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# Executive Functions and Communicative Competence Development in Preschool Bilingual Children

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## Abstract

The research explores the issues related to study the effects of bilingualism on cognitive development in preschool children, identifying the most common challenges they face and suggesting a technology for developing preschoolers' bilingual communicative competence. The study is based on fundamental ideas of sociocultural studies devoted to the role of learning environment in child development of cognition, emotion, imagination and creativity. We conducted the study in the Republic of Tatarstan (region in Russia), which is populated mainly by Tatars and Russians. One hundred sixty-five preschoolers (5-7 years old) took part in the survey. Cognitive differences and communicative competence between monolinguals and bilinguals were taken into account. Measures of executive functions were employed. Preschool teachers filled in observation cards. The study confirms that bilingual children are distinguished by cognitive abilities, in particular, peculiar "flexibility" of thinking, intellectual lability and non-standard approach to processing information of different levels. Monolinguals have a large lexical reserve and productivity of speech activity. Thus, a specialized educational environment with the features of in-depth foreign language learning is defined as a system of conditions created in order to achieve a specific level of a foreign language communicative competence including prerequisites for personal and cognitive development at a younger age.

*Keywords:* bilingualism, cognitive development, communicative competence, early bilingual exposure.

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## **Introduction**

Cognitive and communicative development is important measures of child development in a multicultural environment. Supporters of the sociocultural approach, developmental education (Bronfenbrenner, 1993; Davydov, 1995; El'konin, 1972; Galperin, 1969; Veraksa, 2011; Vygotsky, 1983), and the theory of early bilingual education (Belyanin, 2004; Bialystok & Martin, 2004; Bialystok & Shapero, 2005; Gabdulkhakov, 2014; Goetz, 2003; Protasova, 2003) believe that early second language learning in preschool educational institutions makes sense, as at preschool-age basic personality qualities develop and the foundations are laid for physical, moral and cognitive development. The earlier the child comes into contact with the second language, the higher the child's potential thrives in the future. However, the practices of bilingual competence development provide examples of "semi-lingual" preschool children, the cases when a thought cannot be fully expressed in any language. Such bilingualism effects on child's cognitive abilities and speech production in the mother tongue.

According to Zinchenko, Shaigerova, Dolgikh, and Savelieva (2019), we need to conduct a comprehensive study of the advantages and limitations, associated with the acquisition and usage of two or more languages.

## **Purpose and objectives of the study**

The aim of the study is to research the influence bilingualism on cognitive development in preschool children, identifying the most common challenges they face and suggesting a technology for developing preschoolers' bilingual communicative competence. The development of early bilingualism based on national and cultural traditions is considered as the further well-being of the child, and is the basis for a positive influence on the formation of the linguistic and ethnic identity of children.

## **Literature review**

Bilingualism is understood as a competence in two languages when both languages are commonly used in communication. Nelyubin (2003) understands bilingualism as an equal competence in two languages; Minyar-Beloruhev (1999) defines bilingualism as the knowledge of two languages; Schweitzer (2008) specifies that the first language is usually one's mother tongue, the second one is unrelated but widely used by one or another ethnic community. In this case, the competence in two languages can be different – oral speech skills, or literary written skills, or both forms. Weinreich (1972) understands bilingualism as the alternate use of two languages and clarifies that bilingualism is usually understood as the knowledge of two languages with regular switching from one to another depending on the communicative situation.

According to Leontiev (2010), to be a bilingual is to be able to carry out speech activities (more precisely, separate types of speech activities or their complex), using language means of one, or two languages depending on the immediate social environment, the purpose of communication, awareness of the interlocutor, and having more or less free choice of language for communication.

Mayorov (1997) offers the following interpretation of bilingualism: coexistence, interaction and mutual influence of two different languages in a single bilingual communicative space of a multinational state during a certain historical epoch. According to Amshokov (1999), the main problem of bilingualism is interactions of contacting language structures. However, the researcher points to its various aspects as the most important moments of these interactions.

Currently, numerous studies are devoted to the problem of bilingualism. The analysis of the works, related to the issue under study, suggests that there are three approaches to the influence of bilingualism on the mental and cognitive development: positive, negative and neutral (Bogus, 2008; Gabdulchakov & Shishova, 2017). The comparative research substantiate that bilingualism can be good or bad but in has a major impact on cognitive, communicative, and personal development of children (Marian, Blumenfeld, & Kaushanskaya, 2007).

## **Methodology**

The methodology of this study is based on fundamental ideas of sociocultural studies devoted to the role of learning environment in child development of cognition, emotion, imagination and creativity (Vygotsky, 1983; Bronfenbrenner, 1993), taking into account theoretical works and comparative research showing that bilinguals outperform monolinguals (Bialystok and Martin, 2004; Belyanin, 2009) and the study of the identification of factors, influencing early childhood multilingualism (Protasova , 2003).

We conducted our own study in Russia (the Republic of Tatarstan), where live mainly the Tatars and the Russians. One hundred sixty-five preschoolers (5-7 years old) were classified into two groups, Russian-Tatar bilinguals in one group and Russian-speaking monolinguals in other group. Cognitive differences and communicative competence between monolinguals (group A) and bilinguals (group B) was taken into account. Tests for assessment executive functions were employed.

For diagnostic purposes, the procedures were used in Russian because this was the common language of the participants. The questions of the “Language Knowledge Questionnaire” were adapted from the Language Experience and Proficiency Questionnaire (LEAPQ) (Marian et al., 2007). We also assessed divergent

thinking using a Creativity Assessment Packet (CAP) (Williams, 1980), the Russian version was adapted by Tunik (2003).

Only the children, attending the kindergartens for more than 6 months, received the cards. Under these conditions, the teachers assessed the competence of the children whom they knew well enough, while those, passing the period of adaptation in the kindergartens, were exempt from the procedure. All the participants received a consent form for signing and an information sheet.

## Results

The difference between monolinguals and bilinguals was taken into account according to the theory of second language acquisition (SLA). The main difference between the groups was the starting point of exposure to the second language (L2). The study shows that the bilingual group started to use second language L2 (Tatar language) between the age 1-6 (early bilinguals according to Lenneberg's theory (Lenneberg, 1967), and the monolinguals after the 8th year (late bilinguals because they started to use L2 after the critical period of SLA). The conducted studies show that after the age of eight to nine years the flexibility of the speech mechanism is lost in children.

At the initial stage, with the help of the selected diagnostic tool, we identified the features of the preschoolers' cognitive development in different groups. IBM SPSS Statistics 23.0 was used for the data analysis. Tables 1 and 2 present the analysis of average values of indicators in Groups A and B.

Table 1. The results of ANOVA analysis of variance: indicators of preschoolers' cognitive development

Indicators of preschoolers' cognitive development	Average values in Group A	Average values in Group B	F emp.
Mental flexibility	5,35	7,56	<b>19,72</b>
Verbal fluency	2,17	2,75	<b>3,56</b>
Figurative thinking and logic	3,10	3,75	<b>10,77</b>
Imagination	2,51	3,15	3,89
Auditory memory	3,00	6,2	<b>71,74</b>
Visual memory	4,22	5,3	2,06
Figurative memory	4,15	7,1	<b>44,66</b>
Productivity of speech activity	4,55	2,41	<b>25,67</b>
Lexical reserve	6,45	4,78	<b>15,14</b>

Note: Significant differences in the severity of cognitive development indicators for preschool children in the experimental groups are given in bold type (a given confidence level is  $p \leq 0.5$ ).

Table 2. The results of ANOVA analysis of variance: indicators of preschoolers' divergent thinking development

Indicators of preschoolers' divergent thinking development	Average values in Group A	Average values in Group B	F emp.
Fluency	11,23	11,14	3,04
Flexibility	7,37	9,13	<b>20,47</b>
Originality	17,76	14,12	<b>14,02</b>
Elaboration	12,61	8,57	<b>13,80</b>

Note: Significant differences in the severity of cognitive development indicators for preschool children in the experimental groups are given in bold type (a given confidence level is  $p \leq 0.5$ ).

With the help of a single-factor analysis of variance (ANOVA), we found significant differences in the values of a lot of the studied indicators in the experimental groups.

The results of the comparative analysis allow us to conclude that there are significant differences in the development of the preschoolers' cognitive processes in different groups. A bilingual educational environment is considered to be the condition for the cognitive, intellectual and personal development of children. Language is closely related to thinking. It reflects both how a person thinks, and shapes the process of thinking. In the course of learning a foreign language, memorizing a large number of words and rules helps the development of memory and attention. The ability to express one thought in several languages gives children an opportunity to see their language as one particular system among many others, which leads to special cognitivity in their linguistic strategies. According to Vygotsky (1983, 1999), the two languages that the child speaks do not collide mechanically with one another and do not obey the simple laws of mutual inhibition; on the contrary, there is a positive correlation between these types of speech abilities.

## Discussions

The study confirms that bilingual children are distinguished by cognitive abilities, in particular, peculiar "flexibility" of thinking, intellectual lability, and non-standard approach to processing information of different levels. Monolinguals have a larger lexical reserve and productivity of speech activity.

Therefore, bilingual educational space is a developing environment that takes into account external and internal conditions in order to boost a bilingual child development aimed to acquire social and cultural experience. External psychological conditions for the formation of bilingualism include a social

environment that contributes to the successful formation of bilingualism, the level of speech culture of the people around, the system of bilingual education, and an activity-based approach to learning that takes into account age characteristics. Internal psychological determinants of the successful bilingual development in children are foreign language abilities, cognitive and emotional factors, motivation, and personal qualities of the subjects of learning activity.

When a child encounters the bilingual education system, the problem of choosing one of the models of bilingual education comes to the fore. As a rule, the strongest place, as far as effectiveness of the educational process goes, belongs to the immersion model, i.e. the model of immersion in the language environment. This model assumes that preschool children acquire a second language at an early age. In the classroom, they "plunge into a foreign language environment", subconsciously acquiring phonetic and grammatical structures. Language learning occurs in the course of their daily activities (singing, drawing, modeling, playing, etc.). One of the most important components of the concept of "immersion" is contextualization when a spoken word or phrase is directly associated with a certain activity and is supported by actions, performed by a foreign language carrier, by flash cards and gestures.

Another model suggests a different approach to organizing bilingual education in pre-school institutions. According to this method, one native speaker speaks a foreign language, and the other speaks the mother tongue, thereby organizing in the mind of a young child the comparability of the language and the person, pronouncing phrases in this language. Such an early study will give the child an opportunity to get used to a foreign language and ensure its successful learning in elementary school.

The "spatial model" implies creating an image of the country, whose language is being learned, in one of the rooms or the premise of a preschool institution so that visual aids, tables and posters, could promote foreign language learning and serve as scaffolding in the classroom. At a certain point, one of the teachers, speaking only the studied foreign language, conducts classes with preschool children in this linguistic "space".

The most favorable model for the development of early bilingualism is the one based on the principle "one person - one language" ("one situation - one language"). The effectiveness of this principle is explained by the fact that children of younger preschool age often identify languages with certain people, thus children connect the studied foreign language with a certain person using this language. This principle is implemented in the family or in the educational environment. In this case, a child speaks one language with certain members of the family and uses the other language with other members, or speaks Russian at home and attends a Tatar group in a pre-school education institution. In the course of time, the child begins to differentiate the two language systems and easily switches from one language to another.

However, in practice, the principle of "one situation - one language" is not always effective, as it is difficult to achieve a balance of language situations, and one of the languages dominates. Therefore, it is important to consciously approach the formation of children's early bilingualism and to choose the model of bilingual education that takes into account socio-cultural, psycholinguistic, linguistic, and methodological aspects of bilingual development.

## **Conclusion**

Thus, a bilingual educational environment is defined as a system of conditions created in order to achieve a specific level of a bilingual communicative competence, including prerequisites for personal and cognitive development at a younger age. Formation of early bilingualism is not solely oriented towards learning; its main goal is the comprehensive development of children's personality, the development of their communicative abilities, and cognitive processes. The realization of age capabilities for the development of the child's future foreign-language competence is conditioned by the educational environment, which becomes more effective with the increase of the developmental effect of learning activity.

The obtained results confirm the advisability of early non-native language learning as well as the need to find opportunities to organize foreign language teaching at a preschool age to take advantage of this period favorable for language acquisition (Javor, 2016). Preschool age is the most favorable period for learning a foreign language due to a number of psychological factors. This is the age of potential childhood capabilities, the period of intense perception and formation of language abilities.

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## **Abbreviations**

LEAPQ Language Experience and Proficiency Questionnaire

CAP Creativity Assessment Packet

SLA Second Language Acquisition

L2 Second Language

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