

The correlation between the socio-economic variants and the EFL educational gain of video gaming in light of the VLT test results of secondary school students

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Nowadays learning English is offered at all schooling levels as this language has proved to be necessary in almost all walks of life. Nevertheless, with regard to the students' socioeconomic status, the ultimate goal of reaching the highest skills is rarely attainable for all. Research has revealed that the better educated parents, with a wider mother tongue (L1) vocabulary, may supply room for their children's second (L2) or third (L3) language acquisition, thus setting higher demands for their children. Parents with higher socioeconomic status can also provide special education to their children, such as extracurricular classes or fee-paying schools. Such educative options may give deeper perceptions of the target language and culture, therefore gifted students living in a disadvantaged situation should not be abandoned by the educational system. This research is seeking answers of the facilitative factors of foreign language learning in relation to the students' socioeconomic status and video gaming. The collected data of the secondary school students (n= 890) also provides their school grades in their English language courses, which is used as indicators of correct language use and the devices on which the video gamer students can play. The results indicate that the VLT test results of the participants correlate highly with their socioeconomic status and school grades in English.

Keywords: *video gamers, socioeconomic status (SES), school grades in English language courses, VLT test results, English L2*

1. Introduction

1.1. Theoretical background

The present study is focusing on the facilitators and motivators of language learning as an extramural activity. The positive attitudes and behaviours toward the

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culture connected with the target language acquired by students through direct instruction or modelling provided by their favoured classroom teachers may arouse interest in the target language (Malow-Iroff, O'Connor, and Bisland 2007). School teachers need to have an accurate knowledge and a positive mindset of the target language, including its social, inter/cultural, educational, and socio-economic forces, which play an important part in the process of language learning, because all can be regarded as substantial motivators of the students. Having or lacking inter/cultural connections with the target language and culture has been found to be influential in the formation of students' decision about their target language knowledge (Butler 2015). An intensive target language and cultural immersion, i.e., even a short-term experience within a native speaker environment may have a positive effect on instrumental motivation and results in seeing the world differently (Villegas and Lucas 2002), which strengthens the individual's intention to communicate with a social group and thus creates integrative motivation (Dörnyei and Ushioda 2013).

Traditionally, English is taught as a foreign language (EFL) in Hungary, because this is the most used language by the population (EC 2012), often as mediator between non-native English speakers and even in official use for business purposes (Holmes 2017), besides it is also the primarily chosen FL by the largest proportion of the public at all levels of education (Dörnyei et al. 2006; Csizér and Lukács 2010). The recent ubiquitous information abundance provided by the internet also gives an opportunity to fulfil communication necessities where English as a mediator tool requires its usage (Lee 2019). Social networks are the most visited sites in which the short videos and music clips are the most appealing and watched phenomena (Dogoriti and Pange 2014), as well as the interactive video games, which thus involve more cooperation and English language usage (Sylvén and Sundquist 2012). Therefore, we can no longer assume that EFL learning is taking place solely in the classrooms, because the students can have unlimited exposure to the target language (English) outside of their classroom settings.

Further contextual factors, such as parental socioeconomic status (SES), accessible devices and motivations also need to be considered in order to have a comprehensive understanding of young students' English learning habits. Research in motivation factors for language learning has found significant changes in recent years due to the realistic imitations that can be carried out by the latest highly efficient technical means. Devices, such as VR, are even able to replace human presence successfully, thus they substantially influence socio-environmental factors, like intrinsic and extrinsic motivation as foundation elements of self-determination theory (Dörnyei and Ushioda 2013). Intrinsic motivation refers to one's motivation for the sake of enjoyment and interests, whereas extrinsic motivation is one's motivation driven by utilitarian reasons. The self-determination theory also considers which socio-environmental factors support language learners'

basic psychological needs by facilitating intrinsic motivation, i.e., to achieve higher degree of self-perceived competence or to feel autonomous (Dörnyei and Ushioda 2013) which have been providing a continuous interplay between language learning and identity formation (Firth and Wagner 1998; Lankshear 1997; Willinsky 1998) of any EFL user.

Family, education and the occupation of the parents, household income, race/ethnicity, and even the characteristics of the neighbourhood are typically used as indicators of SES. In view of the parental SES, Butler et al. argue that SES is “a category that represents an individual’s or a group’s relative economic resources” (2018, 2). Wigfield et al. (2006) identified four major influential parental factors: parent, family and neighbourhood characteristics; parents’ general beliefs and behaviours; parents’ child-specific beliefs; and parent-specific behaviours. Divergences by SES in L1 also have a developmental influence, especially at an early stage these were found to remain throughout the school years, i.e., parents’ educational level was positively correlated with primary school children’s comprehension performance in a FL (Farkas and Beron 2004). According to Wigfield et al. (2006), all four parental factors interact with each other and influence their child’s motivation and achievement. Lee and Burkam (2002) conducted a larger-scale study in the United States, showing that the highest-SES children scored 60% higher in cognitive skills tests than the lowest SES children.

Parents’ educational and income levels influence the children’s speed of L2 learning as well as their degree of mastery of L2. Other findings related to parental influence revealed a richer home literacy environment, like having greater verbal interaction within the family, larger collections of books and travelling more often abroad, all of which facilitate the children’s language and literacy development (Goldenberg et al. 2008). Besides, low SES is “an important obstacle to physical growth, cognitive development, and socio-emotional development, as it guarantees less access to the opportunities associated with European lifestyle such as traveling” (Hill and Sandfort 1995, 106), which gives intensive and overall opportunities for using L2.

Moreover, it can be assumed that learning English is mostly influenced by the secondary school learners’ SES because English is often associated with global economic power (Butler 2015), language of music video clips (Marone 2018) and video gaming (Sylvén and Sundquist 2012; Roach and Utami 2017; Acquah and Katz 2020), because these are the three most watched or performed online activities of schoolchildren. Besides, parents with higher SES impose higher demands on their children, thus in such a strong effort-oriented environment, children also tend to discern stronger obligations to meet their parents’ expectations (Steven and Stigler 1992) and feel more motivated to get extracurricular classes and/or acquire exclusive access to learning. For instance, effective communicative competence in learners’ English and its cultural information are considered to be inseparable

(Akl 2007; Beamer and Varner 2001); meanwhile these entail a need of costly travelling or language-specific on-site learning (Pence and Macgillivray 2008). Furthermore, students with higher SES tend to show higher academic achievement (Caldas and Bankston 2004; Chiu 2007; Tomul 2008) and register in universities more than their lower income peers (Li 2007). Social class, housing, and access to literacy resources have also a considerable impact on the acquisition of L2 practicality as much as on the possible academic achievement. After all, English achievement has a potentially large impact on access to higher education and future career opportunities (Butler and Le 2018). However, higher SES parents invest their own resources to provide a more supportive learning environment, yet the extent to which such resources work beneficially for the children's learning may vary depending on the children's age and the contexts in which the learning takes place.

While high-SES parents maintained strong beliefs and high expectation for their children's ability to learn English over time, lower-SES parents gradually lowered their expectations through the middle school years (Butler 2015). English education is increasingly exam-driven, and students become categorized by their SES backgrounds in middle school. Parents with lower income might feel that their children having fewer opportunities to learn English successfully (Butler and Le 2018). More precisely, whereas higher SES students tend to increase their intrinsic motivation and self-perceived competence, lower SES students tend to lower them (Butler and Le 2018). Lower SES students had higher anxiety during the upper primary school years (Chiu 2007), although there are various devices which allow students to have access to self-teaching websites or other edutaining applications, such as video games, in order to develop schoolchildren's cognitive and language skills, because all language related competences appear to be improved by exercising on such applications (Roach and Utami 2017).

The video gaming activity can further provide positive motivative factors without the necessity of moving abroad or of paying a fee to a foreign language teacher, as the gamer experiences the operation of a target language community and their immediate reaction to one's language level. Playing a game itself carries positive feelings about the activity, makes the language learning process entertaining, and will assist to determine individual differences in success and provide valuable feedback to help decrease the possible achievement gap (school grades) for low-income students (Hanghøj et al. 2018). Studying another language formally becomes an experience through which the students must be encouraged to develop tolerance towards their peers while understanding better their own society or cultural group. Video gaming democratizes the participants with different SES, because the players are not appearing in person but convey just the perceptions of their avatars (Worth 2015). Finally, we can state that SES may be eliminated by video gaming therefore it is an important variable of this study

requiring an analysis of the students' living circumstances and childhood facts to enhance both EFL teaching and its practice.

In Hungary even if research provides information regarding the relationship between SES and language learning (Nikolov 2009; Reger 2014; Tanabe 2016; Polonyi et al. 2020, etc.), we still have to fill substantial gaps related to students' access to English education in this region and domain, including parental SES, students' availability of electronic learning devices and video gaming habits. Nikolov (2009) found a significant connection between parents' educational levels and primary school students' EFL learning. Similar associations between SES and the students' language learning were reported at the secondary school level as well. However, this research tries to fill the scientific gap by seeking a relationship among SES, school grades and video gaming.

1.2. Research questions and hypotheses

The self-determination theory (Dörnyei and Ushioda 2013) emphasizes that students' self-efficacy is related to their motivation to accomplish a given task, i.e., language learning, and which may play more a important role than the person's talent. Self-concept is more general belief about one's own competences including self-confidence and self-knowledge and evaluation (Zimmerman 2000). This study focuses on parental factors as a function of socio-economic status (SES), starting from previous research which reported the effect of SES on language learning (Nikolov 2009; Reger 2014; Tanabe 2016; Polonyi et al. 2020, etc.). From this research it can be predicted that SES more likely has significant impacts on important variables influencing students' English learning process; such variables include students' resources, and/or their opportunity to be involved in communicative activities in the target language, which in turn may increase their beliefs about the success of their own learning capability. The students' independence is growing during the secondary school years (Butler 2017), which is being strengthened by video gaming, where the participants accomplish several tasks themselves and gain certain achievements including language skills. The participants' English grades at school and video gaming habits are studied in terms of their relationship with their SES. The major impetus for this research comes from several discussions with EFL students through which it was realized that most of the students' perceptions of the target language are in relation to their socioeconomic status and video gaming habits, and this might have an effect on their language grades, which we used as an indicator of their proper L2 use. It was also interesting to find answer whether the socioeconomic status of the participants plays an important part in their used devices at video gaming, because this would narrow the possibility of the video gamers to participate of an online game, e.g., they would not be able to participate with a less modern phone.

In our former research we collected secondary school students' SES, school grades, video gaming habits, playing devices. Following this, the students performed a vocabulary level test (VLT). We used the VLT results as an indicator of their word count knowledge. We used parents' income levels as indicators of SES in this study. These variables have been used widely as typical indicators of SES in the mentioned previous quantitative studies. According to the mentioned theoreticians, we hypothesize that there must be a positive relationship between the participants' VLT test results and their SES as well as their English grades and VLT test results, because those who are good at word knowledge, ought to be good in classroom tasks as well, especially because the secondary school education is more exam driven than the primary school education (Butler, Gerko 2017). Furthermore, if the relationship between the participants' SES and their devices is strong, we may unveil data-supported evidence that could help locate problems associated with the perception of the correlation between SES status and language learning at secondary school students in the studied region of Hungary. Such knowledge will not only show the underlying factors affecting students' sentiments toward the video gaming as a facilitator of L2 learning but also strengthen the latest positive attitude towards online learning.

In sum, by analysing questionnaire responses from 890 secondary school students, we tried to find answers to the following research questions:

1. What is the relationship between the students' SES and their VLT results?
2. What is the relationship between the students' English grades and their VLT results?
3. What is the relationship between the video game players' devices and their VLT results?

2. Methodology

2.1. Study groups and variables

Video gaming as a habit was primarily targeted as a developmental facilitator of oral communicative competence in English (e.g., in game and out-of-game conversations) with other participants. This report is part of a greater research project in which the video gaming facilitative effect is being investigated at the secondary school EFL students, therefore we use datasets collected in the school years of 2019/2020. We were permitted to ask SES in our survey with three different levels (Block 2014); 1 means 'low', 2 means 'moderate' and 3 means 'high'. The school grades are ranging 1 to 5, from the lowest to the best achievement in the Hungarian schools. The participants' 'devices' were classified into 5 categories from the low-priced to more expensive and by the participant's preference of their everyday used devices regardless of their gaming habits, such as 1) inexpensive smartphone, 2) low-priced laptop, 3) modest smartphone, 4) good desktop computer, laptop or

smartphone, 5) high-cost smartphone or laptop. These categories were compiled after evaluating the conversations with the students.

The two consecutive surveys of the study were performed online in 6 secondary schools in the South-Hungarian area, as they belong to one school district, thus one permission could be applied for each school. Quantitative research was conducted with the expectation of several hundred respondents. Having the first samplings we were able to branch off the participants as video gamers (experimental group) and non-gamers (control group), and we run the VLT test on both groups in the second online sampling. The participants added up to 890 ranging between 14-20 years old (9-13 graders). Having validated the results, the non-gamer group consisted of 244 students which equals 27.5% of the participants and the video gamer group comprised 646 students, which is the vast majority of 72.5% of the participants. However, the consistency of video gamers was various, in view of the wide range of video games played on a daily basis by the hard-core gamers to the soft-core gamers. They are also differentiated by the played hours per day, the quality and the type of their gadget depending on their family SES. As a dependent variable we used the participants' VLT results, and the independent variables were participants' SES, participants' grades of English and participants' devices. The 'participant's grades' was used as an indicator of the correct use of the English language as well as the confirmation of our hypotheses, because a student with a better English grade will likely reach a better VLT test result. We used SPSS 25 for the statistical calculations.

2.2. Analysis

First of all, the normal distribution of the data had to be confirmed on each of the investigated variables. The first verified variable was the 'VLT results' the significance of which must be bigger than 0.05 ($p > 0.05$), but $D (646/244) = 0.00$, thus it violates the assumption of normal distribution, consequently our 'VLT results' data set is not normally distributed, thus only a non-parametric test could be performed on our data set.

The Spearman's rho correlation was administered with a one-tailed analysis, because we had a hypothesis of such circumstances (high SES, English grades, video gaming) that are positively influencing the participant's VLT results. It was found that the participants' 'VLT test results' correlated significantly with independent variables such as: participants' 'grades in English', $r = .83$, participants' 'SES', $r = .38$ except the participants' 'gadgets' $r = .05$, (all $p < .001$). The participant's 'grades in English' were correlated highly with VLT test scores, because $r = .83$, which is very close to 1, thus shows strong positive correlation between the variables. In other words, the student who had a better English grade at school can perform significantly better on the VLT test, which is also a proof of the test validity. The SES

of the participants was correlated with VLT test scores, because $r = .38$, which shows a significant moderate correlation, which means the better SES indicates probable a better performance in VLT results. The participants' 'devices' was correlated with VLT test scores $r = .05$, which shows insignificant correlation, which means that there is no correlation between the devices and the VLT scores.

As aforementioned, our leading research focuses on the video gaming facilitative effect on the secondary school students' VLT test results. The correlation analysis showed a significant moderate correlation ($r = .32$, $p < .001$), which means that the video gamer participants' scores are generally higher than that of their non-gamer peers. In order to see the effect in numbers, a simple linear regression was performed to test how much the participants' video game play influences their VLT test results, $R^2 (.323)^2 = .103 = 10.3\%$ of the performance can be accounted for video gaming, the 89.5% of the performance of VLT tests can be explained with other variables, $p = .00$ ($p < .001$). The ANOVA test revealed that there was a statistically significant difference in participants' VLT test results between gamers and non-gamers $F(1, 680) = 56.71$, $p = 0.00$. It was found that video game playing influences significantly the VLT test results.

Also, a simple linear regression was performed to find out the impact of the grades in English on the participants' VLT test results. The adjusted $R^2 (.83)^2 = .688 = 68.8\%$ of the performance can be accounted for the English grades, the 31.2% of the performance of VLT tests can be explained with other variables, $p = .00$ ($p < .001$). The ANOVA test revealed that there was a statistically significant effect of the participants' English grades on VLT test results at $p < .05$, $F(1, 684) = 1120.80$, $p = 0.00$.

In addition, a simple linear regression was performed to find out the impact of the SES on the participants' VLT test results. Adjusted $R^2 (.38)^2 = .144 = 14.4\%$ of the performance can be accounted for SES, the 85.6% of the performance of VLT tests can be explained with other variables, $p = .00$ ($p < .001$). The ANOVA test revealed that there was a statistically significant effect of the participants' SES on VLT test results at $p < .05$, $F(1, 888) = 102.04$, $p = 0.00$.

3. Discussion

The first important information is the proportion of the students studying different foreign languages, namely 63% of the participants in the test study English, 23% German and the remnant 14% is shared among French, Russian, Croatian language learners, which is in tally with the findings of Dörnyei et al. 2006; Cszér and Lukács 2010, suggesting that the students of our region meet the same conditions as the students nationwide in Hungary. The English language here is learned, known and used by a high percentage of schoolchildren, owing to their favourite activities usually carried out in English, like watching and listening to music videos (Marone

2018) and playing video games (Sylvén and Sundquist 2012; Roach and Utami 2017; Acquah and Katz 2020). All of the mentioned activities strengthen the young individual's instrumental motivation as well as their intension to cooperate with any English speaking/user social groups, a fact which encourages their integrative motivation (Dörnyei and Ushioda 2013).

Furthermore, according to the findings, the participants' English grades are correlated significantly and strongly with their VLT test results, which implies the correct usage of the language, because the VLT instrument measures only the individuals' word count knowledge, though the better language grades require good written and spoken language skills from the student. The good grades are important to study the effective communicative competence of the learners, competence that may be necessary during a costly traveling session or for a language-specific on-site learning (Pence and Macgillivray 2008). Furthermore, to achieve higher academic involvement (Caldas and Bankston 2004; Chiu 2007; Tomul 2008), accurate and confident English usage is a must. Besides, the appropriate language use is also necessary for certain video games, like the online playable games such as FPS, TPS (MMORPG or MOBA), because of a wrong interpretation or reaction to a command may result in the expulsion from the game.

Regarding the SES, the key findings of this study reveal that there is significant fair correlation, which means the better SES indicates better performance in VLT results. The participants' (parental) income level thus was positively related to their English performance, because of the apparent high expectation of the parents on their children's ability to learn English as a foreign language, as it has been declared in other findings (Steven and Stigler 1992; Butler 2015; Butler and Le 2018). In addition, as it has been reported in other parts of the world (Hill and Tyson 2009), parental involvement in the middle school times is essential and just parents with higher income can afford the balanced care and time with their children. Though this study offers no definite cause and effect relationship between SES and students further education, some of the findings give an indication of areas that may be helpful in understanding how EFL may help in planning tertiary education. This result can also be explained by the fact that the more expensive equipment required for the FPS, TPS or MOBA games gives the participants more opportunity to cooperate in English and thus to be exposed to more extensive vocabulary acquisition and usage. We can equally find that the complexity of video gaming influences young learners' English learning and motivation over time, at the extent to which such a gaming mindset effect applies to domains requiring learning and using. For instance, the higher SES children may have a greater preference for cooperative games (FPS, TPS, Adventure etc.), indicating their need for greater autonomy and lower degree of parental involvement.

The participants' 'devices' as a variable was meant to confirm our base hypothesis, namely that parents with higher SES buy more expensive devices on

which their children can play more cooperative games, which leads to a better VLT performance. However, the correlational analysis of the participants' 'devices' showed an insignificant relationship between the devices and the VLT scores, which means that the student's vocabulary does not depend on the electronic device. The newest gadgets can be inexpensive yet powerful, although those which belong to a brand of a status symbol are rather bought by the high SES parents.

This study has several limitations as it has looked into only one dimension of SES and the word knowledge of the students. One of the most significant limitations is the meaning of the SES, which was explained to the participants, although those who are affiliated with the high SES, sometimes expressed their concerns regarding their high position because their parents earned well but were not in a high-status position. Another limitation of this study is related to the number of the variables included in the analysis, because we applied only two variables regarding the SES, although if the study were repeated in another part of Hungary, more SES related variable would be preferable in the questionnaire. For instance, other variables such as parents' educational status were not included in the study although parental education could be used as an additional influencing factor of general student achievement (Davis-Kean 2005). The study was also limited in that it was based on a sample of students in a single, yet not the most developed region of Hungary. Our original data set was composed of two different cohort groups, and therefore it did not allow us to observe long-term changes, still shown significant finding regarding to the field of language learning outside of the classroom.

4. Conclusion

One of the roles of the education is to improve the citizens' language skills in English (EFL), which must be a high priority in Hungary as well, especially because the universities contribute extra admission points for the language exams. The importance of English in the region stems from the rationale that English-teaching countries benefit from the extensive use of that language for tourists, science and scholarship. Learning the language is based on successful communication with proper word and grammar use, as well as the knowledge of the culture, which is treated as a fifth skill of language use (Savignon 1997). The parental SES is an important area which influences the students' instrumental motivation as well as their integrative motivation in order to be able to discover the world by themselves. 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. The view of this study emphasizes the need for obtaining a more global perspective of EFL studies which forms the basis of the more communicative aims and ways of using foreign language teaching methodology. The present study has a number of both

practical and theoretical implications. It is advisable to promote autonomous studying styles and to encourage all parents to maintain high expectations for their children, especially those without high levels of formal education to provide a literacy rich environment to their children. Also, the video gaming must be considered an effective extracurricular activity which may contribute as edutainer occasions to low SES families in the future, thus it may be noteworthy to investigate the connection of SES and other facilitating factors more thoroughly.

There is a need to additional empirical investigation to examine SES more in-depth, therefore qualitative analyses would also be necessary through annual interviews of the students to uncover the long-term changes. As a next step, further studies in the field need a better understanding of the underlying mechanisms of how and why SES influences one's extramural learning and how the widening gaps between classes of the society could be prevented. However, comparing the experience of the English language culture by direct contact or video gaming remains problematic and future research should shed light on this problematic facet of second/foreign language learning.

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