

Development of A Psycholinguistic Index and Diagnostic Model for Assessing the Bilingual Lexicon

 Mirakhmedova Hilolakhon Alisherjonovna

Independent Researcher, Uzbekistan

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Abstract: This article examines the development of a psycholinguistic index and diagnostic model for assessing the bilingual lexicon. The bilingual lexicon is characterized not as a simple combination of two languages, but as an integrated cognitive system with its own specific characteristics. The psycholinguistic processes that determine this state are identified, including lexical activation, lexical access, code-switching, interference, transfer, and lexical processing. The role of these processes in the formation of indicators reflecting the state of the bilingual lexicon is revealed. The study draws on the works of such scholars as J. Kroll, A. De Groot, F. Grosjean, E. Bialystok, W. Levelt, A. A. Zalevskaya, and M. B. Shamsieva. It is concluded that the assessment of the bilingual lexicon requires an integrated measurement tool that combines questionnaire-based and behavioral measures. The findings of the study may serve as a basis for the further development of methods for the differential diagnosis of speech disorders in bilingual children.

Keywords: Bilingual lexicon, psycholinguistic index, diagnostic model, lexical activation, lexical access, code-switching, interference, transfer, cognitive control, bilingual children.

Introduction: Assessing the bilingual lexicon remains one of the practical issues in contemporary psycholinguistics and speech-language pathology. The number of bilingual children is increasing worldwide, including in Uzbekistan. Specialists working with such children need an objective method for determining the state of their lexical system. Without such a method, it is difficult to distinguish vocabulary characteristics associated with bilingualism from indicators of a speech disorder.

The relevance of the topic is determined by several factors. Existing diagnostic tools primarily assess an individual's overall language experience and are not sufficiently adapted for diagnosing the lexical system. Most of these tools have been developed based on Western European languages and require adaptation to other language pairs. Lexical assessment in bilingual children rarely takes into account the mechanisms underlying the functioning of their lexical system. This reduces the accuracy of diagnostic decisions in speech-language therapy and psychological-pedagogical

practice.

The aim of the article is to develop a psycholinguistic index and diagnostic model that enable the assessment and diagnosis of an individual's bilingual lexicon.

To achieve this aim, the following objectives are addressed: to identify the psycholinguistic processes relevant to the diagnosis of the bilingual lexicon; to analyze existing tools for assessing the state of bilingual language functioning; to substantiate the structure of the diagnostic index and model; and to examine the applicability of the index in working with bilingual children.

The theoretical foundation of the article is based on the works of foreign and Uzbek psycholinguists, including J. Kroll, A. De Groot, F. Grosjean, E. Bialystok, W. Levelt, A. A. Zalevskaya, A. A. Leontiev, and M. B. Shamsieva.

The scientific novelty of the article lies in integrating questionnaire-based and behavioral measures into a unified index and diagnostic model aimed at assessing and diagnosing the bilingual lexicon.

As a diagnostic object, the bilingual lexicon cannot be reduced to a single characteristic. It encompasses the integration of lexical units from two languages, the dynamic nature of their interaction, their interdependence, and the flexibility of switching between languages. These characteristics determine the state of the lexicon and should be taken into account when developing a diagnostic tool.

The processes of lexical activation, lexical access, code-switching, interference, transfer, and lexical processing do not operate independently. Rather, they are interrelated. For the diagnosis of an individual child's bilingual lexicon, a descriptive analysis of these processes alone is insufficient. A measurement tool is required that can quantitatively determine the degree to which each of these processes is manifested.

Existing Approaches: Assessment and Diagnosis of the Bilingual Lexicon.

In international psycholinguistic research, a number of instruments have been developed to assess the language profile of bilingual individuals. Among the most widely used is the LEAP-Q questionnaire developed by V. Marian, H. Blumenfeld, and M. Kaushanskaya. The instrument collects information on language experience, age of language acquisition, frequency of language use, and subjective self-assessment of proficiency in each language. The LEAP-Q provides an overall language profile of a bilingual individual. However, the questionnaire is based on self-assessment and does not reveal the underlying cognitive mechanisms of lexical processing. Another well-known assessment tool is the Bilingual Language Profile (BLP), developed by D. Birdsong, L. Gertken, and M. Amengual. The instrument generates a continuous measure of language dominance based on four modules covering language acquisition history, frequency of language use, proficiency, and attitudes toward the languages. The final BLP score is useful for comparing groups of bilingual individuals. Nevertheless, it also relies primarily on self-assessment and conceptualizes the lexicon as a static characteristic rather than as a dynamic system. The Bilingual Dominance Scale, proposed by A. Dunn and J. Fox Tree combines self-reported information about language experience with behavioral measures, including reaction time in lexical translation tasks. This approach brings the assessment closer to the cognitive mechanisms underlying bilingual speech. However, the scope of the scale is limited to translation tasks and does not encompass code-switching or interference.

In addition to the aforementioned instruments, experimental paradigms are also used in psycholinguistic research. These paradigms make it

possible to identify specific mechanisms underlying the functioning of the bilingual lexicon. The cognate effect and the cross-language priming effect described within the BIA+ model provide evidence of the degree of parallel activation of the two languages during word recognition. Such paradigms provide precise information about individual processes. However, each of them addresses only one aspect of lexical functioning and requires specialized laboratory equipment. This makes their application in large-scale diagnostic practice, particularly in the assessment of children, difficult.

Existing approaches to the assessment and diagnosis of the bilingual lexicon are developing along two main directions. The first is represented by questionnaire-based methods. These methods focus on language experience and self-assessment and are convenient for large-scale application; however, they do not reveal the underlying cognitive mechanisms of the lexicon. The second direction is represented by experimental paradigms. These paradigms enable the precise measurement of specific mechanisms, but they remain fragmented and difficult to implement in practical diagnostic settings. This contradiction substantiates the need to develop a comprehensive psycholinguistic index and diagnostic model that integrates the two approaches into a unified measurement framework.

Theoretical Foundations of the Index. The psycholinguistic index for assessing and diagnosing the bilingual lexicon is based on a system of indicators rather than on a single characteristic. These indicators should reflect the psycholinguistic mechanisms that determine the state of the bilingual lexicon. Theoretical analysis makes it possible to identify five such indicators.

The integration indicator reflects the degree of co-activation between lexical units in the two languages. It is grounded in experimental evidence concerning the cognate effect and the translation-equivalent effect. These effects are described within the parallel activation model proposed by T. Dijkstra and W. van Heuven.

The cognitive control indicator reflects the efficiency of suppressing the non-target language and managing competing lexical units. The theoretical basis of this indicator is provided by E. Bialystok's research on executive functions in bilingual individuals and D. Green and J. Abutalebi's Adaptive Control Hypothesis.

The lexical access indicator reflects the speed and accuracy of retrieving lexical units from memory under bilingual conditions. It is based on A. de Groot's views on the factors that determine the efficiency of lexical processing in bilingual individuals.

The code-switching indicator reflects the frequency and communicative conditioning of switching between languages. Its theoretical basis is F. Grosjean's approach, which conceptualizes code-switching as a form of bilingual language management.

The interference and transfer indicator reflects the degree to which the lexical, semantic, and grammatical features of one language are transferred into speech in the other language. The theoretical basis of this indicator is grounded in U. Weinreich's classical definition of interference and L. Odlin's distinction between interference and transfer.

Each of the aforementioned indicators corresponds to one of the processes examined in the theoretical part of the study. This makes it possible to transform the descriptive characteristics of the bilingual lexicon into measurable diagnostic indicators.

Proposed Structure of the Index and Diagnostic Model

The proposed psycholinguistic index is constructed as a composite measure. It integrates five specific scales. Each scale is derived from a combination of questionnaire-based and behavioral measures.

The integration indicator is calculated based on the difference in reaction time when naming cognate words and non-cognate words. The cognitive control indicator is determined based on the results of tasks aimed at suppressing the dominant language, particularly a picture-naming task involving language switching. The lexical access indicator is determined based on the mean response time and accuracy of word naming in both languages. The code-switching indicator is determined based on the frequency of intra-sentential and inter-sentential switching in samples of natural speech elicited within communicative contexts. The interference and transfer indicator is determined based on the number and types of deviations from language norms in spontaneous speech. These deviations are classified according to the levels proposed by A. Berdialiyev.

The values of the individual scales are converted to a common numerical scale and combined into a weighted sum. This yields the final assessment and diagnostic index of the bilingual lexicon. Such a structure makes it possible to determine the overall state of the lexicon and to identify the mechanisms underlying its specific characteristics.

Application of the Index and Diagnostic Model in the Assessment of Bilingual Children. The proposed index and diagnostic model are particularly important for working with bilingual children, especially in the assessment of children who experience difficulties in acquiring written language. M. B. Shamsieva

emphasizes that the level of use of the two languages, the communicative environment, and the bilingual child's language experience directly determine the specific characteristics of lexical processing. Without taking these factors into account, it is difficult to distinguish characteristics associated with bilingualism from those related to speech and language disorders.

The application of the psycholinguistic index and diagnostic model provides specialists with an objective diagnostic profile of the child's bilingual lexicon before conducting an assessment of speech and language disorders. This makes it possible to establish the state of the lexical system in advance, interpret the results of subsequent diagnostic assessments accurately, and avoid misclassifying speech characteristics that are typical of bilingual individuals as pathological.

CONCLUSION

The development of a psycholinguistic index and diagnostic model for assessing the bilingual lexicon addresses the need in speech-language pathology and psychological-pedagogical practice for an objective tool capable of determining the state of a child's lexical system. The proposed index structure integrates five parameters corresponding to the key psycholinguistic processes underlying the functioning of the bilingual lexicon, namely integration, cognitive control, lexical access, code-switching, and interference.

This approach helps overcome the limitations of existing questionnaire-based methods and the fragmented nature of experimental paradigms. It provides a basis for the accurate assessment and diagnosis of the bilingual lexicon, as well as for the proper interpretation of the results of speech and language disorder assessments in bilingual children.

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