Answers to Dr. Gósy Mária

First of all, I would like to express my sincere gratitude for reading and reviewing my dissertation. I appreciate your kind words regarding the layout of the dissertation. I am glad that you found that the test methods and the EEG examination are unique in the research of bilinguals with Hungarian L1. Thank you for highlighting that the results greatly contribute to the field of written word recognition and they give new insights into the process of written word recognition.

It is true that the Introduction is a bit longer than the empirical part and thank you for your concern about the necessity of diversified subchapters. However, I do believe that there is a need for a comprehensive outline, given that the dissertation's main goal is to give guidance to linguists, language teachers and language learners, who, presumably, do not have the necessary knowledge of the relationship between the brain and language and bilingual visual language processing.

Thank you for drawing my attention to the lack of Hungarian-related studies. In the Introduction, I intended to give a general overview of bilingual processing based on the international literature and then continue with my findings concerning Hungarian-English bilingualism. In the future, I will highlight more data gained by Hungarian researchers, since I am aware of their findings (Honbolygó et al., 2020; Csépe, 2006; 2013; Honbolygó & Csépe, 2013; Varga et al., 2022). Their findings on dyslexia and speech perception highly contribute to the understanding of bilingual word processing at the word level. Comprehension of spoken and written linguistic information is the ability to process auditory and visual information in order to retrieve the meaning of utterances. Word processing with all the possible variations in the acoustic or visual domain is based on the complex interaction of local features and global representations. Segmental and suprasegmental features in speech, and visual properties of letters in written words are all needed to be discussed to get a more comprehensive approach to bilingual word processing. Csépe (2006) claims that the hierarchy of the language system affects reading. The visual form of written words (orthography) is the most decisive component of visual recognition for experienced readers. In addition to orthography and phonology, semantics also play an important role in recognizing and understanding the written word. Varga et al. (2021) discusses that automatic visual word recognition requires not only well-established

phonological and orthographic representations but also efficient audio-visual integration of these representations.

I do appreciate your opinion on the topic of handedness. That is right, after a thorough literature review, I came to the conclusion that handedness does not influence visual word recognition and decision-making, and brain lateralization is similar in the case of highly proficient bilinguals, i.e. they have a common storage. In the present paper, I included both right-handed and left-handed participants, but it could be a further goal of the investigation to divide participants depending on their handedness and get more information about brain lateralization. Furthermore, as I wrote in the Limitations part, all subjects were given the same instruction regarding response buttons. The difference between the conditions is not only that one is English and the other is Hungarian, but different fingers and different buttons gave those answers. For instance, people use index finger more frequently to press something, that is why it can result in faster responses. Moreover, people use the left button of the mouse more frequently. It should be counterbalanced in the future.

Thank you for your suggestion concerning the Critical Period Hypothesis and I will not refer to it in the future, since there is no consensus about it among researchers.

I understand that some paragraphs that are in the Discussion and Conclusion chapters should have been put into the Introduction. Later on, I will pay attention to the counterbalance of these chapters, and the points I raise in the Introduction will be reflected upon in the Dissertation or in the Conclusion.

Thank you for highlighting the chapter on the most frequent psycholinguistic methods for measuring lexical processing. I intended to enumerate the most frequent and useful methods and tasks that researchers have applied in recent years to understand visual word recognition, together with their advantages and drawbacks, which also explains why I opted for the lexical decision test and language decision test. At the same time, I understand that it would have been a better choice to include this part in the Methodology.

Thank you for drawing my attention to the references that are more than 10-20 years old. I think they are not outdated as they explain the recognition processes that are valid even today, but I accept that more recent literature could have been more convincing.

In your review, you ask about the bilingualism of the participants. All participants were late bilinguals. The questionnaire included a question whether they consider themselves bilingual

or not according to their own judgment. I was curious about what category they think they belong to and how much knowledge they have on bilingualism. Apart from this, they can be considered bilinguals, according to Grosjean's definition.

The questionnaire did not include questions regarding their Hungarian reading habits, since all participants were Hungarian natives. I understand your concern, and I was too naïve presuming that people read in their L1. However, I understand that it would have been essential to compare their habits in both their languages.

I agree that Table 2 (Other foreign languages besides English that participants are exposed to) does not contain any relevant information from the point of the research, but I intended to include all the collected information about the participants to get more clear-cut results.

Thank you for your suggestions concerning the Hungarian National Corpus.

The language bias of homographs was tested by comparing the rate of Hungarian responses to 50% with Student's t-test. The mean response times were compared among conditions with repeated measures ANOVA.

In the case of Hungarian and English words, between 100 and 300 ms there is no significant difference between the two categories (which is the orthographic-phonological level of processing). Significant difference can be seen between the two languages between 320 and 520 ms in the central region, which is the semantic processing of words. The recognition of Hungarian and English words shows identical patterns of activation with the successful discrimination of languages at N400-600 components.

Thank you for highlighting that it would have been better to rephrase the part that phonological and semantic representations are needed to identify a visual word, using more confirmation based on the new experimental data.

That is right, it was an exaggeration to say that there is no difference between the recognition of L1 and L2 words in the case of highly proficient bilinguals. In the recognition of Hungarian and English words, there is no significant difference between the two categories on the orthographic-phonological level, which means that participants do not need any special effort to identify the words. Neither do ERP curves represent significant difference, which means that homographs are equally processed regardless of the language. There is a significant difference between the two categories at N400-600, which is the lexico-semantic processing. All participants were Hungarian-English bilinguals with C1-level English proficiency. They were

all late bilinguals and learned English in an instructed way. It might be an overgeneralization that the results of the study can be extended to bilinguals in general, but the international findings (Rodríguez et al., 2022; Meade et al., 2019; Vargha, 2010; Halderman et al., 2012; Starrfelt et al., 2013; Hsieh et al., 2017; Yum & Law, 2021) also coincide with the data that were found in the present paper.

You are right, I did not study monolinguals, since it would be quite challenging to find real monolinguals due to the multilingual, among the many languages dominantly English stimuli around us delivered by the media, social media, movies, music, billboards, etc.

Last but not least, I really appreciate your detailed comments. I will take every suggestion of yours into consideration in my future career. It was a great privilege and honor to have such an outstanding expert as a reviewer of my dissertation.

Veszprém, 30. 08. 2023

Ihász Petra