Video Games and English as a Second Language

The Effect of Massive Multiplayer Online Video Games on the Willingness to Communicate and Communicative Anxiety of College Students in Puerto Rico

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The informal setting of online multiplayer video games may offer safe spots for speakers of other languages learning English to practice their communication skills and reduce their anxiety about using a second language. In this study, the author examined the relationship between both these concerns and the time spent playing such games by basic and intermediate English-as-a-second-language (ESL) college students in Puerto Rico. The results indicated a statistically significant relationship between them, supporting previous studies that establish a relationship between online multiplayer video game play and increased confidence and lowered anxiety about using English among second-language learners. **Key words:** affective filter; communicative anxiety (CA); English as a second language (ESL); massive multiplayer online role-playing games (MMORPG); willingness to communicate (WTC)

As technology improves and online connectivity pervades many aspects of daily life, the ability to interact with others online grows more and more commonplace. Text messaging and the use of social media have become standard means of communication for many individuals, and this level of connectivity carries over to video games. Online multiplayer video gaming is more popular now than ever before, thanks in part to the incredible strides game consoles and home computers have achieved in making online interactions smooth and accessible. More than half of those who play video games (53 percent) do so with others, spending more than six hours per week playing online (ESA 2017). In all, researchers estimate that seven hundred million people, or 44 percent of the worldwide online population, play online video game (Takahashi 2013).

Individuals can now play most video games with others anywhere in the world at any time, regardless of their game platform of choice.

The accessibility of social media and online video gaming has also made it easier than ever to interact with those from other cultures using other languages. The need to speak English, one of the more widely used languages in the world, is more prevalent than ever, yet many schools in Puerto Rico struggle to prepare students for a bilingual or English-speaking environment. The lack of resources and limited class time, combined with the politicization of language usage has adversely affected the Puerto Rican Department of Education's ability to provide continuous and engaging second-language learning, particularly in areas concerning language production (Pousada 2013; Schmidt 2014; Carroll 2016).

English language learners are defined as those who do not speak English as a native language and who are attempting to achieve English proficiency (Brooks and Thurston 2010). This definition applies to many students in Puerto Rico, who are learning English as their second language (ESL). They also actively use social media and play video games, including online multiplayer games. These activities require knowledge and use of English, and many Puerto Rican English language learners willingly engage in them despite their often limited language skills. These informal settings, which are devoid of the evaluation and scrutiny of the classroom, help increase motivation, which is considered a primary goal of ESL teaching in Puerto Rico (Ortiz 2010) as well as reducing the fear and anxiety ESL speakers feel when using their second language. These settings may also present an avenue that can create stimulating and effective means for practicing English where such an environment is not readily available.

Since the late 1980s, the potential for technology to help teach language both formally and informally has caught the attention of researchers and educators worldwide. They have taken note of the advantages that features like network-based text and voice chat, personal avatars, and goal-based interaction can have on the learning process for ESL students. New processes for technology-driven language learning have arisen, such as Computer-Assisted Language Learning (CALL). Currently, there are numerous journals and conferences that focus on the subject (Thorne, Black, and Sykes 2009). Levy (1997) defined CALL as "the search for and study of applications of the computer in language teaching and learning" (1), and the field has seen constant growth over the past decades. It has evolved to include blogs, social media, podcasting, and even the use of virtual worlds, such as those found in online multiplayer video games. ESL students have been found more willing to communicate in English when they enter

the virtual worlds of games such as Blizzard Entertainment's 2004 computer hit *World of Warcraft* (Reinders and Wattana 2011).

Review of Literature

Communicative Apprehension or Anxiety

The fear or anxiety about using a target language in public can present a massive obstacle for Puerto Rican ESL learners, an obstacle that often keeps them from conversing with others. Researchers call this anxiety, which involves the level of apprehension or anxiety felt when a person must speak in public, communicative apprehension or anxiety (CA). McCroskey (2009) has studied the concept of anxiety for more than four decades and has identified a personality trait or characteristic-centered version he calls "communicative apprehension." He breaks anxiety into two types—"trait" CA (a general pattern of low, medium, or high anxiety in different contexts) and "state" CA (anxiety confined to a specific situation).

Second-language learners throughout the world face anxiety in both formal and informal settings. The difficulties Puerto Rican ESL learners experience when attempting to communicate in their target language is not exclusive to them, as second-language learners (SLLs) across the world contend with similar issues of anxiety. Yousef, Jamil, and Razak (2013) found that Malaysian students experience anxiety and low motivation due to the lack of emphasis given to oral communication in their studies. Additionally, Andrade and Williams (2009) indicated that most Japanese ESL learners (75 percent) were affected by some form of language or communicative anxiety, with a significant portion (11 percent) being completely hindered by their anxieties. The research suggests that many students enter the classroom already prepared for some level of anxiety, which may apply to Puerto Rican ESL students. It is possible that the CA experienced by language learners may tie to communicative avoidance—those learners who are afraid of communicating in English will avoid situations that require them to do so. For many ESL learners, this avoidance includes the English language classroom, a setting that may create high levels of communicative anxiety because it involves evaluation and immediate assessment for reading out loud or giving oral presentations (Baharuddin and Rashid 2014).

The Effects of Anxiety on Language Learning

The difficulty that anxiety adds to the language-learning process cannot be under-

stated. The anxiety levels English language learners (ELL) experience exceeds those they would face daily in English class. Classroom situations may increase language anxiety to such debilitating levels that learners speak less and more briefly in class or even shake or freeze up (Liu and Huang 2011). Eysenck (1992) contended that anxiety overwhelms the learner's working memory with worry, preventing it from focusing on work-related thoughts. Regardless of whether this concern stems from apprehension about speaking in front of a group or from the fear of making a mistake in a foreign language, anxiety can have a detrimental effect on the learning process. Eysenck, Derakshan, Santos, and Calvo (2007) posited that internal or external anxiety can distract individuals and prevent the realization of learning goals. This position aligns with Krashen's (1982) contention that the negative influence of anxiety can exacerbate other factors like low motivation or self-esteem and can increase the affective filter and prevent the retention of comprehensible input. Researchers such as Elkhafaifi (2005) and Sparks and Ganschow (2007) concluded that high levels of anxiety can decrease learners' motivation and result in poor language performance.

Although anxiety has been found to affect multiple areas of language learning, Martinez Agudo (2013) posited that oral communication in the classroom constitutes one of the larger worries in learner anxiety. In many ESL classrooms, oral communication practice often takes second place to helping students pass the course or to producing satisfactory results in standardized testing. This is the case in many countries, such as India (Patil and Karekatti 2012), Palestine (Yahya 2013), and Puerto Rico (August and Shanahan 2006). The lack of emphasis on practice within the classroom, as well as the lack of an authentic environment outside, can potentially reduce the willingness to communicate (WTC) and increase foreign-language anxiety (FLA).

That is not to say that the mere act of speaking in front of others creates the only stress for learners using English in the classroom. Some researchers (Awan et al. 2010) posited that fears of mispronunciation, worries over an inability to speak spontaneously, and concerns about committing grammatical mistakes, for example, all ranked as problems for Pakistani language learners. Similarly, Mak (2011) discussed how fears of negative evaluation, being corrected while speaking, and negative self-evaluation created major anxiety for Chinese ESL students. Personality plays a large role in the type of learning style and response chosen for a learning situation (Abu-Rabia, Peleg, and Shakkour 2014), and a relationship has been shown to exist between personality variables, such as extroversion, introversion, neurosis, and language anxiety (MacIntyre and Charos 1996).

High levels of anxiety can cause learners to use the target language only when they feel they are in their "comfort zone." An individual's comfort zone is anxiety neutral (Corbett 2013). That is, individuals can maintain a steady rate of performance in whatever language task they attempt and without a sense of risk. White (2009) posited that an individual's performance level within a behavior remains constant if the anxiety level remains unchanged. In the classroom setting, learners are removed from their comfort zone. Problems arise, not from the act of having to use English itself, but from having to do so in the presence of others through acts such as speaking or writing under the pressure for time (Gkonou 2013).

Willingness to Communicate in a Second Language

For language learners to develop their linguistic skills, motivation is key. ESL learners must be willing to use their target language to develop fluency and overcome anxiety. Many students are reluctant to use their second language (L2) because of their anxiety about receiving negative evaluations or being ridiculed, and such worry is not exclusive to the second language (Zarrinabadi, Ketabi, and Abdi 2014). Several factors are involved on social, environmental, and individual anxiety levels, making it very difficult for educators to develop universal strategies for classroom use (Cao 2014). Elements such as error correction, topic choice, and teacher support exert great influence over student WTC (Peng 2013).

Originally constructed as a personality trait referring to communication in the first language, WTC was redefined to include second-language situations as well (MacIntyre et al. 1998). This new conceptualization, defined as "a readiness to enter into discourse at a particular time with a specific person or persons, using the second language" (546) holds significant meaning for Puerto Rico's ESL learners. This definition marks a clear distinction between "motivation" and WTC, with motivation defined as consisting of those factors and influences that direct behavior in specific situations (Loganathan and Zafar 2016). Though this definition may apply to language, it also applies to situations outside those that are language or communication related. In contrast, WTC refers specifically to language-related contexts. Some researchers (MacIntyre et al. 1998) conceptualized WTC in the second language in a heuristic model in which propensities like interpersonal and intergroup motivation constitute influential variables among many in the second language and its use.

In the past, the focus of many studies in WTC has remained on trait level influences, which remain stable regardless of context. Cao (2011) found that

state level factors, such as perceived opportunity to communicate and classroom environmental conditions (teacher, class size, topic discussed) affect WTC by combining with those at the trait level, such as self-confidence and personality. The lack of a persistent environment outside the classroom in which they may practice their English language skills has created low levels of WTC in many. ESL learners in Puerto Rico are exposed primarily to Spanish during their formative years, resulting in a higher competence in their first language (L1) than in their L2 or whatever other language to which they are exposed (McCroskey et al. 2007). Thus, educators in Puerto Rico must look for ways to compensate for this discrepancy by exploring the potential of informal venues that may provide the practice environments not currently available to ESL learners on the island.

The need for a language learning environment (LLE) in which learners can continually practice English in authentic contexts (real-world use by real language speakers) has led many educators to turn to technology (Bahrani and Tam 2013; Krashen 2012). The use of video games in the classroom has increased among educators because they provide an opportunity to associate learning with an activity solidly embedded, both socially and emotionally, among children and adolescents (Anderson et al. 2008; Gee 2007a). Virtually all teens in the United States (97 percent) play video games regularly (Lenhart et al. 2008; Granic, Lobel, and Rutger 2014). The use of video games among young people offers potential for educators to tap into an activity both popular and familiar to their students.

For a century, ESL learners in Puerto Rico have lacked natural, authentic environments in which they can practice their English language skills, and there is little evidence to suggest this will change in the future (Gonzalez Rose 2011; Carroll and Sambolín Morales 2016). To reduce their communicative anxiety about English and improve their willingness to communicate, Puerto Rican English language learners will need environments where they can practice their English skills with urgency and agency and without the fear of negative evaluation. These games may offer such an environment (Hayes and Duncan 2012). Online multiplayer video games are filled with different virtual worlds that never close and are populated by English speakers from across the United States and around the globe.

Educators should more closely examine the potential that time spent engaging in online multiplayer video games can have on lowering language anxiety and providing learners with opportunities to practice their English in real time about subjects that they find compelling. Online multiplayer video games may provide a means of offering learners persistent and authentic environments

for second language learning that other methods cannot, and they may serve to lower anxiety and improve motivation among learners (Young et al. 2012). Educators and even the learners themselves should seek out and take advantage of authentic experiences in which to practice their English in online multiplayer video gaming or some other avenue.

Video Games as a Tool for Language Learning

For more than a decade, educators have viewed video games as a potential avenue for enhancing learning and creating authentic contexts for learners. Some qualitative researchers contend that video game playing can provide immersive experiences that can be associated with real-life situations and applied to learning specific content. Ortiz de Gortari and Griffiths (2015) described this process as Game Transfer Phenomena (GTP). GTP occurs when video gamers associate elements of the games they play with real life, triggering thoughts, sensations, and actions. Researchers refer to this association as the Tetris effect, naming it after the classic Russian puzzle game. Individuals become so immersed in the game that it patterns their thoughts and even their dreams (Curtis 2012). Researchers from different areas of cognitive science have examined GTP and suggested that playing games like Tetris could help reduce symptoms of posttraumatic stress disorder (Holmes et al. 2009). While this may be a coping mechanism, the literature strongly suggests that an active association exists between video game play experiences and real life.

GTP can also apply to language learning. Ortiz de Gortari, Aronsson, and Griffiths (2011) found that several of the gamers they interviewed used video games as a means of interacting with others. Pasfield-Neofitou (2011) concluded that learners craved these interactions to improve their language use. The gamers saw the virtual environments as informal settings in which they could practice their second language and, in effect, be surrounded by it for a time—and thus benefit from immersive and authentic language use. Video game technology has advanced immensely in the past two decades, and phenomena like GTP are beginning to interest educators as a subject for research.

GTP affects video gamers both consciously and unconsciously, which is demonstrated by the fact that many players implement video game dialogue and speech patterns into daily situations. According to Ortiz de Gortari and Griffiths (2015), video gamers can express GTP when they think in the real world as they do in the virtual one. They found that video gamers described the use of strategic thinking and critical evaluation of situations, as well as the testing of

their moral and personal boundaries in the games they played. These experiences then manifested themselves in real-world situations, providing the gamers with additional entertainment value and increasing their sense of intelligence and power in their environments. Some gamers even visualize these thoughts as mental game menus, requiring the same process of articulation and execution they use when manipulating the controller and navigating the menus within a video game. This process, when applied to second-language learning, could be a valuable tool for ESL learners, as it may serve as a script for them to follow. They already possess the necessary dialogue to use properly in a given context, and the added element of "thinking through the game" may help ease their anxiety enough for them to engage more deeply in English conversation. The reduced anxiety and the sense of being able to anticipate the dialogue of a conversation may lower obstacles and create ideal conditions for speaking.

Video games also have the potential to improve the perceptions of learners about their abilities to learn. In a study involving video game players between twelve and eighteen years of age, participants viewed their game-related learning experiences as constructive, evolutionary, and satisfying due to the self-solving nature of the activity (Moline 2010). The use of standard English during online multiplayer video gaming may not carry with it the sense of risk inherent in using the language in a formal classroom setting, because there are no judgments made about usage and no evaluations tied to it. The fact that learners can use English correctly or incorrectly, without the risk of failure or criticism, may encourage them to use it more and thus create a sort of English language comfort zone in which they maintain the behavior consistently. Some researchers (Henderson et al. 2009) theorized that the video game virtual avatars used by learners offered them a sort of virtual shield that, protecting against the threat of negative evaluation and embarrassment, reduced their anxiety levels.

Retailers have sold commercial, off-the-shelf (COTS) video game software for educational purposes for decades. Online multiplayer games and programs accessed either through physical media, such as a DVD, or downloaded online have become increasing popular, but only within the past twenty years or so has research been conducted to gauge their effectiveness for learning. Gee (2007b) contended that good video games, for example, incorporate learning principles such as interaction, risk-taking, tasked-based learning, and lateral thinking. Moreover, they put performance before competence, unlike most classrooms. Through the game's design or help from other players, learners use trial and error to master skills instead of reading texts and then applying what they have

learned. Gee argued that this resembles language acquisition. Skills such as interaction and tasked-based learning are vital to language learning. The ability of virtual worlds and video games to provide the means to enhance them has offered new opportunities to research their effectiveness.

Online multiplayer video games cover a variety of categories, from action titles to sports and puzzle games. An online game can have as few as two players, like the mobile board game *Words with Friends,* or well over thirty players, such as the first-person shooter *Counter-Strike* (Molyneux, Vasudevan, and Gil de Zúñiga 2015). Typically, players log on to the game's official server through a menu in the software, where they are prompted to select the type of online event in which they wish to participate.

One particularly popular genre of online multiplayer video games, known as massive, multiplayer online role-playing games (MMORPG), is also viewed as a productive way to enhance language learning because of its high level of interaction. In these persistent, online virtual fantasy worlds, players create a character (avatar) and fight enemies and chat and trade items with other players. They advance by completing in-game objectives, either alone or with a group. The persistent nature of MMORPGs means that the games can be played online at any time. Many have hundreds of thousands, even millions of players worldwide, and players often find other individuals with whom to play with little effort. Most MMORPGs retain a fantasy setting, such as the popular *World of Warcraft* and *The Elder Scrolls Online*, but the genre hosts games of all types. There are super hero games, like *DC Universe Online*, and even the popular *Star Trek* franchise has its own MMORPG. Modern entries all include a host of features that facilitate teamwork and communication, such as voice and text chat and keyboard message shortcuts. The games are attractive to players because they support real-time interactions among individuals and large groups. Furthermore, many are free to play with only an Internet connection required and are regularly updated with new content (Peterson 2010).

Researchers have now begun to examine the possible sociological and cognitive effects of MMORPGs on players. For instance, according to one study (Kongmee et al. 2011), MMORPGs offer environments that are informal, safe, and community based, all of which represent situations found in the real world. The different types of communication employed through game play increase player confidence and develop skills that are transferable between the virtual and real worlds. This communication is more socio-emotional (compliments, messages of solidarity, encouragement) than task associated, and more experienced

players make more positive comments than negative ones (Peña and Hancock 2006). One study (Rama et al. 2012) found that MMORPGs like *World of Warcraft* affected a focus on communicative competence, raising learner motivation, providing ample time to reflect on conversations, and leaving a large margin for error. It is likely that the communal nature of many online games, such as MMORPGs, along with the high degree of interactivity in authentic situations, helps lower player language anxiety and increase a player's willingness to communicate.

Reinders and Wattana (2014) contended that the ability for projection and even anonymity provided by online video games might influence anxiety levels and make language learners feel more comfortable about participating and making mistakes. According to Peterson (2011), prior gaming experience and the English proficiency levels of learners may affect their use of online multiplayer video games, such as MMORPGs, for language learning. Learners with little prior gaming experience may experience anxiety from the process of learning to control and interact with the game. This anxiety can be overcome with practice, and learners may benefit from increased fluency practice in English and become more experienced in gaming, prompting them to initiate their interactions with other players more often and manage them better. It is likely then, that as learners become more adept with online gaming and accustomed to practicing English with others through the anonymity and informal nature of gaming, they will experience lower levels of anxiety, particularly communicative apprehension.

Online multiplayer video games may also help improve the willingness of learners to communicate in English by bridging the formal educational setting with the informal one in which they spend much of their free time. The interaction of people sharing a common interest, such as video games, allows the generation and dissemination of ideas as well as the opportunity to share common goals and interests. Jenkins, Ford, and Green (2013) called this "participatory culture," and many of its characteristics are commonly found in video games such as MMORPGs. For instance, participatory culture has low barriers to civic engagement and informal mentorship (skilled players sharing knowledge with newer ones), both found in MMORPGs. Also, members of many MMORPG groups, called clans, are valued members who care about the contributions of others, because the actions of each increase the probabilities of success during game play. Members need not contribute, but they must feel that they have the freedom to do so if they want and that their contribution will have value to the community (Jenkins 2006).

These interactions carry over outside of the virtual world, and video game players discuss events and situations at home and in school. Users cross the digital boundary and act to understand the game's narrative and understand its mechanics. These online interactions can thus become vehicles for continuing socialization in the formal learning environment. According to Thorne, Black, and Sykes (2009), online interaction with other players, many of whom are English native speakers, allows ESL learners the opportunity to engage in communicative practices that include extensive language socialization and adaptation outside the formal educational setting.

This sense of belonging also extends to online communities whose members do not meet in person. Olsen (2010) argued that the social connections made through time spent with online multiplayer video games are extremely important to the players, even if they never meet each other in the real world. These interactions, specifically the English language interaction inherent in most of them, may serve as a resource to the language learners in the classroom. Learners bring to school their background knowledge about the informal media—such as video games and comic books—with which they interact daily, and this can provide language learning opportunities in the classroom (Jenkins et al. 2008).

Online multiplayer video games, unlike many other pastimes, are readily available on multiple platforms, many of which are compatible. This availability allows players to continue their game play even when they are away from home. For instance, many games on the PlayStation 3 and 4 have cross play functionality with versions on the handheld PlayStation Vita. Video games on mobile devices, such as smart phones and tablets, have advanced to the point they can offer immersive experiences that rival those of traditional home game consoles. Moreover, many of them now have online functionality, allowing players to connect with many others and share an adventure or engage in competition.

Methods

For this study, I hypothesized a statistically significant relationship between the cumulative time Puerto Rican college ESL learners spent playing online multiplayer video games in English and their WTC in English in the classroom. I defined WTC in English as "the intention to initiate communication when given the choice" (Zarrinabadi, Ketabi, and Abdi 2014). The study focused on

WTC rather than motivation given the language-specific nature of willingness to communicate and the fact that the participants, through their experiences playing online multiplayer video games, already possessed both the instrumental and integrative motivations needed to fuel their WTC. Instrumental motivation refers to a practical reason for language use (Abdul Samad, Etemadzadeh, and Roohbakhsh Far 2012), which in this case is the desire to play online multiplayer video games successfully. Doing so requires the completion of game objectives that often necessitate interaction and coordination with other players. Integrative motivation is characterized by a desire to integrate with the culture associated with a specific language (Lamb 2004). The participants of this study, through their enjoyment of video games, identify with that culture, including game developers and publishers, many of whom operate in English.

Additionally, I hypothesized that there was a statistically significant relationship between the cumulative time Puerto Rican college ESL learners spent playing online multiplayer video games in English and their levels of communicative anxiety (CA) in English in the classroom setting. McCroskey (2012) defined CA as "an individual's level of fear associated with either real or anticipated communication with another person or persons" (137).

Participants and Procedures
The sample for this study consisted of seventy-six, college-level, Spanish-speaking ESL students taking mandatory basic and intermediate ESL university courses who also played online multiplayer video games recreationally. The sample included seventy men (n = 45, 64 percent) and women (n = 25, 36 percent) over the age of eighteen. Six of the participants did not identify their gender. The majority (87 percent) of undergraduate students at the selected campus were younger than twenty-four, and the study focused on this population, which is most numerous. We recruited participants at the university and obtained permission from the dean of student affairs to coordinate directly with the English faculty offering basic and intermediate English courses. I visited each class section and oriented the students of the study at the beginning of the June summer session. There, I distributed a recruitment flyer outlining the eligibility requirements and offering a link to the surveys. We required participants to be volunteers, at least eighteen years old, students taking basic or intermediate English, U.S. residents, game players (however limted their experience) of online multiplayer video games on either home consoles (Xbox 360, Xbox One, Playstation 3 and 4) or personal computerrs, and speakers of Spanish as a first language.

I used these sampling methods to choose participants who provided depth to the questions being studied regarding Standard English use in informal settings, such as those who had engaged in online multiplayer video gaming sessions with friends. Additionally, the study incorporated snowball sampling whenever possible. I could not obtain a random sample because of the logistical difficulty of interviewing the minimum number of participants representative of the overall population. Though a lot of teenagers actively play video games (Lenhart et al. 2008; ESA 2015), the sample had to be purposive because the number of adolescents who play was not absolute.

Measurements

The primary data I gathered to test the hypotheses came from two quantitative, Likert-style questionnaires administered online through *SurveyMonkey*. Yilmaz (2013) defined quantitative research as explaing phenomena by analyzing numeriocal data using mathematically based methods as in statistics. A quantitative method was the most appropriate because it offered a better understanding about the relationship between variables such as anxiety and motivation (Liu and Hwang 2011). This study thus employed a quantitative method for its systematic and objective advantages.

   Participants answered the questionnaires through the cloud-based software service SurveyMonkey. SurveyMonkey provides various methods for data collection, including links sent via email, social media (Twitter, Facebook), and mobile application. With this versatility, the participants could complete the survey conveniently. Likert scale survey questions gave participants a wide range of choices regarding their experiences online and with CA and WTC.

   The first instrument was the Video Game Experience and English Use Preferences during Online Multiplayer Gameplay survey. The instrument was created specifically for this study and field tested to gauge its ability to measure the level of experience of ESL learners who play online multiplayer video games and their English language preferences during these sessions. The initial development of the instrument involved the selection of items that examined the frequency with which online multiplayer games were played, the types of games the respondents enjoyed, and their preferences regarding English use while playing. The items combined both categorical (preferred genre of game play or gaming platform) and ordinal (game play skill level and English use preferences) elements. A panel of three professors at another local university then reviewed the instrument. Two English professors evaluated the quality of

the items, and one Spanish professor ensured that the text was at college-level, basic and intermediate English for ESL students. The panel reviewed the items using a scale of 1 (not relevant) to 4 (highly relevant). Items the panel ranked poor were eliminated based on weak face validity.

Then next stage of the instrument's development involved field testing. I distributed it to a panel of five video game store employees from two major chains of video game and toy stores on the west coast of Puerto Rico who were experienced video game players, particularly with online multiplayer games. There were four game stores and two toy stores in these chains in the designated area, which allowed for participants to be selected from different stores. This variety of stores helped ensure that highly experienced video game players could be obtained. Selecting field study participants from different stores also reduced the possibility of bias. To obtain a more seasoned and self-reflective perspective, I ensured that the participating employees were adults between the ages of eighteen and sixty-four who came from the west coast of Puerto Rico. The population was appropriate for the field test because it was familiar with the types and numbers of online multiplayer video games currently available and their content and release schedules. Also, its members could interact with other video game players daily. Participants reviewed the survey, providing face validity for the field test stage of the study.

Those interested in participating in the field test received full disclosure about the nature of the research via a participation information letter and a letter of informed consent. They were also informed about the contents of the questionnaire and procedural data collection. The amount of time required to complete the questionnaire was measured. Once the questionnaire was completed, the participants were debriefed to obtain their feedback. This debriefing served to improve question wording, instructions, and response categories where necessary.

The second instrument for the study was Wattana's (2013, 153) Willingness to Communicate Scale (set 1). This instrument measured CA in English and WTC in English in the classroom. Set one contained three sections, totaling twenty questions about the participants' WTC in the classroom, self-perceived competence when communicating in the classroom in English, and frequency of voluntary communication in the classroom. Permission for the use of this instrument in this study was obtained from its author. The Pearson's correlation for set 1 WTC questionnaire was .99 ($p < .001$). Researchers consider a Pearson's correlation of .70 or above sufficient to indicate test-retest reliability (Larson-Hall

2010). Although Cronbach's alphas were not high scores, the questionnaire set consists of relatively few items and internal reliability is considered satisfactory.

Analysis

I used SPSS version 24.0 for the statistical analysis because descriptive analysis can approximate the researcher's presence during the game-playing experience. The study employed visual summaries, such as graphs and tables, for descriptive analysis, given the type of instruments used and the limitations inherent in the study itself (a small sample size and only two research questions). I used both a Pearson's and Spearman-Rho correlation to explain the nature of the relationships between the variables and inferential statistics for a more detailed analysis. Because I sought to determine if a correlation exists between cumulative game play experience with online multiplayer video games and WTC and CA levels, I used bivariate regression analysis to analyze both research questions.

Results

I gathered data in June 2016 from basic and intermediate ESL college students attending the selected university. Demographic frequencies and percentages relating to the seventy-six, nonrandomly selected participants were not consistent with the college's gender distribution at the time of the study, which was 38 percent male and 62 percent female, with 64 percent of the participants identifying themselves as male and 36 percent as female. Again, six of the participants did not identify their gender.

The survey responses provided groupings relative to the age of the participants. These age groupings were 18 to 24 ($n = 49$), 25-34 ($n = 15$), and 35 and older ($n = 6$). And six of the participants did not indicate their ages. The majority (70 percent) of the participants were between the ages of 18 and 24; 21 percent, between 25 and 34; and 9 percent, 35 and older.

For both research questions, the cumulative times spent playing online multiplayer video games included only interactions in English, the target language. I calculated the predictor variable of cumulative play time using values from the demographic survey. Then, I multiplied the categorical value for the cumulative amount of play time by the hours per week and then multiplied that figure by fifty-two, the number of weeks in a year, to produce the time-spent value for participants. The hours-per-week value I used in the analysis was the

mean value for each participant. The total accumulated time spent for partici-
pants ranged from 78 hours to 3,510 hours. Results indicated that participants
had a mean categorical value for years playing online multiplayer video games of
5.3, and they played these games, on average, 4 hours per week. Five participants
did not indicate their cumulative time spent playing online multiplayer video
games (in years) and therefore were not included in the data analysis. The mean
for cumulative time spent playing online multiplayer video games was 1,361.5
with a standard deviation of 1,183.2. Figures 1 and 2 illustrate time spent playing
online multiplayer video games data from the demographic survey.

The criterion variable for the first research question was WTC in English in

Cumulative Exp. (years)	n	%
6 months or less (slight extent)	11	15
1 year (some extent)	5	7
2-5 years (quite a bit)	26	37
5-10 (great extent)	13	18
10 years or more (very great extent)	16	23

Figure 1. Participant frequency and percentage for years playing online multiplayer video games (n = 71)

Weekly use (hours)	n	%
1-2 hours	19	27.14
3-4 hours	22	31.43
5-6 hours	14	20
7 hours or more	15	21.43

Figure 2. Participant frequency and percentage for weekly time spent playing online multiplayer video games (n=70)

Research Question 1 Variables	n	M	SD
Time Spent	71	1361.5	1183.2
Willingness to Communicate	71	3.6	0.76

Figure 3. Overall descriptive analysis values for time spent playing online multiplayer video games and willingness to communicate (n = 71)

the classroom setting. Using the first five items of sections one and three of Wattana's (2013) Willingness to Communicate Scale (set 1), I obtained the degree to which the participants were willing to communicate in English in the classroom setting. The WTC variable had a mean of 3.6 and a standard deviation of 0.76. Figure 3 presents the mean and standard deviation values for the two variables for the first research question.

Figure 4 shows the relationship between the participants' cumulative time spent playing online multiplayer video games and WTC in English in the classroom setting. Data for the accumulative time spent is on the x-axis, and data for WTC is on the y-axis. The scatterplot suggests a slight positive correlation between the cumulative time spent playing online multiplayer video games and WTC by participants.

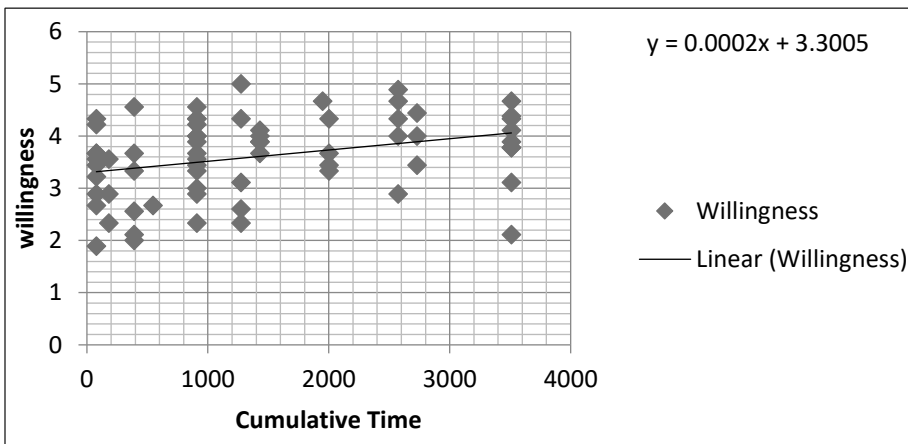I analyzed data for both the cumulative time and WTC variables with a Spear-

Figure 4. Scatterplot of the cumulative time spent playing online multiplayer video games and willingness to communicate in English in the classroom setting

man rho analysis (a nonparametric measure of statistical dependence between the rankings of two variables) to determine the correlation coefficient. As illustrated in figure 5, the Spearman rho analysis demonstrated a statistically significant relationship between the cumulative experience playing online multiplayer video games (M = 1361.5, SD = 1194.9) and WTC in English in the classroom setting (M = 3.6, SD = 0.76), r = .363, p = .003. The Spearman rho correlation coefficient (r = .363) indicated a moderately positive relationship between cumulative time spent playing online multiplayer video games and WTC in English.

Items 1 through 10 of section 2 of Wattana's (2013) Willingness to Communicate Scale (set 1) determined the level of CA. The CA variable had a mean of 3.6 and a standard deviation of 0.72. Figure 6 shows the relationship between the participants' cumulative time spent playing online multiplayer video games and level of CA in English in the classroom setting. Data for the cumulative time spent is on the x-axis, and data for CA is on the y-axis. The scatterplot suggests a moderately positive correlation between the cumulative time spent playing online multiplayer video games and level of CA by participants.

I used a Spearman rho analysis of the data for the cumulative time and CA variables to determine the correlation coefficient. As illustrated in figure 7, the Spearman rho analysis demonstrated a statistically significant relationship between the cumulative experience playing online multiplayer video games (M = 1361.5, SD = 1194.9) and CA in English in the classroom setting (M = 3.6, SD

Variable	Cumulative Time	Willingness to Communicate
Cumulative Time		
Spearman rho r_s value	1.000	.363*
Sig. (2-tailed) p value		.003
N	69	66
Willingness to Communicate		
Spearman rho r_s value	.363*	1.000
Sig. (2-tailed) p value	.003	
N	66	68

*Correlation is significant at the 0.01 level (2-tailed).

Figure 5. Relationship between the cumulative time spent playing online multiplayer video games and willingness to communicate in English for basic and intermediate track students at one Puerto Rico university
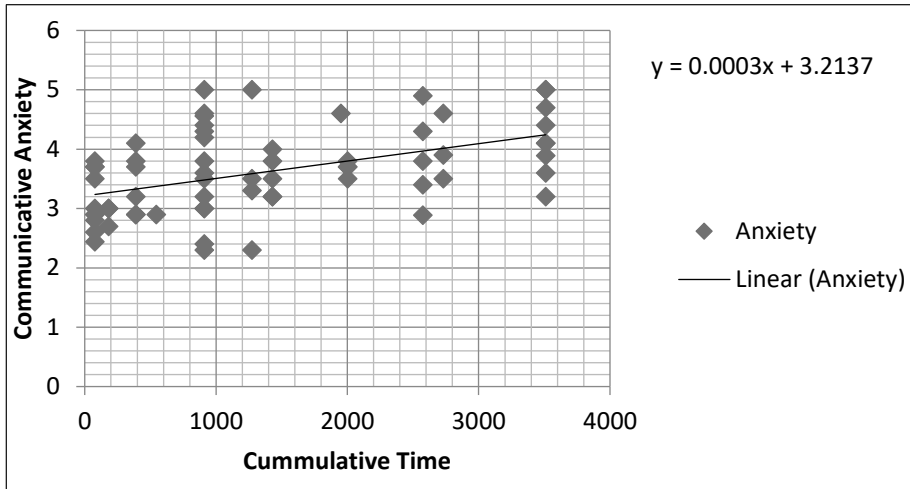
Figure 6. Scatterplot of the cumulative time spent playing online multiplayer video games and communicative anxiety in English in the classroom setting

Variable	Cumulative Time	Comm. Anxiety
Cumulative Time		
Spearman rho r_s value	1.000	.484*
Sig. (2-tailed) p value		.000
N	69	65
Willingness to Communicate		
Spearman rho r_s value	.484*	1.000
Sig. (2-tailed) p value	.000	
N	65	67

*Correlation is significant at the 0.01 level (2-tailed).

Figure 7. Relationship between the cumulative time spent playing online multiplayer video games and communicative anxiety in English for basic and intermediate track students at one Puerto Rico university

= 0.72), $r = .484$, $p = .00062$. The Spearman rho correlation analysis ($r = .484$) indicated a moderate positive relationship between cumulative time spent playing online multiplayer video games and CA in English.

Discussion

The individual types of online multiplayer video games enjoyed by the participants were not examined in the study because they all shared the same qualities of real-time, online communication in the second language. Regardless of whether the participants played MMORPGs like *World of Warcraft* or action shooter games like *Call of Duty*, the need to use the target language to communicate and coordinate with team members and other players to complete objectives remained the same. The actions in the games may have varied, but the need to use English in real time to interact with other speakers during game play did not change.

The predictor variable, cumulative time spent with online multiplayer video games, was a statistically significant indication of CA levels and WTC in English. In the analysis for each of the two relationships, there was a statistically significant positive relationship between the predictor and criterion variable. Zhao and Lai (2009) argued that the collaborative and immersive nature of MMORPGs promoted interaction by offering more opportunities for using the target language and increasing the motivation to seize upon these opportunities. Their contention supports the study's findings of a positive relationship between cumulative time spent playing online multiplayer video games and WTC in English. Such interactions become more common with game play experience and are only effective if they are persistent and prolonged, a key feature to the designs of MMORPGs. Additionally, the results are supported by Chik (2011) who found that MMORPGs presented opportunities for language learning that could increase WTC in English because a strong interest in completing in-game objectives fueled the need to understand in-game texts and contexts.

The relationship between cumulative time spent playing online multiplayer video games and CA also demonstrated a positive relationship. The cumulative time spent playing online multiplayer video games was a significant predictor of low levels of CA in English. Current research on the effects of informal environments on language learning support these findings. Reinders and Wattana (2015) found that MMORPGs were effective in reducing CA among players by encouraging positive interaction and by offering a degree of anonymity, a benefit which few second-language learners are afforded in the formal classroom setting. Moreover, the results of the study were supported by Kim (2010), who contended that online multiplayer video games could create a relaxing learning environment and lower inhibitions. The cumulative time spent playing online

multiplayer games benefited those learners who were shy about communicating in the target language.

A primary limitation of the study was that its instruments relied on participant responses. Participant self-reporting may result in bias and affect the quality of the responses. Social desirability bias occurs when respondents act in a manner that avoids embarrassment, unease, or distress from undesirable answers (Kaminska and Foulsham 2013). Because the respondents were all experienced video game players, they may have been influenced by their perceptions of the expectations regarding a study on a hobby that they enjoy. Other self-report issues may have biased the responses. Acquiescence, for instance can imply a positive relationship that is not necessarily the result of the items being measured (Navarro-Gonzalez, Lorenzo-Seva, and Vigil-Colet 2016). This kind of bias could possibly have been prompted because the survey instruments were in English or because of the participants' desire to see video game research reflect a positive outcome.

Additionally, all the instruments were in English, which was a second language for the participants. This language barrier may have caused difficulties when they completed the instruments. Wattana (2013) and I carefully chose the wording for our survey instruments to mitigate this problem, as each was written with ESL populations in mind. Moreover, we selected wording that obtained a score of 8.9 or lower on the Flesch-Kincaid readability test (used to determine how difficult a passage in English is to understand). It is still not possible, however, to achieve complete assurance that there were no comprehension problems with any of the questions across the complete battery of surveys.

The language barrier may also have been an issue regarding the actual game play experience acquired by participants. The largely Spanish-speaking population of Puerto Rico possibly limited the overall size of the sample because some of the more experienced gamers may have played online multiplayer video games with only other Spanish speakers. Though they may have played online quite frequently, it is possible that a significant portion of them played with only friends and locals who spoke the same language. It was imperative that those who participated in the study play online with English speakers, something easily done given the open matchmaking capabilities of modern, online games. For this reason, I informed participants of the importance of English game play experience beforehand in the orientation, so that those students who play with only Spanish speakers did not participate in the study.

Another limitation was the small sample size. With more than fifty insti-

tutions of higher learning throughout Puerto Rico, we cannot assume that the results of this study can be generalized for the rest of the island. Similar studies would have to be conducted in other private universities to determine if the results obtained are isolated to this campus or are common among university students.

It is also possible that some participants may not have had access to a computer or the Internet at home or via a mobile device. A large portion of the student body at the selected university came from lower-income homes, so we cannot assume that they had such access. To mitigate this limitation, I had several machines placed at the campus tutoring lab, computer center, library, and student union to be available for a period during the day so that the students could access and complete the surveys.

Although a sizeable majority (68 percent) of participants stated that they looked for other people who spoke their first language when they played online multiplayer video games, an almost equal amount (67 percent) stated that they were willing to play even if the other players spoke to them in English. This number indicates that the language of play was not necessarily a significant issue for them. Most participants (77 percent) had at least two years cumulative experience playing online multiplayer video games, which suggested that most participants had played these games for a significant amount of time. These results aligned with Cao's (2011) contention that state-level factors, such as perceived opportunity to communicate and classroom environmental conditions (teacher, class size, the topic discussed), combine with trait-level factors, such as confidence and personality, to affect WTC. Online multiplayer games provide ample opportunity to communicate while removing classroom environmental conditions that may adversely affect willingness. Studies by Riasati, Allahyar, and Tan (2012) and Khaki (2013) suggest that there is a strong relationship between learner autonomy, which is a major element of video game play, and WTC. One implication of the study is that online multiplayer video games may have a positive correlation to students' confidence and other personality traits. And online interactions may serve as a useful context for engaging in different and complex uses of the target language, both written and spoken (Thorne, Fischer, and Lu 2012).

Another implication of the study—supported in the literature—is that video games, particularly those played online with other people, have significant communicative value. They can benefit the learning process by enhancing problem solving and higher levels of cognition (Mayer and Johnson 2010; Prensky 2012).

Moreover, online multiplayer video games are beneficial for increasing social engagement, such as the ability to organize groups and lead others in social causes (Granic, Lobel, and Rutger 2014). The findings of the study were in line with research by Voulgari (2011), Peterson (2011), and Reinders and Wattana (2014) involving relationships between MMOPRGs and increased levels of WTC. In these studies, learners experienced a higher level of relaxation and confidence (two important WTC variables) when using the target language while playing MMOPRGs.

The trial-and-error nature of video gaming gives the gamer an opportunity to see the consequences of failure for not completing a goal, such as completing a level or stopping a particular monster, without physically or emotionally suffering any effects. Learners can go back and try again, putting the knowledge obtained from their previous failures to use and seeing how things change as a result. The overwhelming majority (90 percent) of participants stated that they would not stop playing a game because it was in English, and a similar number (97 percent) expressed confidence in speaking English while playing online multiplayer video games, suggesting that they were willing to ask for help while playing. Given the trial-and-error nature of many video games, it is likely that help would be requested after some failed attempts to advance in the video game. Such communication is common in MMOPRGs. McClarty (2012) and her colleagues contend that failure is an integral part of the learning experience and that immediate feedback is vital. Given the community nature of online games, they will often redo these objectives as a group, and they can thus coordinate attacks and strategies based on previous failures. Similarly, most (65 percent) of the participants said they were willing to ask classmates for clarification to complete a task, while an almost equal number (67 percent) expressed little worry about understanding their classmates. The implication of this information is that repeating game activities and asking for assistance using English provides more opportunities and practice in the target language.

Though this study found a statistically significant positive relationship between cumulative experience playing online multiplayer video games and WTC in English, there are some differences between these findings and those of similar studies. First, many other studies (Lucas, Miraflores, and Go 2011; Sultan 2012; Huang and Hwang 2013) focused on Middle Eastern and Asian ESLs, not Hispanic ones. Research for this study revealed no similar study done with Puerto Rican ESLs, thus emphasizing the value of the study's results and implications for the research literature. It is therefore not prudent to generalize

the results from one ESL group to another, as the cultural and school environments are vastly different. Second, the studies cited used significantly larger samples. Finally, many of the studies used a mixed-methods approach, interviewing participants before and after game play sessions.

Despite these differences, the implications that the findings of this study may have for Puerto Rican ESL learners in their efforts to become proficient in English to succeed in social and professional contexts should not be underestimated. ESL learners need academic English to achieve success in their college careers (Slama 2012), and proficiency can be difficult to obtain if they do not have sufficient exposure to the language and a persistent environment in which to practice their language skills. A lack of proficiency can, in turn, have a negative effect on their WTC in English. Additionally, many career fields include jargon and other specialized terms in English, requiring developed literacy and pronunciation skills (Lems, Miller, and Soro 2017). There is a great need for Puerto Rican ESL learners to develop their English communication skills, and it may not be possible for them to do so in a predominantly Spanish-speaking environment, such as is found on the island.

This study provides some information about how emotional factors, such as anxiety, can interfere with second-language acquisition and how informal environments, such as those presented by online multiplayer video games, can lower anxiety levels and promote language acquisition. The anxiety of a formal learning environment can reduce the comprehension of learners. In contrast, informal environments like online multiplayer video games can create situations that so engage language learners they bypass their fears. ESL learners who play online multiplayer video games are aware of the English language used in these games and by most of the people with whom they interact playing them. This fact does not affect their motivation to play. Additionally, the input acquired during game play can be applied elsewhere. Online multiplayer video games offer opportunities for learners to use the target language (or at the very least, elements of it such as vocabulary terms and dialogue) in low anxiety situations even beyond the games themselves, such as with friends and other video game players (Reinders 2012). By offering authentic and engaging content, online multiplayer video games can lower anxiety and provide interaction with native speakers of the target language on a persistent basis, something that many learners are unable to experience locally (Al-jifri and Elyas 2017). To the learners, online multiplayer video games represent authentic content that promotes learner autonomy and self-training through activities like control over the management and content

of learning (Benson and Voller 2013). The content is also slightly above their competence level, providing a not insurmountable challenge and permitting opportunities for assistance from more skilled peers.

Additionally, the study found that a large portion of the sample (41 percent) had been playing online multiplayer video games for at least five years, while most of the sample (77 percent) had at least two years of experience. There was a statistically significant positive relationship between cumulative time playing online multiplayer video games and reduced levels of CA, suggesting that participants with more cumulative time felt lower levels of anxiety when using the target language. The obvious implication of this finding is that online multiplayer video game play in English could be a significant tool for contributing to a reduction in ESLs' CA, which could be a valuable contributor to second-language proficiency. The majority (88 percent and 86 percent) of the participants expressed that they had learned new English vocabulary and new ways to form sentences in English from playing online multiplayer video games. Just over half (51 percent) said they felt comfortable sharing their ideas, feelings, and opinions with classmates, suggesting that cumulative time spent playing online multiplayer games in English carried over to the classroom environment. This lines up with the findings of Sylvén and Sundqvist (2014), which suggested that ESL learners who spent more time playing video games were less likely to revert to their native language when communicating with classmates.

A key difference between this study and those cited in the literature is that it examined cumulative experience playing online multiplayer video games and not merely the practice in general. Its focus on those who regularly engage in these types of video games removes a notable portion of the classroom population from video game–related activities, because not all are proficient at playing them. It is vital that educators provide persistent environments in which students can freely and comfortably practice the target language, but inexperienced or uninterested students may take longer to learn to play them, and it is unclear how this may affect motivation. Peterson (2010) established that the persistent environment of video games like MMORPGs may be too challenging for students who are inexperienced and that they are more suitable for learners with intermediate and advanced proficiency. In addition to having at least two years of experience with online multiplayer video games, more than half (53 percent) of the sample for this study played for at least five hours a week, suggesting that the use of such video games may be better suited for learners who are in their teens or older.

The implications for this study may be far-reaching. So, too, may be the recommendations regarding the use of online multiplayer video games in second-language learning. As computer technology becomes less expensive and more available, and as high-speed Internet access becomes more widely available in communities and in schools, it will become essential for educators to incorporate technology and interaction into their lessons (Taylor 2009). According to McHaney (2011), many faculties are unprepared for the level of proficiency many students have with technologies such as instant messaging, social media (Facebook, Twitter, and others), and file sharing. Thus, many faculty members are slow to incorporate these technologies into their courses, much to the chagrin of their students.

The Puerto Rico Department of Education would benefit from further exploring the role of online video games in English language development on the island. Historically, the department has embraced technology that could potentially benefit the educative process (Diaz Ortiz 2015). As MMORPGs and other online video games provide persistent, informal settings for ESL learners to practice their English, they may be beneficial to English language teaching on the island. Evidence suggests that they aid in lowering CA and increasing WTC, and with the large percentage of students that actively engage online game play, online video games can provide authentic and persistent content for improving English. The technology and student engagement are there, as is the potential for language learning. It now falls to Puerto Rico's educators, administrators, and parents to decide how and when to use them.

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