	.864
31. The communication aspect with my teammate makes my gaming experience more positive.	.841
37. If I were in this situation in real life, I would feel at ease communicating with my teammate.	.838
36. The interaction with my teammate helps me deal with negative emotions.	.831
35. I generally agree with the content of message that my teammate sends me.	.808
41. My teammate provides me with clear and concise information.	.786
43. My teammate seems willing to initiate communication with me.	.741
33. I do not get offended by the message that my teammate sends.	.734
Eigenvalue	10.08
% of variance	71.98

	McDonald's Omega	.97

Note. Underlined factor loadings met the 60/40 retention criteria.

Table 5

Factor Loadings for Overall Quality of Gameplay Scale

Survey item	Enjoyment	Motivation	Partiality
54. I take great enjoyment out of this game experience.	.818	.322	.054
53. This was one of the best game experiences I've ever had.	.811	.183	.138
59. I am happy with how this game playing experience turned out.	.743	.323	-.212
58. Despite us losing, I would still consider this to be a good experience.	.731	.270	-.360
46. I am really satisfied with my experience.	.657	.370	-.008
60. This gaming experience motivates me to improve my skill.	.251	.771	-.225
52. This experience motivates me to perform better in later gaming sessions.	.323	.722	-.136
50. This experience motivates me to be more competitive in playing video games.	.363	.674	-.029
56. This experience alone cannot fully assess my game experience.	.017	-.170	.806
57. This experience alone cannot predict my future gaming behavior.	-.063	-.059	.805
Eigenvalue	3.14	2.05	1.56
% of variance	31.47	20.53	15.63
McDonald's Omega	.90	.83	--
Cronbach's Alpha	--	--	.81

Note. Underlined factor loadings met the 60/40 retention criteria.

Demographic Questions

The demographic items collected included biological sex, age, ethnicity, education level, and sexual orientation. Additional questions collected information about their frequency of video game use and group the responses into levels of commitment with video games, ranging from casual to professional players.

Data Analysis

Prior to statistical analysis of the research questions, each scale was subjected to EFA and reliability tests, as noted above. Following the collection of data, a series of EFA procedures employed principal axis factoring extraction with varimax rotation. Factor structure was determined by analyzing several criteria for selecting items that cluster together into factors. Items were not retained if they did not meet the liberal 60/40 criteria for factor loadings; that is, the primary loading for an item should be at least .60 and no secondary loading should be .40 or higher. Eigenvalue scores of greater than 1.00 and a visual inspection of the scree plot from the rotated factor matrix helped to determine how many factors to retain. Where possible, McDonald's omega was used instead of Cronbach's alpha for calculating reliability. However, for scales that were not compatible with omega, alpha was used to calculate reliability.

This study used a 3 (HPC, LPC, and MPC messages) x 2 (male versus female teammate voices) factorial design. Following the results of the manipulation check, the factorial design was ultimately tested as a 2 (HPC versus LPC messages) x 2 (male versus female teammate voices). RQ1 addresses VPC messages' main effects on each of the dependent variables: aggression level, relational closeness with other players, communication satisfaction, and perceived overall quality of gameplay experience. RQ2 addresses the main effects of perceived sex through voice

recognition on each of the dependent variables. RQ3 examines the interaction effects between VPC messages and perceived sex through voice recognition on each of the dependent variables. Thus, a series of multivariate analysis of variance (MANOVA) tests were used to answer these research questions. For RQ4, which examines the differences in the sexes of the participants on the dependent variables, a oneway ANOVA procedure was used to answer this research question. Alpha was set to .05 for all statistical tests.

CHAPTER III: RESULTS

The research questions asked if there was a significant difference in video game players' aggression, relational closeness, communication satisfaction, and overall gaming experience among four randomly assigned conditions (low VPC/male, high VPC/male, low VPC/female, high VPC/female). A series of MANOVA procedures was initiated for the first three research questions, using the levels of VPC and the perceived sex of the message providers as the independent variables, while aggression, relational closeness, communication satisfaction, and overall gaming experience served as the dependent variables. For RQ4, which addressed whether survey participants' biological sex influenced the dependent variables, a oneway ANOVA procedure was calculated.

Research Question One

RQ1 investigated whether VPC was related to the dependent variables: aggression, relational closeness, communications satisfaction, and gaming experience. RQ1a addressed the effects of VPC on moderating the participants' aggression level. Box's test of equality of covariance was not statistically significant $F(9, 122123.61) = 1.57$, $p = .12$, meaning the assumption of covariate equality was not violated. Overall, there was not a statistically significant difference on the multivariate level (Wilks' $\lambda = .91$, $F(3, 111) = 2.12$, $p = .15$, $\eta^2 = .008$ for defensive aggression subscale; $\eta^2 = .001$ for arousal subscale). Thus, in answer to RQ1a there were not significant differences between groups for aggression. Descriptive statistics for the MANOVAs conducted in response to the first three research questions are provided in Table 6. Data visualization for both subscales of aggression is shown in Figures 1 and 2.

RQ1b addressed the effects of VPC on moderating the participants' relational closeness with their teammates. Box's test of equality of covariance was not significant ($F(9, 101015.21) =$

.36, $p = .95$) meaning the assumption of covariate equality was not violated. Overall, there was a statistically significant difference on the multivariate level between groups (Wilks' $\lambda = .53$, $F(3, 103) = 23.85$, $p < .01$, $\eta^2_{partial} = .26$). The univariate analysis of relational closeness was statistically significant ($F(3, 103) = 23.85$, $p < .01$, $\eta^2 = .043$). When grouped by VPC levels, participants in the high condition ($M = 5.10$, $SD = 1.05$ for male teammates; $M = 5.64$, $SD = 1.31$ for female teammates) had significantly higher relational closeness than those in the low condition ($M = 3.67$, $SD = 1.22$ for male teammates; $M = 3.33$, $SD = 1.17$ for female teammates). Thus, RQ1b showed statistically significant differences between groups for relational closeness.

Table 6

Descriptive statistics for the MANOVA

Dependent Variables	LPC		HPC	
	Male	Female	Male	Female
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Aggression (Defensive)	3.95 (1.59)	3.28 (1.25)	4.04 (1.58)	3.33 (1.48)
Aggression (Arousal)	4.06 (1.26)	4.26 (1.16)	3.87 (1.27)	4.16 (1.72)
Relational Closeness	3.67 (1.22)	3.33 (1.17)	5.10 (1.05)	5.64 (1.31)
Communication Satisfaction	3.94 (1.19)	3.29 (1.28)	5.40 (1.03)	5.81 (1.27)
Overall Experience (Enjoyment)	3.73 (1.40)	3.13 (1.43)	4.80 (1.20)	4.76 (1.65)
Overall Experience (Motivation)	4.60 (1.31)	4.26 (1.30)	5.55 (1.02)	4.94 (1.58)
Overall Experience (Partiality)	2.80 (1.29)	2.63 (1.37)	2.47 (1.04)	2.25 (1.20)

Note. All scales were arranged on a 7-point Likert scale.

Figure 1

Data Visualization for Defensive Aggression

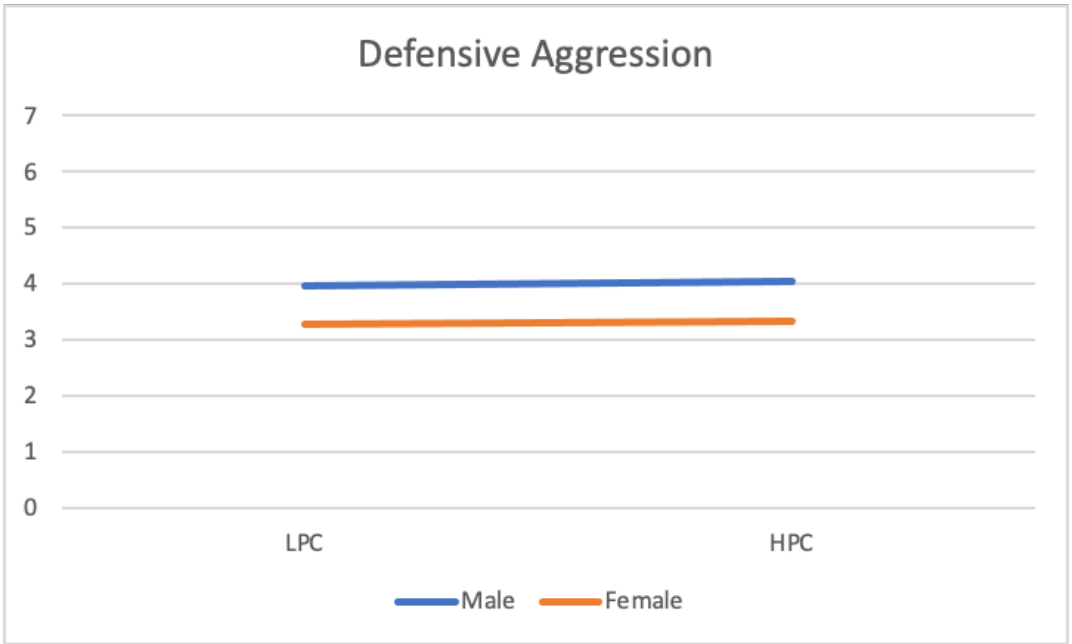
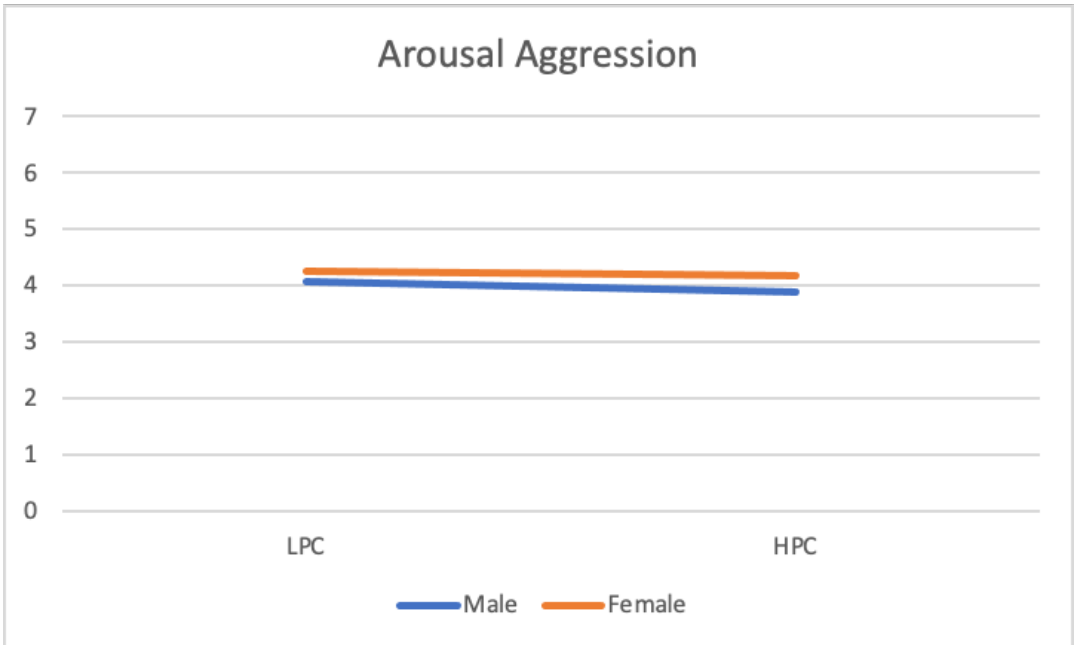


Figure 2

Data Visualization for Aggression Arousal



RQ1c addressed the effects of VPC on moderating the participants' communication satisfaction. Box's test of equality of covariance was not significant ($F(9, 101015.21) = .36$, $p = .95$) meaning the assumption of covariate equality was not violated. Overall, there was a statistically significant difference on the multivariate level between groups (Wilks' $\lambda = .53$, $F(3, 103) = 27.06$, $p < .01$, $\eta^2_{partial} = .26$). The univariate analysis of communication satisfaction was statistically significant ($F(3, 103) = 27.06$, $p < .01$, $\eta^2 = .046$). When grouped by VPC levels, participants in the high condition ($M = 5.40$, $SD = 1.03$ for male teammate condition; $M = 5.81$, $SD = 1.27$ for female teammate condition) had significantly higher communication satisfaction than those in the low condition ($M = 3.94$, $SD = 1.19$ for male teammate condition; $M = 3.29$, $SD = 1.28$ for female teammate condition). Thus, RQ1b showed statistically significant differences between groups for communication satisfaction. Data visualization for relational closeness and communication satisfaction is shown in Figures 3 and 4.

RQ1d addressed the effects of VPC on moderating the participants' overall gaming experience. Box's test of equality of covariance was not statistically significant ($F(18, 36482.27) = 1.22$, $p = .23$) meaning the assumption of covariate equality was not violated. Overall, there was a statistically significant difference on the multivariate level between groups (Wilks' $\lambda = .74$, $F(3, 105) = 8.92$ for enjoyment subscale, $F(3, 105) = 4.39$ for motivation subscale). The univariate analysis of overall gaming experience was statistically significant for motivation and enjoyment subscales ($F(3, 105) = 8.91$, $p < .01$, $\eta^2 = .026$ for enjoyment; $F(3, 105) = 4.39$, $p < .01$, $\eta^2 = .008$ for motivation). When grouped by VPC levels, there was not a significant difference between participants in the low and high conditions. However, for the enjoyment subscale of the dependent variable, there was a significant difference between the LPC female condition ($M = 3.13$, SD = 1.43) and HPC conditions ($M = 4.80$, $SD = 1.20$ for male teammate

condition; $M = 4.76$, $SD = 1.65$ for female teammate condition). In summary, while there were significant differences between groups, the only significant difference observed was between the LPC female condition and the HPC conditions. Data visualization for both subscales of overall experience is shown in Figures 5 and 6.

Research Question Two

RQ2 investigated whether the sexes of the message providers through voice recognition influenced differences in the dependent variables: aggression, relational closeness, communications satisfaction, and gaming experience. RQ2a addressed the effects of the message providers' sex through voice recognition on the aggression of the participants. Homogeneity of variance-covariance was found, as evident by the Box's test of equality of covariance being statistically non-significant ($F(9, 122123.61) = 1.57$, $p = .12$). Overall, there was not a statistically significant difference on the multivariate level (Wilks' $\lambda = .91$, $F(3, 111) = 2.12$, $p = .15$, $\eta^2 = .008$ for defensive aggression subscale; $\eta^2 = .001$ for arousal subscale). Univariate results are not reported because the multivariate test did not reveal a significant difference among groups. Thus, the sex of the message providers did not cause significant differences between groups of participants.

RQ2b addressed the effects of the message providers' sex through voice recognition on participants' relational closeness with their teammates. Box's test of equality of covariance was statistically non-significant ($F(9, 101015.21) = .36$, $p = .95$) meaning the assumption of covariate equality was not violated. Overall, there was a statistically significant difference on the multivariate level between groups (Wilks' $\lambda = .53$, $F(3, 103) = 23.85$, $p < .01$, $\eta^2_{partial} = .26$). The univariate analysis of relational closeness was statistically significant ($F(3, 103) = 23.85$, $p < .01$, $\eta^2 = .043$). When grouped by the message providers' sex through voice recognition, there was

not a statistically significant difference between the groups in the same VPC condition. However, there was a statistically significant difference across VPC conditions in different sex groups. Specifically, participants in the LPC male condition (M = 3.67, SD = 1.22) had significantly lower relational closeness than those in the HPC female condition (M = 5.64, SD = 1.31). Similarly, participants in the LPC female condition (M = 3.33, SD = 1.17) had significantly lower relational closeness than those in the HPC male condition (M = 5.10, SD = 1.05). Overall, the sexes of the message providers through voice recognition did not make a significant difference among groups in terms of relational closeness.

RQ2c addressed the effects of the message providers' sex through voice recognition on participants' communication satisfaction. Box's test of equality of covariance was not statistically significant (F(9, 101015.21) = .36, p = .95), meaning the assumption of covariate equality was not violated. Overall, there was a statistically significant difference on the multivariate level between groups (Wilks' λ = .53, F(3, 103) = 27.06, p < .01, $\eta^2_{partial}$ = .26). The univariate analysis of communication satisfaction was statistically significant (F(3, 103) = 27.06, p < .01, η^2 = .046). When grouped by the message providers' sex through voice recognition, there was not a statistically significant difference between the groups in the same VPC condition. However, there was a statistically significant difference across VPC conditions in different sex groups. Specifically, participants in the LPC male condition (M = 3.94, SD = 1.19) had significantly lower communication satisfaction than those in the HPC female condition (M = 5.81, SD = 1.27). Similarly, participants in the LPC female condition (M = 3.29, SD = 1.28) had significantly lower communication satisfaction than those in the HPC male condition (M = 5.40, SD = 1.03). Overall, the sexes of the message providers through voice recognition did not make a significant difference among groups in terms of communication satisfaction.

Figures 3

Data Visualization for Relational Closeness

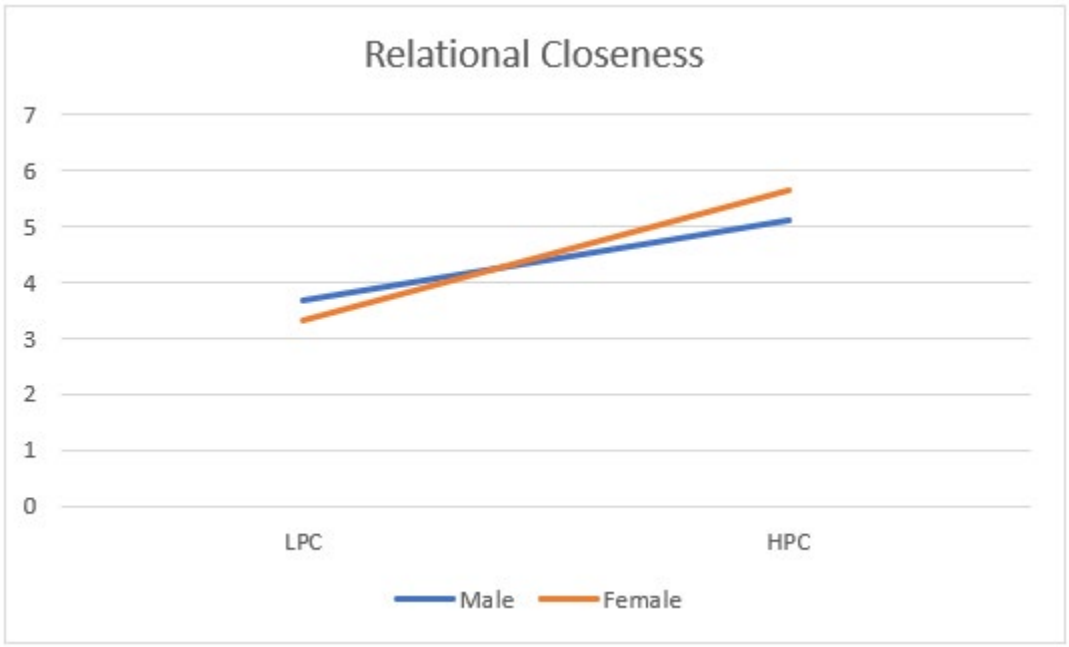


Figure 4

Data Visualization for Communication Satisfaction

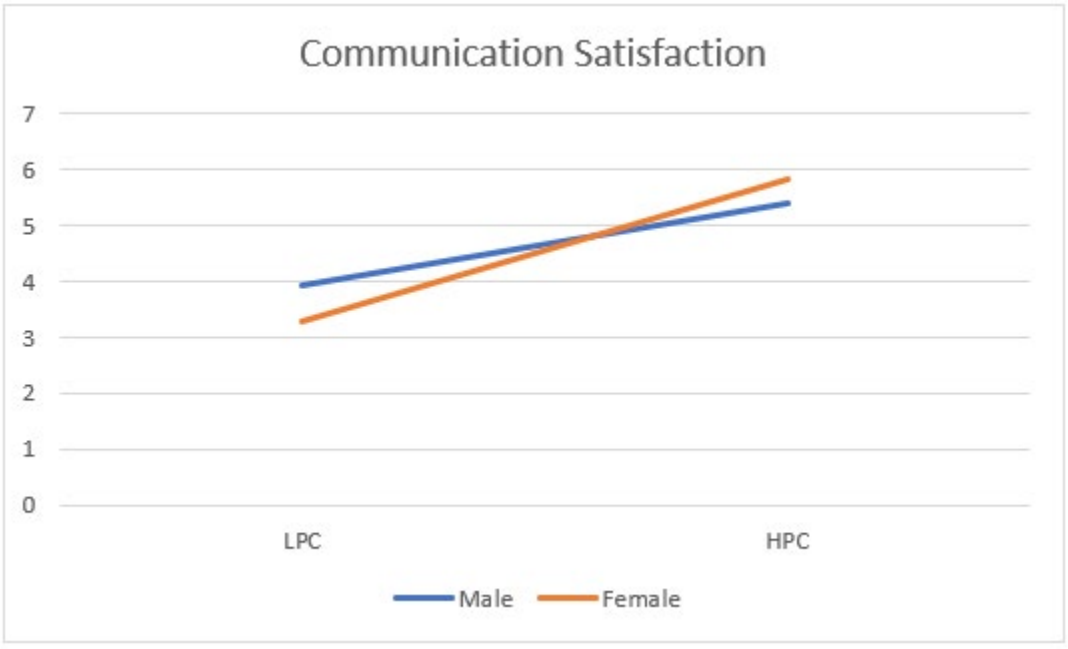


Figure 5

Data Visualization for Overall Experience Enjoyment

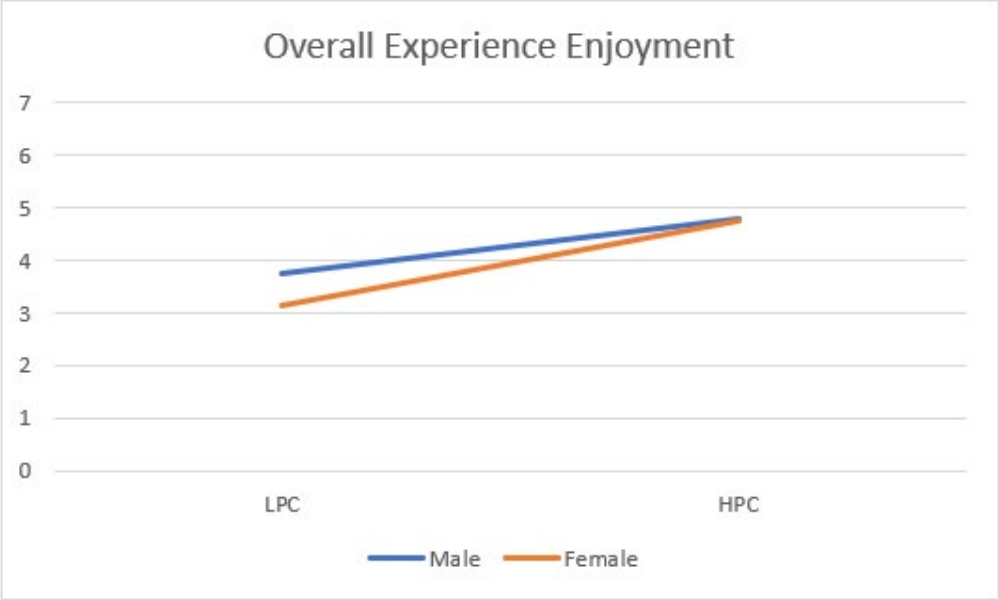
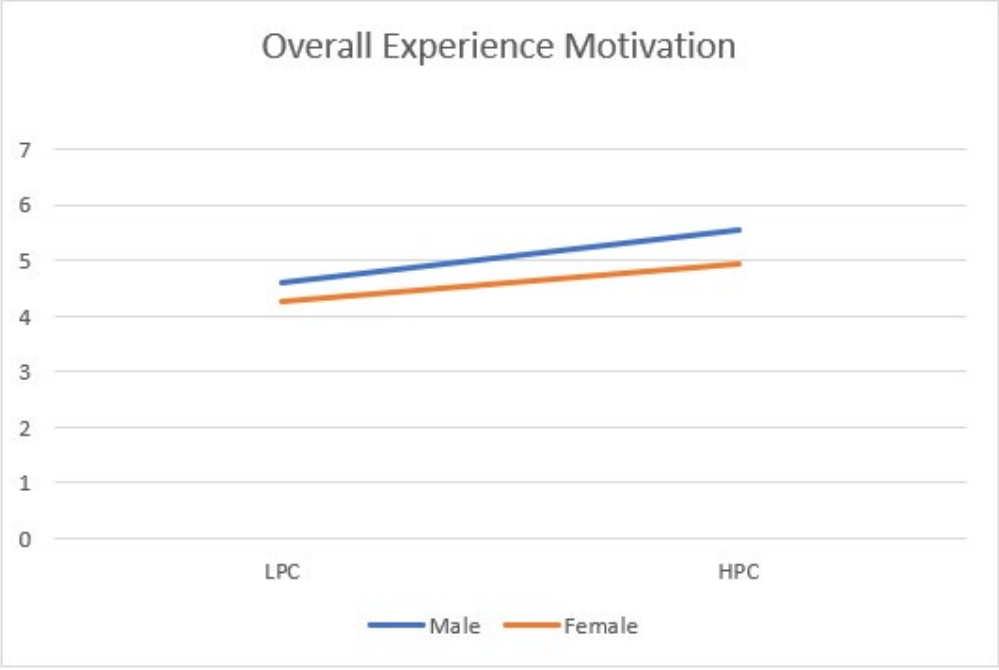


Figure 6

Data Visualization for Overall Experience Motivation



RQ2d addressed the effects of the message providers' sex through voice recognition on participants' overall gaming experience. Box's test of equality of covariance was statistically non-significant ($F(18, 36482.27) = 1.22$, $p = .23$), meaning the assumption of covariate equality was not violated. Overall, there was a statistically significant difference on the multivariate level between groups (Wilks' $\lambda = .74$, $F(3, 105) = 8.92$ for enjoyment subscale, $F(3, 105) = 4.39$ for motivation subscale). The univariate analysis of overall gaming experience was statistically significant ($F(3, 105) = 8.91$, $p < .01$, $\eta^2 = .026$ for enjoyment; $F(3, 105) = 4.39$, $p < .01$, $\eta^2 = .008$ for motivation). When grouped by the message providers' sex through voice recognition, there was not a statistically significant difference between groups, except for participants in the LPC female ($M = 3.13$, $SD = 1.43$ for enjoyment subscale; $M = 4.26$, $SD = 1.30$ for motivation subscale) and HPC male ($M = 4.80$, $SD = 1.20$ for enjoyment subscale; $M = 5.55$, $SD = 1.02$ for motivation subscale). Overall, there were not significant differences between groups when grouped by the sexes of the message providers through voice recognition. In statistically significant comparisons, it was the VPC levels of the manipulation that made the differences, not the sexes of the message providers through voice recognition.

Research Question Three

RQ3 investigated whether VPC levels and the sexes of the message providers through voice recognition influenced differences in the dependent variables: aggression, relational closeness, communications satisfaction, and gaming experience. RQ3a addressed the effects of both VPC levels and the sex of the message providers through voice recognition on moderating the participants' aggression level. Homogeneity of variance-covariance was found, as evident by the Box's test of equality of covariance being statistically insignificant ($F(9, 122123.61) = 1.57$, $p = .12$). Overall, there was not a statistically significant difference on the multivariate level

(Wilks' $\lambda = .91$, $F(3, 111) = 2.12$, $p = .15$, $\eta^2 = .008$ for defensive aggression subscale; $\eta^2 = .001$ for arousal subscale). Thus, for RQ3a, neither VPC levels nor the sex of the message providers caused significant differences between groups for aggression.

RQ3b addressed the effects of both VPC levels and the sex of the message providers through voice recognition on moderating the participants' relational closeness with their teammates. Box's test of equality of covariance was statistically non-significant ($F(9, 101015.21) = .36$, $p = .95$), meaning the assumption of covariate equality was not violated. Overall, there was a statistically significant difference on the multivariate level between groups (Wilks' $\lambda = .53$, $F(3, 103) = 23.85$, $p < .01$, $\eta^2_{partial} = .26$). The univariate analysis of relational closeness was statistically significant ($F(3, 103) = 23.85$, $p < .01$, $\eta^2 = .043$). Overall, there was no statistically significant difference in relational closeness when participants are grouped by the message providers' sex through voice recognition. However, when grouped by VPC levels, participants in the high condition ($M = 5.10$, $SD = 1.05$ for male teammates; $M = 5.64$, $SD = 1.31$ for female teammates) had significantly higher relational closeness than those in the low condition ($M = 3.67$, $SD = 1.22$ for male teammates; $M = 3.33$, $SD = 1.17$ for female teammates). Thus, VPC levels made a significant difference between groups in terms of relational closeness, not sexes of the message providers through voice recognition.

RQ3c addressed the effects of both VPC levels and the sex of the message providers through voice recognition on moderating the participants' communication satisfaction. Box's test of equality of covariance was not statistically significant ($F(9, 101015.21) = .36$, $p = .95$), meaning the assumption of covariate equality was not violated. Overall, there was a statistically significant difference on the multivariate level between groups (Wilks' $\lambda = .53$, $F(3, 103) = 27.06$, $p < .01$, $\eta^2_{partial} = .26$). The univariate analysis of communication satisfaction was

statistically significant ($F(3, 103) = 27.06$, $p < .01$, $\eta^2 = .046$). Overall, there was no statistically significant difference in communication satisfaction when participants are grouped by the message providers' sex through voice recognition. However, when grouped by VPC levels, participants in the high condition ($M = 5.40$, $SD = 1.03$ for male teammate condition; $M = 5.81$, $SD = 1.27$ for female teammate condition) had significantly higher communication satisfaction than those in the low condition ($M = 3.94$, $SD = 1.19$ for male teammate condition; $M = 3.29$, $SD = 1.28$ for female teammate condition). Thus, VPC levels had more influence on the dependent variables than the sex of the message providers through voice recognition to affect communication satisfaction.

RQ3d addressed the effects of both VPC levels and the sex of the message providers through voice recognition on moderating the participants' overall gaming experience. Box's test of equality of covariance was not statistically significant ($F(18, 36482.27) = 1.22$, $p = .23$), meaning the assumption of covariate equality was not violated. Overall, there was a statistically significant difference on the multivariate level between groups (Wilks' $\lambda = .74$, $F(3, 105) = 8.92$ for enjoyment subscale, $F(3, 105) = 4.39$ for motivation subscale, $F(3, 105) = .90$ for partiality subscale, $p < .01$, $\eta^2_{partial} = .09$). The univariate analysis of overall gaming experience was statistically significant for enjoyment and motivation subscales ($F(3, 105) = 8.91$, $p < .01$, $\eta^2 = .026$ for enjoyment; $F(3, 105) = 4.39$, $p < .01$, $\eta^2 = .008$ for motivation). When grouped by VPC levels, there was not a significant difference between participants in the low and high conditions. Similarly, there was not a significant difference between participants when grouped by the message providers' sex through voice recognition. However, for the enjoyment subscale of the dependent variable, there was a significant difference between the LPC female condition ($M = 3.13$, $SD = 1.43$) and HPC conditions ($M = 4.80$, $SD = 1.20$ for male teammate condition, $M =$

4.76, *SD* = 1.65 for female teammate condition). In the motivation subscale, there was also a significant difference between participants in the LPC female (*M* = 4.26, *SD* = 1.30) and HPC male conditions (*M* = 5.55, *SD* = 1.02). Overall, in answer to RQ3d, there were not significant differences between groups when grouped by the sexes of the message providers through voice recognition. In statistically significant comparisons, it was the VPC levels of the manipulation that made the differences, not the sexes of the message providers through voice recognition.

Research Question Four

RQ4 addressed whether the biological sexes of the participants affected differences among the dependent variables: aggression, relational closeness, communications satisfaction, and gaming experience. Oneway ANOVA failed to indicate a statistically significant differences between groups for all of the dependent variable scales ($F(2, 159) = 4.02$, $p = 0.02$, $\eta^2 = .048$ for defensive aggression; $F(2, 157) = .11$, $p = .89$, $\eta^2 = .001$ for relational closeness; $F(2, 161) = 1.51$, $p = .22$, $\eta^2 = .018$ for communication satisfaction; $F(2, 161) = .99$, $p = .37$, $\eta^2 = .013$ for overall experience enjoyment; $F(2, 161) = 1.71$, $p = .18$, $\eta^2 = .01$ for overall experience motivation) but arousal ($F(2, 161) = 7.11$, $p < .01$, $\eta^2 = .081$). Particularly, women (*M* = 4.43, *SD* = 1.37) felt more hostile than men (*M* = 3.63, *SD* = 1.33) when receiving verbal aggression from their opponents. Thus, except for arousal, there were no significant differences between groups when grouped by the sex of the participants.

Summary

In summary, VPC levels of the message providers had more influence on the participants than the perceived sexes of the message providers through voice recognition. In particular, MANOVA test results revealed that participants in the HPC condition had higher relational closeness and communication satisfaction with their teammates, and imagined a more positive

gaming experience than those in the LPC condition. However, there were not significant differences among groups for the aggression variable, which means changes in VPC levels or the identity of the message providers had no influence on video game players' aggression. Additionally, there were no significant differences between the sexes of the participants for the dependent variables with the exception of the arousal factor in the aggression variable, meaning that biological sexes of the participants were mostly not a factor in influencing differences in processing supportive messages.

CHAPTER IV: DISCUSSION

The present study aimed to explore the effects of supportive communication on video game players' relational and game-based outcomes, specifically investigating how supportive communication helps moderate the toxicity resulting from verbal aggression during online gameplay. This study also aimed to examine how video game players evaluate supportive messages based on the perceived biological sex of the teammates through voice recognition. The research design follows a 2 (high versus low VPC messages) x 2 (male versus female teammate voices) factorial design, with the participants being randomly assigned to one experimental condition, then prompted to answer follow-up survey questions. Data collected from survey was then subjected to MANOVA analyses in response to the first three research questions, then an oneway ANOVA procedure in response to the last research question. This chapter will summarize the findings, followed by a discussion of the implications and shortcomings of the present study, and an exploration of future research directions.

Summary of Findings

Research Question One

RQ1 investigated whether VPC was related to the dependent variables: aggression, relational closeness, communications satisfaction, and gaming experience. Results indicated that participants in the HPC condition experienced higher communication satisfaction, relational closeness, and more positive overall gaming experience than those in the LPC condition, but no significant differences were detected for aggression. The main interpretation from this finding is that high VPC supportive messages are effective at improving relational quality between video game players, but high VPC had no effect on moderating the aggression experienced from verbal hostility. However, while they had no significant effect on aggression, supportive messages

generally did not hurt the message recipients' feelings or exacerbate the situation. This finding is consistent with past research that found high VPC to be positively correlated with effectiveness of the message providers and the messages themselves (High & Dillard, 2012).

Interestingly, while the effects of VPC on aggression were negligible, the descriptive statistics and line graphs for arousal showed that participants experienced slightly higher aggression in the HPC condition than the LPC condition. Applying politeness theory (Brown & Levinson, 1987), a possible explanation for this finding is that participants in the HPC condition perceived highly supportive messages as more face-threatening than those in the LPC condition. In other words, offering blatantly supportive messages to video game players in times of distress may be counterproductive in that video game players may experience low self-esteem due to the impression of these message as condescending.

Research Question Two

RQ2 investigated whether the sex of the message providers through voice recognition was related to the dependent variables: aggression, relational closeness, communications satisfaction, and gaming experience. Results indicated that there were no significant differences between groups in the same VPC condition when grouped by sexes of the message providers through voice recognition. The only statistically significant differences were found across VPC conditions and sexes of the message providers through voice recognition. Again, no significant differences were found between groups for aggression.

Interestingly, participants consistently rated men communicating LPC higher than women communicating LPC. While the overall effect was non-significant, it is important to acknowledge this discrepancy as it might help explain how video game players may evaluate support differently based on the biological sex of the providers. One possible reason why a male

voice communicating LPC was slightly more positively received was due to the belief that men generally lacked the ability to provide comforting messages (Kunkel & Burleson, 1999), so it may be socially acceptable that men provided less supportive messages than women. This finding is consistent with past research on VPC that women communicating LPC messages were more negatively received than men doing so (High & Solomon, 2014). However, it is noteworthy that this difference is minor, which implies that support messages coming from men and women are generally rated similarly in effectiveness.

Research Question Three

RQ3 investigated whether both VPC and the sexes of the message providers through voice recognition were related to the dependent variables: aggression, relational closeness, communications satisfaction, and gaming experience. Results indicated that VPC conditions had more influence on the dependent variables than did the sex of the message providers through voice recognition. In other words, differences in VPC levels were the main factor for differences between groups, not the sexes of the message providers through voice recognition. Once again, no significant differences were found between groups for aggression.

Interestingly, interaction effects were discovered for relational closeness and communication satisfaction. Specifically, participants receiving LPC from female players experienced lower relational perceptions than from male players. This is consistent with Kuznekoff and Rose's (2012) finding that video game players responded more negatively to female players when these players exhibit gender cues. However, participants rated female players more favorably than male players when female players communicate HPC messages. The finding contradicts High and Solomon's (2014) finding that men communicating HPC messages are more positively evaluated than women doing so, which is perhaps due to the

perception that women are better than men at providing comforting messages, which influenced the participants' mindset when taking the surveys. Lower evaluation of women communicating support could also be attributed to the high percentage of female video game players who took the survey, who might have felt more comfortable with other female players due to the verbal harassment they received from male game players (Cote, 2017).

Research Question Four

RQ4 investigated whether there were significant differences in how male and female participants process supportive messages from a teammate. Results indicated that there were not significant differences in how men and women process supportive messages, except for arousal. Regarding this variable, women reported feeling more hostility than men, even when exposed to supportive messages from a teammate. This is a new finding because previous studies did not examine how female video game players experience aggression and how it might be different from male players' experience. Perhaps this higher sense if hostility is an unexplored coping mechanism that women use to process online harassment in gaming, with other mechanisms explored and discussed in Fox and Tang (2017). These findings are consistent with Burleson et al.'s (2009) discovery that there are generally some differences in how men and women process supportive messages, but these discrepancies are minor.

Modifications to the Original Design

Although data analysis for the original 3 (high, moderate, and low VPC) x 2 (male versus female teammate voices) research design was accomplished, those data were not reported since the participants did not detect differences between the moderate and low conditions. The findings followed the same pattern as the 2 x 2 research design in that the moderate condition followed the same trajectory as the high condition. Specifically, participants in the moderate condition had

similar experience as those in the high condition. They experienced higher communication satisfaction, relational closeness, and overall gaming experience than those in the low condition. No significant differences were found between moderate condition and low condition in aggression. Those participants exposed to the moderate condition did not report significant differences based on the biological sexes of the message providers. Therefore, if the results from the original design were reported instead of the current design, there would not be any changes in the outcomes of the present study.

Implications

Practical Implications

The findings from the present study have a multitude of ramifications for video game players, their teammates, and game developers. For video game players, the current study showed the benefits of supportive communication in improving gamers' experience. The results showed that having a highly supportive teammate could foster constructive relationships between players and increase the positivity of gaming experience. However, having a highly supportive teammate did not lower video gamers' aggression as there were not significant differences between groups in terms of aggression when manipulated by VPC levels. One reason might be that video gamers are bound to feel aggressive when being targeted by other players during gameplay, as Coyne et al. (2011) indicated that aggressive communication in video games, including profanity, correlates positively to physical and relational aggression. Having a supportive teammate might not help reduce the aggression that players experience because it is commonplace for video game players to experience toxicity from others during games (Kuznekoff & Rose, 2013), which triggers their own aggressive behaviors. Thus, other tactics need to be explored to help players deal with the distress of being victimized by trash talk. One

such suggestion is to provide emotional support without threatening video game players' face and hurting their self-esteem, as the present study indicated that HPC messages might be perceived as face-threatening. Video game players, when finding themselves losing to opponents and being verbally abused during gameplay, may experience lower self-esteem. As a result, they resist social support from teammates because direct verbal support can imply that the recipients are not self-sufficient and capable of winning on their own.

Further, the study's results may imply that receiving supportive messages from teammates may improve the relationship between team members, but it might not be effective at alleviating aggression. In other words, receiving supportive messages helps video gamers have a more positive impression of their teammates, but it does not necessarily moderate video game players' aggression toward their opponents. An explanation for this phenomenon is that since aggression is directed toward the opponents, only attempts to foster effective social support from the opponents themselves can alleviate players' aggression. Interestingly, while changes in VPC levels did not cause changes in participants' aggression level, there were significant differences between groups in terms of overall quality of game experience. This might indicate that video game players generally accept that video gamers being aggressive to one another is part of the experience, and do not let it ruin their gaming experience. Nevertheless, the current study did not measure the effects of trash talk on players' aggression level, which means there is no current evidence that players are bound to feel aggressive as the result of online trash talk. Therefore, if players did not feel aggressive during gameplay, there would be no need for emotional support from teammates.

Moreover, the results from the study indicate that video game players communicating supportive messages might be evaluated differently based on their gender cues, although the

differences are small. The finding suggests that gender-based stereotypes surrounding supportive messages exist in video gaming contexts, to some extents. Since video gamers experience greater positive relational outcomes when receiving supportive messages, it means that female teammates should try to be more supportive of one another to offset the toxicity experienced in online gameplay and make online gaming more comfortable to female players. For male players, it implies that systemic changes should be initiated from the male-dominant perspective in gaming so that gaming culture can change toward a more pro-social culture that resists verbal hostility and harassment toward gamers perceived as *others* (e.g., individuals from non-majority demographic groups).

While the data in the current study did not directly support suggestions for video game companies and developers, it was implied that more effort was needed to foster a safe and supportive gaming environment for everyone, especially gamers from underrepresented identities. Fox and Tang (2017) indicated that a lack of response from video game companies regarding harassment could cause female video game players to withdraw from playing video games, which the current study substantiated by discovering that receiving supportive messages in the event of distress can stimulate social bonding between video game players and improve the overall quality of gameplay experience. Thus, it is important for video game companies to acknowledge the positive outcomes that effective communication can bring to gamers' experiences so they can come up with campaigns to support more inclusivity in gaming through supportive online communication. For example, messages about avoiding aggressive verbal attacks during gameplay should be shown before starting the game so that players can be advised on appropriate gaming behaviors. Moreover, for console players such as Xbox Live or Play Station, community guidelines for communication etiquette during gameplay are also helpful at

informing players about how certain kinds of verbal aggression are harmful to certain demographics of players. While the actual gaming features are the most important factor in attracting video game players to play video games long-term, it is equally crucial to consider how negative online behaviors can potentially lower the quality of gameplay experience. The results from the current study supported the notion that a supportive climate improved the quality of gameplay for female players and generally did not hurt the experience for male players. Thus, competitive online games that are able to foster such an environment will be likely to expand their player base and gain more popularity and profit in the process.

Theoretical Implications

The results of the current study were able to extend existing literature surrounding supportive communication and VPC, adding the usability of VPC in a mediated context among video game players. Previous studies suggested that highly supportive messages improve peoples' affection toward the message provider, reduce stress, and increase psychosocial well-being (Bodie et al., 2011; Burleson & MacGeorge, 2002). Meanwhile, LPC messages result in negative consequences such as an unfavorable perception of the message provider, low affection, and low quality of messages (Bodie et al., 2011; High & Dillard, 2012). These findings were consistent with the findings in the current study, as participants in the HPC condition reported more positive relational outcomes with their teammates than those in the LPC conditions. Moreover, previous studies primarily investigated the processing of supportive messages in face-to-face contexts, and the few ones investigating social support in mediated contexts did not acknowledge communication among video game players. Thus, the findings in the current study extend the existing knowledge by adding that these positive relational outcomes also apply to mediated interactions, specifically among video game players. In short, receiving verbal social

support from an online acquaintance improves the quality of perceived relationship, even if that relationship is developed mostly through online interactions.

One of the findings from the study is that female participants reported more aggression than their male counterpart as a result of being exposed to hostility from their opponents. Thus, the current study confirms Fox et al.'s (2018) finding that women are more attuned to online hostility than men, which is perhaps due to the fact men are more used to being hostile to others online, so they become more aware of online flaming. Further, the findings from the present study generally confirm past research discoveries indicating there are some differences in how men and women process supportive messages (Burleson et al., 2009), and the discrepancies found in the present and previous studies are minor.

While the original research design included the MPC, the manipulation of this condition did not work because participants in the moderate condition did not perceive the manipulation to be different from the high condition. Theoretically, the moderate condition differs from the high condition in that the moderate condition fails to explicitly acknowledge the participants' feelings and suggests indifference from the message senders (Burleson, 2003, 2008). There are a few possible explanations for why this condition did not work as planned. The participants could have rated the moderate condition similarly to the high condition because they responded to hypothetical situation, so their perception of the hypothetical teammate might not have been the same as those they have met in real life. Further, there could be a numbing effect at play, where video game players are so used to being on the receiving end of verbal aggression that they become desensitized to it, thus making their perception of moderately person-centered messages more positive than they actually were. Even more likely, only portraying VPC and social support through written text might not have been realistic enough to participants to evaluate.

Consequently, nonverbal cues such as tone of voice and facial expressions are missing from the manipulations, which could have helped the participants perceive the situation more accurately, especially since nonverbal communication has been found to contribute to effective support messages (Jones & Guerrero, 2001). What is more, there were no follow-up conversations or other opportunities for the participants to reciprocate to social support, which did not reflect accurately on how these interactions would progress in real life.

Limitations

The current study had several limitations, which serve as suggestions for future research. First, while the manipulation for LPC and HPC conditions worked, the participant did not seem to see the differences between MPC and HPC conditions. Thus, in the end, only the LPC and HPC conditions were compared. As a result, the findings of the study did not acknowledge how MPC compared to the rest of the conditions, thus reducing the scope originally intended for the study. This is not rare, however, because High and Solomon (2014) ran into the same problem when they assigned participants to the same kind of manipulation. If this study were to be replicated in the future, third-party raters could evaluate the conditions to increase the confidence in the manipulation.

Second, increasing the number of participants for this study would have improved the statistical power to detect differences among groups. Due to the difficulties of the COVID-19 pandemic on academic research such as the low enrollment rate of students and low motivation to participate in research, we were only able to recruit 180 people for the study, while we needed at least 240 people for greater statistical power. Thus, we may have to recruit more participants in the future to have generalizable results. Moreover, there was a need for a random, which was not achieved because the participants were recruited from a convenience sample, which included

students enrolled in communication courses. However, the participants were assigned to random experimental conditions that helped compensate for the lack of randomization. In the future, we will try to broaden our recruitment by recruiting participants from a multitude of channels and randomly selecting the participants.

Third, some scales could be improved because all scales were developed from scratch. For example, the communication satisfaction and relational closeness scales had high correlations with each other, which implies that the survey items in these scales may have somewhat overlapped, even though there was no indication of overlapping. As a result, participants may have found survey items in these two scales to be similar to each other. Future researchers may need to revise these two scales and ensure these scales are truly distinct from each other.

Fourth, there might be missing variables that can be employed to offer a more comprehensive view of video gamers' supportive communication processes. The present study only examined a linear connection between video gamers' supportive communication and effects of processing supportive messages. However, there could be moderating variables that were not considered in the model. For examples, the message receivers' personality traits could be a factor affecting how positively or negatively they evaluate supportive messages from a teammate. Moreover, it is possible that video game players' trait aggression or attachment styles may contribute to discrepancies in evaluation of supportive messages, as Bodie et al. (2011) discovered that attachment styles moderated VPC and message evaluation.

Fifth, the present study primarily examined how video game players processed supportive messages, which made the communication process in the study unidirectional. Even though we took into consideration how the participants' biological sexes played a role in how they

evaluated supportive message, but it only played a minor role in our research design. Thus, there is a missing piece in the puzzle, specifically the dyadic aspect of supportive communication, which has been extensively studied in the past (High & Solomon, 2014). Future studies need to examine supportive communication from both the message providers and recipients' perspectives in order to obtain a comprehensive view of the communication process among video game players, which would include examining the communicative process between the message senders and receivers and the responses from both sides in creating and processing support messages.

Suggestions for Future Research

The present study only collected cross-sectional data from one-time survey takers, so the effects documented in the study only showed the participants experience at the particular time they completed the survey. This is potentially missing on the long-term effects of online supportive communication, especially since past research indicated that supportive communication could have a lasting effect on the message receivers (High & Solomon, 2014). Therefore, future research should explore the longitudinal effect of supportive communication in among video game players to see whether these lasting effects exist in a mediated environment.

Further, future studies exploring supportive communication should develop MPC more in-depth. Having external raters evaluate VPC messages can help increase confidence in the manipulation, but even then, the participants might still fail to discern between MPC and HPC because of the numbing effect experienced from verbal aggression in real life. Consequently, further examination of this numbing effect can make sure that future participants are able to distinguish between the two conditions.

Moreover, there are other ways to manipulate gender and biological sex, such as participant observation, live experiments, media content analysis, and so on. These methods may offer a more accurate way to portray a realistic gaming experience and observation of video game player communication, thus producing more accurate analysis of video gamer behaviors. Future studies, therefore, could collect data through live observational game labs and manipulate the biological sexes of video game players through both visual and audial cues, thus enhancing the believability of the conditions.

The present study indicates that successful supportive communication behaviors can improve video gamers' relational experience with one another. This line of research creates a new direction for future communication research involving video gamers' relationship through mediated communication, specifically about the positive outcomes of video gaming. Thus, future researchers should explore this new trajectory and produce new scholarly works about the effects of positive relationships among video game players. Another possible direction involves invisible support, coming up with ways to provide emotional support while avoid being face-threating and measuring the outcomes stemming from it. Doing so would allow researchers to compare between types of emotional support and their effectiveness.

Finally, the present study used quantitative analysis to generate generalizability and predictive power to the findings, which helps make substantiated claims about video gamers' communicative behaviors. Nevertheless, a qualitative viewpoint might offer valuable insights on video gamer communication because personal narratives and lived experience with online toxicity can provide important variables to consider for future research. To that end, future researchers can make use of focus groups to foster interaction among video game players. Specifically, they can conduct group interviews with video gamers to document their insights

into the video gamer community and the experiences they had playing online video games, and eventually gain in-depth perspectives of how supportive communication might affect video game players in times of distress.

Conclusion

Almost every video gamer has experienced verbal harassment and hostility when engaging in online gameplay, and this affects certain demographics of players more than others. To examine ways that video game players can use communication to foster a more positive environment, this study explored the effects of supportive communication on video game players' relational and game-based outcomes, specifically investigating how supportive communication helps moderate the toxicity resulting from verbal aggression during online gameplay. The results suggested that supportive communication generally was effective at improving the quality of relationship between teammates and the overall quality of gaming experience. Gamers feel more connected to their teammates and get more enjoyment out of playing video games, despite being on the receiving end of verbal aggression from the opponents. However, it did not make much difference at alleviating the players' aggression. Overall, the study pointed out some positive outcomes from offering supportive messages to video game players when they were being targeted by others, but also indicated that other strategies to reduce toxicity from gaming should be explored. Past research suggests that some forms of aggression, especially competitiveness, might be beneficial for gaming, but it can be damaging for players, especially female players, who frequently experience sexual harassment and hostility while playing online video games. In sum, there should be more effort from the video gamer community to enhance inclusivity and safety for marginalized groups of players to enjoy this form of entertainment, which should be a source of fun and joy for everyone.

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APPENDIX: SURVEY INSTRUMENT

Randomly Assigned Scenarios. Participants will be randomly assigned to one of six scenarios that differ by the sex of the voice as well as VPC level.

Directions: Imagine that you and a fellow video game player are playing *Battlefield 1*, a competitive online video game, as shown in the video clip you just watched. Your teammate, who you have played with before but don't know very well, performed much better than you did. You and your teammate communicate through the voice chat function of the game console, so you know this person is (male/female) based on their voice. One day, you and your teammate are collaborating in a game session, and your team loses against an opposing team, who you have not played against before. The opponents picked on you personally during the game, using nasty and derogatory personal insults and profanity. These comments included homophobic slurs. You are feeling angry and frustrated because your team lost; you are also bothered by what the opponents said to you, and they only picked on you and not your teammate. Even though you are often exposed to this kind of language while gaming, your opponents' comments really got under your skin. Here's what your teammate tells you after the event:

1. LPC message: the speaker condemns and challenges your feelings.

   It sucks that we lost the game, but honestly I think it was your fault. We lost the game because you had such horrible aim. You have to play better. I played well, but your poor play caused us to lose. I can't keep carrying the team if you keep screwing up like this. The other team said some nasty things, but it happens all the time. Suck it up. Keep practicing and maybe you'll get there. If you don't get better, I may have to find someone else to play with.

2. MPC message: the speaker does not acknowledge your feelings explicitly, but attempts to divert your attention away from the event.

   I know you're not a bad player, but the other team was just better. We tried our best but it wasn't enough. I'm sure we would have won if our opponents weren't so good, but don't be sad. The other team said hurtful things, but it's nothing you haven't heard before. You just need to get over it. There's always next game, so shake it off and keep playing.

3. HPC message: the speaker explicitly recognizes your feelings and show that they care about how you feel.

   I am really sorry we lost the game. You tried your best and you must be feeling really frustrated right now. I completely understand how you feel. There's not much we can do now, but I'm really happy with your effort in the game. We'll get them next time. Don't blame yourself. At least we had fun. The other team was really mean to you. If they said stuff like that to me, I'd be upset too. If you're still bothered by this, I'm here to listen.

Manipulation Check Items. The following items will use 7-point Likert-type response options from 1 (Strongly Disagree) to 7 (Strongly Agree).

1. My teammate was supportive.
2. My teammate cared about my feelings.
3. My teammate tried to make me feel better about the situation.
4. My teammate was blaming me for the loss.
5. My teammate was sensitive to how I feel in the situation.
6. My teammate put the blame for our loss on external factors.

Scales for Dependent Variables. Response options to the following scales will be 7-point Likert-type from 1 (Strongly Disagree) to 7 (Strongly Agree).

Directions: The following statements will address your perceptions based on the previous scenario. Please indicate the extent to which you agree or disagree with the following statements.

Aggression scale

4. I would want to engage in a trash talk against my opponents if they said these things to me.
5. I feel the need to express my anger by directing it at others.
6. If I met my opponents in real life, I would engage in a heated argument with them.
7. Hearing offensive comments from my opponents makes me angry.
8. I want my teammate to know how frustrated I feel when receiving insulting messages from the opponents.
9. I am easily angered with this kind of language from the opponents.
10. I feel physically upset by what the opponents said.
11. My opponents' messages made me feel hostile toward them.
12. I would enjoy verbally attacking my opponents.
13. When my opponents trash talked me, I want to attack my opponents' intelligence.
14. I do not feel bad attacking the opponents' feelings if my feelings were hurt.
15. My opponents deserve to be verbally attacked for what they said to me.
16. I feel inclined to retaliate against my opponents by sending them the same verbal messages as the ones I received.
17. When my opponents verbally attack me, it makes me want to hit *something*.
18. When my opponents verbally attack me, it makes me want to hit *somebody*.

Relational closeness scale

19. I perceive teammate as one of my friends.
20. I like my teammate.
21. If I receive this message, I will tell my teammate how much I appreciate them.
22. I would like to develop a closer relationship with my teammate.
23. I want to meet my teammate offline.
24. I look forward to having more gaming sessions with my teammate.

25. My teammate is empathetic.
26. I would like to do more things than playing video games with my teammate.
27. I want to spend time with my teammate.
28. Interacting with my teammate is a big reason why I play this game.
29. I look forward to playing more games with this person.
30. My teammate and I work well together.
31. I feel in sync with my teammate.
32. I do not feel an emotional bond with my teammate.
33. I feel inclined to disclose personal information with my teammate.

Communication satisfaction scale

34. The communication aspect with my teammate makes my gaming experience more positive.
35. Communication with my teammate is positive in that it motivates me to play the game well.
36. I do not get offended by the message that my teammate sends.
37. I am satisfied with how my teammate conveys the emotional content of the message.
38. I generally agree with the content of message that my teammate sends me.
39. The interaction with my teammate helps me deal with negative emotions.
40. If I were in this situation in real life, I would feel at ease communicating with my teammate.
41. I feel like I can have constructive discussions with my teammate.
42. I do not feel overwhelmed when communicating with my teammate.
43. I perceive my interaction with my teammate to be of high quality.
44. My teammate provides me with clear and concise information.
45. I perceive my teammate as understanding.
46. My teammate seems willing to initiate communication with me.
47. I can benefit from less communication with my teammate after gameplay**.**
48. I like how my teammate and I communicate.

Perceived overall gameplay experience scale

49. I am really satisfied with my experience.
50. I feel this game experience was worth my time.
51. This game experience encourages me to keep playing video game in the foreseeable future.
52. I see myself spending more time playing video game based on this experience.
53. This experience motivates me to be more competitive in playing video games.
54. This experience does not affect my commitment to playing video game.
55. This experience motivates me to perform better in later gaming sessions.
56. This was one of the best game experiences I've ever had.
57. I take great enjoyment out of this game experience.
58. This experience gives me a good impression of the video game player community.
59. This experience alone cannot fully assess my game experience.
60. This experience alone cannot predict my future gaming behavior.

61. Despite us losing, I would still consider this to be a good experience.
62. I am happy with how this game playing experience turned out.
63. This gaming experience motivates me to improve my skill.

Possibility of continuing to play video games

The following items will use 7-point Likert-type response options from 1 (Strongly Disagree) to 7 (Strongly Agree).

1. How likely are you to continue playing with this teammate in the future after this experience?
2. How likely are you to stop playing this game in particular after this experience?
3. How likely are you to look for another game to play in the future after this experience?
4. How likely are you to stop playing video games entirely after this experience?

Demographics Questions:

1. How would you describe yourself?
    a. Male
    b. Female
    c. Transgender male
    d. Transgender female
    e. Non-binary
    f. Other (please specify)_____
2. What was your age on your last birthday? _____ (Number slider)
3. What is your ethnicity? Check all that apply.
    a. African American
    b. Asian
    c. Caucasian/White
    d. Hispanic/Latino
    e. Multiracial
    f. Native American
    g. Pacific Islander
    h. I don't want to disclose
    i. Other (please specify) _____
4. What is your sexual orientation?
    a. Heterosexual
    b. Gay
    c. Lesbian
    d. Bisexual
    e. Pansexual
    f. Asexual
    g. Other (please specify) _____
5. What is your education level?

a. Less than high school degree
b. Completed some high school
c. High school graduate
d. Completed some college
e. Associate degree
f. Bachelor's degree
g. Completed some postgraduate
h. Master's degree
i. Ph.D., law or medical degree
j. Other advanced degree beyond a Master's degree

6. Approximately how many hours in a week do you play video games? _____ (number slider)