



## THE EFFECTS OF BILINGUALISM ON SPEECH PERCEPTION

Sharif Khurshidakhon Nurilla kizi

3- English faculty, Department of Integrated course  
of English language №3

<https://www.doi.org/10.5281/zenodo.10390674>

### ARTICLE INFO

Received: 08<sup>th</sup> December 2023

Accepted: 14<sup>th</sup> December 2023

Online: 15<sup>th</sup> December 2023

### KEY WORDS

*Bilingualism, speech, method, language, technology.*

### ABSTRACT

*Speech perception and production have long been subjects of active study. Currently, a variety of directions for research in these areas have been identified. This article reviews current theories of bilingual speech production, with particular attention to the cognitive processes underlying the use of two or more languages.*

### INTRODUCTION

The phenomenon of bilingualism has long been a subject of research for linguists. This article examines a number of models of bilingualism from the point of view of the mechanisms of sentence construction in speech production.

There are two types of processes involved in the construction of a sentence: one is associated with finding the right words in the internal lexicon, the other arranges words in the sentence structure according to the rules of grammar. Coordination of these processes in bilingualism presents some difficulties, since bilinguals are forced to simultaneously select words and construct sentences taking into account the language of communication at the time of speech [2].

### MATERIALS AND METHODS

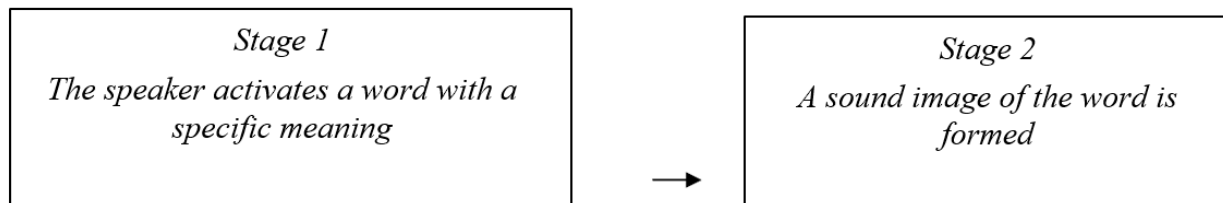
#### *Inhibitory model of speech production in bilinguals*

The inhibitory model of speech production in bilingualism within the framework of Green's theory of control, activation and resources [4] does not make assumptions about deep neurophysiological processes, but accepts the conceptual system as an integral concept. Greene views speech as a whole as "a chain of successes in avoiding mistakes" [4], basing their conclusions on the fact that healthy monolinguals and bilinguals, as well as people suffering from aphasia, experience, although significantly different in severity, still difficulties in generating speech. Thus, errors also occur when monitoring an intact mechanism. One of the more recent models, consistent with the data Green collected for his research, is Morton's simple functional model [3]. On its basis, Green proposed the following three main ideas to explain the facts of difficulties and errors he recorded in the production of speech.

### RESULTS AND DISCUSSION

First, speech production errors in both people with and without aphasia are in both cases evidence of failures in the control of the intact language system.

Secondly, control has only one stage and is carried out through variables, the so-called "labels" that each word has. Internal images of words vary in degree of activation. In the process of controlling speech production, the activation of the necessary variables must exceed the activation of any other options, which occurs in 2 stages (see Fig. 1). Activation of two words simultaneously leads to fusion.



*Fig.1. Stages of word activation during speech production in Green's model*

Thirdly, if the system is not damaged, but there are insufficient resources to regulate it, then control will not be exercised in full. Thus, the effectiveness of control depends on the availability of resources, which may be limited, for example, due to brain damage, stress, etc. With this fact, Green explains the following three phenomena specific to the speech of bilinguals: (1) pauses at the speech planning stage; (2) errors associated with interference of language systems (for example, in a state of severe stress such errors are inevitable); (3) language code switching, which does not necessarily reduce fluency. Thus, as Green suggests, we can assume that words from the lexicon of the two languages "enter into competition" for activation.

Green directly connects the source of resources with the controlling and regulating mechanism. The source of resources has a limited volume, and if they are not replenished at the proper speed, the control function suffers. Resources can be used either to excite the control mechanism or to suppress it. In order for a bilingual to be able to choose a language to produce speech at a given moment, a kind of "switch" is needed from one language (L1) to another (L2). Green called it a "specifier". Its function is selection and suppression, or inhibition [5]. Any non-linguistic task performed by a speaker involves brain resources, thereby making it difficult to produce foreign language speech. The level of difficulty depends both on the complexity of the task and on the individual characteristics of the speaker [2]. Moreover, both languages of the speaker are in the process of activation or inhibition in parallel [1].

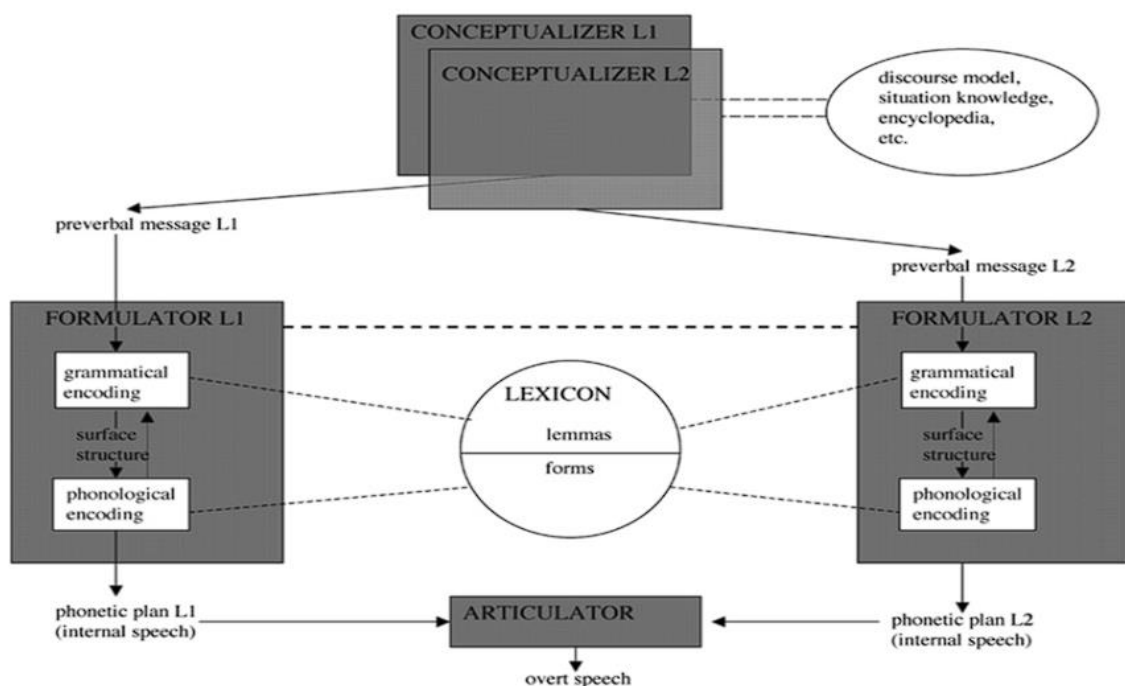
#### *De Bot: A model of speech production in bilinguals*

In contrast to Green's model, the so-called model of speech production in bilinguals, proposed by [2], describes the spontaneous production of speech in bilinguals without any damage to the language system and does not attempt to explain deviations in its functioning for any reason. De Bot adopted Levelt's monolingual model of speech production as a basis [4] for several reasons. Firstly, it has remained unchanged for a long time, which can serve as some proof of its validity. Secondly, De Bot believes that the bilingual model is essentially no different from the monolingual model. Moreover, he believes that a bilingual version based on Levelt's model helps to clarify some of the problems left by Levelt.

The model is based on two concepts: the division of knowledge into declarative and procedural knowledge and a single lexicon for the production and perception of speech. The

model consists of several components: knowledge, conceptualizer, formulator, lexicon, buffer, speech recognition system.

De Bot's goal was to determine what fundamental changes needed to be made to Levelt's model to explain speech production in bilinguals, as well as what components of the model were not language specific (see Figure 2).



*Fig.2. Schematic of De Bot's bilingual model of speech production, presented in the article by Hartsuiker and Pickering, R.J., Pickering*

Knowledge is not a specifically linguistic component in either the monolingual or bilingual models. However, it is precisely this component that determines the choice of language, since in Levelt's monolingual model it is knowledge that determines the stylistic form of the utterance, which for a monolingual is the choice of language in the broad sense of the term. Thus, this component performs the same function for both types of speech production. As for the mechanism of language selection itself, De Bot Green's idea of different levels of its activation (selected, active and passive), when the active language is also involved in the initial formulation of the utterance, i.e. the preverbal version may contain information about two possible languages in which the utterance can be formed.

In the conceptualizer, information about language choice is encoded in preverbal form. However, in the bilingual model, the conceptualizer is not exclusively a component of the language system. Like Levelt, De Bot distinguishes two processes when choosing a language: macro and micro-planning, but for him macro-planning when choosing a language occurs "on the basis of information about the form of discourse [2], which is not exclusively linguistic.

As for the lexicon and speech recognizer, De Bot rejects the idea that they are separate for each language. It assumes the existence of "one system that contains appropriately marked elements of all languages" [1], organized in such a way that it is possible to isolate individual components of one language. Isolation, or selection, occurs through the "passive model" of



lexicon, where words in a passive state still have a number of characteristics, like the "labels" in Green's model, which can be stimulated to make the word active.

### *Declarative and procedural systems of bilingualism*

Green and De Bot's models are static and do not address questions of the brain systems that support these processes, either in terms of their location or neurological processes. Ullman [3] proposes a model of lexicon and grammar from the point of view of representation, computation and neurolinguistic processes of bilingual speech, as well as language acquisition processes.

Ullman bases his model on a well-developed theory of memory involved in language learning and use. In the case of a first language (L1), the mental lexicon and grammar use two types of memory.

### *Bilingual adaptation of monolingual utterance production*

Hartzuiker and Pickering are more interested in the processes of sentence construction in terms of syntactic constructions than in lexical processes. In their study, they set out to answer the question of whether the grammatical structure of a bilingual's first language influences the construction of utterances in L2.

Hartzuiker et al. [3] created a model with special attention to the interaction between the mental lexicon and syntactic constructions. Three layers are assumed to exist, containing (1) conceptual information, (2) lemmas, and (3) word forms. Syntactic information is stored in the form of lemmas. Like De Bot, the authors of this model put forward the idea that the lexicon is the same for both bilingual languages.

### *Unified Model A Unified Model*

The model proposed by McWhinney, although it shares Ullman's interest in the dynamics of language acquisition [4], still differs in many ways from the models of De Bot and Ullman. The main difference is the lack of modularity. McWhinney set himself the difficult task of "creating a unified model of first language acquisition, childhood multilingualism, second language acquisition and adult multilingualism" [3]. The Unified Model, as the author called it, takes as its basis its own Competition Model. Although the Competition Model is not intended to explain all aspects of L2 acquisition and multilingualism, it does contain certain general concepts that can form the basis of a broader model. The fundamental concept is the understanding that the cue strength of an adult speaker is a direct derivative of the cue validity of that option.

Learning new rules for making connections relies on short-term and long-term memory stores. Gupta and McWhinney [2] developed an account of the role of short-term memory in creating memory for phonetic forms and the associative connections of these forms with meaningful lexical items in long-term memory. Linguistic knowledge in long-term memory forms self-organizing maps (SOMs) that base their computation on a two-dimensional grid of units. When the grid is activated, some elements will be active, while others will be in a neutral state. During the learning process, such input activates neighboring units, connecting them to the map. The size of individual maps depends on processing operations for combining elements, which are called chunking.

This model distinguishes two components of code rivalry theory that are important for our analysis. The first component is transfer theory, which predicts both positive and negative



transfer across different linguistic platforms. The second component is the code interaction theory, which governs code selection, switching, and mixing.

## CONCLUSION

The purpose of this article is a comparative description of models of bilingual speech production, with a special focus on the possibility of mutual influence of bilingual languages.

First, the models demonstrate different views on the modularity of bilingual processes. Thus, the models of Green and De Bot tend towards the modularity of processes. Ullman uses the concepts of procedural/declarative memory to highlight the importance of non-language-specific memory systems for language learning and speech production. MacWhinney's unified model highlights the competitive relationship between languages and the dynamic processes within lexical modules, which are less rigid. Hartzuiker et al. do not provide a connection between general syntax and the lexical module at any stage of the bilingual process. This model examines in more detail the mutual influence of the lexicon and word order.

## References:

1. Bowden H. W., Gelfand M.P., & Sanz C. & Ullman M.T. (2010). Verbal Inflectional Morphology in L1 and L2 Spanish: A Frequency Effects Study Examining Storage versus Composition. *Language Learning*, 60(1), 44-87.
2. Jurraevich, Y. J. (2022). COURSE OF EPILEPSY IN CHILDREN, PROGNOSIS AND REHABILITATION ISSUES. *BOSHQARUV VA ETIKA QOIDALARI ONLAYN ILMIY JURNALI*, 2(11), 32-37.
3. Yodgorov, J. J. (2023). EFFECTIVENESS OF USING MODERN ANTIEPILEPTIC DRUGS IN PREGNANT WOMEN. *Open Access Repository*, 4(3), 711-715.
4. Jurayevich, Y. J. (2023). Neurological, Psycho-Emotional and Some Biochemical Properties of the Pharmacoresistent Form of Epilepsy, Treatment Tactics. *AMALIY VA TIBBIYOT FANLARI ILMIY JURNALI*, 2(5), 400-403.
5. Мухтарова, Х. К., & Истамов, М. Б. (2023). ОЦЕНКА КЛИНИЧЕСКОГО ТЕЧЕНИЯ И ИЗМЕНЕНИЯ ЛИЧНОСТИ ПРИ ЭПИЛЕПСИИ. *ЎТМОИЙ FANLARDA INNOVASIYA ONLAYN ILMIY JURNALI*, 3(6), 98-103.
6. Mukhtarova, X. K. (2022). Forms of Psychological Violence as a Factor of Asocial Behavior. *INTERNATIONAL JOURNAL OF HEALTH SYSTEMS AND MEDICAL SCIENCES*, 1(6), 25-27.
7. Zakirovich, G. B. (2022). Discourse about the peculiarities of the theme of male gender in advertising texts in Russian and Uzbek (on the material of medical vocabulary). *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, 2(2), 4-8.
8. Zakirovich, G. B. (2022). Discourse about the peculiarities of the theme of male gender in advertising texts in Russian and Uzbek (on the material of medical vocabulary). *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, 2(2), 4-8.
9. Gafurov, B. Z. (2023). REFLECTION OF STYLISTICALLY MARKED VOCABULARY IN ADVERTISEMENT TEXTS. *Horizon: Journal of Humanity and Artificial Intelligence*, 2(5), 425-428.





10. Gafurov, B. Z. (2019). RESEARCH OF SEGMENTAL BACKGROUND VALUES OF NAMES OF EXISTING UZBEK LANGUAGE WHICH BEGIN FROM THE AGREEMENT LETTER "K". Scientific and Technical Journal of Namangan Institute of Engineering and Technology, 1(6), 272-274.
11. Гафуров, Б. З. (2009). Роль сокращения фонемного состава слова в образовании сегментных фоновариантов существительных русского, узбекского и английского языков. Современные гуманитарные исследования, (6), 124-126.
12. Tursunovich, S. E. (2022). Classification of compliments as speech acts and their basic characteristics in Uzbek and English languages. Eurasian Journal of Learning and Academic Teaching, 4, 77-79.
13. Sadikov, E. (2022). Noval Teaching Technologies of Pragmatic Speech Acts. Центр научных публикаций (buxdu. Uz), 25(25).
14. Sadikov, E. (2022). РЕЧЕВЫЕ АКТЫ В УЗБЕКИСТАНЕ: ЭФФЕКТИВНЫЕ СПОСОБЫ ОБУЧЕНИЯ КОМПЛИМЕНТАМ. ЦЕНТР НАУЧНЫХ ПУБЛИКАЦИЙ (buxdu. uz), 25(25).
15. Xudoyqulov, B. (2023). A REVIEW ON THE STUDY OF PHRASEOLOGICAL EXPRESSIONS IN ITALIAN LANGUAGE. Gospodarka i Innowacje., 33, 212-214.
16. Davlayev, A. A., & Xudoyqulov, B. (2022). XORIJIY TILDAGI FRAZEOLOGIK IBORALARNI QIYOSIY O'RGANISHNING AYRIM XUSUSIYATLARI. Oriental renaissance: Innovative, educational, natural and social sciences, 2(5), 1108-1113.
17. Rashidovna, M. F., & Rakhimovna, B. L. THE PROBLEM OF FAMILY AND FAMILY VALUES IN "WOMEN'S PROSE" OF VICTORIA TOKAREVA AND ZULFIYA KUROLBOY KIZI. SCIENTIFIC REPORTS OF BUKHARA STATE UNIVERSITY, 157.
18. Муртазаева, Ф. Р. (2020). Типология женских персонажей в прозе Виктории Токаревой. In Современные исследования в гуманитарных и естественнонаучных отраслях (pp. 136-142).
19. Rashitovna, M. F. (2020). Philosophy of "female prose". Scientific reports of Bukhara State University, 3(3), 2181-1466.
20. Муртазаева, Ф. Р. (2023, August). ДИНАМИКА РАСКРЫТИЯ ПСИХОЛОГИЗМА В АМЕРИКАНСКОЙ «ЖЕНСКОЙ ПРОЗЕ». In International Conference of Education, Research and Innovation (Vol. 1, No. 7, pp. 15-19).