



Ранний билингвизм и когнитивные способности ребенка: обзор научных источников

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АННОТАЦИЯ

Введение. Современный ребенок часто оказывается в полилингвистической среде, причем даже внутри семьи родители могут говорить на разных языках, а потому необходимо понимание последствий для когнитивного развития ребенка раннего изучения двух языков. В настоящий момент отсутствует единый взгляд на проблему и отмечается значительная противоречивость в опубликованных научных работах.

Цель настоящего обзора состоит в анализе исследований, в которых ставилась задача сравнения когнитивного развития детей, осваивающих в раннем детстве один или два языка.

Материалы и методы. Для поиска статей использовались базы «PubMed», «Google Scholar», «ResearchGate» и российские библиотеки «Elibrary.ru», «КиберЛенинка». Материалами для анализа стали статьи из перечисленных баз, описывающие наиболее значимые результаты в исследовании билингвизма от первых работ, описывающих ранние модели когнитивных последствий билингвизма до последних трудов 2024 г., представляющих современное видение влияния билингвизма на формирование познавательных процессов у детей исследуется давно.

Результаты исследования. Освоение любого языка имеет один и тот же биологический фундамент, что является основой взаимодействия языков. При последовательном овладении разными языками материнский язык становится матрицей, которая облегчает освоение других языков, прежде всего наиболее сложных грамматических форм. В этом случае некоторое замедление освоения сложных грамматических форм на первых этапах освоения языка в дальнейшем сменится значимым преимуществом билингвов по отношению к монолингвам в когнитивном развитии.

Заключение. Анализ литературы позволил сделать вывод, что билингвы имеют преимущество в анализе сложных речевых потоков, хотя обработка этой информации идет несколько медленнее. У детей, осваивающих один язык в 10-12 месяцев происходит перцептивная реорганизация, в соответствии с которой обнаруживается снижение способности к восприятию элементов неродного языка. У билингвов этот процесс в раннем возрасте не происходит, что позволяет им различать тонкие особенности незнакомых языков. В целом на ранних этапах знакомства с двумя языками билингвы медленнее осваивают многие аспекты двух языков, но в более позднем возрасте обнаруживается преимущество билингвов в отношении уровня психологического развития.

КЛЮЧЕВЫЕ СЛОВА

билингвизм, монолингвизм, когнитивные способности, интеллект, исполнительные функции

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Лицензия «С указанием авторства — С сохранением условий». Позволяет перерабатывать, исправлять и развивать произведения при условии указания авторства и лицензирования производных работ на аналогичных условиях.



Early bilingualism and cognitive abilities of the child (review of scientific sources)

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ABSTRACT

Introduction. A modern child often finds himself in a multilingual environment, and even within the family, parents can speak different languages, and therefore it is necessary to understand the consequences for the child's cognitive development of early learning of two languages. At the moment, there is no common view on the problem and there is significant inconsistency in published scientific works. *The purpose of this review* is to analyze studies that aimed to compare the cognitive development of children acquiring one or two languages in early childhood.

Materials and methods. The research methodology was based on general scientific methods and methods of special sciences: psychology and pedagogy. To search for articles, the databases "PubMed", "Google Scholar", "ResearchGate" and Russian libraries "Elibrary.ru", "CyberLeninka" were used. The materials for the analysis were articles from the listed databases, describing the most significant results in the study of bilingualism

Research results. The acquisition of any language has the same biological foundation, which is the basis for the interaction of languages. With the sequential acquisition of different languages, the mother language becomes a matrix that facilitates the acquisition of other languages, especially the most complex grammatical forms. In this case, some slowdown in the development of complex grammatical forms at the first stages of language acquisition will later be replaced by a significant advantage of bilinguals over monolinguals in cognitive development.

Conclusion. An analysis of the literature led to the conclusion that bilinguals have an advantage in analyzing complex speech streams, although the processing of this information is somewhat slower. In children learning one language at 10-12 months, a perceptual reorganization occurs, according to which a decrease in the ability to perceive elements of a non-native language is detected. In bilinguals, this process does not occur at an early age, which allows them to distinguish the subtle features of unfamiliar languages. In general, in the early stages of exposure to two languages, bilinguals are slower to master many aspects of the two languages, but in later life, bilinguals are found to have an advantage in terms of level of psychological development.

KEYWORDS

bilingualism, monolingualism, cognitive abilities, intelligence, executive functions

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INTRODUCTION

According to the UNESCO Recommendations on the Promotion and Use of Multilingualism [1], each language, no matter how small, is of great value from a cultural point of view. In the modern world, knowledge of several languages is becoming a mandatory condition for a person to realize himself in many professions, since communication with representatives of other countries, reading literature in a foreign language is an obligatory component of daily activity.

A child's assimilation of the cultural context in which his parents live occurs through language, and usually both parents use one language. But increasingly there are situations when a child simultaneously or sequentially studies 2 or more languages, which does not always give the same result, since there are situations when a child does not master both languages well, but there are also cases when children easily use sometimes not one, but more [2; 3]. That is why the problem of the mutual influence of mastering several languages requires a solution.

It is obvious that together with the language the child receives a certain picture of the world, including both real and imaginary images [4], an understanding of the reasons that determine events in the world and in society, as well as models of behavior in this social world. It is obvious that different languages can describe different pictures of the world and stimulate different cognitive solutions when certain questions arise.

It is known that language acquisition can occur in at least two ways. In the first case, the child acquires the language through the practice of language communication, without relying on knowledge of the patterns of constructing a speech utterance. In the second case, the child can acquire the language as part of the educational process, when he receives linguistic knowledge from a specially trained adult (teacher, tutor or educator), who uses special methods and techniques for this [5]. In the latter case, the child acquires the second language, already having in his memory the typical constructions of the first language.

Of particular interest are situations of bilingualism, caused by the acquisition of both languages from the practice of communication. This is motivated by the desire to understand how the brain can learn to master the two ways of understanding the world that each language offers, allowing it to prepare at an early age for the possibility of becoming an "educated brain" [6], that is, an "educated brain" even before systematic learning begins.

Definition

The term bilingualism has a long history in scientific research. Initially, the term was used to describe a person who spoke two languages, without regard to the level of proficiency or use of the languages. But in 1935, the American linguist L. Bloomfield defined bilingualism as a situation where a person has native-like proficiency in two languages. He believed that bilingualism arises from full proficiency in two languages, when a person can freely use both the first and second languages in various spheres of life [7].

E. Haugen [8], an American linguist and sociologist, in his work "The Norwegian language in America: A study in bilingual behavior" gave a broader definition of bilingualism, which includes not only the ability to repeat known phrases, but also the ability to generate complete meaningful statements in another language. This definition includes not only the requirements of knowledge of the language, but also its active use, as well as the generation of meaningful statements in different languages.

B. Weinreich strengthened in his requirement for the definition of bilingualism the alternate active use of two or more languages in different contexts (the ability to switch between them), as well as the ability to achieve a high level of proficiency in each [9].

R. Diebold [10] showed that bilingualism can be considered as a continuum on which people are at different levels of proficiency in two or more languages. The researcher also shows that bilingualism can manifest itself in different spheres of life, and the level of language proficiency can differ depending on the context in which the language was acquired and the communicative situation. Thus, bilingualism can be considered as a spectrum of possibilities, and not just as a binary state in which a person is either bilingual or monolingual.

Hence, the term "bilingualism" began to be used to describe different types of states and levels of language proficiency. The terms "dominant bilingualism" (when one language prevails over the other), "recessive bilingualism" (when the second language is less developed) and "equal bilingualism" (when proficiency in both languages is equal) were proposed.

J. McNamara [11] suggested considering a bilingual a person who has minimal competence in one of four language areas: the ability to understand by ear, speak, read, write in a language that is not their native language. This approach suggests that bilingualism does not necessarily mean equal proficiency in two languages in all aspects, but can manifest itself in various combinations. For example, some bilinguals may be better at oral communication, while others may be stronger in written communication.

W. Mackay and J. Ornstein [12] defined bilingualism as the alternative use of two or more languages by the same individual. This definition emphasizes that bilingualism does not necessarily mean full proficiency in two or more languages, but rather the ability to use these languages as needed in different situations.

It is believed [13] that the key feature of bilingualism is the ability to automatically switch between two languages depending on the context or interlocutor, which allows the speaker to confidently and effectively use two languages.

It is worth emphasizing that when learning an additional language late, people often rely on the grammar of the first language when using the second language. This is why R. Titon [14] emphasized that a bilingual is able to speak a second language in accordance with the concepts and structures of this language, and not simply inserting words from another language into the constructs of the native language. In turn, this also implies the formation of unique linguistic behavior for each language [15], which differs from the behavior of monolinguals who communicate in only one of these languages. This is why bilingualism is distinguished by a socio-communicative dimension, since a person who speaks two languages, satisfies not only his own communicative needs, but also the needs of other people, and therefore society as a whole [16]. Therefore, bilingualism is not just knowledge of two languages, but also the ability to choose a language in accordance with the context [17; 18], a specific time, place, and purpose of communication.

However, in practice, when studying bilingualism, most researchers use a simplified understanding of it [19], classifying as bilinguals all those who can communicate in more than one language, regardless of the level of proficiency and time of acquisition. This introduces significant noise and inconsistency into the results obtained.

There is a position according to which, in preschool age, bilingualism is considered to be the child's ability to use language for communication, possibly with a very limited ability to translate thoughts from one language to another, since the thoughts themselves are still formed to a greater extent in figurative form [20].

It is worth remembering that languages can be presented in varying amounts in the environment in which a child develops. The ManyBabies Consortium (a study of bilingual infants, including 17 laboratories around the world) adopted a criterion according to which each language that a child is introduced to can be in the range of 25% to 75% acquisition. However, there remains considerable variability in the minimum and maximum percentages of each language exposure that infants encounter in acquiring bilingualism. The arbitrariness of the researcher in presenting figures for the child's proficiency in a particular language is obvious.

Often, such information is collected primarily through questionnaires completed by parents. These questionnaires include quite detailed information about when and how infants are exposed to each language, who speaks to the infant for how long, and under what circumstances [21; 22]. There is much skepticism in the literature regarding parental responses. A. J. Orena [23] compared parental responses with three video recordings of the infant's daily language interactions in 21 10-month-old French-English bilingual infants. A high correlation was found between the two measures of exposure to each language on the infant ($r = 0.77$).

Another problem that arises when analyzing the literature on bilingualism is that there are bilinguals who have been learning two languages within the family since birth. But there are children

who were introduced to a second language in kindergarten, while at home they continue to speak only their native language [24]. In this case, home bilinguals communicate with children who grow up in monolingual families and learned a second language by interacting with bilinguals in kindergarten, who are called kindergarten bilinguals. There is still no data on the differences in the mechanisms of language acquisition by home bilinguals and kindergarten bilinguals. All of the above explains the enormous difficulties in comparing different studies in which children may have different conditions for acquiring a second language.

The purpose of this review was to analyze the currently available results of comparisons of preschool children who master only one or two languages.

MATERIALS AND METHODS

The international databases PubMed, Google Scholar, ResearchGate and the Russian libraries Elibrary.ru and CyberLeninka were used to search for materials. Mainly articles in Russian and English were selected for analysis. All references to conference abstracts in both Russian and English were excluded from the search. The following queries were used for Russian libraries: "bilingualism_+children", "monolingualism+children", "bilingualism", "bilingualism+monolingualism", "bilingualism+cognitive development"; for foreign databases: "monolingualism+kids", "bilingualism+kids", "bilingualism+monolingualism", "bilingualism+cognitive development". For the final analysis, 79 works were accepted, of which 1 is the "Recommendation concerning the Promotion and Use of Multilingualism and Universal Access to Cyberspace" from the Acts of the General Conference of UNESCO (Vol. 1 of the Resolution, 2004); 17 monographs (including one in French), which either explained many of the concepts used in the article or raised for the first time the problems discussed in the analyzed materials. Some monographs described not so much the linguistic problems of monolinguals and bilinguals, as the psychophysiological and psychological characteristics of the development of a preschool child in various cultural environments, which allowed for a deeper understanding of the specifics of their linguistic problems. Articles were analyzed that presented the results of a simultaneous analysis of children acquiring only one or two or more languages, in preschool age. Particular attention was paid to studies that emphasized the negative or positive consequences of learning only one or two languages, on a child's cognitive development, as well as studies that described factors that facilitate or hinder language acquisition.

RESEARCH RESULTS

Early evidence of the negative impact of second language acquisition on a child's cognitive development

The first studies of bilingualism formed a very negative attitude towards the phenomenon, often calling it the problem of bilingualism [25]. It is worth emphasizing that these findings contradicted both the historical situation closest to the research (the entire European aristocracy spoke several languages in the 19th century) and more distant history (for example, since ancient times, many peoples have been accustomed to taking wives from other tribes or states, which led to the need to raise children in a multilingual framework). Nevertheless, the first findings indicated that bilingualism at an early age leads to cognitive limitations, which were called "mental confusion" [26, p. 38], and it was also proven that bilingual adults performed worse on tests aimed at assessing intelligence than monolinguals [27]. It has been shown that bilinguals have poor articulation [28], a limited vocabulary [29; 30], perform worse on written tests [31], and have learning difficulties [32, p. 479]. But the most radical statement was that "the use of a foreign language in the family is one of the main factors causing mental retardation" [33].

It later became clear that all of these studies had methodological errors that led to such results. For example, if a bilingual adult is given a test aimed at assessing intelligence in a second (non-native) language, and the test emphasizes knowledge of specific cultural events in another country, he will definitely perform worse than a monolingual living in that country and graduating from a high

school where this knowledge is offered. This is what happened to the parents of the outstanding psychologist D. Wechsler [34]. They emigrated to the United States from Romania at the beginning of the 20th century. At that time, L. Terman introduced mandatory testing into the examination of arriving emigrants using the Stanford-Binet scale (an adapted version of the Binet-Simon scale for the USA) that he had developed. The use of this scale led to specific results, according to which the majority of people emigrating from Eastern European countries had extremely low intelligence. It is worth emphasizing that among them were many highly educated people from Russia, fleeing revolutionary persecution.

Later, erroneous positions were found in this scale, which indicated some specific events in the United States as significant for assessing intellectual abilities. L. Terman himself acknowledged the ambiguity of the resulting test [35]. Later, the test was significantly revised precisely due to work with bilinguals [36]. Discouraged by the results obtained by his parents during testing upon entry to the United States, D. Wechsler created his own test for assessing intellectual abilities, which took into account general knowledge, and not specific events in a specific country [34]. Another mistake in early studies of bilingualism was disregard for the quality of the sample: they assessed children of refugees from countries with a lower socio-economic status than the testing country as bilingual, and they were tested not in their native language, but in a second, sometimes weaker language, mastered only at school. At the same time, monolingual groups were from countries with a higher economic status and were tested in their native language. Another serious shortcoming of these early studies was that bilinguals were defined by their parents' place of birth, family name, or place of residence, rather than by their actual language use (which could be rudimentary) [37]. Later studies showed that bilingual children had a smaller vocabulary in each language than monolingual children [38; 39]. But these studies did not take into account the quality of word use, the ability to use them in different contexts, or the ability to use them in speech and writing. The fallacy of this approach when comparing people from two different cultures is discussed in the works of M. Cole [40]. According to the witty remark of E. Haugen [8], who learned Norwegian and English in the United States from his early years, he was threatened in childhood with such terrible dangers as mental retardation, schizophrenia, insanity, and immorality, but he learned about this when, as a student, he read works on childhood bilingualism. He was very glad that his parents did not read the results of these studies. Therefore, the studies of that time had a weak methodological basis and did not take into account the age, socioeconomic status and degree of bilingualism, refugee status of the subjects, interruptions in education during the war, or the discrepancy between the testing language (in most cases English) and the non-English-speaking origin of the participants. The low test results of the participants in the experiments were mistakenly attributed to their bilingualism [41]. These data could not be discussed today if these results were not still broadcast on the Internet and even by some teachers in schools. The attitude towards bilingualism has changed now, but methodological errors still remain in the research and support the negative attitude of some researchers towards bilingualism. This negative attitude is especially true for early ages, which requires the inclusion of the most recent studies, carried out taking into account previous erroneous actions, in the discussion of the problem.

Modern concepts of the differences in bilingualism in preschool age

According to the latest data, at birth, infants are able to distinguish phonemes of almost all languages of the world, while their parents are no longer able to notice them [42; 43]. However, if in the first 10-12 months children hear only the sounds of the parent language, then this ability disappears, and they distinguish only the phonemes of their native language well. But if any other language is introduced during this period, the window of opportunity expands to one and a half years [44]. At about 6 months, the system of perception of the vowels of the mother tongue is established and the perception of vowels of other languages deteriorates, while sensitivity to most consonants is detected at about 12 months [45; 46]. From 6 months, normally developing infants know several words [47] and direct their gaze to objects that others are talking about [48]. Regardless of what language or languages children master, the fundamental positions of mastering the linguistic parameters of different languages are achieved at about the same time. Interlingual differences adjust the process of language acquisition, but do not change it significantly.

If language acquisition is sequential, then mastering the native language helps to create a biological matrix, which then forms the basis for acquiring subsequent languages [49]. Thus, the success of learning a second language directly depends on the degree and quality of mastery of the

first language. The speech skills acquired during mastery of the first language will be easier for a child to transfer to the second language. This is due to the fact that language is created by the same neurobiological foundation, and the difference between monolinguals and bilinguals is that the latter use bilingual input, while monolinguals use one.

The ability to distinguish phonemes in bilinguals and monolinguals

The ability to distinguish phonemes of different languages is an important milestone in the acquisition of bilingualism [50]. A. Amengual et al. [51] note that the dominance of one of the languages at an early age does not allow predicting further interaction of languages at a later age. This is confirmed by the work of other authors [52]. The ability to distinguish phonemes is formed when the child notices that there are two different types of speech streams. Studies have shown that infants can distinguish one language from another from birth. It turned out that they respond to the rhythm of language [53]. I. Bosch and N. Sebastian-Galles [54] showed that Spanish and Catalan infants of 4 months, both those who speak only one of these languages, and those who speak two languages, could distinguish them at about the same time, but used different mechanisms for this. In this study, children sat between columns to which sentences in one of the languages were presented in a random order, the control sentences were in English, which the children were unfamiliar with. Monolingual infants responded faster to the familiar language, while bilinguals responded slower to the language they were less fluent in. Both groups of children responded to sentences in English at the same speed.

The same research group led by N. Sebastian-Galles [55] later published a study recording the EEG of 4-month-old infants in a slightly different paradigm: in this case, languages of different rhythmic groups were compared. The children listened to sentences in their native language (Spanish or Catalan), Italian (the same rhythmic class), and German (another rhythmic class). In monolingual infants, differences were observed in the early P200 component of the event-related potential between the maternal and other languages. In bilingual infants, differences were observed in the perception of the maternal and all other languages in the theta range of the EEG in the temporal region, but only 600 ms after the onset of the signal. The authors suggested that changes in the theta range may reflect increased attention to the speech signal. Therefore, it can be assumed that the rapid reaction of monolingual infants is due to a simpler analysis of a speech utterance, where one language differs from all others, while in bilinguals the analysis is complicated by the need to constantly distinguish between two languages, which leads to both increased attention and a longer analysis duration.

Thus, the first conclusion is that the very differentiation of languages occurs at 4-5 months and bilingualism is associated with a more complex analysis of all incoming speech signals.

The ability to distinguish vowels and consonants in preschoolers with different numbers of mastered languages

We have already talked about critical periods of speech development earlier. Data on the formation of the perception of vowels and consonants in different languages are usually described for monolingual children, while now more and more studies are appearing on some differences in this process in bilinguals. It is worth recalling that since there is no single idea of bilingualism in the literature, these data are also quite contradictory.

Important results were obtained when distinguishing consonants in the mother and foreign languages. Most studies in this area examine the discrimination of the sounds [b]-[p] and [ph] in English and French. When comparing monolinguals and bilinguals speaking French and English, it was found that monolinguals differentiate these consonants at 6 months, but if they had no experience of distinguishing them before 8 months, they lose this ability, while bilinguals retain it [56; 57].

Later, when studying children mastering languages of different rhythmic groups, a more complex solution was found: monolingual infants differentiated only the contrast characteristic of their dominant language, while discrimination does not necessarily begin at 8 months, but can be later (at 11 months), while bilinguals retain this sensitivity to contrast [58].

These data are consistent with the results of a longitudinal study assessing evoked potentials in consonant discrimination in bilingual infants, first at 6-9 months and again at 10-12 months. The

EEG response was absent in infancy and developed at 10 months [59]. However, more frequently used phonemes are acquired earlier in all children [60], and perceptual reorganization of language in monolingualism involves an increase in the representation of native categories and a decrease in non-native ones.

The delay in perceptual reorganization in bilinguals implies a long period of recognition of non-native contrasts, rather than a loss of perception of the natural contrast [61].

Processes of segmentation and generalization of the speech stream

The mechanisms of segmentation of the speech stream into words have been studied [62; 63]. Most studies were conducted on monolingual children using speech stimuli related to one language. Only a few studies examined how bilinguals cope with the division of the speech stream into words. Some studies did not find differences between monolinguals and bilinguals [64; 65], while others revealed a slowdown in distinguishing words of a non-native language in bilinguals [23].

And a completely unique study is one in which monolinguals and bilinguals at 14 and 16 months were offered sentences in an artificial language in a dual speech segmentation task [66; 67]. The authors showed that only bilinguals were able to identify word units based on the probabilities of syllable transitions. According to some data, this may be ensured by a decrease in the functional asymmetry of the cerebral hemispheres [68].

The ability of bilinguals to segment and extract patterns from a speech stream appears to match or even exceed the abilities of monolinguals. This result is likely explained by bilinguals' learning to compute probabilistic patterns when perceiving two different streams.

Word Acquisition and Cognitive Development in Monolinguals and Bilinguals

Word learning is a process that involves three different abilities: extracting the phonological form (how the word sounds), detecting its referent (object/concept), and linking the sound to the object. Bilinguals apparently discover that one object can be associated with several sound sequences and learn them.

Furthermore, bilinguals' object-word mappings are not always one-to-one. In some languages, the same object can be captured in different words. Moreover, some words may not have a translation into another language. For example, the Russian word "kruzhka" has no translation into Spanish or Italian [43].

As a result of the fact that monolingual children are not aware of such possibilities, when presented with an object and a word that sounds at the same time, they are more likely to connect them than bilinguals at the age of 14 months. Bilinguals, in cases where the same object was associated unambiguously in each language, also connected words with the object at 14 months. When bilinguals are presented with linguistically ambiguous sounds (when the same sound is heard differently in different languages), they experience difficulties [69], which is understandable, since in the framework of a study where the sound is presented outside of a linguistic context, the child cannot understand which language is being heard at a particular moment. The monolingual child here uses the principle of mutual exclusivity, based on the assumption that each object can have only one designation [70]. Such a principle is impossible for bilingual infants, for whom objects can have several defining words. K. Byers-Heinlein b J.F. Werker [71] showed that the more equivalents (words in two languages that mean the same thing) a child who speaks two languages knows, the more he or she is inferior to monolinguals. It is worth emphasizing that this is a temporary deterioration in language proficiency compared to monolinguals, because in the future this will become an advantage in constructing a picture of the world.

DISCUSSION OF RESULTS

We agree with the majority of works, which indicate that at the very beginning of language acquisition, monolinguals have some advantage in the speed of acquisition of many aspects of the language, since they have a picture of the world described in one way [3]. This is consistent with the data that they do not need to constantly turn on the monitoring system of which language should be used at the moment [21], and therefore do not need additional time for quantification [22] and

segmentation [23] of linguistic units. Theoretical concepts correspond to the data that later it is bilinguals who will have an advantage in the cognitive description of the phenomena surrounding them. Bilingual children generally know more words than native speakers of one language, when using two languages together [72].

We agree with the authors who note that children who acquire a second language at an early age slow down their development. An explanation of this phenomenon is given in the work of M. Grabowska [73], which is called "The pros and cons of bilingualism". The researcher describes how she taught her daughter English (it was not her native language), while her father always spoke Polish to the child. The child developed in a monolingual Polish environment. The author had to abandon this idea because the mother's teaching of English reduced the acquisition of both languages. Since this is the only work of this kind, it cannot be said with certainty that the child acquires languages better when the mother speaks to the child only in the mother's native language. The mother communicates with the child more than the father, therefore, the impact of the father's language is shorter. At the same time, the mother, speaking to the child in a language that is not her native language, becomes less natural in many of her behavior towards the child. M. Grabowska stopped the experiment with her daughter and completely switched to Polish in communication, which gradually compensated for the daughter's early problems. An analysis of literary sources showed that the most important difference between monolinguals and bilinguals in the first years of life is the presence of perceptual reorganization in the former. This phenomenon includes the strengthening of representations of categories of the native language and the deterioration of the perception of categories of the non-native language. Bilinguals have a delay in perceptual reorganization, which suggests a long period of recognizing the differences between elements of other languages, rather than a loss of perception of their natural distinction, which is emphasized by other authors [61].

Evaluation of the intelligence of bilinguals and monolinguals using the Colored Progressive Matrices of J. Raven [74] indicates an advantage of bilinguals when moving from one scale to another and is possibly associated with the restructuring of the approach to the analysis of the presented material at this moment. Thus, bilinguals reorganize more quickly and easily when moving from one task to another [75]. We believe that this indicates cognitive flexibility - one of the components of executive functions.

Executive functions are functions that are responsible for the management of lower-level cognitive functions, among them inhibitory control, working memory and cognitive flexibility are most often distinguished [76]. P.D. Zelazo [77] found greater cognitive flexibility in young bilinguals compared to monolinguals. A.M. Kovacs and J. Mehler [78] reported greater development of inhibitory control in 7-month-old bilinguals compared to monolinguals.

A review of scientific literature showed that higher development of the Theory of Mind was also found in 4-year-old monolinguals compared to bilinguals [79].

Thus, with a slower acquisition of the constructions of two languages, bilinguals gradually acquire a cognitive advantage consisting in greater development of executive functions, and therefore in a greater ability to change behavior in changing environmental conditions.

CONCLUSION

An analysis of scientific studies was conducted, which indicates that early bilingualism is associated with more complex information processing, and therefore earlier formation of cognitive control, which can contribute to more effective formation of the child's cognitive capabilities in a wide range of activities in the future. Bilinguals have a better formed ability to search for different options for analyzing the same material, sometimes due to a slower task completion.

A study of the works revealed the absence of perceptual reorganization in bilinguals, which reduces the ability to perceive the sound elements of non-native languages in monolinguals, which contributes to long-term sensitivity to the perception of any languages and can facilitate the perception of symbolic information in the future.

All studies emphasize the fact that bilingualism is easier to form in a multilingual environment.

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