Multilingualism Doctoral School
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THESIS BOOKLET

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Videogames as a catalyst for intercultural and foreign language advantage in secondary school ESL students

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Veszprém
2025

‘JOY IS THE DRIVING FORCE BEHIND EVERY SUCCESSFUL ACTION.’

1. Introduction

1.1. The dissertation endeavours to identify relevant theories supporting the special acquisition and use of English by video gamers related to high-frequency word families.

1.2. In order to discover all the influencing factors, the theories and practice of bilingualism are reviewed thoroughly to prove that video gamers are second language users rather than foreign language learners, because of the level of their high-frequency word knowledge.

1.3. The main purpose of the quantitative Study 1 is to determine the English receptive vocabulary difference of the video gamers compared to non-gamers up to 3,000-word families in the cases of the participated secondary school EFL learners as well as to identify players of which video game types achieve higher scores on the VLT, to observe the most effective game type concerning the high-frequency words. Study 1 also aims to assess other possible influencing and controlling factors, like 'watching films in English', gender, parental SES, time spent on gaming and school grades of English, as independent variables.

1.4. The quantitative Study 2 is administered to check if there is any effect of the bilingual language use among the video gamer and non-gamer secondary school EFL learner participants by Stroop and verbal fluency tests.

1.5. The qualitative Study 3 aims to provide samples of game related, low-frequency English word utilization methods in the local gamer subculture which explain whether they differ in meaning and usage from the international and national examples.

2. Literature Review

2.1 In the past decades much research has focused on the general effects of video gaming, like the players' permanent interaction with the game by decoding visual, aural, and textual messages and making decisions based on them (Gee, 2009). In addition to the multimodal features, the video gamer – video game contact in English has also been intensively researched (Benson & Chik, 2011; Vidlund, 2013; Thompson & von Gillern, 2020; Nash & Brady, 2022). Järvinen (2002) and Antzaka et al. (2017) researched the perception of video games in order to examine the nature of visual elements that are displayed in fast pace along with their descriptions, to which the player must react immediately in order to score points. The authors find that collecting different treasure items can be beneficial when the player steps forward to the next level to eventually become a winner. Likewise, the significance of gathering the required number of articles is twofold: on the one hand, to master the ability to control the player's avatar (Worth, 2015) within the game level successfully (performance level), and on the other hand, to recognise and amass the essential objects appearing on the screen (cognitive level) (Gee 2003).

2.2. Acquiring the necessary 'articles', such as in-game items, equipment and knowledge, can only be gathered by practice (Vygotsky, 1978b; Piirainen-Marsh & Tainio, 2009; Sandseter & Kennair, 2011), which leads to the proper mastery of the in-game language (gamerlect) and the evolution of the argot of the gamer society as well (Thorne, Black & Sykes, 2009). The usage of the word 'article' is intentional, because the gamer must acquire linguistic treasures – words and phrases – just like scores. Collecting such glossal elements while playing can cover all the linguistic parts at once, because the arising information includes grammatical, phonological, and lexical information to a different extent (Sylvén & Sundquist, 2012), from which the gamer can draw orthographic conclusions.

2.3. The general English lexis consists of words that are not equally frequent, some word families occur more than others in any type of conversation (Schmitt, 2010) and as such, the video gaming is an effective and an authentic promoter and a potential resource for high-frequency words (Hartanto, 2018) and low-frequency (i.e. video game specific) words (Thomas & Clyde, 2013) as well. Despite the fact there are many papers tackling the role of the video game as an instantly accessible virtual area to acquire English, as Al-Jifri (2017), Eisenchlas, Schalley & Moyes (2015), Thompson

& von Gillern (2020), Peterson (2013) and Cabraya (2016) wrote, only few academic papers discuss the distribution of word frequencies of video games, e.g., Nindyaputry (2017), Rodgers and Heidt (2020), Hartanto (2018) or about the possible contribution of video games to high-frequency English word acquisition, e.g. Sylvén & Sundquist (2012).

2.4. Even though many different media (photographs, audio recordings, film, and video) have been used in education, most teachers still have an unreasonable resistance to using video games as an educational and even extracurricular tool (Pickard, 1996; Marone, 2018; Hanghøj, Lieberoth & Misfeldt, 2018; Nash & Brady, 2022). Those tutors who claim that video games are only for gaming or fun, potentially suggest that acquiring new knowledge cannot be fun or playful. In schools, students have limited time to acquire useful information, for example, in language classes, students feel bored and anxious during recitative tasks. If these tasks could be combined with games, students might forget their concentration difficulties and benefit from the positive effects of the game (Prensky, 2003; Sandseter & Kennair, 2011). Consequently, playful learning can have a beneficial effect on the students' daily mood, while a certain level of knowledge is to be acquired.

2.5. At secondary schools in Hungary, there is a clear level of L2 that students must achieve, which generally conclude with a B1 matriculation exam, as the formal target level of the National Curriculum (Szilágyi, 2020). The preferred receptive vocabulary level for such exam is around 3,000-word families by CEFR, which is needed for a satisfactory comprehension of a text at B1 level (Laufer, 1998; Milton & Alexiou, 2009). Consequently, the knowledge of high-frequency words is crucial because it supports learners not just to understand the meaning of the text and the structure of the language, but also to achieve a high and permanent quality of language awareness. Therefore, high-frequency words have been favoured at the initial stages of L2 vocabulary learning (Kucera & Francis, 1982; Schmitt 2010).

Globalization has innumerable effects on its users (Ricento, 2012), such as the widespread increase of online trends such as the creation and participation of short videos, podcasts, and video games, which users are willingly employing English as the lingua franca (ELF) (Seidlhofer, 2005, 2013; Butler, Sayer & Huang, 2018). Consequently, the consumers are all continuously and extensively influenced by English words and idioms without even noticing them every day in all levels of society (Veszelszki, 2017). This entails not merely a linguistic impact by English as a 'foreign'

– or rather transnational – language, but it also has an apparent intercultural related footprint even in the Hungarian minds (Nikolov, 2009).

2.6. The quality social occasions have particularly intense demand in childhood, when the playing activity could be the means to understand the surrounding world (Rubin et al., 1983). The video games are also getting more lifelike in screen resolution and language utilization to provide a reality-like experience (Hodent, 2017; Matern, van der Westhuizen & Mostert, 2020), which make the video games a suitable substitute of the presence of social interactions. Advancement of the language skills enables a child to communicate with others which encourages the development of cognitive skills and fosters the socio-emotional self-regulations (Vigotsky 1978). Video gamers' cognitive functions also profit from gaming which have been widely confirmed (Banquied et al., 2014; Kühn, Gallinat & Mascherek, 2019), with the positive effect on memory, flexible thinking, and self-control. Many studies have presented video gamers outperform non-gamers in terms of attention, spatial perception, mental flexibility and working memory efficiency (Atzaka et al., 2017; Green & Bavelier, 2007; Martinez, Gimenes & Lambert, 2023; Welker, 2022; Liu et al., 2019). Child cognitive development has many influencing factors, e.g., playing games, reading, and playing music instrument as the most popular ones, because they require competence, performance, skill and cause joy and rearrange knowledge (Christakis, Zimmerman & Garrison, 2007). Also, the consequence of the family income (SES) on child development is well documented, study proves that the volatile SES has the greatest effect on the children living in the borderline of poverty (Sosu & Schmidt, 2022). Video games with internet access may offer various and low-cost alternative to be unattended but not playing alone. As a small tool for cognitive development, smartphones provide children with imaginative, mysterious, problem-solving, or so-called educational games (Järvinen, 2002). Besides, as it has already been discussed, playing any kind of video games may develop into the acquisition of (high- and low-frequency) English vocabulary. This complex vocabulary promotes concealed instructions and gimmicks to the player which assist the progress of winning of an actual part of a game, still, some gamers select to use information exchange platforms, e.g., YouTube videos and podcasts, chatrooms etc., to find out which way to progress (Damsa & Fromann, 2018). Hence, such gamers often find themselves in an online multinational environment where the discourse occurs in English (Ashraf, Motlagh & Salami, 2014; Al-Jifri, 2017).

2.7 Undoubtedly, video game players encounter a substantial number of words and phrases, although it remains unclear, whether the gamers can acquire high-frequency words from video game play or not. The aim of this research was to shed light on the potential for L2 English high-frequency vocabulary acquisition through video games. The research tries not to fail to consider that L2 language learning and L2 high-frequency word acquisition do not always overlap, and learning L2 through video games itself simply becomes ineffective if so-called video gamer people view the video gaming world as opportunity to express themselves in L1 exclusively or play only visually satisfying games.

3. Research Questions

3.1. Main research question:

To what an extent video gaming contributes to the receptive vocabulary proficiency, inhibitory control, and lexical retrieval of EFL learners?

3.2. Study 1.

What is the relationship between video gaming and the receptive vocabulary proficiency of high-frequency words of the participating high school students?

For reaching comprehensive answers, the research question is further divided into sub-questions inquiring about measurable concepts.

a) Is there a significant difference between the VLT scores of the participating video gamers and non-gamers?

b) Is there a significant difference between the VLT scores of the female and male participants?

c) Is there a significant difference between the VLT results of the 'watching videos in English' group and the control group?

d) Does the 'time spent on video game play' correlate with the participants' VLT results?

e) Is there a difference between participants VLT results with different SES background?

f) Do the participants' English grades at school correlate with the participants' results in the VLT?

g) To what extent the device video gamers use contribute to their VLT results compared to the control group?

h) Players of what video game type have the highest VLT scores compared to the control group?

3.3. Study 2.

Is there a difference between the inhibition and the lexical retrieval of gamers and non-gamers?

Stroop test:

a) Is there a significant difference between the intralingual interferences of the video gamer and the non-gamer groups?

b) Is there a significant difference between the interlingual interferences of the video gamer and the non-gamer groups?

Verbal Fluency test:

a) Is there a significant difference between the performance of the video gamer group of students compared to their non-gamer peers in the VFT letter ‘s’ (L1 & L2) cases?

b) Is there a significant difference between the performance of the video gamer group of students compared to their non-gamer peers in the VFT category (L1 & L2) cases?

3.4. Study 3.

Main research question:

Does the game-related low-frequency English vocabulary used by the interviewed video gamer participants in out-of-game situations differ from other domestic and international examples?

With the video gamer students, a wordlist was assembled to highlight:

a) the embedding methods of the video gaming words into sentences,

b) examples of video game words used by interviewed video gamers that have different meanings compared to examples taken from the literature,

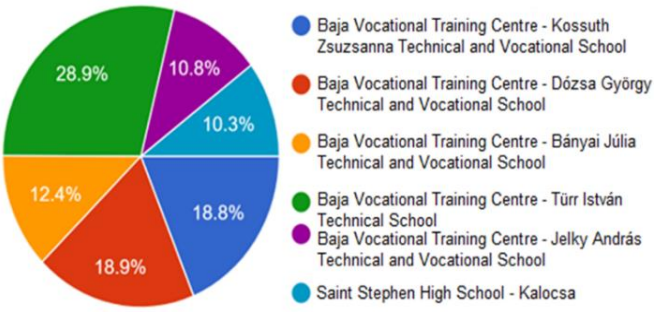
c) the pronunciation of the gaming words by the interviewed secondary school gamers.

4. Research Methodology

4.1. In this case the quantitative, cross-sectional research method was the best choice as the most efficient sampling method since the difference in knowledge at a given point in time was examined as well as more than hundred participants was expected. The research also includes a language knowledge test, so a feasible and widely used measuring instrument had to be found. The data used for this research were collected by an online distributed self-developed questionnaire and a vocabulary levels test. Both the survey and the test were conducted during regular IT classes at the schools. The survey comprised 36 independent variables, e.g., the participant's age, residence, school type, school grade of English, any other learned language(s), language preference for watching movies, parental SES and video gaming habits, gadgets used for gaming, time spend on gaming, most played video game(s), respectively. In Study 2, the work focuses on the effect of video gaming on the cognitive functions. This part of the research was performed and computed independently in the same population at the same school, and by comparing the results of the gamer and non-gamer students of Stroop and VFT test results.

Geographic area of the research

Proportion of participants by school



4.2. The participants were from the Hungarian districts of Baja and Kalocsa, attending secondary schools of the Baja Vocational Training Centre, and several students from the Szent István grammar school in Kalocsa in the school year of 2020/2021. To fulfil the objectivity of the research the participants were randomly selected from each of the school classes, as the questionnaire was administered as a regular school activity since it was conveniently administered during IT classes. The teachers' presence also attested the students' positive attitude towards their partaking in video game related research. Eventually, out of the approx. 2,500 pupils, 907 English language learner, right-handed students participated and filled out the online questionnaire, of which 890 valid responses

were received (n=890). Although the results cannot be used for statistically representative generalizations of the entire Hungarian 14-19-year-old population, it is still a significant amount of data for drawing considerable L2 English language-related conclusions.

4.3. Participants of the Stroop and Verbal Fluency tests; (Study 2)

The participants were not chosen randomly, all the students (N=157), attended the Kossuth Zsuzsanna technical and vocational school in Kalocsa, Hungary, study English and were present at school when the sampling occurred. The age distribution of the population of 9-13 graders ranged between 14–19 years. Verbal consent was obtained from all the participants following a full description of the study. Distribution of participants: video gamers: 92 / non-gamers: 65. Female: 97 / male: 60. All of them had begun to learn English in elementary school, around the age of 10 (depending on the type of the school) and continued learning it in the secondary school. All the participants had normal or corrected-to-normal eyesight and proper colour recognition. However, the participants who, in addition to English, learned another language, were excluded from this study. There was no pre-questionnaire used at this study, but at the task the participants' gender, class, age and video gaming preference (yes/no) only were recorded during the performance of the tests.

4.4. Experimental methods

In Study 1. the self-developed questionnaire was created in the Google Forms and the results could have been converted into an Excel file in the Microsoft Forms hence it was more applicable for the vocabulary levels test (VLT). In Study 2. the computerized bilingual Stroop test was used to obtain the appropriate and comparable data, for example, number of answers and summarized reaction times in seconds. In the VFT test, the traditional paper/pencil data collection method was used. In the qualitative part of the study (Study 3.), the students complied video game related words and phrases from 'gamer365.hu' blogsite (Gamer365, 2021) and 'KjúbCast' (Kjúbcast, 2021) gamer podcast sites. The game type groups were the following: *The League of Legends* from MOBA games, *The Walking Dead – (Telltale)* from adventure games, and *FIFA* and *F1* from sports games, because these games promoted different communicative skills. The word material was differentiated by game types to be able to acquire a broader view of both hard-core and casual gamers' word usage.

4.5 Calculation methods

For the statistical calculations SPSS 25 was used, in case of normally distributed datasets the difference of the means of data sets gave the statistically interpretable, i.e.,

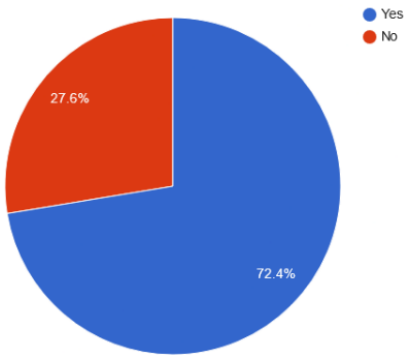
numerical, results. If histograms and P-P plots did not provide clear answers about the normality of datasets, further Kolmogorov-Smirnov (K-S) analysis must have been performed. For comparing the difference of the means of two datasets one-way ANOVA or t-test statistical calculation methods were used (e.g. gamer – non-gamer), or in case of comparing means of more than one dataset the Tukey HSD (parametric) or Games-Howell (non-parametric) post hoc test were used. In case of a not normally distributed data set a non-parametric Mann-Whitney U statistical test was employed.

5. Results

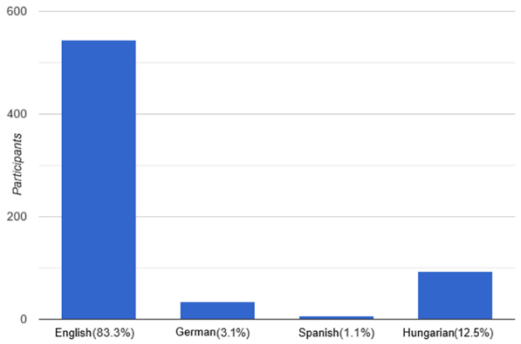
5.1. Results of the survey

The first and most interesting result was the ratio of players to non-players, a group which consisted of 244 students (27.6%), while the video gamer group consisted of 646 students (72.4%). The gender distribution of video gamers was 187 female and 459 male students. Among the video gamer participants there were 536 video game players who prefer to play games in English, which is 83.3% of the video gamer responders. In addition, the English language is used overwhelmingly more (83.3%) than Hungarian (12.5%) in the games played by the video gamer responders.

Distribution of video gamers and non-gamers

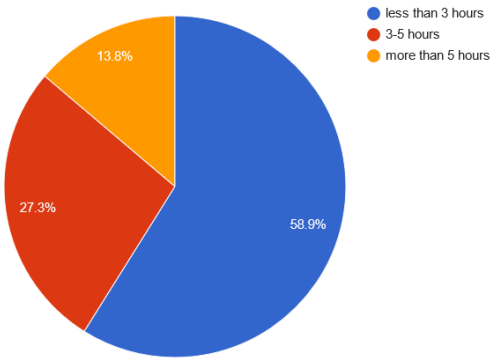


Languages used for playing

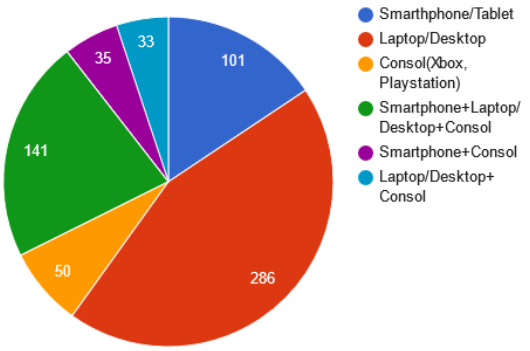


Furthermore, the participating video gamers can be categorized, among others, according to the played hours per day, the quality and the type of their devices and the game type they are primarily playing. The video gamers are various in their playing simultaneously various kinds of video games that include FPS/TPS, MMORPG, MOBA and adventure games, sports games, card games, etc., therefore the video gamer participants can cover several domains in English.

Daily video gaming time.



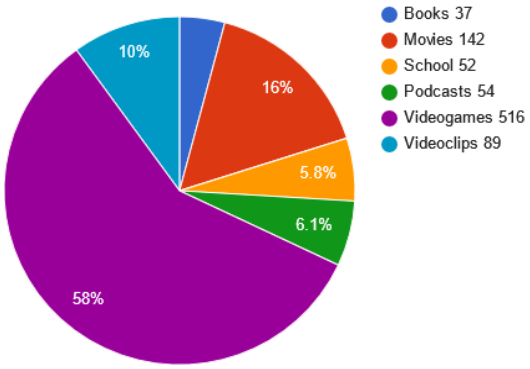
Gadgets used for video gaming.



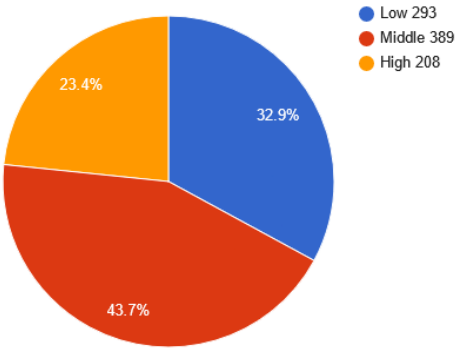
Most video gamer respondents declared that they acquire their word knowledge from video games, out of 646, 516 (58%) responded positively. The answers confirmed another assumption, watching movies as a means of learning words was the second most

favoured source with 16% of the voters. Video clips could also be a useful source of word learning, because 10% of the participants voted for that option. Reading is an effective and inexpensive means of L2 learning, although, the survey shows that books are preferred for 4.2% of the participants and school is preferred only for 5.8%.

Where do you learn the most English words?

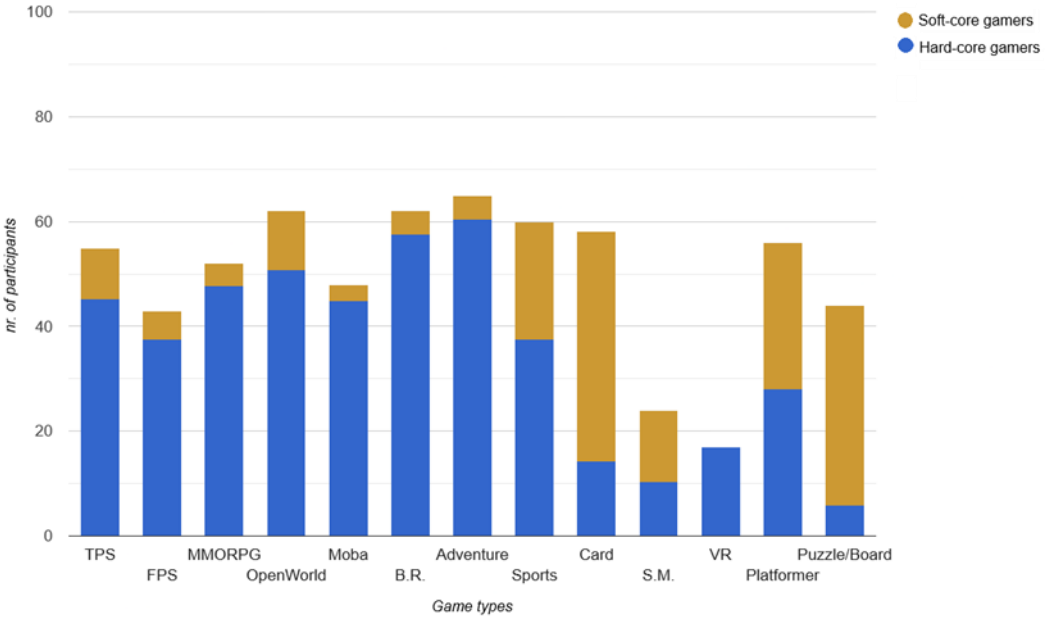


Distribution of parental SES



Additional non-linguistic variables, which are used to calculate statistically relevant results to clarify and supplement the research questions, include the students' socioeconomic background and the game types they are primarily playing.

Favourite game types by number of votes



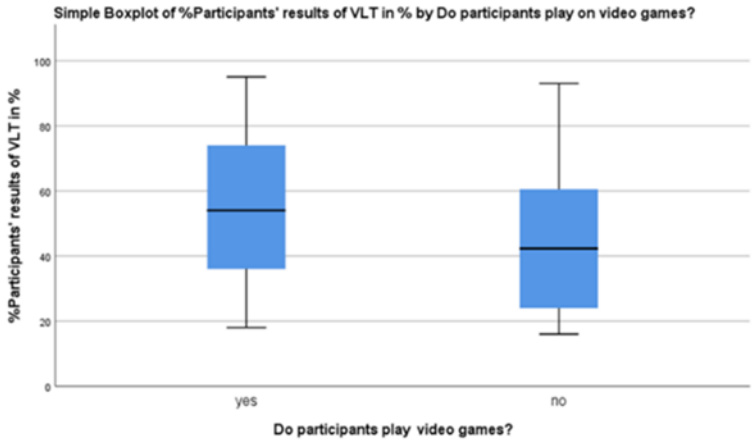
5.2. Statistical calculations of Study 1

5.2.1 Comparison of the gamer and the non-gamer groups

The first calculation was for the statistical difference between the means of the gamer and the non-gamer groups, which can be recognized in the boxplot diagram. Due to the not normally distributed data set, a non-parametric Mann-Whitney U statistical test was

used, and the outcomes show statistical ranks from which the conclusion can be drawn in favour of the video gamer participants.

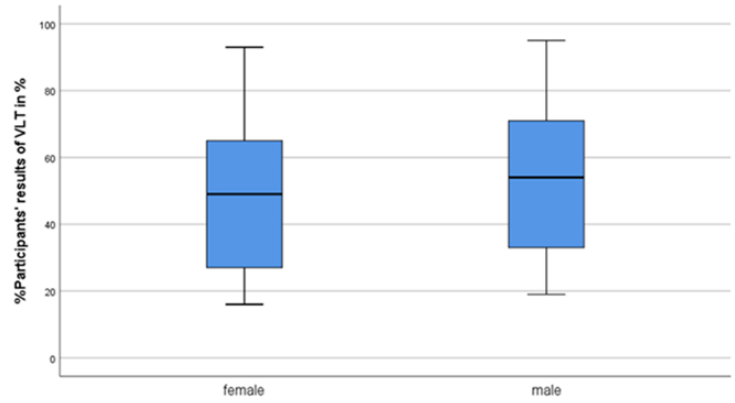
Boxplot of means of the VLT test results for video gamer and non-gamer groups



5.2.2. Comparison of the gender groups

The mean values are close as seen in the boxplot diagrams, and the statistical ranks calculated by the Mann-Whitney U showed the lack of significant difference between the female and the male groups.

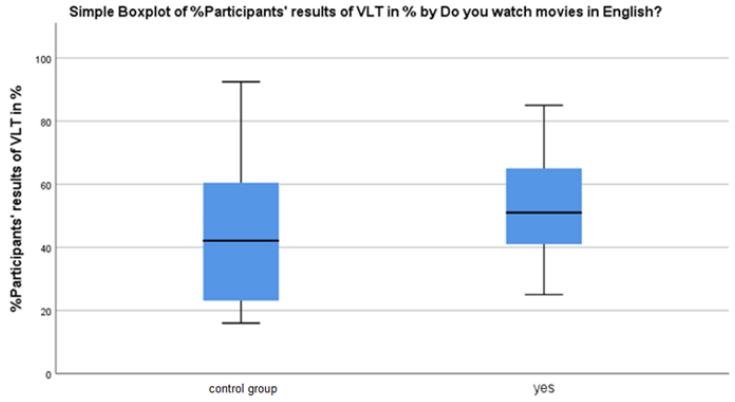
Boxplot of means of the VLT results for gender groups



5.2.3. Comparison of the 'Watching film in English' and the control group

Due to the non-normal distribution of the datasets the Mann-Whitney U non-parametric test was utilized. The results indicated that there was no significant difference between the VLT results of the groups of 'Watching film in English' and the control group in the studied secondary school population.

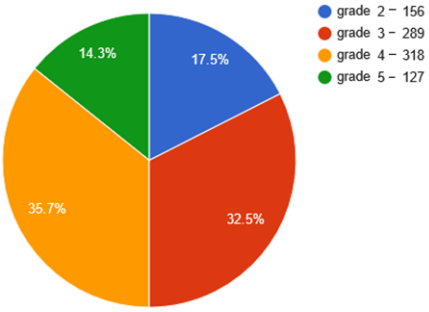
Boxplot of means of the 'control group' and 'Do you watch movies in English?'

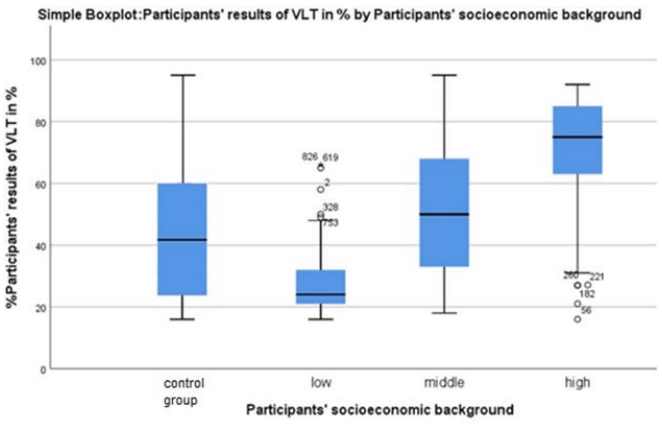


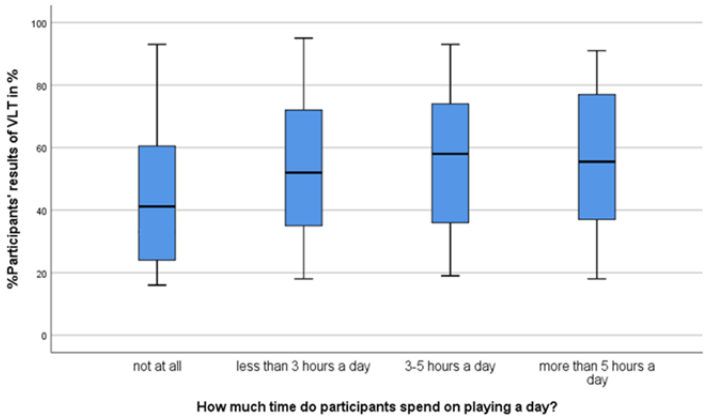
5.2.4. Correlation and comparison of the SES groups, 'time spend gaming' groups and the English grades

The correlation coefficient (*r*) describes the strength and the direction of a relationship between the variables. There is a weak correlation between 'time spend playing games' and their VLT scores with $r = 0.25$. The participants' SES has a medium effect on VLT results, because $r = 0.33$. However, the relationship is strong in the case of participants' English grades $r = .88$.

The pie chart of the participants' English grades and the boxplots of SES, time spend on gaming







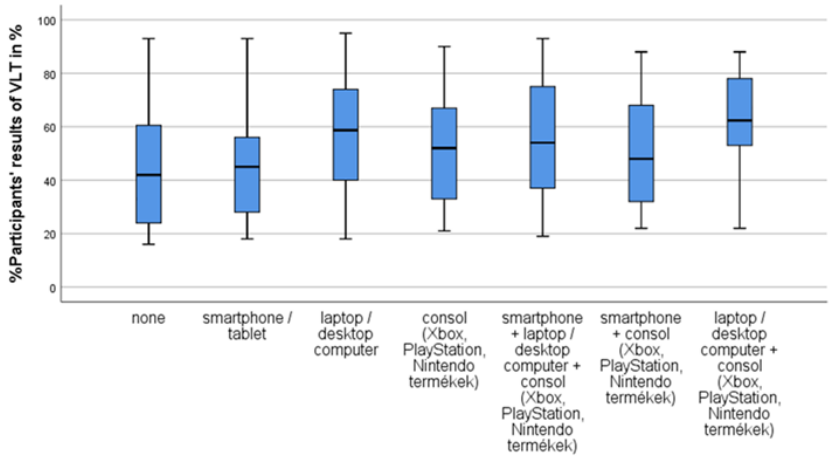
The mean of the low and the high SES groups VLT scores differ significantly from the mean of the VLT scores of the non-gamer (control) group. Given lack of significance, the mean of the middle SES group VLT scores does not differ significantly from the mean of the VLT scores of the non-gamer (control) group.

Regarding the participants' playing time, the daily playing time should be calculated by dividing the weekly average by 7, because too many factors influence the daily playing time, e.g. school, weekdays/weekends. Among the gamers the median values increase with the playing time until 3-5 hours per day with a steady interquartile range, although after more than 5 hours of video gaming the median value decreases sharply with the narrowing trend of the interquartile range. The results showed significant differences between the non-gaming (control) group and all of the 'gaming time' groups. However, there is no significant difference within the 'gaming time' groups.

5.2.5. Comparison of 'devices used for gaming' groups

Regarding the devices used for gaming, the results showed significant differences between the non-gaming (control) group and the computer-using group, and between the non-gaming (control) group and the smartphone + computer + consol user group, as well as between the non-gaming (control) group and the computer + consol user group.

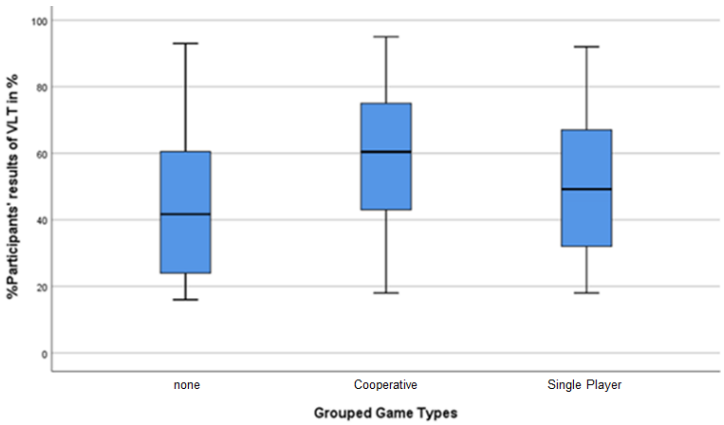
Distribution of the means of the devices used in relation to the VLT results



5.2.6. Finding the most contributor video game types to the best VLT results

After having labelled the game types, these were classified into ‘cooperative’ and ‘single player’ groups. The cooperative here means that these game types have an online multiplayer mode, their players can communicate with each other verbally and a co-op mode is also available. On the other hand, the single player game types implies that they are mostly played by a single person or at the same physical location with another (non-English speaker) player.

Boxplot of means of the grouped game types



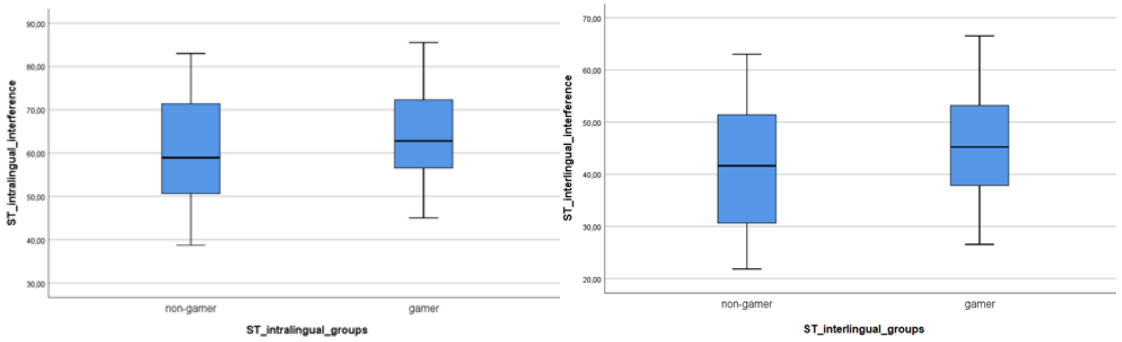
The results showed non-significant differences between the non-gaming (control) group and the single player group. However, there is a significant difference between the cooperative group and the single gamer group.

5.3. Statistical calculations of Study 2

5.3.1. Findings of the Stroop test

The percentage of the intralingual and interlingual effect ranges between 70%-75%.

Means of the Stroop test interlingual and intralingual interferences by groups

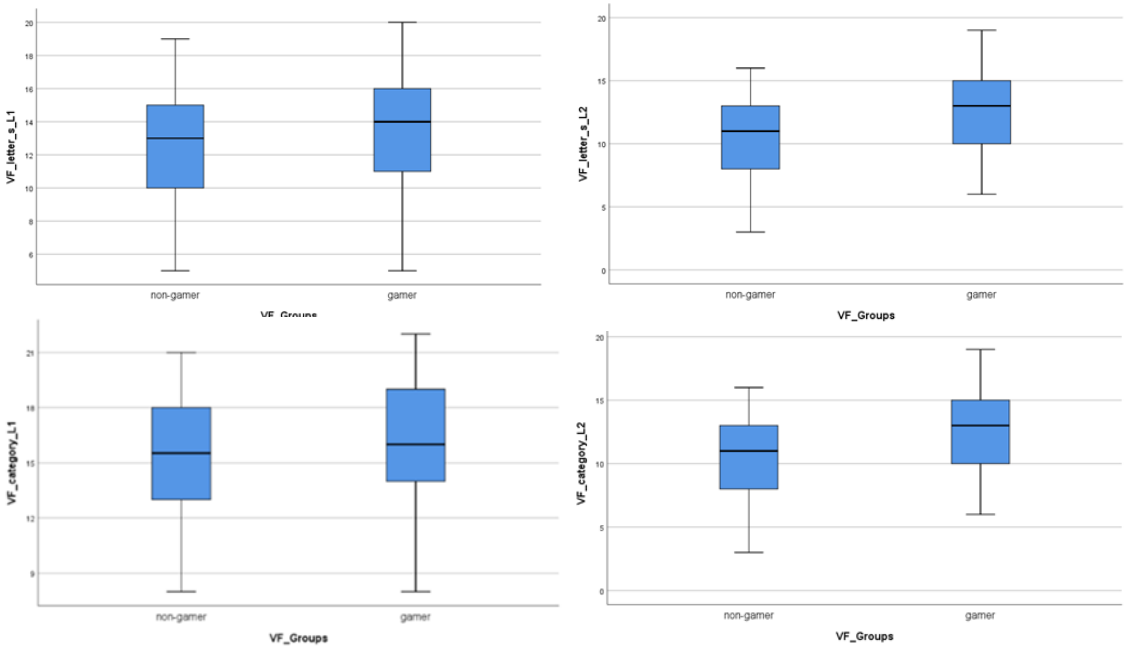


Video gamer intralingual interference was insignificantly higher than found in the non-gamers, although the video gamers’ interlingual interference was significantly higher than the non-gamers’.

5.3.2. Findings of the verbal fluency test

The VFT category and the VFT letter [s] cases were used as two different outcome variables to calculate the difference between the performance, i.e., number of pronounced items, of the video gamer and the non-gamer participants, to find out their relationship.

VFT category and letter 's' groups L1 & L2



The mean of the video gamer VFT category L1 cases was not significantly higher than found in the non-gamers. The mean of the video gamers VFT category L2 samples was significantly higher than the non-gamers'. The difference between the video gamer and non-gamer VFT letter 's' L1 cases was not significant. The video gamers' VFT letter 's' L2 mean was significantly higher than the non-gamers'.

5.4. Findings of the interviews

The video gaming expressions are used more frequently nowadays, since the number of active gamers is growing, as well as that of the classic game specified parlance mostly used by hard-core gamers in various out-of-game communication. Having completed this list of the low-frequency video gamer words that the volunteering video gamer students frequently re-use in their real-life communications allowed to continue the qualitative part of the research by interviewing the hard-core and the casual gamers to confirm the usage and the variation of the grammatical utilization of the samples, which could be accounted for when assessing the gamer argot linguistically.

5.4.1 Example sentences

The conversational examples below have been written by gamers.

Ebből a **loot**-*ból* veszek a **soti**-*ra* egy **upgrade**-*t*, hogy nagyobb legyen a **damage**.

I have looted some stuff from which I can buy some upgrade to make bigger damage with my shotgun.

Elcsesztem a **flag**-*em*, mehetek vissza a ***hill***-*re*.

I lost my flag, now I must go back to the hill (to fight for it).

Kaptam egy **boost**-*ot* a **mate**-*től*, így már sikerült behúznom pár **frag**-*et*, aztán elkezdett **lag**-*golni* és kidobott a **szeró**-*ról*.

I had got some boost from the mate, so I was able to gain some frags, then (the game) started lagging and got me out from the (game) server.

5.4.2. Example words and expressions that retain English pronunciation

Hipe-*olták*' for forced publicity; '**dodge**-*olsz*' for to dodge a blow; '**unity**-*ben*' for creating a new online default 'game generating' engine something; '*ki*-***rage***-*el*' for to burst out; '**pixel**-*es* vagyok' (I am pixelated) for the internet feed is slow or the person is tired; 'adj **shield**-*et*' (give me a shield) meaning help me; 'adj **bandage**-*ot*' (give me bandage) meaning help me; 'valami **off**-*os*' (something off-like) meaning anticipated loss; '*ki*-**loot**-*olom* a hűtőt' (I am looting the fridge) for taking stuff out of the fridge; '**upgrade**-*elek*' (I am upgrading) meaning to learn in order to be better in something; '**raid**-*eljük* a boltot' (let' raid the shop) meaning many people go into the store to buy some food; '**quest**-*eljük* a boltot' (let's conquer the shop, for the same meaning above);'jönnek a **bot**-*ok*' (the bots are coming) the word 'bot' derives from 'robot' and is a short for non-gamers; '**freemium**-*nak* látszik' (looks like a free game) meaning just the opposite; '**help**-*elj*' (help me) literary meaning; '**skip**-*peljük* a napot' (let's skip the day) meaning everything is boring; '*ki*-**click**-*keltük* az embert' (we have clicked out of the man) meaning to avoid meeting somebody; 'adj **boost**-*ot*' (give me a boost) asking again for help.

5.4.3. Example words and expressions that use Hungarian pronunciation

'lement a **HP**-*ja*' [hʌ pe:], (his/her health points went down), meaning lost interest or feeling tired; '**attack**-oljuk a boltot' [atak], (let's attack the shop) meaning buying food in a shop; '**lag**-*golok*' [lag], (I am lagging) for a momentary lapse in the game flow; '*ki*-**ban**-*noltuk* az embert' [ban], (we have banned the person) meaning to; '**warn**-*ollak*' [varn], for warning; **TK** [te: kʌ], for team kill, bad things have happened in a row.

6. Summary of the Research

The analysis of the most quantitative data indicated statistically significant relationships among variables, like school grades in English, used gadgets, parental SES, and video gaming habits, which demonstrated the impact of video gaming on English language learning and usage among the examined participants, although these results cannot be generalized beyond the student participants and the context of the study, because the number of contributors did not reach one thousand. Among the 646 gamer participants the three most played game types are the cooperative games, namely, the first-person shooter, the open-world, and the battle royale, and according to the findings those who play these video games have better results in the VLT test, hence giving them an advantage in high-frequency word knowledge. Such multiplayer action games that are available online in a multiplayer mode, operate with more intensive audial, written, and on-screen communication than the sports, card, and social media games. although sports, card, or puzzle games utilize just single information channels thus they are lesser exploitable for language learning. After all, the research participant players prefer to play action games principally, whose players were found to have significantly higher VLT scores.

Regarding the socio-economic situation of a video gamer, Study 1 revealed the connection between SES and VLT results, which was positive, also there was a connection between the used gadgets and the VLT results, which means that a desktop or a laptop computer is the best to be used to play any kind of video game as an out-of-school language learning activity. Study 2 verified the hypotheses about the impact of video gaming on the person's cognitive functions and demonstrated that video gaming plays a significant role in the language learning process, alongside with presenting what reliable and entertaining test instruments can be applied in classroom settings. In turn, these elements assist the progress of proper grammar, therefore the participants require instructional education as it is observed in the correlation between the language grades and video gaming.

The video gamers are also effective in publicizing their extensive literacy knowledge and using the target language daily, since the gamer/learner is part of a (virtual) reality environment. Video gaming as an extensive extramural activity can be treated as a facilitator of leaning English, through which the participants can meet gamers from other countries.

7. The Author's Publications in the Field

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