

Program and Abstracts

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PROGRAM

PROGRAM

Friday, 01.11.2019.

09.00 – 10.00 **REGISTRATION**

10.00 – 11.00 **CONFERENCE OPENING**

Chairpersons: A. Kostić, M. Sovilj, S. Jovičić, M. Subotić, D. Raković

A.Kostić- Language structures are solution close to optimum for a given cognitive constraints

11.00-18.00 **PLENARY LECTURES, ORAL PRESENTATIONS**
POSTER PRESENTATIONS

Time	PLENARY LECTURES	Lecturer
Chairpersons: M. Subotić, D. Raković, L. Nazarenko		
11.00-11.30	DNA or nurture in formation of the personality: Is all accounted in this discussion?	G. Brekhman, K. Brekman (Israel)
11.30-12.00	Applicability of phonetic perceptive tests for speech therapy and practice	H. Tivadar (Slovenia)
12.00-12.30	Speaker personality, individuality and uniqueness of human voice	D. Popov (Bulgaria)
12.30-13.00	Electrophysiological correlates of reading in adults with dual literacy	M. Sovilj, Lj. Jeličić, M.Stokić (Serbia)
13.00-14.00	COFFEE BREAK	
Chairpersons: G. Brekhman, H. Tivadar, D. Popov		
14.00-14.30	Nikola Tesla as a case study for quantum-holographic correlations of individual and collective consciousness: creative and spiritual implications	D. Raković (Serbia)
14.30-15.00	Challenges in the application of telepractice	M. Subotić, R. Bilibajkić (Serbia)
15.00-15.30	The use of prenatal graded sound stimulation in the evaluation of the fetal status and for predicting newborn desadaptation	L. Nazarenko, Lj. Gyk, I. Semerinskaja (Ukraine)
15.30-16.00	Speaking through Our Eyes!	J. Turner, T. Turner, O. Gouni, G.I. Brekman, D.Rakovic (US, Netherlands, Greece, Serbia)
16.00-16.30	COFFEE BREAK	

Time	ORAL PRESENTATIONS	Lecturer
Chairpersons: O. Gouni, V. Vasileva, D. Đorđević		
16.30-16.40	Праксиология использования комического письма в языке мед	L. Duskaeva (Russia)
16.40-16.50	Prosodic text rhythm and comic effects: the possibility of correlation	V. Vasileva (Russia)
16.50-17.00	New knowledge's on genetic continuity and linguistic continuity of the Serbian language	D. Đorđević (Serbia)
17.00-17.10	Error Correction in the Foreign Language Classroom: Why, When, How?	A. J. D. Toledo (USA)
17.10-17.20	Is there an atypical oculomotor signature in autism spectrum disorder?	V. Nenadovic, M. Stokić, V. Žikić (Serbia)
17.20-17.30	A Constructional Account of Word Formation in Persian: Evidence from Compounding	A. Safari (Iran)
17.30-17.40	The Inherited form of 22q11.2 Deletion Syndrome: Speech Impairment and Delay in Language Development	M. Rakonjac, G. Čturiilo, M. Stevanović, M. Sovilj, D. Drakulić (Serbia)
17.40-17.50	Perinatal Risk factors in disharmonious development and the development of communication	I. Juhász (Hungary)
17.50-18.00	Meow! Woof! Neeigh! - Is language unique only to human beings?	J. Živanović, N. Janković (Serbia)
	The effect of age on grammar comprehension in adults with intellectual disabilities	A. Perović (UK)
	Fast mapping vs. explicit encoding of novel words: ERP evidence	O. Shcherbakova, A. Kirsanov, M. Filippova, E. Blagoveshchensky, Y. Shtyrov (Russia)
	The outcomes of the individual phonetic correction on the example of Croatian fricative /s/	A. Dobrić, M. Haičman (Croatia)
	Aspects of bimodal communication: Croatian spoken and Croatian Sign Language	R. Geld, D. Posedi, D. Tomić (Croatia)
	Agrammatism in Moroccan Arabic Speakers	S. Diouny (Morocco)

Time	POSTER PRESENTATIONS 10.00-19.00	Lecturer
	The state of oral practice in dysphasic children	A. Veselinovic, M. Marisavljević, J. Nikolić (Serbia)
	Attachment in children with autism	M. Marisavljević, D. Zečević, A. Veselinović (Serbia)
	Students Views on Teaching Content From Subject Knowledge Society	I. Pavković, I. Ristić, I. Stanković (Serbia)
	Graphomotor abilities in children with specific language impairment	M. Đorđević, J. Nikolić, S. Đorđević (Serbia)
	Application of neurofeedback treatment in children with specific language impairment	M. Tešić, I. Stanković, S. Todorović (Serbia)
	Neurofeedback application in the treatment of speech and language, attention, behavior and learning disorders in children	D. Zečević, M. Tešović, S. Fatić (Serbia)
	Attitudes of Pupils of Elementary School Age Towards Learning and Teaching Contents From Subject Knowledge of Nature in Inclusive Teaching Context	I. Ristić, I. Pavković, I. Stanković (Serbia)
	Effects of multimodal treatment to attention in children with ADHD	V. Plečević, S. Đoković (Serbia)
	Energy transfers of the linguistic and harmonic structures of the number 144 system	M. Grozdanović, A. Margot, M. Sovilj (Serbia)
	Evaluation of individualization of schooling in students with language-speaking difficulties.	N. Mravlinčić (Croatia)
	I am gifted but school is still problem for me	M.- Alifirev Njegovan- (Croatia)
	The impact of medication during pregnancy on fetal development	M. Tešović, I. Bogavac (Serbia)
	Gender effect on reading performance in elementary school children	N. Stanojević, S Fatić, M. Mitrović (Serbia)
	The influences over the linguistic components of the individual language acquisition	M. Dimitrova (Macedonia)
	Characteristics of developmental abilities in young children	M. Janjić, M. Stokić (Serbia)
	Alphabetical foundation of the universe: Philosophy, anthropology, sociology, physics and biology	G. Dlyasin (Russia)

PROGRAM
Saturday, 02.11.2019.

10.00-19.00

Time	PLENARY LECTURES	Lecturer
Chairpersons: S. Jovičić, B. Gerazov, M. Sečujski		
10.00-10.30	Prenatal Human Modification, Designing Babies and the End of Homo Sapiens	O. Gouni (Greece)
10.30-11.00	Comparison of acoustic properties of voice quality before and after thyreoplasty	G. Škarić Varošanec, S. Stevanoviće, I. Bašić (Croatia)
11.00-11.30	Innovations in the Bulgarian child Syntax	V. Popova (Bulgaria)
11.30-12.00	Alphabetic systems generating the new paradigm	Gennady G. Dlyasin (Russia)

12.00-12.30 *COFFEE BREAK*

Chairpersons: G. Škarić Varošanec, V. Popova, Gennady G. Dlyasin

12.30-13.00	Modeling Speech Prosody – Comparing and Contrasting the Physiologically Inspired Bottom-Up Models and Deep Learning based Top-Down Models	B. Gerazov (Macedonia)
13.00-13.30	How the advent of machine learning transforms speech Technologies	M. Sečujski, T. Nosek, S. Suzić, D. Pekar, E. Pakoci, B. Popović, V. Delić (Serbia)
13.30-14.00	Speech perception under adverse conditions in communication: Modern views	S. Jovičić (Serbia)
14.00-14.30	Characteristics of Language Disorders Following Traumatic Brain Injury	M. Vuković (Serbia)

14.30-15.30 *COFFEE BREAK*

Time	ORAL PRESENTATIONS	Lecturer
Chairpersons: M. Drossinou-Korea, Z. Šarić, M. Vojnović		
15.30-15.40	Orthomolecular psychiatry – the significance of nutrition and micronutrients in advancement of mental health	T. Antin Pavlović, B. Stankov (Serbia)
15.40-15.50	Agrammatism in Moroccan Arabic Speakers	S. Diouny (Morocco)
15.50-16.00	Communication levels from biomolecules to noosphere - new insights	L.Šurlan (Serbia)
16.00-16.10	Adaptive endfire microphone array for ambient noise suppression in speech therapy treatment by KSAFA-D device	Z. Šarić, M. Subotić, R. Bilibajkić (Serbia)

16.10-16.20	Langue de bois et propagande dans le discours politique de Jean-Marie Le Pen	M. Tomescu (Romania)
16.20-16.30	The peer relations of students with special educational needs in university: The sociological and cultural aspects to importance of speech and language interactions.	M. Drossinou-Korea (Greece)
16.30-16.40	On the issue of basic mechanisms of language strategies in childhood	O. B. Sizova (Russia)
16.40-16.50	Perception of Speech Sounds' Pronunciation Quality Based on the Acoustic Features	S. Punišić, R. Bilibajkić, M. Vojnović, M. Subotić (Serbia)
16.50-17.00	The Importance of Preschool Hearing Screening	T. Adamović, S. Maksimović, M. Vojnović (Serbia)

17.00-17.30 COFFEE BREAK

Chairpersons: Z. Matić, D. Furundzic, T. Adamović,

17.30-17.40	Detection of lateral sigmatism using Support Vector Machine	R. Bilibajkić, M. Vojnović, Z. Šarić (Serbia)
17.40-17.50	Specific protocol for hearing assessment in preterm Babies	B. Mikić, M. Nikolić, A. Jotić (Serbia)
17.50-18.00	Sleep - a multifunctional phenomenon: memory consolidation and protective effect with respect to psychosomatics	T. Bojić, Z. Matić, S. Mandić Rajčević, I. Soldatović, Lj. Čvorović, Z. Rašić Milutinović, A. Kalauzi (Serbia)
18.00-18.10	Quality assessment of speaking voices using information technologies	D. Furundzic, S. Punisic, M. Subotić (Serbia)
18.10-18.20	The influence of sensorineural hearing loss on aural speaker recognition	J. Kudera (Germany)
18.20-18.30	Accented vowels in Serbian language	M. Vojnović, R. Bilibajkić (Serbia)
	Fragile x syndrome	D. Protić (Serbia)
	The modern development of linguistic - pedagogical technologies	M. Goncharenko (Ukraine)
	The Uniformity and Variation of Pitch Accents in Standard Serbian	D. Zec (USA)
	Materiality of speech as a virtual component of human existence	S. Tashaev (Russia)
	The impact of Speech Processes on Oral Language Processing	C. Smaoui (Tunisia)

18.30-19.00 CONFERENCE CLOSING

Time	POSTER PRESENTATIONS 10.00-19.00	Lecturer
	Statement Duration in Developmental Verbal Apraxia	V. Đorđević, M.Panić, V.Žikić (Serbia)
	Characteristics of auditory information processing in children with specific language impairment	Lj. Jeličić, I. Bogavac, I. Veselinović(Serbia)
	Risk Factors at Birth and Their Impact on Prelingual and Early Lingual Development in Premature Infants	M.Panić, V. Đorđević, N. Stanojević (Serbia)
	Physiology of speech and sleep-converging evidences about the core pathophysiological mechanism of chronic tinnitus	Z. Matić, S. Mandić Rajčević, I. Soldatović, Lj. Čvorović, Z. Rašić Milutinović, A. Kalauzi, T. Bojić (Serbia)
	Development of linguistic and cognitive skills in children with scholastic skills disorders	V. Žikić, S. Golubović, M. Panić (Serbia)
	Tongue as the organ of speech - its importance, symbolism and connection to other body parts in medical traditions of ancient civilizations	A. Žikić (Serbia)
	Speech and Language Development in Children with Developmental Dysphasia	J. Nikolić, M. Đorđević, A. Veselinović (Serbia)
	Examining the effects of speech and language treatment on the reduction of symptoms which may be indicators of the presence of autistic spectrum disorder	S. Maksimović, M. Marisavljević, M. Janjić (Serbia)
	The Influence of Genetic Conditions on Increasing Risk of The Speech-Language Pathology at Children	M. Rakonjac, I. Bogavac, M. Stokić, M. Vujović (Serbia)
	Language lateralization during auditory perception in left – handed children	S. Fatić, N.Stanojević, M. Stokić (Serbia)
	Evoking lexical units in children with specific language impairment and irregular patterns of EEG activity	S. Đorđević, M.Đorđević, I. Nenadić (Serbia)
	The impact of group psychotherapy workshop on the emotional state	D. Sovilj , V. Kljajević, (Serbia)
	Communication Of The Deaf Employees	I. Mitrović Đorđević, V. Todorović (Serbia)
	Risk factors prevalence in children with speech and language disorders	I. Bogavac, M.Tešović, Lj. Jeličić (Serbia)
	Formation of phonemic and harmonic structures of the Serbian language of the 144 system	M. Grozdanović, A. Margot, M. Sovilj (Serbia)
	Alexia without agraphia – case study	G. Tomić, J.Nikolić, S. Punišić, M. Subotić, J. Zidverc-Trajković (Serbia)
	Caesarean section as a compromising factor in psychomotor development	M. Mitrović, S. Đorđević, M. Pantović (Serbia)

ABSTRACTS

LANGUAGE STRUCTURES ARE SOLUTION CLOSE TO OPTIMUM FOR A GIVEN COGNITIVE CONSTRAINTS

Aleksandar Kostić

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The dominant focus of psycholinguistic research is how we process natural language. The perspective presented in this study is somewhat different with the principal question being why language looks the way it looks. This perspective is rooted in a strong belief that prior to the question how we process language we should ask what are the origins of the observed language structures. Once we understand the logic of language structures the answer to how we process language may not come for free but it may provide us with insights that will enhance our understanding of the complexity of language processing.

The starting point of this approach is the perspective where the observed language structures are the solution close to optimum for a set of cognitive constraints. In other words, given the set of cognitive constraints, what might be the solution close to optimum that will allow complexity observed with language structures. With this in mind, the challenge is to identify the relevant cognitive constraints that allow for the observed language structures. In this study we'll focus on inflected morphology, in particular, on inflected forms of Serbian nouns. In a series of experiments it was demonstrated that processing of inflected Serbian noun forms of masculine, feminine and neuter gender is determined by the amount of information (bit) carried by a particular inflected noun form of a given gender. However, in linear regression the slope varied from experiment to experiment, indicating the processing speed variation per bit in a given experiment. This variation is determined by the cross entropy of a given experiment where the increase of the cross entropy values was paralleled by faster processing per bit. The obtained function of slope variation turned to be hyperbola with the asymptote being around 7 bits. Likewise, the decrease of the cross entropy value was paralleled by slower processing with the asymptote being around 0.5 bits. In other words, the complexity of the system (i.e. paradigm of a particular noun gender) is inversely related to processing speed per bit. The observed asymptotes could be taken as a boundary conditions for structuring of inflected noun forms, i.e. the complexity increase beyond asymptote values could not be additionally compensated by processing speed per bit increase.

The other cognitive constraint is related to the homogeneity of inflected forms probability within a given paradigm (i.e. declension of a given gender). In diachronic study within span of 800 years, probability variation of Serbian noun cases was inspected. In spite of dramatic changes in case probabilities it was demonstrated that Shannon's equitability values (i.e. ratio between obtained and maximum entropy) remained unaltered. In other words, what had been conserved is the distance of a paradigm from the maximum entropy. Put differently, any probability change of a given inflected case is permissible as long as the whole system (paradigm) preserves its distance from the maximum entropy.

The respective constraints presented in this study are just a subset of cognitive constraints that have yet to be identified.

СОВРЕМЕННОЕ РАЗВИТИЕ ЛИНГВО - ПЕДАГОГИЧЕСКИХ ТЕХНОЛОГИЙ

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На основе анализа современного развития лингво-педагогических технологий сделан вывод о том, что для реализации принципов синергетики в образовании необходима новая образовательная технология, которая решила бы триединую задачу: воспитание творческой личности, ее адаптацию к условиям жизни, которые изменяются, предоставление возможностей для дальнейшего саморазвития и самореализации.

Ключевые слова: педагогика, образование, лингвистика, синергетика, здоровьесбережение.

COMPARISON OF ACOUSTIC PROPERTIES OF VOICE QUALITY BEFORE AND AFTER THYROPLASTY MEDIALIZATION

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After vagus nerve was recessed, due to the resulting gap and lack of adduction voice quality was poor, the timbre was completely unharmonic and phonation type whispery. Six years after the surgery thyroplasty type I (medialization thyroplasty) was conducted. Before and after the procedure the following data were collected: subjective assessment of voice quality, (VHI), phonetic, auditory assessment, and acoustic analysis including: F0 measures, tone and intensity perturbations, HNR during phonation, and long term average spectrum (LTASS). After thyroplasty the subjective assessment was that there is no voice quality disorder. Phonetic protocols provided information about complete comprehensibility, good speech quality, optimal communication, middle tone, normal loudness, no supralaryngeal modifications, modal phonation, adequate breathing and rhythmicity. Acoustic parameters indicated significant differences in jitter ($p>0.0001$), shimmer ($p=0.001$), dispersion F0 ($p=0.002$) and HNR ($p=0.005$). Regarding timbre, during reading and spontaneous productions showed more balanced LTASS. Interdisciplinary approach motivates patient because higher voice quality improves life quality.

Keywords: voice quality, medialization thyroplasty, VHI questionnaire, phonetic assessment, acoustic analysis

THE UNIFORMITY AND VARIATION OF PITCH ACCENTS IN STANDARD SERBIAN

Draga Zec
Cornell University

Standard languages are commonly subject to deliberate efforts at promoting their uniformity, generally referred to as language standardization. Such efforts are counterbalanced by a ubiquitous tendency in language towards variation at all its levels. In this talk, I address aspects of uniformity and variation in the complex prosody of Standard Serbian, which, from a broader typological perspective, corresponds to a hybrid prosodic system. Standard Serbian is traditionally characterized as a pitch accent language, with contrasting Rising and Falling melodies associated to stressed syllables (Lehiste & Ivić 1986). However, Rising and Falling pitch accents can be beneficially decomposed into lexically associated High tone and stress (Browne & McCawley 1965, Inkelas & Zec 1988). Placement of stress then depends on placement of High tone. If lexical High tone is word-initial, stress and High coincide, resulting in a Falling accent. If High tone is non-initial, stress falls on the immediately preceding syllable, yielding a Rising accent. Thus, in Falling accents High tone and stress converge on the same syllable, while in Rising accents stress falls one syllable ahead of High tone. But while this overall organization of Standard Serbian hybrid prosody is promoted by standardization efforts, and is broadly embraced in the speech community, its uniformity is only apparent. We will present two cases of variation, one involving stress and the other involving High tone. Our first case is a class of loanwords in which stress falls on the syllable preceding a non-initial High tone only if that syllable is word-initial; otherwise stress and High tone converge on the same syllable. This results in a class of loanwords with Falling accents on non-initial syllables, which as such do not conform to the prescribed standard, yet are part of common usage. Our second case concerns the interaction of lexical High tone and the Low intonational tone, which varies across regional idioms. Thus, in Belgrade, the realization of the intonational Low tone causes the retraction of the lexical High to the preceding stressed syllable, while further to the north, the High tone is unaffected by the intonational Low, which is simply not realized. These two cases illustrate how language users contribute to variation by creating subsystems within the larger common prosodic system; and how their input further undercuts the tenuous uniformity of the standard linguistic idiom.

THE MATHEMATICAL ALPHABETICAL SYSTEMS ORIGINATING THE NEW PARADIGM

Gennady Dlyasin

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Dedicated to the 150th anniversary of the Chemical Elements System

This paper presents the concept of organizing the fundamental principles of mathematics - elementary functions and convex bodies of Plato and Aristotle. Exploring the systemic of natural and socio-psychological phenomena and continuing to search and find in this objective world the invariant of the universal system of 24-elements (after the first system – protein amino acids and nitrogenous bases of nucleic acids), the author remains convinced of the possibility of the existence of new systems. And he transfers his conviction to abstract subject areas — and discovers his systems in these areas twice. Functions and convex polyhedrons confirm the principles of the adopted research program - the consistent unfolding and complication of constituents of the systems in fives (rows) and tens (periods) of elements, mirror symmetry of two periods with each other, the presence of the "genetic" kernel from four elements-"generals" and another.

Keyword: Arithmetic (operators): addition, subtraction, multiplication and division. System of four arithmetic actions. Elementary functions and their curves. System of twenty functions. Symmetry of system of functions. 3D-system of the functions. Platon's bodies. Aristotle's bodies. A prism and an antiprism. System of twenty convex bodies. Symmetry of bodies system. System of four special elements for twenty convex bodies. 3D-system of convex polyhedrons. Transfer of the notion about the genetic code of living on mathematical abstractions.

ALPHABETICAL FOUNDATION OF THE UNIVERSE:

Philosophy, Anthropology, Sociology, Physics and Biology

Gennady Dlyasin

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DEDICATED TO THE 150TH ANNIVERSARY OF THE CHEMICAL ELEMENTS SYSTEM

This work presents the author's concept of organization of each level of the Universe in the form of a matrix (and 3D-) system-alphabet. This system was previously discovered for molecular foundations of the genetic code - and then - for the vowels and consonants of the phonetic alphabet. As in these cases, each of the alphabets turned out to be composed of 24 elements. When considering the system of the society, the four central bases were the Culture, Economics, Politics and Law, while the remaining twenty elements surrounded them with four symmetrical tapes of five in each. They completely covered all sides of the social existence. Each of these twenty elements turned out to be a unity of paired opposition, homologous to that for the protein amino acid (amine + acid), and the model of society appeared as the globule of a protein molecule. A discussion of the results is built around the principal aspects of the breakthrough. First of all, this is a real "Transfer", which means the possibility of introducing the accuracy of the natural sciences into the Sociology. Secondly, these are new perspectives for the historical research and futurology, opening up with the identification of the laws of relationships of the system units of the "mechanism" established here. And here we present several anthropic alphabet systems, as well as systems of philosophical and synergetic categories. And also - some of the alphabetical foundations of the physical and biological worlds. These Applications have transformed this work from sociologic to synthetic.

Keyword: System, Vortex (spiral and symmetrical system of chemical elements), Alphabet. Alphabet system. Amino acids. System of protein amino acids and nitrogenous bases. Gen-"butterfly". Phon-"butterfly". Socio-"butterfly". Universe "floors". The Single triplet code - genetic, speech of the human and society. Symmetry. Co-symmetry. Geometric and optical isomerism of 3D-system. Metachemistry of the Society. The Big Transfer of the Sciences. Exact sociology. History Metachemistry. Symbolism Metachemistry. Anthropic principle. Anthropic Alphabetic Systems.

THE EFFECT OF AGE ON GRAMMAR COMPREHENSION IN ADULTS WITH INTELLECTUAL DISABILITIES

Aleksandra Perović

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Individuals with intellectual disabilities often show limitations in language functioning, commonly linked to their overall poor cognitive skills. However, language seems more vulnerable in some populations, e.g. Down syndrome (DS), and is relatively preserved in others, e.g. Williams syndrome (WS). Individuals with DS are also known to be at increased risk of cognitive decline due to earlier onset of Alzheimer's dementia, although little is known about how aging affects grammar comprehension in this population. Individuals with WS, though with relatively developed language, are reported to have particular difficulties with complex grammatical structures that appear late in typical development, such as passives of psychological verbs (Perovic & Wexler, 2010).

In an attempt to better understand how linguistic deficits in individuals with intellectual disabilities can be teased apart from effects of general language delays, chronological age, and overall intellectual impairment, we compare comprehension of passives in English-speaking adults with DS (mean age: 38) and WS (mean age: 30). Passives are known to develop late in typical development, especially passives of psychological verbs (*see, remember*), compared to actional verbs (*kiss, hold*).

Our results reveal divergent patterns of performance: adults with WS performed no different from younger typical controls, while adults with DS showed an exceptionally poor performance on all sentence types, even on actives of actional verbs. While the good performance of adults with WS might be due to individual variation, rather than continuous language development, we argue that the poor performance of participants with DS is due to an age-related decline of cognitive and language abilities, possibly linked to Alzheimer's type dementia.

ELECTROPHYSIOLOGICAL CORRELATES OF READING IN ADULTS WITH DUAL LITERACY

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Background: In Serbia, children from the earliest stage of education learn to read and write both Cyrillic (as first) and Latin (as second) scripts. From the second grade of the elementary school children read and write both scripts effortlessly. To the best of our knowledge, there are no studies aimed at exploring electrophysiological basis of this phenomenon.

Aim: we wanted to explore possible differences in EEG during reading Cyrillic and Latin scripts in adult fluent readers with no history of dyslexia nor dysgraphia.

Method: we recorded EEG (10/20 system with 19 electrodes) in 30 right-handed adults, aged 27-42, with normal or corrected to normal vision. Participants read silently short neutral paragraph (weather forecast) written in Cyrillic and Latin capital and handwritten letters. The order of scripts and modalities were counterbalanced. The spectral power and Higuchi's fractal dimension were calculated.

Results: The obtained results showed different activity of left frontal regions in Theta rhythm during reading capital vs. handwritten letters in both Cyrillic and Latin scripts. Alpha rhythm showed decrease in spectral power during reading in posterior regions when compared to resting state. However, we found no differences in EEG theta and Alpha spectral power between Cyrillic and Latin scripts. **Discussion:** the obtained results suggest that brain in people who have dual literacy from the early stage of education do not differentiate two scripts. However, increased Theta spectral power in F7 region might reflect more difficult grapheme-phoneme conversion during reading handwritten script compared to capital letters.

MATERIALITY OF SPEECH AS A VIRTUAL COMPONENT OF HUMAN EXISTENCE

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Three kinds of Matter are identified, which are corpuscular, field and virtual kinds. No one of them can exist independently. Special consideration is given to the virtual kind of Matter due to its ability to connect all other kinds of Matter in the past, present and future in all directions. Examples of the “programming languages” are: photon emission in any biochemical reaction; full set of chromosomes in any cell of the living organism, regardless of the functions and structure of that cell. Such “redundant design” might serve as an instrument for holographic application to the living matter. Human speech hierarchically resides at the very top of such “programming languages”. After thorough investigation of prenatal speech memory and publicly available scientific data we’ve made the following conclusions:

1. The virtual kind of Matter operates with several “programming languages”, by means of which it is able to interact with the other kinds of Matter and dynamically balance the Entropy and the Order.
2. Available features of programming language and its “competence” in dynamic balancing of Entropy and Order determines its position in the common hierarchy of programming languages.
3. Human speech resides at the very top of the hierarchical structure of these programming languages and, in its turn, has its own hierarchical structure – from the “mind diarrhoea” and various small talks to the speech as an act of creation.
4. Human speech is not a product of human brain, despite of the presence of speech areas (Broca’s area and Wernicke’s area) in the latter.
5. These areas serve for the retranslation of speech rather than its generation – by the analogy of the railway, which is not the source for train’s motion but just the tool for such motion and its optimisation in terms of energy costs.
6. The structure of speech and the meaning of separate words is evolving constantly over time, which serves as a proof for the existence of bidirectional feedback between the virtual reality and the time as such.

DNA OR NURTURE IN FORMATION OF THE PERSONALITY: IS ALL ACCOUNTED IN THIS DISCUSSION?

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Entering into a polemic, which is the main thing in what makes us who we are: nature or nurture, the authors indicate that this happens against the background of the constant interaction of genes and the environment, starting from conception. Consideration of this phenomenon from the perspective of multifactorialness reveals the significance of circumstances (environmental, social, psychological) under which the birth and formation of the personality occurs, as well as the role of emergentness in maintaining the integrity of the individual.

Keywords: Nature or nurture, birthing, genetic system, ecological and social environment.

THE USE OF PRENATAL GRADED SOUND STIMULATION IN THE EVALUATION OF THE FETAL STATUS AND FOR PREDICTING NEWBORN DESADAPTATION

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The strategy of perinatal risk, as the basic platform of perinatal medicine of the 21st century, provides for the earlier identification of a group of women in whom pregnancy and childbirth can lead to the birth of a sick child with unsatisfactory life prospects. One of the reserves for preventing an adverse perinatal outcome is the evaluation of the adaptive resources of the fetus during labor. The purpose of the work is to assess the diagnostic and prognostic value of the prenatal functional test with sound stimulation. A comprehensive study of 116 women with a single fetus pregnancy without congenital malformations, in the period 34-40 weeks. The method of "prenatal hearing screening" was applied by M.Sovilj, A.Ljubic (1992) with a Dopplerometric assessment of the dynamics of the parameters of vascular resistance in the middle cerebral atheria of the fetus, in combination with cardiotocography. A comparative characteristic of pregnancy and childbirth is presented for various variants of the fetal response to an sound stimulation. It was shown that a positive reaction to a sound stimulus is observed in 73.6%. There are no changes in pregnant women with hypertensive disorders, with a scar after cesarean section, as well as with breach presentation of the fetus. A correlation of the reactive test with sound stimulation of the fetus and impaired early neonatal adaptation of the newborn was revealed.

The Conclusion A functional test with sound stimulation of the fetus has advantages: it reduces the number of cases of areactive cardiotocography, contributes to the selection of the optimal delivery model, makes it possible to predict the state of hearing and the nervous system of newborns, justifies the need for parents to learn prenatal communication technologies.

Keywords: acoustic stimulation, fetus, adaptation

SPEAKER PERSONALITY, INDIVIDUALITY AND UNIQUENESS OF HUMAN VOICE

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Voice individuality has been one of the most interesting topics in psychology and rhetoric since antiquity, and scientists have consistently tried to classify people into different groups according to the characteristics of their speech behavior. Speech Analysis as part of Experimental Phonetics and Psychoacoustics offers unique opportunities for a multifaceted research and classification of voice personality on the basis of typical speech features which characterise each individual. Everyone possesses such inherent and stable speech features, which often reflect the typical behavioral inclinations of the individual. Speech analysis can provide an objective indication of voice personality. Repeated speech features often accurately reflect certain aspects of personality and can be described in terms of individual speech personality. Moreover, when a person activates different speech properties under specific verbal interaction conditions, these features usually reflect the mood or attitude of the speaker which are relevant to the given situation. In addition, they give an indication of the status (emotional, health, etc.) of the person. The variational richness of speech provides the opportunity to identify and classify typical speech features in different styles of speech (discourse) and use them to make conclusions about the personality of the speaker. It is also interesting to investigate how speech can provide information about the speaker's characteristics, on the one hand, and the message, on the other. Personal uniqueness of voice is supported by the fact that it is impossible to find two people with the same voices with regards to their speech apparatus which models the sounds, or in terms of their articulation habits. The uniqueness of individual human voice is its invisible "business card", which makes it recognizable even when talking over the phone before face-to-face introduction.

Keywords: human voice, speaker personality, individuality, uniqueness

NIKOLA TESLA AS A CASE STUDY FOR QUANTUM-HOLOGRAPHIC CORRELATIONS OF INDIVIDUAL AND COLLECTIVE CONSCIOUSNESS: CREATIVE AND SPIRITUAL IMPLICATIONS

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Abstract: Nikola Tesla's visions and inventions realized in his controlled altered states of consciousness are proposed as manifestations of his meditative insights through macroquantum correlations of individual and collective consciousness, with significant quantum-holographic creative-educational and psychosomatic-spiritual implications. On the one hand, they can provide guidelines for a deeper understanding of the quantum-holographic framework of holistic control of creativity and education – based on a mentally-focused increase of macroquantum correlations between individual and collective consciousness. On the other hand, they can provide guidelines for a deeper understanding of the quantum-holographic framework of holistic control of psychosomatics and spirituality – based on a mentally controlled systematic reduction of macroquantum correlations of individual and collective consciousness. In a wider context, Tesla's overall research can be an inspiration for reconsidering global educational / informational / political goals – with a reorientation to holistic subtle actions for solutions of the global risk society.

Keywords: Nikola Tesla, Hopfield-like neural-networks quantum-holographic framework, quantum-holographic primal source, normal & altered states of consciousness, individual & collective consciousness, macroscopic quantum correlations, integrative medicine & transpersonal psychology, creativity & education, psychosomatics & spirituality.

HOW THE ADVENT OF MACHINE LEARNING TRANSFORMS SPEECH TECHNOLOGIES

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Until recently, speech technologies have been considered as an interdisciplinary area spanning a range of areas, such as linguistics, psychoacoustics, speech generation and perception, as well as engineering disciplines such as signal processing. In a classical system for automatic speech recognition (ASR) or text-to-speech synthesis (TTS), specific components in the process of speech recognition or generation had to be identified and explicitly modelled. However, the recent advent of machine learning has brought a significant shift of this perspective from combining explicitly modelled components to a more end-to-end approach, in which the system, typically based on a deep neural network (DNN), would eventually be directly trained on speech data and corresponding text transcription, which can be compared to the human acquisition of abilities of reading aloud or taking dictation. Due to extreme language dependence of both ASR and TTS, some of the steps in the conversion of text to speech or vice versa are more predisposed to such an approach in some languages than in others. Furthermore, due to the fact that a shift to such an approach dramatically increases the quantity of data needed for training, significant results have so far been obtained only for a small number of major world languages. However, the shift of the paradigm is evident in the entire research and development community, and it can be expected that more and more of the existing components of ASR and TTS systems would be encompassed into single neural networks in the future. This review article aims to give an overview of the state of the art in the area as well as to give an insight into the advantages and disadvantages of the increasing impact of machine learning paradigms, particularly the end-to-end concept, on the development of speech technology.

Keywords: speech recognition, text-to-speech synthesis, machine learning, end-to-end

SPEAKING THROUGH OUR EYES

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As attendees at this congress know, speech & language are the most effective, elegant & comprehensive means by which human beings are able to communicate with each other. This paper illustrates some thoughts on our next most important ability - communication through our eyes. Philosophers have said that the eyes are the mirror of the soul and that humans make soul connections through the eyes. We share some research on how emotions are telegraphed through the eyes. Looking in each other's eyes offers such amazing possibilities for future of relationships. We offer some examples of speaking eyes. Then there are eyes in the fingertips of the visually impaired. At birth, our eyes are opened to a lifetime of evolutionary adventures. At death there is the 'curtain down' for the final act of life – the release of the last breath and the closing of the eyes. Meanwhile, here's looking at you!!!!

Keynote: My friends who have eyes do not see, And those who have ears do not hear (Helen Keller)

PERCEPCIJA GOVORA U NEPOVOLJNIM KOMUNIKATIVNIM USLOVIMA: SAVREMENI POGLEDI

Slobodan Jovičić

Govorna komunikacija se odvija svakodnevno u različitim okolnostima koje utiču pre svega na kvalitet komunikacije a potom i na razumljivost. Najranija istraživanja su se odnosila na nepovoljan uticaj ambijenta u kome se komunikacija odvija (buka, reverberacija, izobličenja telekomunikacionog kanala). Kasnije su se istraživanja proširila na produkciju i percepciju govora imajući u vidu artikulaciona odstupanja (patologija u glasu) i probleme slušnog mehanizma (uz upotrebu slušnih aparata i kohlearnih implanta). Sa razvojem istraživanja moždanih funkcija produkcija i percepcija govora su počele da se sagledavaju sa kognitivnog nivoa. Ovaj pregledni rad je posvećen integralnom prikazu nepovoljnih uslova komuniciranja sa naglaskom na adaptivnu plastičnost kognitivnih funkcija. U prvom delu rada napravljen je osvrt na uslove komuniciranja koji utiču na varijabilnosti u produkciji i percepciji govora. Zatim je na modelu pre-leksičke percepcije analiziran proces detekcije akustičkih karakteristika u govornom signalu, njihova integracija u distinktivne karakteristike i prepoznavanje osnovnih lingvističkih jedinica, stavljajući ovaj proces u kontekst neuralne organizovanosti. Drugi deo rada analizira uticaj kognitivnih funkcija na govor u nepovoljnim uslovima komuniciranja. Obuhvaćene su kognitivne funkcije kao što su prediktivno kodovanje u percepciji govora, redukcija pažnje, redukcija memorijskog kapaciteta, perceptivno učenje i perceptivne interferencije. Posebno su interesantni brzi adaptivni mehanizmi u percepciji govora koji prihvataju kratkovremene devijacije u ulaznom govoru balansirajući između potrebe za stabilnošću i adaptivne plastičnosti u funkciji očuvanja naučenih dugovremenih normi maternjeg jezika.

INNOVATIONS IN THE BULGARIAN CHILD SYNTAX

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The article analyses problems related to the mastery of the Bulgarian language at early and preschool age. An attempt has been made to show the significance of the “syntactic beginning” for the linguistic achievements in ontogenesis on the basis of some observations on the speech production of five Bulgarian children. The focus of this research is on syntactic innovations, which, in the context of the system’s potential, compensate for the child’s linguistic and cognitive deficits and create conditions for expanding and enhancing his/her linguistic competence. Speech data is analyzed and interpreted both “vertically” and “horizontally”. This double-oriented research paradigm creates favorable conditions for the optimal realization of the main goal we have set, namely the syntactic innovation phenomenon to be presented not so much and not only “vertically” as a deviation from the norm, but also “horizontally” as a supporting language mechanism that provides the relevant development phase with child-friendly constructions.

Keywords: Child language, Bulgarian, Syntactic innovations

EVALUATION OF INDIVIDUALIZATION OF SCHOOLING PUPILS WITH SPEECH-LANGUAGE DIFFICULTIES

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Throughout the work we will present our outcomes, process and opportunities, feelings, coping and thinking of pupils and teachers. It was conducted a qualitative survey by the educational rehabilitator in primary school kralj Tomislav Zagreb. The questionnaire that was used was designed for this purpose and it included these questions for pupils: What is your speech-language difficulty?, How do you help yourself in learning?, How do you feel in classroom?, How do your peers in classroom treat you?, What kind of support do you get from your education rehabilitator?, What would you like to change in school regarded to your difficulty?, What do you think that are positive and negative sides of your difficulty?, In what ways do your peers help you?, In what ways do your teachers help you?, In what ways do your parents help you?, Are you included in some sport?, What motivates you to get some task done?. The questionnaire that was used by teachers included these questions: How does it feel to have a pupil with speech-language difficulties in your classroom?. What is the role of a teacher in classroom?. Do you use individualization in work with pupils with speech-language difficulties?, What are the grades of those pupils?, Can those pupils be successful in reciting a song?, What do you suggest to the other classmates of the pupil who has a speech-learning difficulties?, Do you avoid a group work in subject Croatian Language or do you support it, since you have a pupil with speeac-language difficulties in your classroom?, What is your evaluation of inclusion in your classroom?. The quastionnaire was conducted to the students with the parental permission. Through the work we wanted to contribute to their integration in the classroom and to the individualization of the educational program. The results showed that through individualization and through the personality of the teachers themselves, there is still much room for improvement in implementation inclusion of pupils with speech-language difficulties.

Key words: difficulty, inclusion, individualization, pupils, speech, teacher

MODELLING SPEECH PROSODY – COMPARING AND CONTRASTING THE PHYSIOLOGICALLY INSPIRED BOTTOM-UP MODELS AND DEEP LEARNING BASED TOP-DOWN MODELS

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Introduction The importance of prosody in Text-To-Speech (TTS) systems, as well as Automatic Speech Recognition (ASR), predominately for tonal languages, has been the driving force in the development of prosody models, with a special focus on intonation. Most of these models follow a bottom-up approach, i.e. from signals to functions. A number of these intonation models incorporate physiological constraints in the modelling process. The main problem with the bottom-up approach taken in all of these models, is that it is difficult to establish the linguistic significance of the extracted model parameters. On the other hand, very few models follow the top-down approach, i.e. from functions to signals. These models have the advantage of directly mapping linguistic structure to phonetic events, but lack in modelling performance. Here we give an overview of two models that are state-of-the-art representatives of these modelling paradigms and discuss their strengths and weaknesses.

2. Generalized Command Response (GCR) prosody model One of the most well established physiological intonation models – The Fujisaki Command-Response (CR) model, treats the pitch contour as a sum of global, phrase components, and local, accent components output by systems that model muscle activation. The Generalized CR (GCR) prosody model is a recently proposed state-of-the-art that describes the intonation contour using atoms, which correspond to elementary muscle activations. Although the GCR can reach high accuracy in modelling the intonation contour, the linguistic significance of the extracted parameters is unclear. Namely, even though we found that the atoms extracted by our GCR correlate well with stress and emphasis, especially when the GCR is expanded to all of the dimensions of prosody, a direct link between these two domains remains to be established.

3. Variational Prosody Model (VPM) The Superposition of Functional Contours (SFC) model is one of the rare models that tackle the mapping problem the other way around – using a top-down approach. The SFC has been shown to be able to decompose prosody into elementary multiparametric functional contours through the iterative training of neural network contour generators using analysis-by-synthesis. Based on this paradigm we recently proposed the a deep model that in addition to decomposing prosody into its constituent contours, can also capture a part of their variance. The Variational Prosody Model (VPM) and the Variational Recurrent Prosody Model (VRPM) comprise a network of variational encoding (recurrent) neural network contour generators, which map the linguistic context of the contours into a prosodic latent space. The prosodic latent space can then be used to generate prosodic contours by sampling it.

4. Results and conclusion The main strength of the bottom-up approach over the top-down approach is in the arbitrary accuracy with which it can model the intonation contour of an utterance. On the other hand, the top-down approach has the advantage of establishing a direct link between the extracted contours and the linguistic functions that spawned them. In that sense, bottom-up approaches might be more useful for analysing prosody in ASR systems, while top-down approaches might fare better for TTS applications or for linguistic analysis of prosody.

PRENATAL HUMAN MODIFICATION, DESIGNING BABIES AND THE END OF HOMO SAPIENS

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Since 1978, the year when Louise Joy Brown, the first human baby conceived by IVF was born, the scientific world has seen a huge explosion in the knowledge gained in the fields of genetics and genetic research and technology, biology, engineering, Artificial Intelligence and the such. Hybrid fields came into appearance and words like biogenetics, human engineering, human enhancement and reprognetics to mention a few have entered our vocabulary. ART was once a word to describe the talented outcomes of painters and sculptors. Today, it is a common word to refer to Artificial Reproductive Technology. Back in 1932, Aldous Huxley published his well known dystopian novel “Brave New World” and set the futurist

genetically modified citizens, members of an intelligence-based social/political hierarchy into context, anticipating the huge scientific developments in reproductive technology which now are a reality. Pre-implantation Genetic Diagnosis (PGD), Cloning, Germ-line Therapy, Human Enhancement and (True)Designer Babies are here to stay. Parents, today, are seduced into a possibility of selecting the particular genes that will render their children healthy, intelligent and powerful, thus controlling their children identity of being. They turn to cloning and baby design to provide for their sick children. Reprogenetics is being practiced in an effort to control the birth of mentally retarded humans and postnatal interventions are here to allow certain characteristics be integrated as human enhancements. Studying the psychological and sociorelational consequences of traumatic preconception, prenatal, birth and early postnatal experience, what we are to see as a result of the new, here to stay scientific, technological and laboratory interventions that may turn parenthood into an act of gardening or cultivation with decisionmaking based on eugenic genetic control is just a small fraction. Is there a line to be drawn? Is this the end of Homo Sapiens? Has already the Posthuman been conceived? Will the intention of health support become the front cover for hidden sociopolitical agendas, leading to the extinction of democracy and the sovereignty of those who have and can? The paper will risk to pose questions for philosophical and ethical considerations, hoping to sensitize those involved so that human progress and consciousness evolution can continue on healthy grounds.

Keywords: PGD (Preimplantation Genetic Diagnosis), Cloning, Germ-like Therapy, Human Enhancement, Posthumanity, Designer Baby, Genetic Engineering, Genomic Science, Reprogenetics , Prenatal Human Modification, Bio-ethics.

THE APPLICABILITY OF PHONETIC PERCEPTIVE TESTS FOR SPEECH THERAPY AND PRACTICE

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Phonetics (together with phonology) and speech-language pathology are scientific disciplines that are closely related research-wise. Both disciplines are methodologically rooted in natural science because they try to describe human speech as accurately as possible. Both measure speech phenomena and illustrate patterns with empirical data. The disciplines differ in their focus and aim. A speech-language pathologist tries to mend a speech disorder and focuses on “ideal” articulation/perception, whereas a phonetician (a linguist) wishes to describe and accurately represent speech so that a language learner (a child/adult) can engage in spontaneous communication. Since both disciplines deal with speech, which is intrinsically a human activity, they come together in education, where they must complement each other. Perception tests (Tivadar 2004) can bridge the gap between the two disciplines. Namely, speech therapists focus on ideal speech production, so they are faced with the question about when their patient’s therapy should end or when their patient’s speech becomes good enough. In order to establish the acceptability of ideal and less ideal speech production (e.g., a news anchor’s rapid speech, the speech of children with cochlear implants, sigmatism), it is possible to use objective phonetic perceptive tests. Speech therapists, by relying on experience as well as data from medical devices, do not know when their patient becomes content with his/her articulation. In addition, speech therapists do not receive feedback on whether a particular device (e.g., a cochlear implant) leads to better articulation by a hearing-impaired individual. Consequently, in 2017–2019 in the context of speech-language pathology and surdopedagogy studies at the Faculty of Education in Ljubljana, we designed and tested phonetic perceptive tests with which we measured how non-ideal speech production influences speakers’ perception. We focused on prosodic (e.g., timbre – nasalisation; speech rate) and non-prosodic (differences between ideal and unideal phoneme realisations) features of speech.

CHALLENGES IN THE APPLICATION OF TELEPRACTICE

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The introduction of telepractice systems as a support to speech language therapists (SLTs) in the treatment and evaluation of verbal communication disorders offers multiple benefits such as reduced transportation costs, more efficient time management, treatment availability, real-time consultations. However, the implementation of these systems is accompanied by certain challenges that must be overcome in order to make the application as efficient as possible and to ensure positive user experience.

In this paper, we first reviewed the conditions that telepractice system should satisfy in order to be used in logopedic practice for the purpose of distal work with children with verbal communication disorders. We considered the advantages and disadvantages of the use of distal therapy from the aspect of the system characteristics and its components, audio-visual integration, the effectiveness of this type of therapy and the reliability of the system when assessing speech quality. In this paper we present the results of the research dealing with the SLTs views and experiences of the telepractice system. SLTs observations are provided through a survey regarding the use of telepractice system for remote therapy and speech quality assessment.

PERCEPTION OF SPEECH SOUNDS' PRONUNCIATION QUALITY BASED ON THE ACOUSTIC FEATURES

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For many years, scientists from the field of phonetics have been trying to detect the connection between articulatory and acoustic features of pronounced speech sound. Complex dependence, including nonlinear effects, makes this connection unambiguous, so the variation field of pronounced speech sounds is multidimensional in the acoustic domain and its boundaries are not defined. One way of researching the variation field of pronounced speech sounds is the analysis of acoustic characteristics of typical and atypical speech sounds' production. Previous research on the Serbian language speakers' speech sounds' deviation from the typical pronunciation are mostly based on one of the criteria: articulatory or auditory (perceptual), while the objective acoustic approach is mostly absent. The aim of this study was to analyze the acoustic measures for deviation identification and its role in deviation recognition. The analysis of pronunciation's articulatory parameters preceded the acoustic analysis. Sample consisted of 30 speakers with typical (E group) and 105 speakers with atypical pronunciation (K group). Following speech sounds have the highest frequency of atypical production: / c /, / č /, / dž /, / š /, / ž /, / r /, / l /, which was the criterion for the inclusion into the acoustic analysis. The analysis of deviations' acoustic correlates in the spectral domain showed that deviations by the sigmatism type (interdental, alveolar and strident sigmatism) and the friction intensity (weak and strong friction) can be recognized in the spectral domain and it is possible to define the criteria for differentiation of typical and atypical pronunciation for mentioned deviations. In order to better understand articulation and acoustic manifestations, in the typical and atypical production of speech sounds, modeling of individual processes has begun, and the results of the simulation showed agreement with real speech phenomena with the corresponding deviation. The existence of more objective criteria for assessing the speech sounds' articulation quality, based on the determination of clear articulation-acoustic indicators of pronunciation deviation, would contribute to a more reliable classification and categorization of vectors of multidimensional acoustic space in which pronounced speech sounds are realized. Defining the unit vectors of the multidimensional acoustic field of pronounced speech sounds and their relationship with the phonemes correlates in the perceptual domain is one of the directions of the scientific research work that this research has contributed to. Also, this research has shown that by combining subjective and objective measures in the analysis of acoustic correlates of speech sounds, it is possible to develop objective systems for the articulation assessment.

Keywords: acoustic correlates, perception, pronounced speech sounds, speech sounds variational field, distortion

LANGUAGE LATERALIZATION DURING AUDITORY PERCEPTION IN LEFT-HANDED CHILDREN

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It is generally accepted that most people have left-hemispheric language dominance. The authors examined auditory language distribution in left and right-handed children during listening word and non-words. Sample is consisted of 10 children, aged 5-7 with normal speech and language development, divided into two groups: five right-handed children and 5 left-handed children. EEG recordings were performed using Nihon Kohen Corporation, EEG 1200K Neurofax apparatus by utilizing 10/20 International electrode positioning. We used Fractal Dimension (FD) in quantifying the complexity of EEG signals between both groups. FD was calculated by Higutchi algorithm, as one of the methods for FD evaluation. Also, spectral power of five brain rhythms were obtained. Results of our study showed differences in language processing but without statistics significance for lateralisation in auditory processing between both groups.

PROCENA KVALITETA IZGOVORNIH GLASOVA PRIMENOM INFORMACIONIH TEHNOLOGIJA

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Cilj rada: U radu su prikazani rezultati i metodologija primene savremenih informacionih tehnologija za automatizaciju standardnog Globalno Artikulacioni Test (GAT) postupka ocenu kvaliteta artikulacije glasova Standardna GAT procedura se zasniva na preslušavanju u realnom vremenu ili preslušavanju audio zapisa karakterističnih govornih segmenata ispitanika koji sadrže odabrane reči i foneme, od strane grupe iskusnih logopeda, koje na kraju rezultuje kategorizacijom kvaliteta izgovora fonema u dve ili više kategorija, od omisije i supstitucije, preko umerene distorzije do odlične artikulacije. Logopedi pri postupku ocenjivanja koriste iskustvene memorisane paradigme akustičkih obeležja karakterističnih za određeni stepen kvaliteta.

Ovde prikazana automatizovana procedura koristi audio zapis govornih segmanata pogodno odabranog reprezentativnog uzorka ispitanika kao izvor akustičkih karakteristika koje korespondiraju određenom kvalitetu artikulacije, sa jedne strane, dok sa druge strane kao pridružene ocene kvaliteta izgovora koriste numerički kvantifikovane ocene date od strane logopeda. Cilj celog postupka je determinacija modela klasifikatora koji će automatizovati proceduru ocene kvaliteta artikulacije glasova sa tačnošću i pouzdanošću koja je slična logopedskoj oceni.

Rezultati istraživanja: Na raspoloživom test uzorku rezultati su pokazali da postoji visoka saglasnost tačnosti i pouzdanosti projektovanog računarskog modela za ocenu kvaliteta artikulacije sa standardnom GAT procedurom logopedskog načina ocenjivanja.

Zaključak: Adekvatnim izborom akustičkih obeležja iz govornih stimulusa ispitanika uz primenu modernih metoda računarskog modeliranja zasnovanih na inrteligentnim tehnikama, moguće je automatizovati vrlo zahtevnu i kompleksnu proceduru logopedске ocene kvaliteta artikulacije glasova.

IS THERE AN ATYPICAL OCULOMOTOR SIGNATURE IN AUTISM SPECTRUM DISORDER?

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A growing number of studies is aimed at assessing visual attention and eye movements in the population with autistic spectrum disorder (ASD). Results show atypical visual attentional allocation in samples with ASD and point to the question of possible measurable oculomotor signatures for this diagnostic category. Objective measures of this kind are especially needed in assessment of populations who are non-verbal, minimally verbal or non-cooperative. This observational study has monitored attentional disengagement during a semi-structured play session in a sample of children with ASD, aged 3 to 6. We have sampled eye movements during grasping of toys and compared the results with a typical age-matched sample. Findings point to a greater number of atypical eye movements, categorized as prolonged or rapid, in the sample with ASD, compared to the sample of children with typical development. Prolonged latency in visual disengagement of attention, known as „sticky attention“ is seen in typically developing infants only to disappear by end of the first year. It has also been registered in infants and toddlers at risk for developing ASD. This is the first study to measure attentional disengagement in preschoolers with ASD. Results are discussed in light of cognitive development in ASD.

Keywords: visual attention, visual disengagement, reaching, play, cognitive development, autism spectrum disorder

A CONSTRUCTIONAL ACCOUNT OF WORD FORMATION IN PERSIAN: EVIDENCE FROM COMPOUNDING

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In this article I will present a number of arguments to support a Construction Morphology (CM) (Booij, 2010b) and Cognitive Grammar (Langacker, 1987; 1991) approach to word formation in Persian. In CM, instead of speaking of word formation rules or concatenation of morphemes, we speak of word formation schemas with a systematic correlation between form and meaning. In this paper holistic properties of complex words are shown to be an argument for constructional schemas at the word level. The second argument is related to the embedded productivity in which the productivity of a certain word formation pattern may be dependent on its being embedded in another morphological pattern. In this case words have been created by means of the conflation of two word formation schemas. The last argument comes from the systematic co-occurrence of two or more word formation patterns. The unification of word formation schemas accounts for such cases. These arguments can provide evidence for a constructional account of word formation in Persian. I will present arguments in favor of construction morphology approach to word formation in Persian. Based on this analysis compounds including exocentric and endocentric compounds are dominated by the following schemas in Persian lexicon. The schema in (1) is the schema for endocentric compounds like 'češm pezešk' (oculist). Exocentric compounds like naxon xošk (scrooge), are not compositional so they are represented as specific constructions with a fixed meaning as (2). The schemas in (1) and (2) pair a form with a specific meaning in the form of a morphological construction. (1) [[X]X [Y]Y]Z 'Y with relation R to X' (2) [[X]X [Y]Y]Z 'FIXED MEANING'. It will be shown that a constructional approach to word formation and compounding in Persian leads to express more explicit generalizations on Persian word formation.

Keywords: Construction, word formation schemas, hierarchical lexicon, Persian

THE OUTCOMES OF THE INDIVIDUAL PHONETIC CORRECTION ON THE EXAMPLE OF CROATIAN FRICATIVE /S/

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In this paper the outcomes of the phonetic correction based on the verbotonal method of Croatian fricative /s/ are evaluated on the basis of perceptive test. Ten speakers of different native languages who started to learn Croatian as foreign language participated in 10 sessions of individual phonetic correction, respectively, during the initial level language course. The main purpose of the sessions was to improve their pronunciation of Croatian fricative /s/ and some time in the beginning of each session was dedicated to improving rhythm and intonation of speech. The discussed speech sound was in one of three possible positions: initial, medium or final. 20 trained listeners participated in the listening of selected words recorded before and after sessions of the verbotonal phonetic correction. The first task was to decide whether the word was pronounced by a native speaker or not and the second task to evaluate how acceptable the pronunciation was on the scale from 1 to 7 together with a short description of their choice. The results show that the words recorded after the correction were defined as those pronounced by a native speaker and the answers depended partly on the position of the sound /s/ in the word. Some of the acoustic correlates are discussed in the light of the obtained results with intention to explain clarify the link between perception and production.

Keywords: fricative /s/, perception test, the verbotonal method

THE IMPORTANCE OF PRESCHOOL HEARING SCREENING

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Child's auditory function during the preschool period, should be controlled on several occasions. The reason for this are hidden hearing deficits, even the most discreet ones, that can be a disruptive factor in the adoption of specific skills at school such as reading and writing. Hearing loss often gradually progresses from slight to more serious during early childhood, and sometimes even into school age years. The aim of this paper was to examine the reliability and feasibility of transient otoacoustic emission (TEOAE) as a screening method in the assessment of hearing loss (HL) in preschool children. In a sample of N = 54 children, aged 5.0 to 5.4 years, the auditory function (AF) was tested by TEOAE, tympanometry and audiometry. The hearing function in five-year-olds was tested twice. The first time on the whole sample of children, and the second time only on the part that failed at the initial testing. After the child was cured and monitored over a period of 6 months, a control test was conducted to confirm or deny the existence of a suspected hearing deficit. Assessment of speech and language development was additionally carried out. The obtained results indicated that 94.40% of the sample has a proper auditory function, 3.70% bilateral conductive hearing loss and 1.9% bilateral sensorineural hearing impairment. Results confirmed the high degree of positive correlation ($r_t = +0.81$, on the level 0.01) between tympanometry and TEOAE responses, indicating the sensitivity of the TEOAEs methods in the detection of both sensorineural and conductive hearing impairments. Introduction of systematic programs for preschool hearing screening can play an important part in promoting early intervention for childhood hearing loss and minimizing the negative consequences for children. Otoacoustic emissions offer the most promising option for systematic hearing screening of the preschool population.

Key words: conductive hearing loss, child, otoacoustic emission, screening, pre-school age

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CHARACTERISTICS OF LANGUAGE DISORDERS FOLLOWING TRAUMATIC BRAIN INJURY

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Traumatic injury is one of the most common causes of brain damage in the modern society. This is, at the same time, one of the leading causes of mortality and morbidity, with a constant increase in the number of injuries. It occurs in people of all ages, with young people being more likely to suffer from traumatic brain injuries, compared to other age groups. Thanks to advances in medicine and technology, the survival rate of the injured has increased significantly today. However, many survivors are noticed, often long-term consequences on cognitive, speech, linguistic and psychosocial plans. Although language disorders in traumatic brain injury have long been documented, their nature is still not sufficiently understood. Initially, language disorders of this etiology were equated with aphasia, but with the accumulation of empirical data it was found that they differ from classical aphasic syndromes that occur in other forms of neuropathology, such as cerebrovascular disease, for example. Language disorders in traumatic brain damage are usually clinically unobservable and are not detected by standardized aphasia tests, which is why patients often remain outside the process of speech/language and cognitive rehabilitation. This paper examines the aphasic and non-aphasic language disorders in people with traumatic brain injuries. Particularly discussed is the relation between language impairment and other aspects of cognition: memory, thinking and executive functions. Characteristics of cognitive-communication disorder are highlighted. The focus of the work is the influence of linguistic and cognitive impairments on the functioning of a person in performing professional and everyday life activities.

THE PEER RELATIONS OF STUDENTS WITH SPECIAL EDUCATIONAL NEEDS IN UNIVERSITY: THE SOCIOLOGICAL AND CULTURAL ASPECTS TO IMPORTANCE OF SPEECH AND LANGUAGE INTERACTIONS

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Students with special educational needs (SEN) are generally less accepted by peers in Universities and have fewer friendships than those without SEN. However, little research has examined peer relations across multiple dimensions, relative to severity of need and in relation to the sociological and cultural aspects to importance of speech and language interactions from the lecture classroom experiences and individual behavioural characteristics. This study aimed to extend understanding of the peer relations of students with differing levels and categories of SEN. Also we see the differing attainment levels of social contact between the non formally recognised SEN and the importance of speech and language interactions to the student groups working study. Two hundred and sixty 18-32-year-old students recruited from 6 classes in 2 University, the first from the south of Greece (Peloponnese) and the second from Agricultural University (Athens). Fifty-two students had been identified as having a SEN and had been facilitated to entry in the university exercises. From them 40 had a official statement of specific learning difficulties (dyslexia). Student sociometric questionnaires provided the importance of speech and language interactions and the range of peer relations measures and the contact with peers. The speech and language interactions into six months was rated by the students coordinators of study groups . Compared to students without SEN, students with a statement of SEN had lower levels of peer acceptance, fewer reciprocated friendships, and were less integrated into groups study. Whilst internalising language behaviours, such as word phrases with social anxiousness and anxiety content, and externalising speech behaviours, such as aggression words and hyperactivity, were related to peer relations measures and the sociological and cultural aspects for the SEN status. Findings point to the crucial role of meaningful social contact with the speech and language interactions in the university lecture classrooms for the students's relationships with peers in group study.
Keywords: peer relationships, students with specific learning difficulties (dyslexia), socio-cognitive mapping, inclusion, university

EXAMINING THE EFFECTS OF SPEECH AND LANGUAGE TREATMENT ON THE REDUCTION OF SYMPTOMS WHICH MAY BE INDICATORS OF THE PRESENCE OF AUTISTIC SPECTRUM DISORDER

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Autism, or autism spectrum disorder (ASD), refers to a broad range of conditions characterized by challenges with social skills, repetitive behaviors, speech and nonverbal communication. Children with ASD require continual and comprehensive treatment. This paper's aim was to examine the effects of speech and language treatment on the reduction of symptoms that may be indicators of the presence of ASD. Sample was consisted of children who were included in the intensive speech and language therapy within the Institute for Experimental Phonetics and Speech Pathology, in Belgrade, Serbia. GARS-3 was used to determine the presence of ASD symptoms. Each child was tested twice, at several months intervals. After each test, Autism Index score was obtained, which indicated on the severity of ASD symptoms. The study results indicate on the statistically significant differences between the Autism Indices during the first and the repeated testing. Such data suggest that intense speech and language treatment can affect the reduction of ASD symptoms.

Keywords: reduction of ASD symptoms. autism, speech and language therapy, reduction of symptoms, GARS-3

AGRAMMATISM IN MOROCCAN ARABIC SPEAKERS

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Individuals with agrammatism show selective impairments in functional categories. On the one hand, some researchers (Friedmann & Grodzinsky, 1997) have attributed many linguistic difficulties experienced by agrammatic aphasics to a deficit in the hierarchy of functional projections. Other theories (Kolk, Kok, Zevenbergen, & Haverkort, 2007), however, suggest that agrammatic production results from limitations in processing capacities (Kolk, 1995). The purpose of this study was to investigate the use of functional categories by two Moroccan-speaking agrammatic aphasics across different tasks. The functional categories studied are: tense affixes, subject-verb agreement and noun and adjective agreement. The availability of verbal affixes and grammatical features was investigated using spontaneous speech, recitation of Koranic verses, picture description and picture-matching tasks. In task 1 the participants were asked to talk about their family life, work, history of illness, hobbies and preferences for entertainment. In task 2, the participants were asked to describe the "cookie theft" picture (Kaplan & Goodglass, 1983). In task 3, they had to recite Koranic verses. In task 4, the participants were asked to name 60 pictures (30 depicting actions, and 30 depicting an object). The participants achieved high correctness scores for object naming, while scores for action naming were below average. They also achieved high correctness scores for verbal and nominal agreement, while tense affixes were impaired. To account for the observed disassociations, we suggest that the production deficit in Moroccan Arabic agrammatism cannot be explained in terms of a structural account, but rather in terms of a processing account that takes the view that inaccessible syntactic knowledge affects the subjects' ability to produce verbal affixes. The study provides further evidence that tense production is selectively impaired in agrammatic aphasia. On this account, we posited a processing account to explain the problems experienced by individuals with agrammatism.

Keywords: Moroccan Arabic, Agrammatism; aphasia; verbal breakdown, tense and agreement; structural account; processing accou

PHYSIOLOGY OF SPEECH AND SLEEP-CONVERGING EVIDENCES ABOUT THE CORE PATHOPHYSIOLOGICAL MECHANISM OF CHRONIC TINNITUS

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Tinnitus is a specific phantom sound perception whereby the brain compensates for missing sensory input from the ear (De Ridder D, 2014; Bojić T, 2017; Cederroth CR, 2019). Precise mechanisms of tinnitus are unknown, though still valid deafferentational model of Jastreboff based on central neuroplasticity changes (Jastreboff PJ, 2011) provides useful basis for upgrading. Recent investigations reported significant coexisting of tinnitus and decrease of speech perception (Omidvar S, 2018; Liu YW, 2018) especially in noise (Liu, YW, 2018) where auditory brainstem responses on speech stimuli are distorted in time (latencies) and frequency domain (F1 and HF spectral magnitudes) (Omidvar S, 2018). Furthermore, REM sleep is reciprocally incompatible with chronic tinnitus: during REM sleep, tinnitus is not perceived (De Ridder, 2014) and vice versa - in chronic tinnitus patients the amount of REMS is notably diminished (Attanasio G, 2013). This reciprocity indicates on alternative usage of common neural networks, as in the case of REM sleep and thermoregulatory system (Parmeggiani PL, 1967).

Based on foregoing, we bring special attention to the cerebral core structures: i) Brainstem structures (nc. accumbens, lateral lemnisc and inferior collicle) possess fundamental importance for speech auditory processing and with ii) thalamic nuclei form gain-control mechanism for the unwanted auditory stimulus from the environment. Once lesioned, the phantom sound is generated. More, brainstem regions are highly active during REM sleep while forming a functionally operative centrencephalic unit (Maquet P, 1996; Pigneux P, 2001; Zoccoli G, 2005): Thalamic neurons exhibit desynchronization in this state, participate in the generation of ponto-geniculo-occipital waves and are, hypothetically, irresponsive to pathological auditory information coming from caudal regions. Vice versa, thalamocortical dysrhythmia, proposed as tinnitus pathophysiological model (Llinás RR, 1999) would prevent normal REMS pattern of thalamocortical fibers. Therefore, deafferentational model of Jastreboff (2011) should be restricted on brainstem-thalamic circuits, looking there for the potential tinnitus functional core.

Keywords: language lateralisation, auditory perception, left-handed children

SLEEP - A MULTIFUNCTIONAL PHENOMENON: MEMORY CONSOLIDATION AND PROTECTIVE EFFECT WITH RESPECT TO PSYCHOSOMATICS

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Sleep is universal physiological necessity whose precise mechanisms and function(s) are still unknown (Huber R, 2004; Donlea JM, 2018). The most known attempt to describe its role by Allan Hobson “Sleep is of the brain, by the brain and for the brain” (Hobson A, 2005) is slowly but inevitably extended by “...and for the organism”. On the basis of electroencephalographic and electromyographic activity sleep is defined as the approx 8 hour cyclic successive alteration of Non REM (or Quiet Sleep) and REM sleep (or Active Sleep) (Rechafen & Kales, 1968). Duration, sleep quality and harmonic alteration of Non REM and REM sleep play essential role in memory consolidation which is consequently of paramount importance for the new vocabulary learning (Batterink LJ, 2017), motor skills learning (Cipolli C, 2005) and learning process in general. Non REM and REM sleep have specific physiology both on neurophysiological and molecular level (Kryger M, 2017) that drive restorative processes of the cardiovascular (Zoccoli G, 2001; Silvani A, 2003; Bojić T, 2014), respiratory (Harper RM, 2017), immune (Opp MR, 2017) and endocrine system (Van Cauter E, 2017) all the way to the genetic restorative processes (Fuller PM, 2019). Thus, healthy sleep contributes to healthy functioning of organism and assures higher abilities like mental attention, mindfulness, insightfulness (Wagner 2004), creative (constructive), focused/unscattered and vivacious oral communication and social high quality self-regulation and cooperation. In the era of information revolution where the only limitations are the individual’s cognitive and memory capacities, the importance of healthy sleep regime must be recognized and taken as a priority with respect to short term benefits of stress-driven learning coupled with sleep deprivation. Consequently, sleep deprivation, a novel phenomenon of 24/7 society is becoming a notable circumstance of the general human psychophysical health.

ERROR CORRECTION IN THE FOREIGN LANGUAGE CLASSROOM: WHY, WHEN, HOW?

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Objectives of the paper: To create awareness about the appropriateness of error correction in the foreign language classroom, based on the methodology used by the instructor, and explore the attitudes of both teachers and students about error correction and the different error correction techniques available as well.

Content:

- Teacher and student beliefs around error correction
- The use of different error correction techniques and the effectiveness of each
- Error correction techniques
- Frequency of correction: when and how to correct
- Communicating your philosophy of Error Correction

THE STATE OF ORAL PRACTICE IN DYSPHASIC CHILDREN

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Oral practice represents the activation of facial organs through complex, learned movements that involve muscles of lips, tongue and face in order to produce the speech. Well-developed oral and motoric practice is one of the requirements for proper pronunciation of speech sounds. The maturation of oral practice follows the child's physiological development. The developmental dysphasia is characterized by the appearance of specific "pathological" patterns of expression, such as the distortion and replacement of phonemes and words that take the form of parafasic (substituted) productions, which remain in the speech for a long time, and which do not occur in any stage of normal language development. The aim of this research is to examine oral practice abilities of children of different ages with the diagnosis of developmental dysphasia. A sample for the examination is made up of a total of 50 children with a diagnosis of developmental dysphasia, which are divided into two groups age-related. The ages of children of the first and second groups ranged from 4.0 to 6.0 years. The first group of children included 25 children aged from 4.0 to 4.11 years, while the second group consisted of 25 children aged 5.0 to 6.0 years. The methodology of work was based on the application of Oral Practice Test to examine the children's pronunciation. The results of the study have shown the differences between two age stages of dysphasic children. There is a tendency of slight improvement with age, but the results must be interpreted in the context of this study, which means that more comprehensive sample should be used for further investigations.

Keywords : oral practice, developmental dysphasia, articulation

PERINATAL RISK FACTORS IN DISHARMONIOUS DEVELOPMENT AND THE DEVELOPMENT OF COMMUNICATION

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Perinatal psychology is show how is the important early childhood experience in the womb and early childbirth experience and say children comes to the world with "competences". It points out that they all remember from the earliest times, and as some developmental models manifest themselves later in normative crises and during development in structure and function. Adaptation and learning carries the character, how we were born, how we started life. Prenatal risks and interventions during conception, pregnancy, and delivery suggest specific developmental disorders. In this paper we present pre-,nperinatal risk factors that most influence the development of communication, development of understanding and expressive speech. Our participians are children and families looking for Early Ambulance for Early Intervention and Prevention of 0-6 years. The results emphasize the importance of undisturbed pregnancy, childbirth and parenting competencies. The child and his family are at the center of the intervention. Parents are competent bearers of responsibility and the best judges of their children. They were due to some difficulties in development, or the cause of developmental disorders, problems of speech underdevelopment. This shows us the direction of the early therapy.

Keywords: perinatal psychology, perinatal communication, perinatal risk

SPEECH AND LANGUAGE DEVELOPMENT IN CHILDREN WITH DEVELOPMENTAL DYSPHASIA

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Speech and language development is a complex process that begins right after the birth of a child. Language development depends on the different systems in the brain, causing problems in any of these systems can lead to atypical speech and language development.

The aim of this research was to examine the development of speech and language in children with developmental dysphasia and children of typical development. The sample consisted of 15 children with a developmental dysphasia diagnosed at the Institute for Experimental Phonetics and Speech Pathology and 10 children of typical development. All examined children were aged 4 to 6 years. For this research were used Language Development Examining Test and part of the Semantic Test (Antonyms).

The results of the Semantic test show that there is a statistically significant difference between children with developmental dysphasia and children of typical development in the use of antonyms. Comparing all the results obtained with the Language Development Examining Test, we notice a statistically significant difference between children with developmental dysphasia and children of typical development due to the definition of known concepts (man, mother, life, house and sun). Generally speaking, children with developmental dysphasia were the most commonly used functional definitions, an echolalic response or an incorrect response, while the children of typical development most often used descriptive definitions and logical definitions of the first and second levels.

Key words: speech and language development, antonyms, developmental dysphasia.

ATTITUDES OF PUPILS OF ELEMENTARY SCHOOL AGE TOWARDS LEARNING AND TEACHING CONTENTS FROM SUBJECT KNOWLEDGE OF NATURE IN INCLUSIVE TEACHING CONTEXT

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Often the failure in school work is linked to changes in the physical, emotional, social and intellectual development. The results of a large number of studies indicate the specificities and shortcomings in the social adaptation, communication, behavior and education of pupils with hearing impairments that result from primary damage. The aim of the research was to examine the students' attitudes towards: teaching content, teacher, learning, learning conditions, family relationships and help that the student expects with the goal of mastering teaching contents from the subject of knowledge of nature. Respondents were students of typical development who attend the fourth grade of regular primary school and hearing impaired pupils of the same age. The analysis of the obtained results indicates that the attitudes of students with hearing impaired do not differ from those of students of typical development. Equally they have / do not have problems in mastering school materials from the subject of natural knowledge. Both groups of respondents have identical attitudes towards school and teachers. No statistically significant differences in the conditions in which impaired student and disciple of typical development mastering academic material, and there is no difference when it comes to aid in learning.

ACCENTED VOWELS IN SERBIAN LANGUAGE

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Vowels have an important role in speech analysis because they frequently appear in speech, they are not problematic for pronunciation, and they well reflect the vibration of vocal cords and the position of articulatory organs. The classic definition of the vowel pronunciation, according to the International Phonetic Alphabet (IPA) standard, uses the F1-F2 diagram. According to this classification, in the Serbian language, we distinguish open and close vowels (with two gradations: medium-open and medium-closed) as well as front and back vowels (with one gradation: central). In order to define the vowels according to the IPA standard, the values of the first two formant frequencies are considered important. The formant frequencies of the vowels depend on the position of the articulatory organs, i.e. the shape of the vocal tract. Speech as a non-deterministic process implies that there are different shapes of the vocal tract for the realization of the same vowel. In order to determine the position of the vowels in the F1-F2 diagram (IPA standard), the averaged values for the first two formant frequencies are used. To get the valid statistical estimation for the first two formants they are calculated on a sufficiently large speech database.

There are five vowels in the Serbian language and sometimes their definition according to the IPA standard is problematic. In addition to coarticulation, the most important factor in vowel pronunciation is their accentuation. Some previous studies showed that the formant frequencies of the same vowel can be significantly different depending on the accent.

This paper analyzes the formant frequencies for all five Serbian vowels and four accents: short falling, long falling, short rising and long rising. The results of the analysis show that accents have a significant effect on formant frequencies and should certainly be taken into account when analyzing vowel pronunciations.

Keywords: accent, formant frequency, IPA, vowel

GRAPHOMOTOR ABILITIES IN CHILDREN WITH SPECIFIC LANGUAGE IMPAIRMENT

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Development of graphomotor abilities represents a precondition for mastering writing skills. Hindrances in the development of graphomotor abilities, lateralization and visual-motor coordination can have an impact on developing and mastering writing skills in children. The aim of this research was to enquire into the development of graphomotor abilities and visual-motor coordination in children of typical and atypical development. The experiment was performed on 40 children of both genders between the ages 6-7. The examinees were divided into 4 groups: group K - 10 children of typical development; E1 - children with articulation disorders; E2 - children with specific language impairment; E3 - children with autistic spectrum of disorders. The research took place in May, 2019. in the Institute for experimental phonetics and speech pathology "Đorđe Krstić" and in a preschool institution called "Ljolja", borough of Voždovac. The results obtained in this research were considered in relation to the clinical picture of children and children of typical development.

Keywords: graphomotor abilities, children of typical and atypical development

ПРАКСИОЛОГИЯ ИСПОЛЬЗОВАНИЯ КОМИЧЕСКОГО ПИСЬМА В ЯЗЫКЕ МЕДИА

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Один из ключевых подходов в медиалингвистике, рассматривающей речевые особенности медиа, - его анализ в тесной обусловленности профессиональными стандартами, нормами и правилами, т.е. праксиологический. В настоящее время существует настоятельная как практическая, так и теоретическая потребность в разработке праксиологических идей в лингвистике. В образовательной практике среди наиболее часто используемых сегодня такие категории, как профессиональные коммуникативные компетенции, профессионально-речевые процедуры и действия, которые требуют применительно к каждому виду профессиональной речевой практики лингвистически релевантного осмысления. Практика показывает, чтобы эффективно обучать использованию языка в той или иной профессиональной сфере, необходимо отчетливое представление не только о важнейших ситуациях профессионального общения, но и об основных профессиональных стандартах – продуктивных видах, формах, способах и процедурах речевой деятельности и речевых действий, которые употребляются для достижения профессиональных целей. Однако профессиональные стандарты с лингвистической точки зрения в исследовательской литературе не раскрыты. Полагаем, что детальное описание использование комических средств в разных типах СМИ поможет прояснить специфику каждого из них, увидеть речевое поведение профессионала в коммуникативной ситуации, создаваемой типологическими признаками этих изданий. Изучение речевой деятельности в массмедиа с праксиологических позиций видится в создании типологии эффективных нормативных речевых систем процедур и действий в конкретно-историческом социокультурном контексте, и, по выражению Т. Котарбинского [1975], в создании «грамматики действия» и оценке эффективности этих речевых систем. Этот анализ сосредотачивается на исследовании инструментария речевой деятельности, на установлении эффективных процедур профессионального речевого поведения, на выработке критериев оценки его эффективности и рекомендаций по предупреждению речевых неудач. Среди этих средств комическое занимает важное место. Следовательно, развитие праксиологии в лингвистике как «системного знания об общих принципах и способах рациональных (правильных), целесообразных, успешных действий» весьма своевременно, поскольку станет «своеобразным ответом теоретического мышления на потребность «человека работающего» в целостном понимании механизмов собственной деятельности...». Цель статьи – проанализировать в этих аспектах своеобразие речевой системности разнотипных периодических изданий. Лингвопраксиологический анализ комических языковых средств в СМИ покажет, как под влиянием профессиональных норм и правил, действующие в этих медиа, формируются их речевые свойства и лингвистическая специфика.

Keywords: лингвопраксиология, комическое, язык медиа

RISK FACTORS PREVALENCE IN CHILDREN WITH SPEECH AND LANGUAGE DISORDERS

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Risk factor refers to any characteristics or event which can contribute to the development of some form of disorder or disease. The link can be only associative one by no means causative. This concept is very important for cases with heterogenic etiology, especially multifactorial disorders or diseases. Literature has already shown some links between certain risk factors and speech and language disorders. The research aim was to estimate the prevalence of risk factors in the group of children with speech and language disorders. The research sample included 1286 children with speech and language disorder. The data was collected from their case-history files in the Institute for Experimental Phonetic and Speech Pathology in Belgrade. Obtained results were further analyzed and were discussed according to the frequency of risk factors. risk factors, prevalence, speech and language disorders.

THE INFLUENCES OVER THE LINGUISTIC COMPONENTS OF THE INDIVIDUAL LANGUAGE ACQUISITION

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This paper is focused on the topic of the multilingual children, thus encompassing one of the most appealing issues in the field of pragmatics and linguistics. The subject of the research in the paper is the linguistic minorities represented by the multilingual children in Canada and its goal is to determine the outer sources as the main influences upon the individual language acquisition at children. The second chapter of the paper elaborates on the themes on multilingualism and its psycho-linguistic mechanisms, whereas the third chapter is devoted to the research with an aspect on the socio-cognitive discourse analyses and the social identity construction. The fourth chapter is our conclusion and suggestion.

Keywords: multilingualism, linguistic minorities, psycho-linguistics, children, language

FAST MAPPING VS. EXPLICIT ENCODING OF NOVEL WORDS: ERP EVIDENCE

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Arguably, there are at least two main learning strategies of word acquisition: implicit (“fast mapping”, FM) and explicit (explicit encoding, EE), which are believed to differ in terms of their brain mechanisms. However, the neural underpinnings of these learning types remain elusive. To address this question, we compared event-related potentials (ERPs) elicited in the brain of adults learning new word forms in either FM or EE fashion, with the two tasks being matched for their cognitive load and the manner of presentation. To this end, we designed an experimental paradigm that combined images of familiar and novel objects with auditorily presented questions. Under the FM condition, the meaning of a new word form could be inferred from the context. Under the EE condition, the novel image and the word form corresponded explicitly with the task to learn this correspondence. To quantify word memory trace development and activation, ERPs elicited by passive listening of wordforms were recorded before and after the training session and then compared. Both learning regimes led to successful acquisition of the new verbal stimuli. Behavioral results showed no significant differences between learning of new word forms in both FM and EE conditions. Auditory ERPs peaked at ~170, 250 and 520 ms indicating clear learning effects: ERPs elicited by familiar and novel wordforms diverged before training but became highly similar following the learning session. The topography of ERP effects differed significantly between the FM and EE conditions in the early negativity as early as ~170ms. For wordforms presented under EE condition, this topography displayed right-lateralised changes; for those presented in the FM condition, learning-related dynamics was distributed more centrally/left-lateralised. The results support the existence of two different neural learning mechanisms for word acquisition and suggest their differential distribution across the cerebral hemispheres.

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Keywords: fast mapping, explicit encoding, novel wordforms acquisition, semantic learning, ERPs

MEOOW! WOOF! NEEIGH! - IS LANGUAGE UNIQUE ONLY TO HUMAN BEINGS?

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If we compared an ape to a human in terms of speech and understanding of what had been said, we would easily assume that the ape is incapable of comprehending or repeating mere utterances. This is due to the popular belief that language is one of the features making a distinction between a man and animals. However, recent evidence in language evolution research, interdisciplinary by its nature, is still developing, shows that in some aspects of language, our uniqueness may be in question. The aim of this paper is to present current knowledge in language evolution process relying on proofs this knowledge is based on. To achieve this, we will first question what language is as a phenomenon and what linguistic capability involves. This means that constraints will not be put on grammatically (in)accurate production of contemporary language, but our focus will also be on extra- or nonlinguistic features. Another issue which will be addressed concerns language as a unique feature for people. Building upon the abovementioned communicative features, which can sometimes be nonverbal, we will explore all different aspects of language that can be found among other species as well. Finally, we will conclude that, in order to discuss the ownership of language ability, it is necessary to raise awareness of language development and to promote interdisciplinary cooperation in language evolution research scientists in a variety of disciplines, some of them being philology, philosophy, phonology, anthropology, psychology neurology and genetics.

Keywords: speech capacity, language capacity, language evolution, protolanguage, communication Systems

DEVELOPMENT OF LINGUISTIC AND COGNITIVE SKILLS IN CHILDREN WITH SCHOLASTIC SKILLS DISORDERS

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Scholastic skills disorders (SSD) are defined as specific developmental disorders when child can not achieve level of writing, reading and calculating according to their age. This discrepancy is not related to brain trauma, cognitive deficit, visual or hearing impairments. Aim of this research was assessment and descriptive analysis of linguistic and cognitive abilities in children with SSD. Sample was conducted of 30 children with scholastic skills disorders, aged 7 years and 4 months to 1 years and 10 months, 19 boys and 11 girls. We used Acadia test for assessing abilities of children with SSD. For assessing linguistic abilities we have used subtests visual memory, auditive memory, trace and encryption, skills of creating concepts, acquired linguistic treasure, automatic linguistic treasure, drawing. Results showed that children with SSD have lower results on subtests that show linguistic and cognitive skills. The importance of this research is reflected in the acquisition of new knowledge that would enable early detection, diagnosis and treatment of children with specific learning disabilities.

Key words: scholastic skills disorders, linguistic abilities, cognitive abilities, reading, writing, calculating

THE IMPACT OF GROUP PSYCHOTHERAPY WORKSHOP ON THE EMOTIONAL STATE

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The document presents the impact that group psychotherapy has on the emotional development of a mother who is bringing her child to the Institute. The condition of the mother when she was assigned to the institute was observed, when she was first confronted with working with her child, her condition during therapy, as well as after determining the working time within group psychotherapy. The results show that mothers in group therapy have an increase in experiencing positive emotional states, such as having self-confidence, feeling safety by free expression of emotions, sharing of emotional states with other persons and positive interpersonal relationships, as well as additional improvement in the mother- child relationship.

Keywords: mother- child relationship, emotions, psychotherapy group workshop, emotional state

ADAPTIVE ENDFIRE MICROPHONE ARRAY FOR AMBIENT NOISE SUPPRESSION IN SPEECH THERAPY TREATMENT BY KSAFA-D DEVICE

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Ambient noise is the serious problem in speech communication. The problem is even more serious when the noisy speech has to be processed by spectralmodification methods usually used in speech therapy practice. One of the most efficient speech therapy methods in Serbian language area, based on "Kostich's selective auditory filtering amplifier" (KSAFA), has the similar problem with ambient noise. In this case, noise reduction can be efficiently conducted by the microphone array using minimum variance distortionless response (MVDR) beamformer. Unfortunately, performance of the MVDR beamformer is poor in real reverberant room due to multipath wave propagation and cancelation of the desired speech. In order to optimise the performance of the MVDR based microphone array for the specific scenario related to the speech therapy treatment, we applied a few advancements. Under assumption that the positions of the therapist and the patient are apriori known, and that the microphone array can be physically oriented towards the active speaker, we used endfire configuration of the array, because endfire configuration provides the maximal directivity index of the array. Noise reduction is further improved by using unidirectional microphones instead of usually used omnidirectional microphones. Calibration of the microphone array is performed during speech activity, while adaptation on the ambient noise is performed in pause of the speech. Theoretical limits of the proposed method are analysed on the model of the MVDR beamformer with multiple constraints applied to the diffuse noise model. The equivalent generalised sidelobe canceler (GSC) is proposed for real time application and its performance is analysed for particular array model. The experimental results confirmed the good performance of the array that was predicted by the theoretical analysis.

Keywords: Speech therapy, KSAFA, Microphone array, Speeechenhancement, Adaptive beamforming, MVDR beamformer

STUDENTS' VIEWS ON TEACHING CONTENT FROM SUBJECT KNOWLEDGE SOCIETY

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The realization of positive educational outcomes depends on a number of pedagogical, sociological and social factors. The attitude of students with hearing impairment towards learning and education is generally formed under the influence of family, teachers and peers. Positive attitudes of family, school, and peers contribute to a pupil's hearing feel satisfied and achieve good schooling. The aim of the research was to examine the attitudes of students towards: syllabus, teacher, learning, learning conditions, family relationships and help the student expects in order to master the material from the object knowledge society. The sample of the study was made up of hearing impaired students and students of typical development who attend the fourth grade of regular elementary school. The analysis of the obtained results indicates that the attitudes of students with hearing impaired do not differ from the attitudes of students of typical development. Equally they have / have no problems in mastering school material from the subject of knowledge of society. Both groups of respondents have identical attitudes towards school and teachers. There is no statistically significant difference in the conditions in which a child with hearing impaired and a child with proper hearing overcomes school material, and there is no difference in learning assistance.

APPLICATION OF NEUROFEEDBACK TREATMENT IN CHILDREN WITH SPECIFIC LANGUAGE IMPAIRMENT

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Neurofeedback is a kind of biofeedback, which teaches self-control of brain functions to subjects by measuring brain waves and providing a feedback signal. Neurofeedback is known as a complementary and alternative treatment of many brain dysfunctions. During neurofeedback sessions, patients learn to produce desirable brain wave patterns displayed on a computer screen by controlling the activity of a computerized game or task seen on a screen. The subject becomes aware of the changes occurring during training and will be able to assess his/her progress in order to achieve optimum performance. Specific language impairment (SLI) describes a condition of delayed language development in children without intellectual disability, hearing impairment, visible neural damage. Children with SLI have major problems in learning to talk, despite showing normal social, emotional and motor development. It is a heterogeneous category, varying in both severity and profile of disorder, but in most cases children have problems with both understanding and producing spoken language. This study included 20 children from Institute for experimental phonetics and speech pathology "Djordje Kostić" with specific language impairment who were divided in two groups. The groups was consisted of 5 girls and 5 boys aged 5-7 years. Neurofeedback treatment consisted of twenty 30-min sessions given twice a week. One group received neurofeedback training to reduce their abnormally high power of theta/beta ratio and the second group decreasing the amplitude of slow theta waves (4-7 Hz) in Cz position. Results show that children of both group have successfully completed the tasks predicted by above mentioned neurofeedback protocol.

Keywords: neurofeedback, specific language impairment

EVOKING LEXICAL UNITS IN CHILDREN WITH SPECIFIC LANGUAGE IMPAIRMENT AND IRREGULAR PATTERNS OF EEG FINDINGS

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Lexical-semantic ability is an important determinant of language development and learning abilities. This study shows the results of an evaluation of the ability to evoke the lexical units in children with specific language impairment. The research was carried out in order to determine the difference in the ability to evoke the lexical units between children with specific language impairment and irregular patterns of electroencephalographic (EEG) findings compared with children who have a specific language impairment and a normal EEG findings. The sample was taken from 10 children with specific language impairment and irregular patterns of electroencephalographic activity, and 10 children with specific language impairment and a normal EEG findings, ages 5 to 7 years. The ability of evoking the lexical units is estimate with the Test dictionary for children aged 3 to 7 and the Test verb. The study found that there is a significant difference in the ability to evoke the nouns in children with specific language impairment and irregular patterns of electroencephalographic findings compared to children with specific language impairment and normal EEG findings. There was no statistically significant difference between this groups in the ability to evoke the verbs.

Keywords: lexical-semantic ability, specific language impairment, evoking of lexical units, changes in electroencephalographic activity.

RISK FACTORS AT BIRTH AND THEIR IMPACT ON PRELINGUAL AND EARLY LINGUAL DEVELOPMENT IN PREMATURE INFANTS

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This paper presents the results obtained for risk factors at birth in preterm infants that influence on the development of speech and language, which was the goal of this research. From the resulting research objectives are the following research tasks: determine the number and type of risk factors at birth in preterm infants and to determine the state of development of speech and language in premature infants at the age of three to four years. The sample consisted of 60 children aged between three and four years of age. The experimental group consisted of 30 children with premature infants under 32 weeks of gestation with a birth weight below 1500gr. The control group consisted of 30 children born at term, over 38 weeks of gestational age and birth weights above 3000 g. Research variables were: the beginning of sitting, walking age, the chatter and beginning to speak (medical history list). It was found that between premature and term newborn infants there is no statistically significant difference in early motor development: an independent sitting and to beginning to walk. Statistically significant differences were found in the beginning of chatter, and to speak. The qualitative analysis of the results was found to be in preterm infants and infants born at term ability too seating occurs between 6th and 7th months, and beginning to walk between 13th and 14th months of age. Phase chatter is in premature slightly delayed and occurs between 7th and 8th months of age, whereas in children born at term occurs in the 6th months of age. Phase of speaking characterized by the emergence of the first word is also delayed in preterm infants and occurs about 15th months of age, whereas in children born at term first word occurs between 12th and 13th months of age. The qualitative analysis of the results

we have found the presence of articulation disorders through omissions, substitutions and distortions of voices in both groups of children. It was also found that when the articulation voices no statistically significant differences between premature infants and infants born at term, or that in both groups occurring disorders of articulation.

Key words: articulation disorders, early motor development, speech-language development

THE INFLUENCE OF GENETIC CONDITIONS ON INCREASING RISK OF THE SPEECH-LANGUAGE PATHOLOGY AT CHILDREN

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Over the past years, more and more scientific studies have been devoted to defining the biological and neurological mechanisms of speech-language disorders. Numerous studies suggest that speech-language pathology is significantly conditioned by genetic factors. However, genetic etiology is not precisely defined. The genes responsible for the development of speech and language disorders have not yet been accurately identified. To identify the genes involved in the development of speech and language, twin studies, analysis of attachment, ie, the study of the association of genetic markers with disorders, the analysis of common alleles or chromosomal regions in the affected people (e.g., nurse and sister), as well as the examination of the association of the entire genome, i.e. Comparing the entire genome of the sick and control. Thanks to the modern methods used in the diagnosis of chromosomal aberrations, as well as DNA sequencing along the entire genome, it significantly contributes to our knowledge of the genetic etiology of various forms of speech and language disorders. This knowledge from genetic studies may provide new approaching into early identification of children at-risk for specific speech, language, literacy, and hearing disorders, which would encourage earlier interventions and stimulations of communication deficits. Additionally, it is very important that speech and language pathologist understand a role of genetics in communication disorders so they can use a different methodology for different cognitive and communication capacity at different genetics conditions and syndromes.

Keywords: speech-language pathology, genes, diagnostic

THE INHERITED FORM OF 22q11.2 DELETION SYNDROME: SPEECH IMPAIRMENT AND DELAY IN LANGUAGE DEVELOPMENT

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The 22q11.2 Deletion Syndrome (22q11.2DS) is the most common microdeletion syndrome in humans. It commonly includes cardiac defect, characteristic facial appearance, thymic hypoplasia, cleft palate/velopharyngeal insufficiency, hypoparathyroidism with hypocalcaemia, speech and language impairment and developmental delay. The mode of inheritance of the 22q11.2DS is autosomal dominant. In

As a part of a multidisciplinary study we examined the speech and language abilities of members of two families with inherited form of 22q11.2DS. The tests of language and motor abilities were applied in order to determine the communication profile of children monolingual native speakers of the Serbian language with 22q11.2DS. The presence of 22q11.2 microdeletion was revealed by fluorescence in situ hybridization (FISH) and/or multiplex ligation-dependent probe amplification (MLPA). We found considerable variability in the phenotypic characteristics of 22q11.2DS and the degree of speech-language pathology not only between different families with 22q11.2 deletion, but also among members of the same family. In addition, we detected no correlation between the phenotype and the size of 22q11.2 microdeletion. 22q11.2 deletion syndrome; inheritance, development of speech and language;

DETECTION OF LATERAL SIGMATISM USING SUPPORT VECTOR MACHINE

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Sigmatism or lisp is an articulation disorder characterized by defective articulation of sibilant sounds. Lateral sigmatism is a form of lisp which occurs when the air stream is forced over the sides of the tongue instead of being directed through the center of oral cavity. Traditionally, the existence and severity of these types of articulation disorders are determined by trained professionals - speech therapists by the means of audiovisual assessment. This paper proposes a method for automatic detection of lateral sigmatism. The proposed method is based on SVM (Support Vector Machine) as a binary classifier and its ability to distinguish between normal and pathological speech. Speech samples of simulated lateral sigmatism and normal speech are collected for stimuli words that contained phonemes /c/, /s/ and /z/. This speech database is used for SVM training and testing. The results show that it is possible to achieve significant level of correspondence between the results of automatic detection and real classes.

Keyword: lateral sigmatism, SVM, articulatory disorders

ON THE ISSUE OF BASIC MECHANISMS OF LANGUAGE STRATEGIES IN CHILDHOOD

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Verification of hypothesis about support of analytical and synthetic language strategies on functions of left and right hemispheres revealed its inconsistency (Sizova 2019). A study explores of relationship of language strategies with basic mechanisms of movement provided by kinetic and somatosensory cortex. Informants: SLI preschoolers of analytical cognitive strategy with primary kinetic dysfunction (PKD), and children of synthetic cognitive strategy with primary somatosensory dysfunction (PSD). Methods: longitudinal observations; testing of analytical and synthetic language processing; testing of manual praxis and repetition of sequential movements; t-test, Pearson correlation coefficient. Results Younger children -The more accurate the repetition of sequential movements, the better word differentiation; - With PKD, accuracy of praxis determines success of language analysis, but not synthesis. In PSD, this relationship is correct for phonemes discrimination (processing of units of motor and language levels). Dysfunctional praxis doesn't ensure success of synthesis and word differentiation (processed as sound sequence). Middle-aged children - With PSD, degree of intactness of somatosensory cortex determines language processing. In PKD, development of language centers weakens biological functions of dominant hemisphere at this age. Better language processing is correlated with reliance on subdominant hemisphere in motor tasks (Sizova 2019). Respectively, between success of praxis and language processing there is inverse relationship. The more pronounced somatosensory dysfunction in PSD and kinetic dysfunction in PKD, the more disturbed both analytical and synthetic processing. Discussion -In younger preschoolers, linguistic processing is more conditioned by successive processes (kinetic cortex); in middle-aged preschoolers, by the accuracy of movement (somatosensory zones) -In younger age, interdependence is revealed between basic motor functions and nature of task: accuracy of each movement determines the analysis; sequence organization determines synthesis -In middle age, groups are differentiated not by success of analytical or synthetic processing, but by reliance on movement mechanisms, which are basic for each linguistic strategy. analytical and synthetic language strategies, SLI, basic mechanisms of movement

STATEMENT DURATION IN DEVELOPMENTAL VERBAL APRAXIA

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The aim of this study was to determine the duration of speech statement in developmental verbal apraxia, developmental dysphasia and developmental phonological disorders. The research was carried out at the Institute for Experimental Phonetics and Speech Pathology and at the Institution for Psychophysiological and Speech Disorders in Belgrade. An adequate diagnosis conducted by the professional team: speech therapist, clinical psychologist, neurologist, we select children whose speech and language disorders were diagnosed as developmental verbal apraxia, developmental dysphasia and developmental phonological disorders. The sample consisted 45 children aged 4-5 years. The first group (N = 15) were children with diagnosed developmental verbal apraxia, the second group (N = 15) children with diagnosed developmental dysphasia, and the third group of subjects (N = 15) included children with diagnosed developmental phonological disorders. The groups were uniform compared to age. The results show that children with developmental verbal apraxia need much more time and attempts to properly pronounce the word, and therefore the speech production is longer than usual.

Key words: developmental verbal apraxia, developmental dysphasia, developmental phonological disorders, speech-language disorders

LANGUE DE BOIS ET PROPAGANDE DANS LE DISCOURS POLITIQUE DE JEAN-MARIE LE PEN

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L'étude de ce qu'on appelle, d'une manière générale «idées politiques», a suscité depuis longtemps de belles et fortes discussions. Par quoi se caractérise le discours politique de Jean-Marie Le Pen? A-t-il vraiment changé au fil des années? Cet homme politique a su que le pouvoir de l'image dans la politique représentait quelque chose d'incontournable, surtout à nos jours. C'est justement pour cette raison que la politique et la télévision sont devenues pour lui un couple inséparable. Il a appris appris, les dernières décennies, à « faire de l'image », étant de plus en plus présents à l'écran, non seulement dans les émissions politiques, mais aussi dans les talk-shows ou les émissions sociales et de divertissement. Les hommes et les femmes politiques en général, et ceux qui passent à la télé en particulier, sont souvent critiqués pour leur usage de la langue de bois (surtout utilisation abusive de barbarismes et stéréotypes), parce qu'ils utilisent un code préfabriqué, rigide, indéformable, sans innovation, donc ennuyeux, ce qui provoque un blocage dans la communication sociale. Dans le discours de Jean Marie Le Pen il y souvent des références à la sexualité, sa langue est guerrière, nationaliste, mais métaphorique et, par conséquent, l'emploi d'un vocabulaire violent est inévitable. A la différence de la plupart des politiciens, « Jean Marie Le Pen est le candidat qui maîtrise sans aucun doute le plus spectaculairement la langue française. Toute sa réussite politique est liée à cette assurance» (Roussot, 2007). Mais, malgré un goût évident pour les mots rares et désuets, sa langue n'est ni polie, ni respectable. Discours politique, propagande, langue de bois, manipulation

PROSODIC TEXT RHYTHM AND COMIC EFFECTS: THE POSSIBILITY OF CORRELATION

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In the conditions of significant increase in a modern Russian media discourse of a share of oral speech including in its spontaneous form, the comic effect is often formed by means prosodic (in particular rhythmic) the organizations of the speech that defines need of a research of this party of the media speech. Comic content has prosodic marks, which can be described as a specific rhythmic structure. The rhythmic-prosodic organization of a media text with a humorous component has not yet received due attention in scientific literature. Taking into account the fact that the comic in the orally (re)produced media text implements various intentional installations of the author (from the creation of a humorous tone to ridicule and sarcastic judgmental evaluation), often recognition of the comic relies not so much on lexical-semantic content of the text as to its prosodic features: intonation, tone color, in general on the voice parameters of reproducing a text (in our case, we believe this a person is an author of the text, since it is his utterance that makes the text available to the audience). All the prosodic features of a text are fully expressed in the rhythm of a text. The rhythm is primal in relation to segment, which reveals in coming ahead of time orientation as in the process of production, and in the process of speech perception (A. A. Leontiev). The rhythm of the text, understood as a universal prosodic characteristics of the text includes the operation of all super segmental units (syllables, the beat, the phrase) in their prosodic parameters (syllables, stress, intonation). The purpose of this analysis is the study of the semantic-expressional correlation of rhythmic organization of the text and its comic effects.

Keywords: oral speech, media speech, prosodic marks, the comic effect, prosodic, rhythm of the text

THE IMPACT OF SPEECH PROCESSES ON ORAL LANGUAGE PROCESSING

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This presentation addresses the question of influence of various speech processes on oral language processing, both in terms of comprehension and production. The thrust of the argument is that there could be no successful processing without heeding phonetic and phonological elements such as co-articulation, pronunciation, assimilation, and linking. In terms of comprehension, it will be argued that understanding cannot be guaranteed without paying attention to the appropriate acoustics, and without considering principles in experimental psycholinguistics research such as the degradation effect, whereby any degradation in the input causes trouble to lexical decision and therefore to understanding.

Similarly in speaking, it will be shown that no oral message can be accurately conveyed without taking into account the acoustic properties of speech, which are not fixed and vary with the context in which they exist. This will be illustrated with principles such as ‘the segmentation problem’ and ‘the invariance problem’.

ALEXIA WITHOUT AGRAPHIA – CASE STUDY

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Introduction: The neuroanatomic basis of alexia without agraphia was described by Dejerine in 1892., after a dominant angular gyrus lesion. Alexia without agraphia is manifested by the impairment of reading ability. Speech, auditory comprehension, repetition and writing are relatively intact. Because of the damaged splenium of the corpus callosum, alexia without agraphia is considered an example of an interhemispheric disconnection syndrome.

Case study: We presented a 71-year-old male, with chronic hypertension, diabetes mellitus and dyslipidemia. The MRI shows a lesion in the left mediotemporal region, which also covers equilateral thalamus, posterior cingulate gyrus, splenium of corpus callosum, lingual occipital gyrus, and the tail of the hippocampus. On the right part of cerebellar, lacunar ischemia is present.

Neurolinguistic diagnostic protocol includes Mini Mental Test, Boston Diagnostic Aphasia Examination, Boston Naming Test and phonemic and category fluency tests. We have also structured a clinical protocol for the color recognition assessment. The results shows a mild cognitive impairment related to the disturbance of time and space orientation, delayed memory and reading. On the speech and language level, we registered a severe degree of acquired alexia without agraphia which does not interfere with other modalities of language.

Conclusion: The application of neurolinguistic tests and clinical techniques provides more reliable diagnostic criteria, which represents the basis for procreation of neurorehabilitation. The rehabilitation protocol refers to the training techniques: tactile-kinesthetic recognition of graphemes and the application of various reading techniques, such as "Letter by Letter", Multiple Oral Re-reading and melodically intonated oral reading technique in aim of the restitution of the reading disorder.

Key words: Alexia without agraphia, Stroke, Hemianopsia, Neurolinguistics, Neurorehabilitation

THE INFLUENCE OF SENSORINEURAL HEARING LOSS ON AURAL SPEAKER RECOGNITION

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The aim of this research was to investigate the influence of high-frequency sensorineural hearing loss on speaker recognition during earwitnessing line-ups. The secondary objectives were: to estimate the influence of familiarity of speakers on the correctness of recognition and to verify the correlations of correct recognition of speaker with a confidence scale in assigning line-up recordings. Recordings for line-ups underwent a low-pass filtering procedure in order to imitate moderate, severe and profound hearing loss conditions. All subjects were interviewed for audiologic screening and were subjected to a hearing assessment procedure. After identification during the line-up session, a questionnaire estimating degree of familiarity of speakers and certainty of answers on a scale was filled in. Finally, relation of confidence of recognition and degree of familiarity was measured. Results show that the correlation between hearing loss and ability of speaker recognition is statistically significant. Surprisingly, it appeared that higher level of exposure to speakers' voices has a negative effect on speaker recognition. The two correlation between confidence level and hearing loss and confidence level and degree of familiarity of speakers were investigated as well. Significance. Some instructions for improvement of line-ups were given such as implementing a hearing screening test procedure or magnetic induction loop installments. The results of the present study should be considered in line-up sessions planning and earwitness evaluating.

Keywords: presbycusis, hearing loss, familiar speaker recognition, experimental & forensic phonetics, audiology

COMMUNICATION LEVELS FROM BIOMOLECULES TO NOOSPHERE - NEW INSIGHTS

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The new century has brought significant new insights into the fields of natural and information sciences, daring the spiritual/philosophical sciences to step-up from behind the scene, announcing „new“ but, in fact, somewhat ancient concepts. The latest generation measuring devices as well as computer systems of a massive capacity and speed of data processing have made it possible to detect, measure and display in a cognitive-friendly manner a range of unexplained physical phenomena and subtle energies - precisely those, until recently, unmeasurable phenomena, but defined in the textbooks of spiritual and theosophy disciplines. Accordingly, communication systems and „data“ exchange, starting from the level of supramolecules, then intercellular communication, information flux within the individual, within the community, communication at the living species level, to higher levels of orderliness - biosphere and, why not - the noosphere, become the subject of expanding and fundamental renewal of theoretical concepts. Distant to a degree and highly specialized scientific disciplines became more interlinked and complemented. By giving a partial synthetic insight into the boundaries of modern natural sciences and informatics, it is aimed to briefly comment on the physical nature and levels of information exchange within the increasingly overlapping scope of study of contemporary:

- Physics (physics of Ether, quantum mechanics and quantum biology, physics of time within biosystems,...)
- Biology (biophotonics, wave genomics, bioenergetics ...)
- Informatics (quantum computers, bioinformatics, morphogenetic fields, artificial intelligence, ...)

From the very names of its sub-disciplines it can be concluded that the age of mechanistic materialism and the neverending dissection of science on super-narrowed disciplines has ended!

Based on new breakthroughs in natural and IT sub-disciplines mentioned above, psychology and sociobiology became armed with new methodological tools too, coming closer to the Holy Grail or the „subject of study“ of these sister sciences, namely: human soul and „soul of the species / soul of the world“.

Consequently – Homo and his place on the spiritual scale of the Universe became a permissible topic again. Somewhat ironic: precised quantum mechanics instruments and soulless IT software - unintentionally, but definitely not "accidentally" – bring back ontology and spirituality to the world of exact science.

THE IMPACT OF MEDICATION DURING PREGNANCY ON FETAL DEVELOPMENT

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Abstract: In spite of the widespread opinion that drugs should be avoided in pregnancy, a great number of pregnant women take drugs with more or less justification. Administration of drugs in pregnancy requires additional attention because the health of both the mother and her unborn child must be protected. Majority of drugs administered in pregnancy have not been tested within the controlled studies performed on pregnant women, but their effect on the human fetus is based on assumptions and clinical trials performed on animals. Most often, the non-negative effects of the drugs used during pregnancy affect the anatomical basis of the fetal development as well as its psychophysiology of development. The aim of this review article is to put the emphasis on the importance of early detection and diagnosis of developmental disorders. Some potential developmental disorders in children can be detected in the prenatal period, and thus enable the early intervention and habilitation treatment of the psychophysiological abilities of such children.

Keywords: drugs, pregnancy, childhood developmental disorders, psychophysiological abilities

ASPECTS OF BIMODAL COMMUNICATION: CROATIAN SPOKEN AND CROATIAN SIGN LANGUAGE

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Croatian Sign language (CSL, Croatian: HZJ) is a largely unexplored area. The reason for this is twofold: first, legal recognition of CSL came very late in Croatia (2015), and second, it is not systematically taught. Deaf children are still encouraged to develop basic aural/oral skills through intensive programs with teachers trained to use procedures based on the verbotonal method originally developed by Petar Guberina. The language they develop is often quite limited, which seriously impedes their cognitive, affective, and social development. Children's parents have been convinced that CSL is an arbitrary system used by a closely-knit minority groups and not a natural, complex, and cognitively motivated system crucial for children's intellectual and emotional growth. The aim was to investigate the nature of salience (attention) and situatedness (perspective) as coded in CSL. Our sample consisted of 4 participants who received cochlear implants at different stages in their lives (Group A), and 9 totally deaf from birth or infancy, and with no hearing aids (group B). The participants were first asked to describe a "frequent route" from home to another place reachable on foot. Second, they were asked to describe a marked route on the map of a building, and a marked route on a town map. The participants had problems understanding the concept of "route", they questioned the purpose of describing the maps, and they were quite evasive about the focal point of the task: instead of describing spatial relations and landmarks, they attended to such details as who they would take along if they were in the imagined place, they kept mentioning their daily routines, or simply stated they would rely on the interpreter. The analysis of the spoken data suggests (the expected) simplified syntax and non-functional use of directional concepts (left/right) as well as concepts coding distance.

Keywords: Croatian Sign Language, deaf, salience, situatedness

NEUROFEEDBACK APPLICATION IN THE TREATMENT OF SPEECH AND LANGUAGE, ATTENTION, BEHAVIOR AND LEARNING DISORDERS IN CHILDREN

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This study aims to provide an insight into the theoretical basis of the neurofeedback method as well as to offer our experience in working with speech pathology and treatment of accompanying symptoms of speech and pathology. This study includes an explanation of the basic concepts on which the method is based, as well as explanations of the forms of learning that underlie the change in behavior achieved during the treatment. Learning is combined with higher mental functions that we aim to "wake up" by introducing metacognitive strategies into treatment. We look at the measures that are characterized by a special biofeedback and neurofeedback, as well as an interpretation of their significance. Then, the diagnostic process and the basic objectives of the intervention are described. There is a diagnosis diagram in which there is usually an indication for the use of the neurofeedback method. We have identified two pilot cases to illustrate the effect of applying this method. The quantitative presentation aims to indicate the existence of a change in value in each case. This change is interpreted in a positive light, as it indicates the establishment of more functional physiological patterns in patients involved in treatment. The conclusion points to the possibility of combining audiolinguistic treatment and neurofeedback methods in a number of patients with diagnosis in the domain of speech-language pathology, attention deficit, behavioral and learning disorders.

Keywords: biofeedback, neurofeedback, classical conditioning, instrumental learning, attention deficit, school skills disorder, stuttering

ATTACHMENT IN CHILDREN WITH AUTISM

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Attachment represents a specific relationship between a mother and a child which lasts for a lifetime. Children with autism spectrum disorders (ASD) have difficulties in the social interactions development, which can have an influence on the development of attachment. Studies that examined attachment in children with ASD obtained somewhat contradictory results. While certain research indicate that children with ASD develop disorganized attachment styles, others claim that in most children with ASD some evidence on the presence of secure attachment can be found. It has also been shown that the severity of autistic symptoms and the child's cognitive level can be significant predictors of the attachment style. Namely, autism does not necessarily exclude the development of a secure attachment style, but in some way it changes the behaviors that reflect it. Authors point out that during the observation of children from this population, it is necessary to allow certain behavioral idiosyncracities. It seems that the comorbidity of autism severity and intellectual difficulties is associated with insecure attachment styles, rather than the diagnosis itself.

Keywords: attachment, autism spectrum disorder, intellectual difficulties, severity of symptoms

ORTHOMOLECULAR PSYCHIATRY – THE SIGNIFICANCE OF NUTRITION AND MICRONUTRIENTS IN ADVANCEMENT OF MENTAL HEALTH

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Mental health implies the way we think, the way we make decisions, the way we feel, how we treat others and deal with stress. Even though nowadays we live in abundance, research and empirical data show suboptimal levels of vitamins, minerals and omega 3 fatty acids in our nutrition because of global pollution, overused lands and inadequate nutrition habits. This is the reason why the professional public shows interest in different ways of nutrition. The intake of micronutrients through dietary supplements can act preventively in the field of mental health, and also affect the degree and course of mental disorders. This is the field of interest of orthomolecular psychiatry. There are many studies and results that explain the role and significance of micronutrients in advancement of mental health. The significance of omega 3 fatty acids stands out as they are essential components in cell membrane of neurons, they regulate the activity of neurotransmitters, they also have anti-inflammatory and anti-apoptotic effect and they enhance neuroplasticity. Vitamins from B group, Fe, Zn, Ca participate in many biochemical reactions which are significant for development and functioning of the central nervous system. Deficit of vitamin D is associated with neurodevelopmental disorders. Lipid peroxidation of the cell membrane of neurons, caused by high levels of oxidative stress, represents one of the biochemical processes included in occurrence and development of mental health problems. With the aim to control oxidative stress, it is pointed out the significance of the oxidants (vitamin C, vitamin E, beta carotene, polyphenols). With the aim of advancement of mental health, it is crucial to enrich the knowledge of health care professionals, parents and young generations about significance of good eating habits and physiological functions of micronutrients which are essential for mental health.

Key words: mental health, orthomolecular psychiatry, balanced nutrition, micronutrients

COMMUNICATION OF THE DEAF EMPLOYEES

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Communication can be defined as a dynamic and complex process in which people receive and send verbal and non-verbal messages to understand others and for others to understand them.

The factors of communication are: a) the sender - the person sending the message, b) the information - the message being transmitted, v) the channel - the path the message crosses, g) the recipient - the person or persons receiving the message. Feedback or feedback indicates how the message was interpreted and accepted by the recipient and what impact the message had on the recipient. They can take many different forms, from smiling or frowning, nodding, to verbal reactions or behavioral changes. Research indicates that words participate with 7% of communication, voice with 38%, mimicry, gesture with 55%, or 93% of the message is non-verbal. Hearing loss greatly affects communication, educational attainment, and social interactions (Boutin, 2010; Boutin & Wilson, 2009), and reduces job opportunities, that is, leads to unemployment or lower-level employment (Bradley, Ebener, & Geyer. 2013; Smith, 2011). Inadequate communication strategies may be associated with depression, social introversion, loneliness, and social anxiety. The results of the research presented in this paper show that the barrier to communication remains the greatest challenge employers face in seeking to hire hearing impaired people. On the one hand, employers believe that hearing impaired people are reliable and competent to perform their job duties, as well as people who do not have hearing problems. On the other hand, employers (100%) point out that they do not know how to communicate or have received training in the needs of hearing impaired people.

Key words: communication, verbal and nonverbal messages, hearing impaired, communication strategies, factors of communication

NEW KNOWLEDGES ON GENETIC CONTINUITY AND LINGUISTIC CONTINUITY OF THE SERBIAN LANGUAGE

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In the Paleolithic-Mesolithic-Neolithic period, all Danube cultures include genetic continuity (paleoethnogenetics or archeogenetics) and linguistic continuity (linguistic continuity theory of the Indo-Europeans). Archaeological genetic research has shown that the majority of the population in Europe in the Neolithic (30–10 kya) consisted of superhaplogroup IJ, and a smaller proportion of superhaplogroup IR; in the period 12,000-6,000 B.C. the major part were consisted of haplogroup I1/2. Sometime later, increased the proportion of haplogroup R (R1a/R1b). The genetic structure of today's population in the territory of Old Europe shows an uninterrupted continuity with the Neolithic period and testifies to the genetic autochthony of Serbs in this area. The linguistic continuity of the Serbs is confirmed by the list of Slavs words from the Paleolithic, Mesolithic and Neolithic periods has also been compiled, which practically represents the "oldest substrate of European languages". The Paleolithic, Mesolithic and Neolithic Lexicon of Slavs is shared by other Indo-European (IE) languages. Hence, the Neolithic cultures of the Danube Region or Old Europe constitute the "originally linguistic culture of Europe". Old Europe is an area of the Balkan and around the Balkan where an advanced Indigenous Serb civilization was developed in the pre-Indo-Neolithic period, creating the first prototype, known as the Script of Lepenski Vir, whose development later evolved into the Vinča script or Serbica. Today's Cyrillic and Latin letters are mostly unmodified letters of the Serbica. The Vinča calendar or autochthonous Serbian calendar has also evolved, which has remained mainly unchanged to this day. All these are irrefutable evidence of the preserved genetic and cultural identity of the Serbs in the territory of Old Europe and their autochthony in this area.

Keywords: genetic continuity, paleoethnogenetics, haplogroups, linguistic continuity, Vinča script, Serbica, Serbian calendar, identity, autochthony.

GENDER EFFECT ON READING PERFORMANCE IN ELEMENTARY SCHOOL CHILDREN

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The development of reading skills is based on the already established primary linguistic competence within verbal communication. When a child gains the ability to read, it is at the level of fluent reading, which implies accurate and fluent reading of the text and is accompanied by good reading comprehension. In this paper we discuss gender differences in reading speed, precision, and comprehension. The sample consisted of 120 children who are attending Second, Third and Fourth grade of primary school. For reading assessment we have used a three-dimensional reading test by Helene Sax. Reading speed was measured by the number of words read per minute, while reading comprehension was measured by the number of information about the text read. Our results showed that girls read faster than boys. There were no statistically significant differences regarding number of mistakes and reading comprehension.

Keywords: gender, reading, speed, precision, comprehension

CHARACTERISTICS OF DEVELOPMENTAL ABILITIES IN YOUNG CHILDREN

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The purpose of this study was to identify differences in speech and language development of third and fourth - grade elementary school children as well as to identify differences in speech and language development between boys and girls. The sample consisted of 108 subjects: 54 children of the third-grade of primary school and 54 children of the fourth-grade of primary school. Assessment of speech and language skills was performed using: Global Articulation Test (Kostić, Đ., Vladislavljević, S., 1983), Test for speech development (Vasić S., 1991), Three-dimensional reading test, which is an adapted version of the Helen Sax reading test (Kostić, Vladislavljević i Popović, 1983), Lateral dominance test (Kostić, Vladislavljević i Popović, 1983) and Acadia test (Subtest 9, Subtest 10 and Subtest 11). The results of the research showed that irregular articulation is more common in third grade elementary school children. Right-handedness is dominant regardless of class and gender. The results of the Three-Dimensional Reading Test indicate that fourth-grade children read faster than third-grade children, while there is no significant difference in Reading Speed and Error Count between the two groups of children. Using the Test for Speech Development, the following results were obtained: fourth-grade children achieved higher scores compared to third-grade children. Also, there is a significant effect of gender on achievement on the test: fourth-grade girls achieve significantly better results than boys. Using Acadia subtests 9, 10, and 11, the following results were obtained: third-grade children scored higher on Subtest 9 (Concept Making Skill) and Subtest 10 (Acquired Linguistic Treasure) compared to fourth-grade children. Gender has a statistically significant effect on the Acadia Subtest 11 (Automatic Linguistic Treasure). The results show that both third and fourth-grade girls scored higher on this subtest compared to third and fourth-grade boys.

Keywords: speech and language development, articulation, reading, lateral domination, acadia test, younger school age

FRAGILE X SYNDROME

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Fragile X Syndrome (FXS) is the most common genetic form of intellectual disability and single gene cause of autism with a prevalence of approximately, 1 in 4000 males and 1 in 8000 females. FXS is a neurodevelopmental disorder caused by full mutation of the fragile X mental retardation (FMR1) gene. This mutation leads to methylation of the gene and a subsequent lack of the protein encoded by this gene, the Fragile X mental retardation protein (FMRP). Patients with FXS have variable clinical presentations. The classical physical phenotype in males with FXS includes large prominent ears, long narrow face, hyperflexible joints, double-jointed thumbs and macroorchidism. All boys with FXS have one or more of these physical features. They can also have behavioral problems such as social anxiety, shyness, attention-deficit hyperactivity disorder (ADHD), irritability, aggression (including self aggression), impulsiveness, language deficit, and seizures. Many aspects of the FXS phenotype can negatively affect language, such as intellectual disability and behavioral challenges. Not surprisingly, language difficulties, relative to chronological age and/or nonverbal cognitive ability, are common in males with FXS. Symptoms of autism are frequently observed in individuals with FXS, with as many as 60% of males warranting a comorbid diagnosis of autism. In contrast, FXS accounts for only 2–6% of all cases of autism. There are still no currently approved curative therapies for FXS, and clinical management continues to focus on symptomatic treatment of comorbid behaviors and psychiatric problems. However, there are several targeted treatments that target the neurobiological pathway abnormal in FXS.

Keywords: Fragile X syndrome

I AM GIFTED BUT SCHOOL IS STILL PROBLEM FOR ME

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Starting school is a turning point in the life of every child and its family. The child's as well as family's expectations can be high, but difficulties and disappointment may arise quickly and unexpectedly. Pupils with learning difficulties often face school failure and with it grades that aren't in accordance with the work they put in. On top of that, these students also face mocking from their peers and often disapproval from their teachers. Gifted children even though characterized by traits that give them the potential to consequently achieve above average results can be a sensitive population as well. Although gifted, these children can still experience learning difficulties of various etiologies. These children are especially vulnerable because they can often use their extraordinary abilities to mask any difficulties for some time so neither parents nor teachers notice them. When the pressure of a large workload becomes too big to compensate, children largely depend on their parent's reaction to the situation. Some families continue to negate any issues while others look for help. These approaches are crucial for the child's further development. Thanks to caring and supporting families two gifted boys with learning disabilities who weren't able to deal with the workload and pressure at school on their own came to see a speech-language pathologist. Specific language difficulties are the basis of specific learning difficulties and approximately 5-8% of children experience specific language difficulties and difficulties in reading and writing. At that, the prevalence of dyslexia is 5-7% and is more present in boys. The boys in this study have been attending speech-language therapy and psychological therapy. Adequate professional help and a caring and supportive family surrounding have enabled these young people to fulfill their potentials so far and it hopefully will in their further education as well. What would have happened otherwise?

Keywords: gifted, learning difficulties

EFEKTI MULTIMODALNOG TRETMANA NA PAŽNJU KOD DECE SA ADHD

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Sa neuropsihološkog aspekta ADHD se sastoji od impulsivnosti, problema planiranja, nepažnje, hiperaktivnosti, problema modulacije gratifikacije i emocionalne regulacije (Goldstein, Jansen, 2008). Osobe sa ADHD teško održavaju pažnju što ih čini manje efikasnim u odnosu na vršnjake. U terapiji dece sa ADHD najčešće se primenjuje kombinovana terapija koja obuhvata upotrebu lekova, bihevioralne tehnike i modifikaciju okoline. Cilj ovog rada je da se utvrdi efekat multimodalnog tretmana na pažnju kod dece sa ADHD. On je podrazumevao primenu metakognitivnih strategija, neurofidbek treninga, reedukacije psihomotorike i sportsko-rekreativne terapije. Metod: Istraživanje je obuhvatilo 15 dece sa ADHD, uzrasta od 7 do 17 godina. Efekat multimodalnog tretmana je procenjivan posle šest meseci od početka primene pomenutih programa. U tom periodu deca nisu bila na medikamentoznom lečenju. Procenjivan je indeks pažnje koji se dobija na osnovu procene verbalnog raspona (subtest brojeva -VITI), vizuelnog raspona (WMS-R), kao i procene mentalne kontrole (WMS-R). Takođe, korišćena je i SNAP 4 skala koju su popunjavali roditelji. Rezultati i zaključak: Dobijeni rezultati pokazuju značajno poboljšanje merenih aspekata pažnje. Oni nas upućuju na zaključak da je multimodalni pristup, tj. primena metakognitivnih strategija, neurofidbek treninga, reedukacije psihomotorike i sportsko-rekreativne terapije dobar izbor kada je reč o pristupu u radu sa ovom populacijom. Kod dece sa ADHD dominantna je obrada manje značajnih informacija, tj. narušena je selektivna funkcija pažnje. Pojačana osetljivost na irelevantne stimulse upravo dovodi do stanja rasejanosti i impulsivnosti, pa je terapijski rad na resursima pažnje od presudnog značaja, jer se pozitivni efekti odražavaju i na probleme preterane motorne aktivnosti i impulsivnosti.

Ključne reči: ADHD, pažnja, metakognitivne strategije, neurofidbek, reedukacija psihomotorike, sportsko-rekreativna terapija.

CHARACTERISTICS OF AUDITORY INFORMATION PROCESSING IN CHILDREN WITH SPECIFIC LANGUAGE IMPAIRMENT

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Abstract: The application of quantitative EEG in the examination of speech-language processing in children with typical and atypical speech-language development enables a better understanding of relations between brain regions in mechanisms of speech-language comprehension and production. Research in the field of speech language processing in children with specific language impairment (SLI) has shown that children with SLI have disturbed and insufficient auditory and speech-language information processing. In this paper, a few very important findings of the auditory information processing in children with specific language impairment will be presented. The main emphasis is placed on a significant reduction of general interpretative area space, its dissociation and/or predominantly right-hemispheric presentation when examining the processing of auditory stimulation in children with SLI.

Conclusions drawn from these findings may be widely used not only in the treatment of speech and language disorders but also for prognostic purposes.

Key words: QEEG, auditory information processing, specific language impairment

SPECIFIC PROTOCOL FOR HEARING ASSESSMENT IN PRETERM BABIES

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Hearing impairment is frequently met in preterm babies as compared to well baby population. Incidence of congenital and perinatal hearing loss in prematurely born children is 2-4% and in case of extreme prematurity (less than 32 GW) it could reach 6 %. It could be caused by extreme immaturity of the newborn baby as well as by multiple risk factors (gestational age, extremely low birth weight, hypoxia, hyperbilirubinaemia, infection, ototoxic medication, prolonged NICU stay, mechanic ventilation. Assessing the hearing status of a premature baby is extremely complex, and interpreting the results requires extensive experience and knowledge of the milestones and complexities of development in this population. In addition to cochlear hearing impairment, retrocochlear problems can often occur due to auditory neuropathy and dyschrony, as well as immaturity of central auditory tracts. Hearing screening in prematurely born babies should not be restricted to otoacoustic emission testing (OAE), but automated auditory brainstem response (AABR) is mandatory for detection of retrocochlear pathology which is frequently seen in those babies. In case of several negative OAE tests baby should be referred for further audiology evaluation. Interpretation of audiology test results is complex and dependent on the degree of prematurity, age at the time of testing and comorbidities. Type and timing of eventual intervention is determined by the degree of the hearing impairment and other developmental disorders. It should be kept in mind that one third of babies identified as significant hearing loss in the first months of life, later on could achieve normal hearing thresholds through maturation process. It is essential to monitor development of these children closely at least during first two years of life in order to adjust type of amplification and habilitation of hearing and speech.

Keywords: preterm babies, hearing loss, hearing assessment

CAESAREAN SECTION AS A COMPROMISING FACTOR IN PSYCHOMOTOR DEVELOPMENT

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Psychomotor development means synchronized triage i.e. motor, intellectual, and emotional maturation and all these dimensions are mutually conditioned in function and development, and in overall maturation they are inseparable. Often, however, the question arises as to which dimension in development is more primary or basic than the rest. We are of the view that movement is the basis of all functioning of living beings, so motor development is the basis of all psychomotor development. The objectives of this study was to determine the incidence of caesarean section in children with speech and language disorders, as well as the relationship between type of delivery (caesarean or vaginal) and psychomotor development. The research was conducted between the period of 2015-2016. The sample consisted of 205 children with speech and language disorders that were diagnosed at the Institute for Experimental Phonetics and Speech Pathology "Djordje Kostic" in Belgrade and were on continuous speech-language treatment. The selected children underwent a diagnostic procedure at the Institute. The sex ratio was 23% (42) female and 77% (163) male. The tested children reported to the Institute in Belgrade where they were assessed in the following: speech-language, psychomotor, and socio-emotional status. Results showed that the incidence of caesarean section in children with speech and language disorders, as well as the relationship between the type of delivery (caesarean or vaginal) and psychomotor development, was not significant – according to the data except that some children started walking after 16th months and the percentage of such children was 21% (N = 43), of which the highest percentage was 59% (N = 78) of children born by a vaginal delivery and the highest number was children who did not establish physiological habits and amounted to 39% (N = 79), of which the highest proportion 56% (N = 44) were children born by a vaginal delivery.

