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ScienceDirect

Procedia - Social and Behavioral Sciences 233 (2016) 486 – 491

Procedia
Social and Behavioral Sciences

Annual International Scientific Conference Early Childhood Care and Education, ECCE 2016, 12-14 May 2016, Moscow, Russia

Speech perception by left-handed preschoolers with different types of hemispheric laterality

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Abstract

The aim of the study was to examine the characteristics of speech perception while teaching a foreign language to left-handed preschoolers. The relevance of the study is based on the insufficient state of knowledge of the issue and a new approach to the issue of left-handedness. Currently, left-handed children are no longer retrained and that was the reason for creation of different educational technologies. The study used interesting methods of speech study: the differential hearing sensitivity determination technique by J.A. Vedenyapina, the dichotic listening technique by D. Kimura adapted by B.S. Kotik. Conclusively significant differences were found when we compared most of the indicators in the group of left-handed preschoolers with different types of Functional Brain Asymmetry (FBA). There were conclusively significant differences identified by comparing the left-handed and right-handed preschoolers with strong right hemispheric laterality at all levels of differential hearing sensitivity. The results can be used by teachers of various types of educational institutions, as well as the parents of left-handed children.

Peer-review under responsibility of the organizing committee of ECCE 2016.

Keywords: speech perception, hemispheric laterality, left-handedness, foreign language speech

1. Introduction

Children with special needs fall within the area of special attention under the conditions of innovative transformations in the sphere of education. Left-handed children, too, belong to this group. Currently we are increasingly often seeing unretrained left-handed preschoolers while ambidexters are rare, too.

For the purpose of a child's compliance with certain standards of education his parents forcibly retrained him to write and work with his right hand, which almost always became a psychotraumatic situation for the

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Peer-review under responsibility of the organizing committee of ECCE 2016.
doi:10.1016/j.sbspro.2016.10.199

child. In addition to the focus on some dissimilarity to other children, retraining itself resulted in psychoemotional and cognitive stress.

Due to the actualization of this issue, the majority of teachers and parents have shifted their position from retraining a left-handed child to accepting his nature and offering educational technologies that are comfortable and ergonomic for him, taking into account his view of life and reflection of the environment.

A child's left-handedness does not mean trivial actions with the left hand, left-handedness means a cerebral organization of cognitive functions completely different from that of the right-handed, which must be considered in education and training [1]. The study of left-handedness issues by national and foreign scholars is presented from the viewpoint of the brain functional laterality, characteristics of the cognitive sphere, attempts have been made to study the causes of left-handedness [1].

However, the issue remains open to research. There are practically no studies on left-handedness in the preschool period of a child's life [1]. In connection with the above, special significance is given to study of the cognitive sphere of a left-handed child, in particular to speech as a basis of the cognitive activity of a person. Speech and language are complex cognitive-perceptual systems, which include the development and functioning of all cognitive processes. Currently, this is reflected in the integrative theory of speech which, in our opinion, is an innovative step not only in psychological science, but also in linguodidactics and linguoeducational psychology [2].

Of particular interest is the relationship between qualitative and quantitative indicators of speech development and attentive-mnestic characteristics, especially in foreign language acquisition. Qualitatively formed attentive characteristics are the key to a highly productive and efficient mnestic activity of a student.

In our view, innovative methods of formation and development of the cognitive sphere consist of rehabilitation of traditional auditory-verbal learning technologies: storytelling, retelling, listening tasks with different kinds of information presentation. This, in turn, encourages concentration, perseverance, discipline and obedience [3].

2. Method

Analysis of the relevance of the study and definition of the objective prerequisites allowed us to formulate the aim of this research - to study the characteristics of speech perception by left-handed preschoolers with different types of functional laterality.

To implement the study we used the differential hearing sensitivity determination technique by J.A. Vedenyapina (1979) and the dichotic listening technique by D. Kimura adapted by B.S. Kotik. Participating in our study were 20 left-handed preschoolers. They formed the control sample. The subject was the cognitive sphere (speech perception) of left-handed preschoolers with different types of functional laterality (FL).

At the first stage, the subjects were offered dichotic listening technique by D. Kimura adapted by B.S. Kotik [4]. In contrast to the differential hearing sensitivity determination technique (DHS), this technique interested us in terms of the indicator of sensitivity to the articulatory aspect of speech, i.e. phonemic. The indicator, which can give such information - ER (efficiency ratio) represents the number of correctly reproduced words.

As a result of playing dichotic verbal series we determine the right ear coefficient (REC) using the formula: $REC = (R - L)/(R + L)100\%$ where R is the total number of correctly reproduced words using the right ear, L is the total number of correctly reproduced words using the left ear. Basically, REC may vary from +100% (stimuli are reproduced only using the right ear) to -100% (stimuli are reproduced only using the left ear). REC positive values determine a relative prevalence in reproduction of the units, presented to the right ear. The indicator P (productivity) means the number of all correctly reproduced words using both sides, that is R + L. The efficiency ratio $ER = (P-E)/(P+E)100\%$, where E is the number of errors made, i.e.,