RESPONSE TO DR. SZILVIA BÁTYI'S EVALUATION of ROBERT ARNOLD-STEIN'S

Doctoral (PhD) Dissertation

Faculty of Modern Philology and Social Sciences

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Title: ***Videogames as a catalyst for intercultural and multilingual literacy advantage in secondary school ESL students***

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I would like to thank Dr. Szilvia Bátyi for reviewing my dissertation and for her detailed remarks and comments. The prior suggestions offered by the reviewer have been immensely helpful and also appreciated her insightful comments on topic, form, style, methods, results, and publications. Thank you very much for the guidelines regarding the construct of the dissertation, which has been rewritten accordingly.

Notable questions still emerged by the reviewer upon which I address her with a response.

Literature review

Thank you for the positive comments about the literature review.

Regarding "the large number of sub-questions", due to the high number of variables the sub-questions helped to organize the statistical analyses, systemizing the results and the overviews.

Concerning the absence of contradictions and critical engagement of the effects of the video games in the brain is not mentioned in the dissertation. There is hardly any research that discusses the ineffectiveness of language learning through video games. However, there are studies that review the effect of violent video games on behaviour (e.g., Przybylski & Weinstein, 2019), or the negative effect of the extended video gaming on brain functions or obesity (Turel, Romashkin & Morrison, 2017). In this dissertation, I highlighted that video gaming should be moderate, or rather balanced in life, which is proven in the case of high school students under parental supervision.

Furthermore, "no brain imaging was performed in the dissertation", although the effect of video games on the brain is twofold: on the one hand, they show noticeable changes in the brain structures, and on the other hand, they leave measurable effects on brain functioning. The literature used research findings that utilized brain imaging through which the effects of video gaming were explained. The further description then provided an explanation of how these video game-related language processes work in the brain. Those effects were in the focus of this dissertation. For instance, in Study 2 such effects were measured and compared with the non-gamer participants. The conceptual structure of the dissertation has been built to a twofold end. Firstly, I have intended to prove that the language development and the general linguistic progress of a player in a game proceed hand in hand. Secondly, my findings aim to support that language development strongly depends on the given circumstances and game play is able to give 'scaffolding' or 'meaningful context' (Vygotsky, 1978) to facilitate the literacy development.

Regarding the “concept of flow”. Although the concept of flow has not been incorporated into any memory model related to language learning, it is important to understand how the ‘video game effect’ influences the impact of video games on the implicit and the explicit learning stages and the different areas of the brain, all of which is supported by the relevant literature (Gold & Ciorcialy, 2020). As concluded from the readings, the internal brain processes that occur during video gaming promote a state of flow, resulting in an internal ‘frontal lobe shift’ which results in exceptional focus on the task by shifting cognitive control from an explicit to an implicit process (Gold & Ciorcialy, 2020), that is the point I was looking for, because this switching makes the video games so powerful in language learning. The more explicit and implicit learning can take place, the more words and skills can be acquired. Not to mention the motivative factor of the flow with a feeling of joy, freedom and time loss, etc. (Csikszentmihalyi 1996). Such feelings of challenges and opportunities for action make the player to want to play again. The reported feeling of freedom and joy in the literature (Borderie &Michinov, 2016) motivates the video gamers to develop their vocabulary among others, to be able to carry on playing and to step to the subsequent level. This is one of the strongest motivating factors that promotes language development in an environment in which the individual feels comfortable and willing to learn.

Concerning “concepts such as motivation and a detailed description of L1 acquisition”: The literature review talks about the parallel between the facilitative effect of the parental play of toddlers’ first language acquisition and the video game play. According to Piaget (1973), learning can be accelerated by additive operations, for example, a child learns easily while playing. Parents’ collaborative play has a key role in young children’s cognitive and literacy development (Lyytinen, Eklund & Lyytinen, 2003). Furthermore, the literature also links the language-learning promoting effect of games to the way the words are learned, which is in the focus of the research of the dissertation. Accordingly, play is a social activity that can provide a zone for vocabulary acquisition, as the player is willing to communicate in a safe and familiar environment (Mcleod, Hardy, & Kaiser 2017), like parental play.

Regarding the “inhibition-enhancing effect of games”: Liu et al. (2019) suggest that video games promote cognitive flexibility because video games use a person’s working memory and basal ganglia (responsible for successful inhibition and retrieval) as the rapidly changing environment requires selective attention and quick reaction time in a fast-paced environment. Furthermore, there is also a connection between working memory and language abilities (Miyake & Friedman, 1998) as well as lexical inhibition, when the player uses the second language during the game play. This concept coincides with the goal of the research which is to demonstrate that video gamers are L2 users rather than L2 learners.

Methodology

Thank you for your positive comments about the methodology.

In case of “wording of the hypothesis”: the dissertation uses academically appropriate language, a sectioning that deviates from standard usage, which I will use more carefully in my future articles. I hope that academic readers will appreciate the concepts and focus on the results of the section mentioned.

Results

I really appreciate your positive comments about the presentation of the results.

Discussion

Thank you for your positive feedback on discussion chapter.

Regarding the “causal relationship between video gaming and the knowledge of high frequency words”: In the dissertation I intended to provide data from the VLT test, which shows that there is a measurable difference in the high frequency word proficiency between gamers and non-gamers in favor of gamers. The reviewer points out that there was no controlled treatment administered to the experimental group per se, which is partly correct because the treatment difference was the video gaming habit itself. In case of non-gamers, there was no such habit involved, but the video gamers use that habit to a different extent. According to the results of Study 1, players who played for a longer period of time (up to a certain time) improved their knowledge of high frequency words, and when players played cooperative games instead of single player games, their scores also improved. Likewise, the differences of results compared by gender or ‘watching film in English’ also show that the video gaming causes measurable differences in VLT results. That is why I selected many variables from which anchored conclusions can be drawn. Besides, as reported by the survey, 72% of the examined population acknowledged to play video games frequently and 58% of the participants stated that they learn English words exclusively from video games.

Regarding the “correlation of the English grades”: The ‘r’ number shows the strength of the effect and in case of English grades this is 0.88 (above 0.8), which mean a strong relationship. Accordingly, the dissertation only concludes that “The results of the correlation indicate that … the high-frequency word knowledge is a prerequisite for better grades” (p. 114). So, better word knowledge is necessary for a better grade, but not vice versa.

Concerning the “executive function, this is expected to result in less interference (both intra- and interlingual) cases”: In the interlingual cases, I expected less interference, as I anticipated faster responses from video gamers as second language users than from non-gamers, as video gamers might have a higher level of language proficiency. In the intralingual cases, I did not expect differences due to the similar level of the first language. The L2 proficiency and cognitive skills are interconnected, but the relationship is not straight forward. Higher L2 proficiency can positively influence certain cognitive abilities, particularly those related to cognitive control or flexibility, like inhibiting L1 when using L2. Some research suggests that L2 proficiency is linked to the ability to monitor and resolve conflicts in cognitive processing, particularly when dealing with conflicting information (Miyake & Friedman, 1998).

Concerning the “interpretation of the results of semantic and phonemic fluency tasks”: The interpretation contains the information about the significance of both calculation: “Two significant differences among the variables have been found, and the most striking one was the dominance of L2 letter ‘s’ condition, in which the video gamer students were found to be significantly better performers than their non-gamer peers.” (p. 121) In case of letter ‘s’ fluency was more important for me because the semantic task was easier than the letter ‘s’ case. Although, a large number of English words start with the letter ‘s’, it is still difficult to collect many examples at once.

Regarding the question of the reviewer: “To name a theoretical framework (or a combination of 2 frameworks) that could help make the literature review more coherent and the interpretation of the results more straightforward”: First, in my dissertation I argue that language acquisition and language learning occur in parallel in video games, and Krashen’s second theory of language acquisition (Krashen, 1992), which includes five main hypotheses, supports this as follows.

1. Acquisition-Learning Hypothesis:

This hypothesis distinguishes between intuitive acquisitional - natural process, similar to how children learn their native language - and conscious learning. For example, video games that

feature action scenes offer instances that require rapid nonverbal responses or so-called Total Physical Responses (TPRs), which connects a linguistic item (a vocabulary item or grammatical point) to a physical action, confirming that the player has understood the previous command. Or video game players perform on-screen actions that may serve to double-encode the language being learned. In both cases, there is an unconscious and a conscious part that provides instances for second language acquisition.

2. Monitor Hypothesis:

This hypothesis suggests that the learned system (conscious grammatical knowledge) acts as a "monitor" or editor in the acquired system. This means that the video gamer constantly monitors the on-screen appearing items that could be useful for the future video games or can serve as reference in real life conversations, in L2 case they can be the names of tools, places or actions.

3. Input Hypothesis:

This hypothesis states that acquisition occurs when learners are exposed to comprehensible input, which is language that is slightly above their current level but not too difficult to understand. This comprehensible input provides the "ammunition" needed for acquisition. It means that if the gamer encounters too many unfamiliar items, this means that the language of the video game is much higher than expected; therefore a lower-level game must be played before the gamer is able to play the whished game. Such a conscious approach is much more common than we think, video gamers often spend weeks and months acquiring the necessary skills to able to play a wished game.

4. Affective Filter Hypothesis:

This hypothesis suggests that emotional factors such as anxiety, low motivation, and lack of self-confidence can act as filters, blocking or hindering language acquisition. A positive and supportive environment is important for language learning. This is a most important hypothesis in the case of video gaming and L2 learning, because video games have a strong motivational factor, as they provide freedom in an unbiased and supporting virtual area where the player can be anyone and do practically anything. Moreover, a video gamer also wishes to belong to the "club" (gamer subculture) which requires strong L2 knowledge of the video game related items.

5. Natural Order Hypothesis:

This hypothesis states that language features are acquired in a predictable order, regardless of the learner's age, native language, or teaching method. This order is influenced by the complexity and frequency of the language features. In a natural order, all video gamers start playing casually and progress along a developmental path from easy games to more difficult ones, from single-player games to cooperative games, from L1 language games to simple L2 language games, and finally to video games requiring a high level of L2 language proficiency.

Another important framework to consider is vocabulary learning strategies: Word knowledge is an essential component of communicative competence (Matthews & Cheng, 2015), and it is important for both production and comprehension in a foreign language. According to Gu (2019) L2 vocabulary learning strategies are categorized as metacognitive, cognitive, memory, and activation strategies. All of them involve active engagement with new words, the use of tools and techniques, and vocabulary expansion through exposure, incorporating a variety of activities.

Video games offer a vast number of words (an adventure game can contain up to 14,000 lemmas), so the player can encounter them in all their written and spoken forms. In single-

player games, the player is the only recipient of the information, but the written forms of the words can still be used. In cooperative games, the player can actively participate in the game, which facilitates the production of words, which is important for mastery. Therefore, video games, by their nature, simultaneously support all metacognitive, cognitive, memory, and activation-based vocabulary learning strategies.

Besides, vocabulary knowledge is a reliable predictor of various dimensions of L2 proficiency, including the sub-skills of reading, writing, speaking, and listening (Matthews & Cheng, 2015). Considering the aspects of frequency, coverage, acquisition and usage, it has been assumed that frequent words constitute the most common 2–3000-word families in the English language. There are roughly 3,000 items that cover 70–90% of the words in different types of texts (e.g. general conversations, TV programs) (Dang, Webb & Coxhead, 2022), although understanding written texts such as newspapers (preferably broadsheets rather than tabloids) requires a larger vocabulary of 4,000 words (Nation, 2006). This dissertation uniquely demonstrates that the most important, frequently occurring words can be learned through video games, of course they must be chosen carefully, although if a second language learner wants to use video games to develop their vocabulary and communication skills, this dissertation offers valuable points to consider.

Thank you for all your valuable work and mentioned ideas according to which I made the dissertation into a more professional and adequate work.

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