

## THE IMPACT OF VIDEO GAME INTERVENTION ON REDUCING STRESS AND ENHANCING LANGUAGE ACHIEVEMENT AND COMMUNICATION SKILLS

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### ABSTRACT

This study investigated whether video game intervention can play a role in reducing stress, and in improving English language proficiency and communication skills of English as Foreign Language (EFL) learners in Iran. Elementary EFL students ( $n = 100$ ) from two classes at a private language institute voluntarily participated in this study. The participants were randomly divided into two groups. The experimental group had video games incorporated into their learning experiences for eight weeks, while the control group's learning experiences remained unchanged. The participants completed measures of perceived stress, communication skills, and an English language proficiency test at pre-test and post-test stages. Additionally, five students were randomly selected from each group and invited for semi-structured interviews. Analysis indicated that perceived stress decreased significantly in the experimental group while the level of stress did not change in the control group. Additionally, the communication skills and English language proficiency of students in the experimental group also increased significantly, but remained unchanged in the control group. These findings suggest that video game intervention holds potential as a tool for decreasing stress in Iranian EFL students and for enhancing their communication skills in English language classrooms. Additionally, video game interventions may enrich teacher-student relationships.

**Keywords:** Communication skills, English as a foreign language, English language students, Gamification, Language anxiety, Perceived stress, Stress, Teacher-student relationship, Video games

### INTRODUCTION

Stress is caused by psychological and/or physical pressures that negatively affect the human automatic nervous system. Sustained high levels of stress can have serious, negative implications for mental and physical health (Schneiderman, Ironson, & Siegel, 2005). This is salient for people learning a second language, established as one of the most stressful learning contexts (Hauck, Hurd, & Hall, 2005). Soyooof and Jokar (2014) suggest that language learners are exposed to many uniquely stressful factors, including a new culture and a new 'language ego' (Guiora, 1972). These stressors place language learners at risk, not only of academic failure but also of physical and mental illness. Indeed, the term 'language anxiety', experienced by second language learners, and used interchangeably with 'stress' in this paper, captures the particular "unpleasant emotional state of condition which is characterized by subjective feelings or tension, apprehension and worry, and by activation or arousal of the autonomic nervous system that accompanies these feelings" (Spielberger, 1972, cited in Piechurska-Kuciel, 2008, p. 27).

Thus, while it is well established that stress and anxiety detract from learning experiences generally, second language learners seem to be at particular risk. For instance, in Elias, Ping, and Abdullah's (2011) investigation of the degree of stress among undergraduate students in different fields of study at a Malaysian university it was found that modern language and communication students were exposed to higher levels of stress compared to those studying agriculture, environmental or educational studies, and forestry. In line with this finding, other researchers have found negative associations between language stress and language performance (Aida, 1994; Azher, Anwar, & Naz, 2010; Dewaele, & Alfawzan, 2018; Zhang, 2018).

For these reasons, investigating the underlying reasons for stress or 'language anxiety' has been a significant area of inquiry for language acquisition scholars. Hashemi (2011) classifies language learning anxiety into six categories and suggests strategies that can help learners manage the stress arising from each one. In particular, the role of the language teacher is seen as vital to reducing students' stress levels. Similarly, Tsiplakides and Keramida (2009) examine the reasons why second language students experience stress in L2 classrooms, finding that unwillingness to communicate (Fukuta, 2017) and lack of motivation (Okay & Balçikanli, 2017) are among the main sources of stress.

Reducing the negative impact of stress is important for student learning in any subject area (Meadus, 2007), and there is a considerable body of work concerning intervention strategies. Mindfulness-based approaches have been found to hold promise and are of increasing scholarly interest (Felver, Celis-de Hoyos, Tezanos, & Singh, 2016). Berkowitz, Moore, Astor, and Benbenishty (2017) found that equipping both teachers and learners with interpersonal and communicative skills can reduce stress in the classroom and enhance learning outcomes (see also Liu & Huang, 2011). In terms of second language learning specifically, building a reciprocally friendly environment between language teachers and students can also be a very fruitful solution to reducing the anxiety level of English students in foreign language classrooms (Tanveer, 2007). For example, eliciting learners' perspectives on factors that contribute to increased stress and collaboratively negotiating solutions, besides minimizing competition among students are strategies that have been found to assist (Hashemi, 2011). Hershner (2015) suggests that one-on-one teacher and student interviews can be an effective solution to enhance students' listening, critical thinking, and oral communication skills; improvements in this area can reduce stress in one way or another. In addition, Gustafson, Davis, Hornsby, and Bess (2015) have argued that one of the most fruitful ways to decrease students' stress is to support them to shift their sense of 'learner identity' in relation to the process of learning new languages, so changing to more positive self-perceptions. Technology generally and video games specifically have also been found to foster English language learning and at the same time contribute to reducing learner stress (Soyooof & Jokar, 2014).

Digital tools can open up new spaces for students and teachers to interact in ways that preserve learner anonymity from their peers. This can increase students' willingness to communicate and thereby support and improve rapport and connections between students and teacher, ultimately leading to better academic performance (Drummond, 2014; Reinders, 2017). In a study focused on five EFL learners who attended a fifteen-week educational game-based program at a university in Thailand, Reinders and Wattana (2015) found that videogames can minimize the affective barriers of language learning as students subconsciously engage with a new culture and develop a new identity or 'language ego'. This research is in keeping with Gee (2012), who argues that video games are useful in teaching students new language features through situated language learning.

Further, many studies have found that video games are intrinsically and extrinsically motivating for learners (e.g., Domínguez et al., 2013; Gee, 2012; Molins-Ruano, Sevilla, Santini, Haya, Rodríguez, & Sacha, 2014). As a result of this motivation, students' social and

collaborative skills, as well as metacognitive skills like organization and planning, can be enhanced (Barr, 2017). Another important potential advantage of videogames for language learners is that this tool affords using the target language in a non-threatening environment (Barr, 2017). In line with this finding, Reinders and Wattana's (2014) study revealed that Thai language learners felt more confident, less stressed, more competent, and more willing to communicate in game-based environments compared to the language classroom environment. Similarly, Jensen (2017), in a seminal study, found that the oral and written skills of male Danish children were enhanced through playing video games.

Jones, Scholes, Johnson, Katsikitis, and Carras (2014) contend that video games can relax and reduce stress in learners more generally, ultimately supporting mental well-being (see also Bouchard, Bernier, Boivin, Morin & Robillard, 2012; De Schutter, Brown, & Vanden Abeele, 2015; Russoniello, O'Brien & Parks, 2009). Similarly, Sun, Wang and Chan (2011) suggest that video games reduce student frustration, while Collins and Cox (2014) reported a connection between video games and post-work recovery and stress reduction.

In a review of 28 studies into video game use, Wouters, Van der Spek, and Van Oostendorp (2009) found that serious games are conducive to learning, largely because they reduce stress and support attitudinal change within individuals. In another seminal study, Fang and Zhao (2010) found that video games reduced the stress level of players in issues related to personality traits. Moreover, in a survey of 833 employees, Reinecke (2009) found that playing casual video games during working hours helped workers recover from fatigue and better cope with stress. Ferguson and Rueda (2010) investigated the role of violent video games on aggressive behaviour, but interestingly, their findings indicate that violent video games decrease depression and hostile feelings in players through mood management.

Other research suggests that video gaming can help players manage phobia and stress such as physiological responsiveness (heart rate), subjective ratings of distress (SUD), rating scales for severity of fear of driving (FDI), Posttraumatic Stress Disorder (CAPS), depression (HAM-D), and achievement of target behaviour (Walshe, Lewis, Kim, O'Sullivan & Wiederhold, 2003). Rahmani and Boren (2012), in a meta-analysis of 34 articles, reported that video gaming is beneficial for stress reduction, behavioural change, and cognitive ability of players. Kiili (2005) concluded that video gaming reduces stress by providing immediate feedback, clear goals and matching to players' skill level. Finally, Baranowski et al. (2016) reported that, when embedded in an appropriate learning framework, video gaming can enhance the persuasiveness and informativeness of key messages, and also support behavioural change.

In summary, there is a significant body of work to support the contention that video gaming supports learners generally and second language learners specifically. Video games can reduce learner stress and anxiety by increasing motivation, providing a non-threatening, situated learning environment, and opening up new spaces for interaction. However, there is limited experimental and mixed-method research directly investigating the effects of video games on perceived stress, communicative skills, and English language achievement of L2 learners. The research reported in this paper engages with this apparent gap in the literature by examining the impact of video games on perceived stress and the communicative skills of Iranian EFL learners. The research has been guided by three research questions:

1. Does video gaming contribute to reducing stress and tension among Iranian EFL students within language classrooms?
2. Does video gaming positively affect various dimensions of communication namely, verbal, audible, and feedback variables, among Iranian EFL learners?
3. Does video gaming have a positive effect on English language proficiency of Iranian EFL students?

In this research ‘tension’ – negative feelings such as fear, concern, or distress during stressful situations (Lehne & Koelsch, 2015) – is conceived as the indicator of perceived stress (Häfner, Pinneker & Ströhle, 2014), while communication skills are understood as comprised of verbal, audible and feedback elements (Burton, 1990). The verbal element involves creating spoken messages designed to send a meaningful message to a listener (McDuffie, 2013). The audible element is understood as exchanging meaningful messages through voices or sound from one person to another (Yule, 2016). Finally, the feedback element assesses whether an effective communication has been established between the sender and receiver of a message (Maguire & Pitceathly, 2002).

## **METHOD**

### **Participants**

Participants were drawn from two elementary English language classes at a private institute in Shiraz, Iran. Students initially self-nominated for participation by returning consent form indicating their interest in and consent to participating in the study. An information form outlined the purpose of the study, methods of generating data, and explained that all information would be kept confidential and anonymous. A total of 100 English language students (50 male students, 50 female students) between the ages of 18 to 32 (mean age = 23.5 years, SD = 1.86 years) were randomly assigned to a videogame intervention group (n = 50) and a control group (n = 50).

### **Measures**

The following section outlines the tools used to generate data in this research.

#### *Tension*

The Perceived Stress Scale (PSS) is a 14-item questionnaire used for eliciting individuals’ tension disorder. ‘The PSS is regarded as “a brief and easy-to-administer measure of the degree to which situations in one’s life are appraised as stressful” (Cohen, Kamarck, & Mermelstein, 1983, p. 394). This questionnaire is designed so that it can be understood by people who are not educated at secondary school level. The purpose of this questionnaire was to measure the tension degree of the participants.

#### *Verbal, Audible and Feedback Skills*

To measure students’ level of communication skills, the Communication Skills Inventory (CSI) (Burton, 1990) was administered. The CSI assessed the communication skills of students, including verbal, audible and feedback using eighteen Likert scale items ranging from 1 (I disagree) to 5 (I completely agree). Before administering this questionnaire to the participants, it was piloted to several students having the same characteristics as the sample, to achieve an acceptable index of reliability and validity. Using Cronbach Alpha, the first author calculated the reliability of this instrument and found an acceptable index of reliability [0.765]. A higher score in each of the different skills (verbal, audible and feedback) correlates with a higher degree of communication skills. Feedback skills are receiving the messages and responses of individuals and to answer them back appropriately and effectively (Burton, 1990).

#### *English Language Proficiency*

In this study, the Oxford Placement Test (OPT) (Edwards, 2007) was administered to help teachers identify students’ level of English language proficiency (elementary, pre-intermediate, and intermediate). This test assesses different aspects of students’ L2 linguistic

knowledge, including grammar, vocabulary, reading and writing. However, due to the objectives of the study, only the grammar and vocabulary sections of this test were given to the participants. These two sections consisted of 50 items altogether. This test was used for pre-test and post-test, and showed the extent to which the groups of participants' linguistic knowledge changed prior to and after the intervention of the treatment (video game).

### **Conditions**

The following section outlines the conditions under which participants engaged with the various assessment measures.

#### *Control Group - Routine Training Only*

The participants in the control group were forty-five Iranian Elementary EFL students who were taught English throughout the whole semester (16 sessions). The teacher followed the instructional blueprints mandated by the private institute within pre-service and in-service teacher training courses. The participants were taught English using Interchange Level 1 Student's Book 1 (Richards, Hull, Proctor, 2004) through Communicative Language Teaching (CLT). Students in the control group were given both (PSS) and (CSI) in the first and final sessions, respectively. In the eighth and sixteenth sessions of English training, five randomly-selected students were invited to participate in a semi-structured interview.

#### *Experimental Group - Video game Intervention*

In the experimental group which received videogame intervention, students were first explained how to install the related video game, the Android and English version of Grand Theft Auto Chinatown Wars, which is Commercial Off-the-Shelf (COTS) game. Then, the teacher explained the different properties of the video game and students were able to ask questions during an introductory session in which they were able to play the video game. The students in the experimental group were taught the same material as the control group, based on their proficiency level. However, the teacher and the students in the experimental group were asked to play video game for 30 minutes every night throughout the semester. The experimental group also participated in an online chat group that focused on the game and their experiences playing it. In this group, the students talked about the video games they had played each night for 15 minutes, sharing information on how to better play the video game and their experience while playing it. Like the control group, the students in the experimental group were administered (PSS) and (CSI) both in the first and final sessions. Similarly, as with the control group, five students were randomly selected and invited to participate in a semi-structured interview in the eighth and sixteenth sessions classroom sessions.

### **Procedures**

After fully informing participants of the study's focus and method, written consent was obtained from students in both the experimental and control groups. Participant students were then randomly assigned into one of the two groups. The conditions in both groups were similar; the key difference was that participants in the experimental group were asked to play video games on a daily basis and subsequently share their videogame playing experience with both the teacher and the classmates for 15 minutes each day via a chat room.

All participants in both groups were given measures of perceived stress and communication skills (pre- and post- the language learning program), as well as the OPT (was this also given pre and post). All participants completed the test instruments again, approximately eight weeks after the pre-test (Figure 1). Finally, five students were randomly selected within each group to participate in a semi-structured interview.

## Materials of the Study

Students in the experimental group were asked to play the video game, *Grand Theft Auto: Chinatown Wars*. This action and adventure-oriented game was released on 17 January 2010 for iPhone (Vanolo, 2012) and on 18 December 2014 for Android devices. Depending on the platform of their mobile devices, the students in the experimental group were given the Android or IOS version.

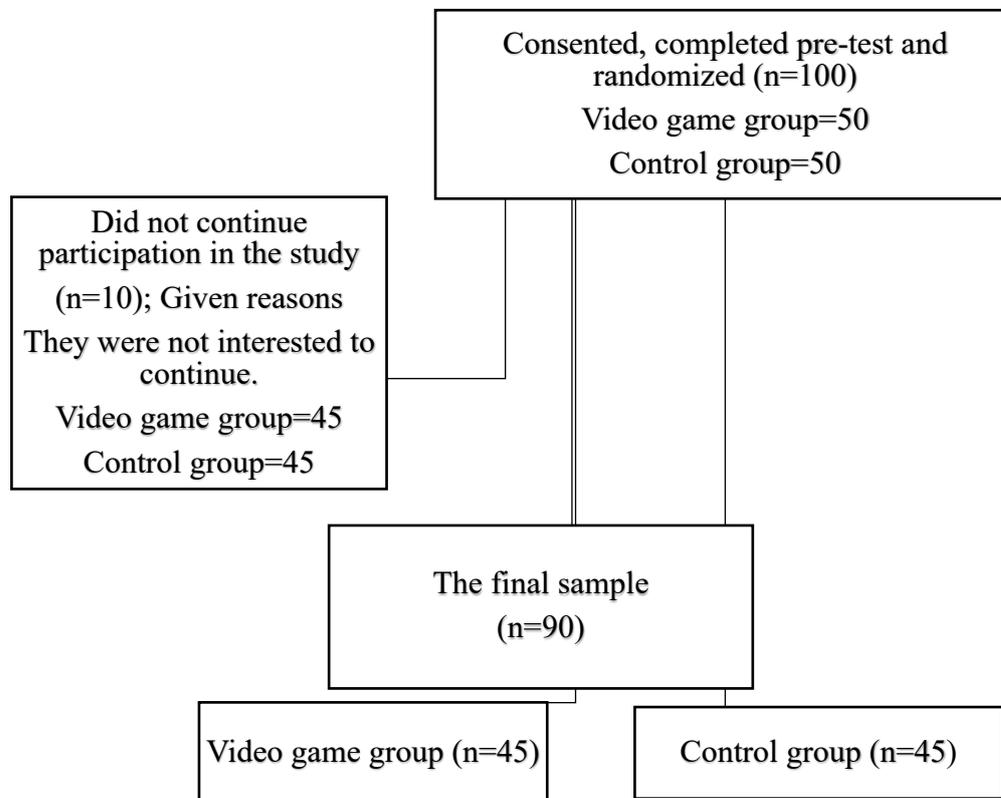


Figure 1. Participant procedures

## RESULTS

The following section outlines the results of the pre- and post- tests conducted on participants in the experimental and control groups.

### Descriptive Statistics

The descriptive information can be found in Table 2. Just over half of the English language students in this study were female (approximately 55.5 %), with the mean age of 19.97 years (SD= 2.59). Prior to the intervention, the degree of tension in English language students were respectively 2.65 (SD=0.63) and 2.61(SD=0.68) in the video game and control groups. Moreover, at pre-test phase, there were no significant differences in the participants' verbal skills (video game group: M=14.59, SD=3.04; control group: M=14.63, SD=3.21), audible skill (video game group: M=7.79, SD=3.46; control group: M=8.01, SD=3.52), feedback skill (video game group: M=5.82, SD=3.27; control group: M=5.77, SD=3.42), and language proficiency (video game group: M=10.21, SD=3.76; control group: M=10.34, SD=3.52). It should be noted that almost 90% of the participants (n=90) sustained involvement

in game play throughout the research period. Ten of the participants did not continue the study as they reported that they were not interested in participating.

### Influence of Intervention on Tension

The first hypothesis in this study was that the video game intervention would reduce tension among English language students. At the end of this study, after the delivery of the treatment to the experimental group and comparing the results between the two groups, the degree of tension experienced in the experimental group reduced significantly ( $M=2.65$ ,  $SD=0.63$  in the pre-test, and  $M=1.21$ ,  $SD=0.34$  in the post-test), while tension did not decrease significantly in the control group ( $M=2.61$ ,  $SD=0.68$  in the pre-test, and  $M=2.52$ ,  $SD=0.73$  in the post-test (Table 2).

Table 1. The demographic characteristics of the participants

	Total (n = 90)	Video game group (n = 45)	Control (n = 45)
Age [mean (SD)]	19.97(2.59)	20.40 (4.07)	19.95 (3.76)
Gender, female [n(%)]	50 (55.5)	26 (57.7)	24(53.3)
Academic year at pre-test			
First year [n (%)]	65(72.2)	35(77.7)	30(66.6)
Second year [n (%)]	25(27.7)	15(33.3)	10(22.2)

Table 2. Mean and standard deviations of the stress and language variables in the video game and control groups.

Variables	Video game group (n= 45)				Control group (n=45)			
	Pre-test		Post-test		Pre-test		Post-test	
	M	SD	M	SD	M	SD	M	SD
Tension	2.65	0.63	1.21**	0.34	2.61	0.68	2.52	0.73
Verbal skill	14.59	3.04	35.42**	2.83	14.63	3.21	16.03	2.96
Audible skill								
	7.79	3.46	18.24**	2.36	8.01	3.52	9.74	2.84
Feedback skill	5.82	3.27	19.24**	2.17	5.77	3.42	6.38	3.26
Language proficiency	10.21	3.76	22.17**	3.11	10.34	3.52	12.32	3.49

\*\* $\rho < 0.01$

### **Influence of Intervention on Communication Skills**

The second hypothesis stated that video gaming can positively affect various dimensions of communication namely, verbal, audible, and feedback variables, among Iranian EFL learners. As can be seen from Table 2, the participants in the experimental group demonstrated statistically significant improved communication skills after the intervention. Specifically, verbal skills (M=14.59 SD=3.04 in the pre-test, and M=35.42, SD=2.83 in the post-test), audible skills (M=7.79, SD=3.46 in the pre-test, and M =18.24, SD=2.36 in the post-test), and feedback skill (M=5.82, SD=3.27 in the pre-test, and M=19.24, SD=2.17 in the post-test). Participants in the control group did not show any statistically significant improvement in any of the areas, their respective comparative means were: tension (2.65; 2.61), verbal skills- (14.59;14.63) Audible skill (7.79; 8.01), Feedback skill (5.82; 5.77) and Language proficiency- (10.21;10.34).

### **Influence of Intervention on Language Proficiency**

For the final hypothesis an independent-sample *t*-test was used. It was found that the video game intervention would have a positive impact on the language achievement of the participants. After the video game intervention, there was statistically significant improvement in the language achievement of the experimental group,  $p < 0.01$  (one-tailed), with a pre-test mean of 10.1 (SD=3.76) compared with a post-test mean of 22.17 (SD=3.11); however, similar improvement was not evident in the language achievement of the control group with a pre-test mean of 10.34 (SD=3.52) compared with a post-test mean of 12.32 (SD = 3.49)  $p > .05$ .

### *The Interview Phase*

As described earlier, to generate qualitative data for this research, five participants were randomly selected from each group to take part in a semi-structured interview comprised of 26 questions. Two versions of interview questions were developed. One version targeted the experimental group and focused on communicative skills and perceived level of stress in relation to the videogames. The second version targeted the control group and focused on communicative skills and perceived levels of stress in classroom context. The interview was conducted by the researchers and each interview lasted approximately 30 minutes and was conducted in a private classroom space in Shiraz. After transcription, the participants' responses were coded using a priori coding and content analysis (Stemler, 2001). Three themes emerged from this coding: the atmosphere of the video game; the motivation associated with the video game; and language learning associated with the video game.

### *The Atmosphere of Video Games*

Research suggests that video games can provide an enjoyable, low-stress 'atmosphere' that is an excellent way to learn new material (Soyooof & Jokar, 2014; Shubik, 1998). This notion of 'atmosphere' aligns well with simplicity theory which contends that over-explaining new information beyond necessity is not beneficial. Rather, the simplest way of presenting information tends to be best (Chater, 1999). To illustrate this, consider the following comments made during semi-structured interviews with participants (P) in the experimental (E) and control (C) groups:

*I actually found the classroom atmosphere somehow stressful, and I do not dare to talk and express my problems to the teacher. Besides, I believe that classroom is not an ideal place for me to learn, it is a very boring place. (P2C)*

*In my experience I found the video game an intriguing place for learning new material. Additionally, it is like learning from trial and error and a very stress-free place for learning. (P2E)*

Here, the participant from the control group (P2C) expresses anxiety about engaging with the teacher in the classroom context, while the participant from the experimental group (P2E) explicitly refers to learning in the video game environment as ‘stress-free’. Further, while P2C describes the classroom as “a very boring place”, P2E’s experience engaging with the video game is “an intriguing place for learning new material”. The contrast between these two brief accounts is clear, and suggests that the experience of these students aligns with the hypotheses in the present study, and in the literature more broadly.

### *The Motivation Associated with Video Games*

As outlined earlier, many studies have found that video games can increase student motivation and support more effective communication with peers and teachers during game play (Ryan, Rigby, & Przybylski, 2006; Reinders, & Wattana, 2015). Participant responses during interviews align with these findings:

*Learning in the classroom is not motivational enough for me. I really find it hard to interact with my teacher and my classmates because I am embarrassed of making mistakes. (P4C)*

*For me the video game and its related context was very motivational. I was full of enthusiasm during playing video games. It also gave me a reason to establish effective communication with both the teacher and my classmates. (P5E)*

Just as P2C expressed reluctance about engaging with the teacher about problems, P4C is similarly reluctant to interact with the teacher and classmates for fear of embarrassment as a result of making mistakes. In contrast, P5E participated enthusiastically in the video games and was motivated to interact with peers and teacher. It is reasonable to assume that both P4C and P5E would have made ‘mistakes’ in using English during these interactions, both in class and in the chat room. However, unlike P4C, P5E expresses no anxiety or fear of embarrassment associated with the risk of making mistakes in the “trial and error” gaming environment.

### *Language Learning Through Video Games*

A number of studies suggest that incorporating video games into learning experiences can contribute to improved language learning outcomes (Gee, 2012; Peterson, 2010; Reinders, 2012; Soyooof & Jokar, 2014). This is reflected in some participant responses during interview:

*The process of language learning in my opinion is very hard to attain, and it cannot be obtained merely in language classroom. I reckon that out of language classroom learning also play an indispensable role in better language learning. (P1C)*

*Through video gaming, better motivation and communication were established among students, which in turn can result in English language achievement. (P4E)*

Participant responses around these three themes that emerged during semi-structured interviews indicates that the second language learners in this study benefitted from engaging with video games. Participants in the experimental group were motivated by and enjoyed the stress-free learning atmosphere of gaming and subsequent participation in the chat group. The

gaming experience provided a common experience that participants could converse about in the chat group, which supported more effective communication and supported the development of positive relationships with peers and teacher. As P4E implies, the ‘noticeable improvement’ in language skills arises almost as a by-product of using video games as learning tools – the subconscious attainment referred to by Reinders and Wattana (2015), discussed earlier.

## **DISCUSSION**

This study suggests that engaging with video games supported improvements in the EFL students’ perceived stress level as well as in their communication skills. Data analysis indicates that the video game intervention also had a notable impact on variables such as tension; verbal, audible, and feedback skills; and language achievement of students in the experimental group compared to students in the control group. Consequently, the hypotheses of this study are supported to some extent.

The literature surrounding the relationship between video games and learning is replete with studies indicating that gaming can be beneficial not only for reducing learner stress, but also for language learning outcomes. The present research aligns with these findings, suggesting that video games can be effective tools for minimizing learner stress. For example, Jones et al. (2014), Reinecke (2009), and Russoniello et al. (2009) also found that using video game as a learning tool can reduce learner stress. Similarly, Soyoof and Jokar (2014) reported that the use of video games contributes to a stress-free and motivational atmosphere in L2 classrooms. Within their meta-analysis, Wouters et al. (2009) found that video games are helpful not only for minimizing stress reduction, but also support learners to develop more positive attitudes. Tanveer (2007) found that building a supportive and stress-free environment can enhance student achievement, and we suggest that the results of this study are in line with these findings.

Positive communication between students and teachers is of paramount importance to learning outcomes. Opportunities to engage openly and purposefully with peers and teachers without fear of embarrassment or failure motivates students to participate with a ‘trial and error’ mindset that is particularly valuable in second language learning (Kraft & Rogers, 2015; Roorda, Koomen, Split & Oort, 2013). According to Roorda et al. (2013), positive and supportive student-teacher relationships enhances learners’ engagement and achievement; a stance supported by Berkowitz et al. (2017) among others. As such, this research indicates that video games can be a highly effective tool for language learning by contributing to a stress-free, motivational, and interesting space for learning to take place. This assertion is supported by scholars including Gee (2008, 2012), Reinders and Wattana (2014), Reinders (2012), Soyoof (2018 a, b) and Peterson (2010).

### **Conclusions, Implications and Suggested Future Directions**

The results of this study indicate that video gaming can significantly reduce the stress of Iranian EFL learners and enhance their communicative skills (verbal, audible and feedback), ultimately enhancing English language proficiency among Iranian EFL learners. This reflects findings in this field of research more broadly; that is, that video games are highly beneficial for language learning. Further, this research suggests that video gaming may be an effective strategy for improving rapport between students and teachers – a contention that could be explored in learning areas other than second language classrooms into the future. Other directions for future research include exploring the impact of different genres of video games (e.g., strategic, sports-related). Investigating affective variables other than stress, such as

empathy, self-concept, self-efficacy, and language inhibition, is another pathway for interesting future research.

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