



Program and Abstracts

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PROGRAM

Friday, 25 October 2013

09.00 –11.00	Registration of the participants
11.00 –12.30	Opening ceremony
12.30 – 13.00	Presentation Digitalization of Serbian written heritage: Electronic Corpus of Serbian Language from 12th to 18th century Aleksandar Đ. Kostić
13.00– 14.30	<i>Cocktail</i>

SESSION: S1 ORAL PRESENTATION

Time: 14.30– 16.30

Chairpersons: *G. Brikhman, D. Rakovic, O.Gouni*

S1.1 14:30-14:50	LANGUAGE AND SPEECH DISORDERS AS A DISPLAY OF PRENATAL AND PERINATAL TRAUMA IN THE HUMAN EVOLUTION CONTEXT	G. Brikhman
S1.2 14:50-15:10	SOCIOBIOLOGY OF FETUS (EMBRYO)	V. Shestakov
S1.3 15:10-15:30	THE EGG and SPERM POLARITY in UNION at HUMAN CONCEPTION	O. Gouni
S1.4 15:30-15:50	STRESS & ANTI-STRESS:HOLISTIC QUANTUM-INFORMATIONAL FRAMEWORK	D. Raković
S1.5 15:50-16:10	HOLISTIC APPROACH TO SPEECH INTERACTION IN NORM AND PATOLOGY	D. Popov, V.Popova
S1.6 16:10-16:30	BASES OF (PRENATAL) COMMUNICATION	M. Sovilj
16.30-17.00	<i>Coffee break</i>	

SESSION: S2 ORAL PRESENTATION

Time: 17.00– 19.00

Chairpersons: *S. Plesinac, M. Vojnović, V. Shestakov*

S2.1 17:00-17:10	FETAL AUDITORY STIMULATION AND THE CHANGE OF PULSATILITY INDEX OF THE FETAL MIDDLE CEREBRAL ARTERY	S. Plesinac, S. Jankovic, D. Plecas, O. Antonovic, T.Adamovic, M. Sovilj
S2.2 17:10-17:20	VOCAL TRACT SHAPE ESTIMATION FOR CHILDREN AGES TO ONE YEAR	M. Vojnović
S2.3 17:20-17:30	MOVEMENT AND SPEECH	T. Adamović, M. Sovilj, K. Ribarić Jankes
S2.4 17:30-17:40	APPLICATION OF FUZZY SYSTEMS IN AFFECTIVE COMPUTING	D. Šaletić
S2.5 17:40-17:50	A COMPARATIVE ANALYSIS OF UNDERSTANDING VERBAL ORDERS IN COCHLEAR IMPLANTED CHILDREN AND CHILDREN WITH NORMAL HEARING	S. Todorović, S. Đoković
S2.6 17:50-18:00	EEG CORRELATES OF NON-VERBAL TRANSPERSONAL HOLISTIC PSYCHOSOMATIC COMMUNICATION	B. Bedričić, M. Stokić, Z. Radivojevic, D. Milovanović, M. Ostojić, D. Raković, M. Sovilj, S. Maksimović

S2.7 18:00-18:10	IMBALANCED LEARNING APPROACH TO THE CATEGORIZATION OF ARTICULATION DISORDERS	D. Furundžić, S. Jovičić, M. Subotić, S. Punišić
S2.8 18:10-18:20	CHARACTERISTICS OF PERCEPTUAL IDENTIFICATION OF THE DISTORTION DEGREE OF FRICATIVE /Š/ DURATION IN TRAINED AND UNTRAINED LISTENERS	S. Punišić, S. Jovičić, Z. Kašić
S2.9 18:20-18:30	CHANGES IN EEG THETA RHYTHM PEAK FREQUENCY AND AMPLITUDE IN FRONTAL MIDLINE CORTICAL REGION DURING SHORT-TERM AUDITORY MEMORY FORMATION FOR WORDS AND NON-WORDS	M. Stokic, Z. Radivojevic, V. Nenadovic, S. Maksimovic
S2.10 18:30-18:40	THE SPEECH ACT OF APOLOGY IN SPOKEN VERBAL COMMUNICATION	D. Peneva
S2.11 18:40-18:50	MOUTH ACTIONS IN SIGN LANGUAGES: THE ROLE OF MOUTHING IN HZJ	A. Marčič, M. Milković

SESSION: P1 POSTER PRESENTATION

Time: 14.30-19.00

Chairpersons: *N. Čabarkapa, I. Bogavac*

P1.1	THETA AND ALPHA RHYTHM AMPLITUDE CHANGES DURING AUDITORY PERCEPTION OF WORDS AND NON-WORDS	Z. Radivojevic, M. Stokic, D. Pecenica, M. Subotic
P1.2	MAKSIMAL VOWEL SPACE	M. Vojnović
P1.3	INTUITION SPEECH	V. Kljajević, D. Portić
P1.4	INTERDENTAL SIGMATISM – DIACHRONIC FOLLOW UP IN PRONUNCIATION OF SERBIAN SPEAKERS	S. Punišić, S. Golubović, M. Subotić
P1.5	ABILITIES OF PHONOLOGICAL ANALYSIS IN FIRST AND SECOND GRADE ELEMENTARY SCHOOL CHILDREN	N. Stanojević, M. Randelović
P1.6	LONGITUDINAL MONITORING OF VOICE QUALITY AT SPEECH THERAPISTS	M. Randelović, N. Stanojević
P1.7	PRENATAL COMMUNICATION: HOW IT REFLECTS ON EARLY CHILD DEVELOPMENT	Lj. Dobrijevic, M. Rakonjac, M. Vujovic, I. Bogavac
P1.8	SPEECH AND LANGUAGE INFORMATION PROCESSING OBSTRUCTION IN A BILINGUAL CHILD	Z. Radičević, Lj. Dobrijević, M. Stokić, M. Subotić, I. Stanković
P1.9	THE ROLE OF THE BASAL GANGLIA IN SPEECH MOTOR CONTROL	M. Vujović, Lj. Jeličić, Dobrijević, B. Bedričić, M. Rakonjac, I. Bogavac
P1.10	EVALUATION OF PHONEMES QUALITY ARTICULATION USING NEURAL NETWORK ENSEMBLES	D. Furundžić, S. Jovičić, M. Subotić, Đ. Grozdić
P1.11	SEMIOTIC ANALYSIS OF SPANISH ADVERTISEMENT ENTITLED "AUTISMO HABLA" – "AUTISM SPEAKS"	I. Mitrović, Djordjevic, V. Todorović

Saturday, 26 October 2013

SESSION: S3 ORAL PRESENTATION

Time: 09.30 - 11.30

Chairpersons: *T. Tsenova, S. Đoković, N. Vasileva*

S3.1 09:30-09:40	ASPECTS OF RELATIONSHIP BETWEEN SPECIFIC LANGUAGE IMPAIRMENT AND SPECIFIC DYSLEXIA	T. Tsenova
S3.2 09:40-09:50	EEG APPLICATION IN AUDITORY CORTEX STUDIES IN PATIENTS WITH COCHLEAR IMPLANTS	S. Đoković, S. Maksimović, V. Nenadović, S. Ostojić, S. Todorović
S3.3 09:50-10:00	INTRODUCING PUPILS INTO WRITING SKILLS	Z. Cvetanović, K. Šulović Petković
S3.4 10:00-10:10	NEURAL NETWORK-BASED RECOGNITION OF WHISPERED SPEECH	Đ. Grozdić, B. Marković, J. Galić, S. Jovičić, D. Furundžić
S3.5 10:10-10:20	AUTOMATIC DETECTION OF STRIDENCE IN SPEECH USING THE AUDITORY MODEL	R. Bilibajkić, Z. Šarić, S. Punišić, M. Subotić, S. Jovičić
S3.6 10:20-10:30	CONDITION OF VERBAL ASSOCIATIONS IN PRESCHOOL AGE CHILDREN (NEUROPSYCHOLOGICAL ANALYSIS)	N. Vasileva
S3.7 10:30-10:40	TRANSIENT EVOKED OTOACOUSTIC EMISSION DETECTION USING AUXILIARY PROBE AND NONLINEAR ADAPTIVE FILTERING	Z. Šarić, M. Subotić, S. Jovičić
S3.8 10:40-10:50	Auditory perception - BASIS OF SPEECH AND LANGUAGE DEVELOPMENT	S. Maksimović, S. Đoković
S3.9 10:50-11:00	ACQUISITION OF APPROXIMANTS IN CROATIAN	D. Tomić
S3.10 11:00-11:10	THE INFLUENCE OF FEATURE VECTOR SELECTION ON PERFORMANCE OF AUTOMATIC RECOGNITION OF WHISPERED SPEECH	J. Galić, B. Marković, Đ. Grozdić, S. Jovičić
S3.11 11:10-11:20	THE POWER OF WORD IN EDUCATION AND UPBRINGING	Lj. Klajić
S3.12 11:20-11:30	ABILITY OF NOMINATION IN CHILDREN WITH PHONOLOGICAL DISORDERS	M. Panić, V. Djordjević, S. Todorović
11.30-12.00	<i>Coffee break</i>	

SESSION: S4 ORAL PRESENTATION

Time: 12.00 - 14.00

10 Key Moments to Human Evolution O. Gouni

14.00-15.30 Coffee break

SESSION: S5 ORAL PRESENTATION

Time: 15.30 - 17.30

Chairpersons: *S. Jankovic-Raznatovic, M. Subotic, M. Sovilj*

S5.1 15:30-15:40	CHANGE OF PULSATILITY INDEX OF MIDDLE CEREBRAL ARTERY AFTER PRENATAL SOUND STIMULATION IN NO RISK TERM PREGNANCIES	S. Jankovic-Raznatovic, S. Plesinac, M. Sovilj, T. Adamovic, D. Plecas, Dj. Cecez, Lj. Dobrijevic, Dj. Koruga
S5.2 15:40-15:50	THE COMPARISON OF CONSCIOUS AND UNCONSCIOUS ACTIVITY IN THE BEHAVIOUR OF THETA AND BETA EEG RHYTHMS DURING SILENT REHEARSAL OF THE KNOWN	M. Sovilj, Z. Radicevic., Lj. Dobrijevic

PRAYER AND RESTING STATE		
S5.3 15:50-16:00	PALATAL LATERAL APPROXIMANT /ʎ/ AS ONE OF THE MAIN TROUBLEMAKERS IN LEARNING CROATIAN AS L2	A. Dobrić, J. Bičanić
S5.4 16:00-16:10	DEVELOPMENTAL DYSPHASIA – SOME BASIC CHARACTERISTICS	P. Stefanov Petkov
S5.5 16:10-16:20	ARTICULATORY- ACOUSTIC CHARACTERISTICS OF FRICATIVES	M. Subotic, S. Punisic, N. Cabarkapa, M.Vojnović
S5.6 16:20-16:30	BASIC COMPETENCIES IN GENETICS FOR SPEECH – LANGUAGE PATHOLOGIST	I. Buzganović , B. Bobić Gece
S5.7 16:30-16:40	APPLICATION OF DTW METHOD FOR WHISPERED SPEECH RECOGNITION	B. Marković, J. Galić, Dj. Grozdić, S. T. Jovičić
S5.8 16:40-16:50	CHILDREN WITH ADHD - PERCEPTION OF EMOTION IN SPEECH	V. Plecevic, A. Kesic
S5.9 16:50-17:00	VOWEL FORMANT FREQUENCIES ESTIMATION FOR NEWBORN CHILDREN	M. Vojnović, I. Bogavac, Lj.Dobrijević
17:00-17:30	CONCLUSIONS AND CLOSING	

SESSION: P2 POSTER PRESENTATION

Time: 09.30-17.30

Chairpersons: *R.Bilibajkić, I. Buzganović*

P2.1	ETHICAL CHALLENGES AND ALTERNATIVE POSSIBILITIES FOR IMPROVING CHILD'S ABILITIES AND BEHAVIOR	B.Bedricic, M.Vujovic
P2.2	VACCINE INJURY AND ITS TREATMENT WITH HOMEOPATHY	D. Marković
P2.3	PROBLEMS OF CHILDREN IN SCHOOL WORK	IPavkovic
P2.4	IMPACT OF PREMATURITY ON ARTICULATING STATUS OF 5 YEARS AGED CHILDREN	I. Stanković Milićević, S. Todorović, V. Đorđević, M. Milenković
P2.5	AUTOMATIC DETECTION OF SPEECH PATHOLOGY - TOWARD THE EXPERT SYSTEM	R.Bilibajkić, S. Jovičić, Z. Šarić, S. Punišić, M. Subotić
P2.6	LINGUISTIC CAPACITY OF CHILDREN WITH DI GEORGE SYNDROME	S. Todorović, V. Đorđević, M. Panić
P2.7	THE INFLUENCE OF RH INCOMPATIBILITY TO SPEECH AND LANGUAGE DEVELOPMENT	I. Buzganović, M. Sovilj, N. Čabarkapa
P2.8	LEXEMES AND PHRASES IN ASSOCIATIVE FREQUENCY DICTIONARY OF PRESCHOOL CHILDREN	N. Čabarkapa, S. Fatić I. Buzganović, Z. Radivojević
P2.9	THE INFLUENCE OF EARLY COMMUNICATION ON CHILD DEVELOPMENT AND LEARNING	M. Rakonjac, Lj. Dobrijević
P2.10	GRAPHOMOTOR SKILLS OF CHILDREN WHO STUTTER	N. Stanojević, M. Randelović
P2.11	NEUROBIOLOGICAL BASIS AND LINGUISTIC MANIFESTATIONS IN AUTISTIC SPECTRUM DISORDER	S. Torbica Marinkovic
P2.12	LANGUAGE PROFILES OF CHILDREN WITH SUBCLINICAL EPILEPTIFORM EEG DIAGNOSED WITH SPECIFIC LANGUAGE IMPAIRMENT	V. Nenadović, M. Stokić, S. Đoković, Z. Radičević

ABSTRACT

DIGITALIZATION OF SERBIAN WRITTEN HERITAGE: ELECTRONIC CORPUS OF SERBIAN LANGUAGE FROM 12TH TO 18TH CENTURY

Aleksandar Đ. Kostić

University of Belgrade, Faculty of Philosophy, Belgrade, Serbia

In the mid-fifties at the Institute of Experimental Phonetics and Speech Pathology Prof. Đorđe Kostić had initiated a project aimed at compilation of an annotated corpus that would span Serbian language from the 12th century (Serbian-Slavonic) to the contemporary Serbian language. The subsample of Serbian-Slavonic texts from the 12th to 18th consists of about 450 000 words and includes all the prominent authors of that period (St. Sava, Domentijan, Teodosije, archbishop Danilo II, Grigorije Camblak, patriarch Pajsije, Stefan Prvovenčani). Distinct segment of this subsample contains old Serbian charters and royal correspondence edited by Ljubomir Stojanović. In the mid-fifties Serbian-Slavonic texts were manually annotated at the level of inflected morphology with a system of annotation that distinguishes about 3000 grammatical forms.

The annotated Serbian medieval texts were digitalized through mutual efforts of the Institute for Experimental Phonetics and Speech Pathology and the Laboratory for Experimental Psychology, University of Belgrade. In the last five years eight volumes of frequency dictionaries of the medieval Serbian authors were published by Službeni glasnik. The printed version is accompanied with CD that contains application which allows search through the original text, concordances and collocations for each lemma and quick search of a series of frequency dictionaries.

Key words: annotated corpora, Serbian-Slavonic, diachronic corpus

DIGITALIZACIJA SRPSKE PISANE BAŠTINE: ELEKTRONSKI KORPUS SRPSKOG JEZIKA OD 12. DO 18. VEKA

Aleksandar Đ. Kostić

Univerzitet u Beogradu, Filozofski fakultet, Beograd, Srbija

Pedesetih godina prošlog veka prof. Đorđe Kostić je inicirao u Institutu za eksperimentalnu fonetiku i patologiju govora projekat koji je imao za cilj stvaranje anotiranog korpusa srpskog jezika, koji bi zahvatio srpski jezik od 12. veka do savremenog jezika. Uzorak srpskoslovenskih tekstova od 12. do 18. veka sadrži oko 400 000 reči i obuhvata sve važnije autore tog vremena (sv. Sava, Domentijan, Teodosije, arhiepiskop Danilo II, Grigorije Camblak, patrijarh Pajsije, Stefan Prvovenčani). Poseban segment ovog uzorka čine Stare srpske povelje i pisma u izdanju Ljube Stojanovića. Srpskoslovenski tekstovi su ručno anotirani na nivou infleksione morfologije sistemom anotacije koji razlikuje oko 3000 gramatičkih oblika.

Tokom 2003. godine, u saradnji Instituta za eksperimentalnu fonetiku i patologiju govora i Laboratorije za eksperimentalnu psihologiju Filozofskog fakulteta u Beogradu, gramatički obrađeni srpskoslovenski tekstovi su digitalizovani. U poslednjih pet godina u izdanju Službenog glasnika objavljeno je osam tomova frekvencijskih rečnika sv. Save, Domentijana, Teodosija, arhiepiskopa Danila i ostalih autora koji čine uzorak srpskog jezika od 12. do 18. veka. Uz otštampane frekvencijske rečnike razvijena je i softverska aplikacija koja omogućava rad na izvornom tekstu, izdvajanje konkordancija i kolokacija i pretragu frekvencijskog rečnika.

Korisnička aplikacija pruža mogućnost različitih statističkih i matematičkih analiza gramatike i leksike srpskog jezika od 12. do 18. veka i poređenje sa savremenim jezikom. Time se otvaraju mogućnosti za sistematsko dijahrono proučavanje srpskog jezika i postavljanje osnove za rad na srpskoslovensko-srpskom rečniku kojim bi se trajno sačuvala jezička baština stara osam vekova.

Key words: annotated corpora, Serbian-Slavonic, diachronic corpus

LANGUAGE AND SPEECH DISORDERS AS A DISPLAY OF PRENATAL AND PERINATAL TRAUMA IN THE HUMAN EVOLUTION CONTEXT

Grigori I. Brekhman

Interdisciplinary Clinical Center of University, Haifa, Israel
State Medical Academy, Ivanovo, Russia

Language and Speech reflect the human intellect, his mental and physical health. Analysis of the WHO, the Departments of Health showed that the health of the population in different countries over the past decades is deteriorating. Analysts predict an increasing of people with psychological and psychosomatic problems, and among them - an increasing of language, speech, and hearing disorders.

Experts know that language and speech disorders in children are not isolated, most often they are the symptoms of some syndromes or are combined with them. Speech disorders were found in such conditions as ADHD syndrome, autism, unipolar (depression) and bipolar disorders.

Researchers working in the field of prenatal psychology found that these syndromes often are the result of emotional stress, which influenced into both mother and her child during pregnancy. They consider them as the different manifestations of prenatal mental trauma. Researchers found a strong association between maternal

obesity and diabetes and children's autism, learning and language problems. The same one can see in children who born premature with low birth weight.

The frequency of the mentioned disorders in recent decades progressively increases. So, the frequency of ADHD from 1970 to the end of the 90s in the UK has increased from 1.0 per 2,000 children to 3 per 1,000 children, and in the United States from 12 per 1,000 to 34 per 1,000 children, and the number continues to grow. According to the World Autism Organization for 10 years the number of children with autism has increased by 10 times. According to the WHO the number of people with diabetes from 2002 to 2012 have increased in the world from 120 million to 366 million people. These and other data testify that the intrauterine period of development is a stage of human evolution. It promotes expansion of pathology in the world, and assists birth of the people with various mental traumas. On the other hand, it is a period, when the prophylaxis of traumas and creation of conditions for birth of mentally and physically healthy generation of the people is possible.

From this, the work on prevention of mentioned disorders are very important. It is necessary a broad public information and awareness about mental life of the child before birth, his emotional perception and actively functioning memory. The people need also to know that the information, which child received before his birth (from the mother or through mother) will be influence on the thinking and behavior of the individual in later life. It is necessary to inform the people about prenatal and perinatal origins of mental and psychosomatic disorders in children, including the delay in the overall development and the development of speech and language. The state and public institutes, MASS-MEDIA, medical and social workers, obstetricians and midwives should be involved

This requires an expansion of speech therapist knowledge about the mentioned syndromes to make corrections and adding in a treatment program based on the specific syndrome and so on.

SOCIOBIOLOGY OF FETUS (EMBRYO)

V. Shestakov

Research and Training Center for Problems of Human Vital Activity, RAS
Moscow, Russia

Normal SOCIOBIOLOGY OF FETUS is general sociobiology of a human being at the stage of its engagement and development. Over this period, disorders of the developing fetus's separate sensory systems and brain, as well as of behavior in general can occur as a result of various causes. The extreme case of such disorders is death.

The objective of our research was studying the effect of natural peptide/polypeptide complexes on the embryonic development of animals. We used the preparation Actoinvit and substances Actoinvit SB, SV and SG. In the experiments, we used embryonated hen eggs, sturgeon roe, pregnant rats and intact mice, as well as hemopoietic stem cells of human bone marrow.

It was found that treating embryonated eggs of hens of "Smena" cross with 10% solution of Actoinvit on the 19th day of the embryonic development decreased the rate of embryo mortality by 14% in comparison with the control. Using the preparation from the first hours of fertilization of sturgeon roe (Russian and stellate sturgeons) in the dose of 4 mg/ml of water in the tray decreases the rate of embryo (alevin) mortality by 14-36% in comparison with the control. The preparation in the dose of 50-800 mg/ml of cultural medium in vitro improves the proliferation of chicken brain embryonic neurons impaired by b-amyloid and L-glutamate.

Intra-gastric administration of the preparation Actoinvit in the dose of 5 g/kg of weight to healthy pregnant rats has no effect on the animal body weight dynamics, duration of pregnancy, number of live embryos, their weight and craniocaudal size of the body, neither does it increase the rates of pre-/postimplantation fetal death. The preparation does not cause delays in the development of the embryo skeletal system or any abnormalities or developmental defects.

Substances Actoinvit SB, SV and SG exert a stimulating effect on hemopoietic stem cells of human bone marrow in vitro, increasing their proliferation by 67% in doses from 0.008 to 1.0 mg/ml of growth medium. The proliferating activity of substances is also confirmed by their high colony forming activity. The most significant values: CFU-G (by 62%), CFU-M (by 83%) and CFU-E (by 87% in comparison with the control).

After a 3-time administration of the substance SG to experimental mice, the level of hemopoietic stem cells in animal blood increases 40 times.

There is a discussion of issues concerning the use of Actoinvit series preparations for preventing and treating sociobiological abnormalities in fetal development and behavior, engagement and development of fetal sensory systems, in particular hearing, and certain diseases of pregnant women.

THE EGG AND SPERM POLARITY IN UNION AT HUMAN CONCEPTION

Olga Gouni

Prebirth Psychologist, Prebirth Psychology Lecturer
Cosmoanelixis prebirth psychology center, Hellenic Union for Prenatal and Perinatal Psychology and Medicine
info@cosmoanelixis.gr

Our human body consists of many parts each of which carries specific qualities orchestrated in a symphony of tones that makes the physical form. Each human body bears an individual resonant frequency, a kind of energy signature within the zone of frequencies that correspond to the humankind. Each one of us is unique in the

meaning that each one of us can resonate at a slightly different frequency within this zone that includes less and more subtle ones and, at the same time, –as part of our Earth existence- we all resonate to the earth frequency. Living in a world of polarities as experienced in day-night, good-evil, male-female etc, the same laws that create the two polarities in man and woman are seen to work to the egg and sperm, the two gametes that create us. The phenomenon of the conception of each human being is a process that takes us to the depths of life, irrespective of the form that life takes to manifest, the structure of basic elements of life and such study-journey reveals us the miracle of life. Human conception unfolds in front of us as a magical process of transformation and offers keys for the understanding of human relationships along the evolutionary path. In the paper, we will examine the egg and sperm to discover their basic biological –almost archetypal qualities- we'll compare them and spot the polarities they present. Then, we'll see how these polarities serve the co-creational ACT of human conception.

STRESS & ANTI-STRESS: HOLISTIC QUANTUM-INFORMATIONAL FRAMEWORK

Dejan Raković

University of Belgrade, Faculty of Electrical Engineering
rakovicd@etf.rs

In the report of United Nations at the beginning of 1990s stress was marked as a disease of 20th century, as its role in the development of numerous psychosomatic disorders was undoubtedly confirmed. On these lines, contemporary investigations of psychosomatic diseases imply the necessity of application of holistic methods, oriented to healing the person as a whole and not disease as a symptom of disorder of the whole, suggesting their macroscopic quantum origin. In the focus of these quantum-holistic methods are body's acupuncture system and consciousness – which (within the Feynman propagator version of quantum mechanics) have quantum-informational structure of quantum-holographic Hopfield-like associative neural network – with very significant quantum-holographic psychosomatic implications. In the context of quantum-informational holistic acupuncture-based and consciousness-based approaches and techniques, their goal would be a resonant stimulation of the electromagnetic psychosomatically disordered quantum state (acupuncture palpatory painful or psychologically traumatic, as one of hundreds possible disordered states) thus enabling that its initial memory attractor is bioresonantly excited (similarly to annealing procedure in artificial neural networks) becoming more shallower and wider on the account of deepening of the (energy-dominating) attractor of healthy quantum state (acupuncture palpatory painless or psychologically non-traumatic) – which is then altogether quantum-holographically projected on the lower quantum-holographic cellular level, thus changing the expression of genes. However, when this process is hindered by transpersonal entangled blockages in the energy-state space of EM field of the acupuncture system / consciousness (and numerous laboratory tests are revealing the evidence of entangled minds i.e. extrasensory experiences in a quantum reality) – then memory attractors of quantum-holographic network of field-related collective consciousness should be removed as well (via prayer or circular (psycho / energy) therapies from all relevant meta-positions included in the problem, thus performing spiritual integration of personality which initiate the process of permanent healing as suggested by experiences of volunteers in post-hypnotic regressions). So, all these holistic acupuncture-based and consciousness-based approaches and techniques can be treated as quantum-informational therapies, by imposing new healing boundary conditions in the energy-state space of the acupuncture system / consciousness. The above mentioned quantum-holographic psychosomatic framework provides better understanding of the nature of psychosomatic diseases as well as limitations of the healing methods, which might help in developing strategies for psychosomatic integrative medicine in the 21st century.

Keywords: stress, anti-stress, psychosomatics, quantum-holographic informatics, integrative biophysics, integrative medicine, quantum-informational medicine, acupuncture system, individual consciousness, collective consciousness

HOLISTIC APPROACH TO SPEECH INTERACTION IN NORM AND PATOLOGY

Dimităr Popov, Velka Popova

Konstantin Preslavsky University of Shumen (Bulgaria)
labling@shu-bg.net

The goal of this paper is to present the advantages of the holistic paradigm for the investigation of speech interaction in norm and pathology. The focus is on the use of modern multimedia devices for the study of human communication as a frame structure in on-line performance. Presented are some of the opportunities offered by interactive platforms such as TALKBANK and CHILDES, which are most frequently used.

BASES OF (PRENATAL) COMMUNICATION

Mirjana Sovilj^{1,2}

¹The Institute for Experimental Phonetics and Speech Pathology, Belgrade

²Life Activities Advancement Center, Belgrade

The author's long and extensive researches of interconnections and interdependencies of children's speech, language, behaviour and learning through holistic psychophysiological – sociobiological approach, resulted in this paper aimed at shifting the borders of understanding human communication with oneself as well as with others. This is a pilot research in which the author presented and compared results of:

1. prenatal hearing screening (PHS), with the particular emphasis on the direction of reactivity of prenatal children (positive – increased speed of blood flow in a.cerebri media and negative direction – decreased speed of blood flow in a.cerebri media) in N=120 pregnant women
2. drawings and displayed emotions obtained in a designed experiment

"Draw the moment when you were created and write down the first three emotions which appeared", which was conducted on N=174 examinees with a university degree, aged 25-56.

The aim of the experiment "Draw the moment when you were created and write down the first three emotions which appeared" represents the author's attempt to observe "deep memory prenatal traces", which she considers to be in the sphere of subconsciousness and to analyse them through drawings and kinds of displayed emotions.

The results of global analyses of drawings and kinds of displayed emotions indicated that 75% examinees had positive emotions about "the moment they were created", 21% had mixed (both positive and negative), whereas 4% examinees had completely negative emotions. When these results were compared to the direction of reactivity of prenatal children on the PHS, there was an unexpected congruence between the percentage of adult examinees with positive emotions about "the moment of their creation" (75) and the percentage of positive direction of reactivity on PHS (increased blood flow in a. cerebri media in 75% prenatal children) mixed and negative emotions in adult examinees (21% + 4%), and negative direction of reactivity on the PHS (decreased blood flow in a.cerebri media in 25% prenatal children).

The results direct us towards the possibilities of studying more subtle regularities of the origin and development of communication, behaviour and learning.

Key words: prenatal development, PHS, speech and language, behaviour, learning, drawing, emotions

OSNOVE (PRENATALNE) KOMUNIKACIJE

Mirjana Sovilj^{1,2}

¹ Institut za eksperimentalnu fonetiku i patologiju govora, Beograd

² Centar za unapređenje životnih aktivnosti, Beograd,

Dugogodišnja traganja autora za međuvezama i međuzavisnostima govora i jezika, ponašanja i učenja, dece kroz holistički psihofiziološki –sociobiološki pristup, rezultovala su ovim radom koji ima za cilj da pomeri granice razumevanja komunikacije čoveka sa samim sobom i svojom okolinom. Rad je pilot istraživanje u kome je autka prikazala i uporedila rezultate:

1. prenatalnog slušnog skrininga(PSS), sa posebnim akcentom na pravac reaktivnosti, prenatalne dece (pozitivni-povišena brzina protoka krvi u a.cerebri media i negativni pravac- snižena brzina protoka krvi u a.cerebri media) N=120 trudnica
2. crteža i iskazanim emocijama koji su dobijeni u dizajniranom eksperimentu

"Nacrtaj trenutak kada si nastao i napiši tri prve emocije koje su se pojavile", koji je obavljen na N=174 ispitanika sa visokom stručnom spremom, starosti 25-56 godina.

Cilj eksperimenta "Nacrtaj trenutak kada si nastao i napiši tri prve emocije koje su se pojavile", je pokušaj autorke da sagleda "duboke memorijske prenatalne tragove", za koj smatra da su u sferi podsvesti i da ih analizira kroz crtež i vrste iskazanih emocija.

Rezultati globalne analize crteža i vrsta iskazanih emocija ukazuje da 75% ispitanika ima pozitivne emocije vezane za "trenutak svog nastajanja", 21% mešovite (i pozitivne i negativne), a 4% ispitanika je iskazalo potpuno negativne emocije. Kada su ovi rezultati upoređeni sa pravcem reaktivnosti prenatalne dece na PSS, uočena je neočekivana podudarnost između procenta odraslih ispitanika sa pozitivnim emocijama vezanim za "trenutku svog nastajanja" (75) i procentom pozitivnog pravca reaktivnosti na PSS (povećan protok krvi u a. cerebri media- kod 75% prenatalne dece) i mešovitim i negativnim emocijama, kod odraslih ispitanika (21%+4%), i negativnim pravcem reaktivnosti na PSS-u (smanjen protok krvi u a.cerebri media- kod 25% prenatalne dece).

Rezultati dozvoljavaju da razmišljamo o mogućnostima izučavanja suptilnijih zakonomernosti početka i razvoja komunikacije, ponašanja i učenja.

Cljučne reči: prenatalni razvoj, PSS, govor i jezik, ponašanje, učenje, crtež, emocije

FETAL AUDITORY STIMULATION AND THE CHANGE OF PULSATILITY INDEX OF THE FETAL MIDDLE CEREBRAL ARTERY

**Snežana Plesinac^{1,2} Svetlana Jankovic,^{1,3} Darko Plecas,^{1,2} Olga Antonovic^{1,2}
Tatjana Adamovic⁴ Mirjana Sovilj⁴**

¹Medical Faculty, University Belgrade, Belgrade, Serbia,

²Clinic for Gynecology and Obstetrics, Clinical Center Serbia, Belgrade, Serbia,

³Clinic for Gynecology and Obstetrics Narodni Front Belgrade, Belgrade, Serbia,

⁴Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia

Purpose: An aim was to determine fetal acoustic response after the constant sound stimuli. Method: Study included 343 patients divided in two groups. Group 1: low risk pregnancies and group 2: gestational hypertension. Ultrasound prenatal auditory screening was performed after the 27th week of gestation. Results: The percentage of fetuses with increase of cerebral blood flow was slightly higher in the pregnancies with hypertension. Conclusion: An average change of PI of median cerebral artery was higher in this group.

VOCAL TRACT SHAPE ESTIMATION FOR CHILDREN AGES TO ONE YEAR

Milan Vojnović

Life Activities Advancement Center

vojnovicmilan@yahoo.com

For a more complete and more comprehensive analysis of vowel formant frequencies, it is necessary to know the physical shape of the vocal tract. This is especially important if we need to do modeling of vowel pronunciation, or the estimation of maximum vowel space (MVS). Analysis of atypical pronunciation of vowels in children is a complex issue and needs to be analyzed from several aspects: simulation and modeling of sound propagation through the vocal tract, simulation of vowel pronunciation, MVS estimation etc. For all of this analysis it is necessary to know the shape of the vocal tract. Classical techniques for vocal tract shape estimation (X-ray, magnetic resonance, etc.) are not appropriate for children. One possibility is to use the shape of the vocal tract adults and, after that, correct it on the basis of anatomical and articulatory differences between children and adults. This paper presents a method for vocal tract shape estimating the shape of the child aged one year. The initial shapes of the vocal tract refer to the Russian vowels spoken by an adult male. We analyzed all the relevant anatomical and articulation parameters that influence the formant frequencies. Finally, we got the configuration of the vocal tract for the five vowels that can be used for the initial analysis of the pronunciation of vowels children aged one year. These results are very useful for define the MVS for children of this age.

Key words: maximal vowel space, vocal tract model, vocal tract shape, vowel formant frequencies

MOVEMENT AND SPEECH

T. Adamović^{1,2}, M. Sovilj^{1,2}, K. Ribarić Jankes³

¹Life Activities Advancement Center, Belgrade

²The Institute for Experimental Phonetics and Speech Pathology, Belgrade

³ The Hospital "Euromedic", Belgrade, Serbia

tadus3@gmail.com

Many complex processes contribute to the child's ability to speak, including motor learning, motor planning, sensory processing and sensory integration. Language and speech are closely related but not the same. Speech is physical production of sound and spoken skills depends on the smooth functioning of the muscles of the throat, tongue, lips and jaw. Speech recognition as a movement, stresses the importance of preservation of sensory processing systems. The vestibular system, as the most complex sensory system, affects motor control and motor planning, coordinates body movements, balances and helps children to develop normal muscle tone required for the production of clear speech. This is proved by data from recent literature suggesting that in the treatment of children with vestibular dysfunction, there is a significant improvement of speech and language skills simultaneously with improving balance, movement and motor planning.

The aim of this study was to examine the links and interdependence of movement and speech, by testing vestibular function in children with developmental dysphasia and children with normal speech and language development.

The study sample was comprised of N = 40 children of both genders, aged 5 to 6 years. Experimental (E) group consisted of 20 children diagnosed with developmental dysphasia who are undergoing treatment at the Institute for Experimental Phonetics and Speech Pathology in Belgrade, and the control group (C) consisted of 20 children with normal speech and language development from kindergarten "Roe" in New Belgrade. For the assessment of vestibular function in mentioned sample, 5 standardized tests have been applied. Each test is examined in three attempts. The obtained results were recorded by means of a digital camera, then scored and statistically and descriptively processed.

The research results suggest the existence of statistically important difference regarding parameters of tested vestibular function in the E and C group.

Key words: movement, speech, sensory integration, vestibular system

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A COMPARATIVE ANALYSIS OF UNDERSTANDING VERBAL ORDERS IN COCHLEAR IMPLANTED CHILDREN AND CHILDREN WITH NORMAL HEARING

Selena Todorovic¹, Sanja Djokovic²

Institute for Experimental Phonetics and Speech Pathology ¹

University of Belgrade, Faculty of Special Education and Rehabilitation ²

One of the most important function of speech is the realization of human communication, to share their thoughts, views, wishes and needs with others in the social world. To establish a communication situation you need to understand one question or voice message that was sent. For people with hearing impairments, due to difficulties arising in the perception and processing of speech leads to reduced ability to understand. In recent decades in most countries are developed and implemented programs of cochlear implant to improve hearing ability of deaf and therefore the understanding of speech. Cochlear implantation is a modern form of amplification, which provides easier and quicker implementation of auditory re / habilitation of hearing impaired persons. The aim of this study was to examine the understanding of verbal orders of cochlear implanted patients, and to examine whether there are differences involving ratio in the population of hearing subjects. Another aim was to investigate the potential impact of individual time of demographic factors such as chronological, hearing, and age of implantation time. The sample included 20 children of both sexes (8 cochlear implanted children and 12 children with normal hearing) between the ages of 10 and 18. To test verbal comprehension was used Token Test (De Renzi, Vignolo 1962). The test consists of five levels of testing verbal comprehension sorted by weight, with a total of 62 items. Results were analyzed using methods of descriptive statistics and analysis of variance. Statistical analysis showed that there were statistically significant differences in the understanding of verbal orders between cochlear implantated and normal hearing children. Differences increase with raising the linguistic complexity of verbal tasks. Also, there are spotted a large dispersion of results in the group of children which cochlear implantation is not the case with the results of hearing population. This suggests that the cochlear implant alone does not constitute a decisive factor in the success of overcoming language understanding, but that this process affects a large number of individual characteristics.

Keywords: cochlear implant, understanding, Token test

EEG CORRELATES OF NON-VERBAL TRANSPERSONAL HOLISTIC PSYCHOSOMATIC COMMUNICATION

Biljana Bedričić,¹ Miodrag Stokić,¹ Zorana Milosavljević,¹ Dragan Milovanović,^{1,2} Mirko Ostojić,¹ Dejan Raković,^{1,3} Mirjana Sovilj,^{1,4} Slavica Maksimović^{1,4}

¹Life Activities Advancement Center, Belgrade, Serbia;

²Megatrend University, Belgrade, Serbia;

³University of Belgrade, Faculty of Electrical Engineering, Serbia;

⁴Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia

bbedricic@gmail.com

The subject of this paper are EEG correlates of non-verbal psychosomatic communication in novel transpersonal holistic diagnostics and healing, applied to the pilote group of 30 volunteers with some psychosomatic problems. In this pilote group, EEG changes were monitored and analyzed during the resting period, during the period of holistic diagnostics, and during the period of holistic treatment – in order to get data about central nervous system excitability during these periods; also, a health state questionnaire is organized in order to collect data about how participants perceive different areas of their well being. The obtained results might be interpreted in terms of non-verbal transpersonal holistic psychosomatic communication, revealing holistic interaction of acupuncture system / consciousness (of healer) and central nervous systems (of volunteers). This might be of significance for novel holistic prospects in improvement of verbal-emotional-cognitive development of children and their psycholinguistic functions, and of psychosomatic-cognitive status of children and adults.

Keywords: non-verbal holistic psychosomatic communication, transpersonal holistic diagnostics and healing, EEG measurements, EEG analyses, health state questionnaire, prospects for improving verbal-emotional-cognitive development.

IMBALANCED LEARNING APPROACH TO THE CATEGORIZATION OF ARTICULATION DISORDERS

Draško Furundžić¹, Slobodan Jovičić², Miško Subotić³, S. Punišić³

¹Mihajlo Pupin Institute, Belgrade, Serbia

²School of Electrical Engineering, University of Belgrade, Serbia

³Life Activities Advancement Center, Belgrade, Serbia;

This paper presents a study of several methods for balancing uneven distribution of data, related to disorders of pronunciation of phonemes, whose main purpose is improvement of prediction performance of the various related classification algorithms. Essential feature of supervised learning based classification algorithms is generalization ability that is manifested in prediction performance. Actual ability of the mentioned algorithms becomes worse when information balance between training set classes is violated. Class imbalance problem occurs when the classes in the training set are represented by considerably different number of realizations. This imbalance phenomenon appears in many classification tasks in different research areas, such as speech recognition and speech pathology categorization. Cause of the imbalance data in case of speech disorders lies in the uneven distribution of different categories of disorders. Another cause could be improperly designed training set, which is not uncommon. Learning process in such a conditions is called imbalanced learning. Advantages and disadvantages of the two main approaches to balancing data, oversampling and undersampling, and their improved variants, are presented in this paper. We also present several algorithms that have been applied to the classification of global articulation disorders. Our study showed that all classification algorithms trained on balanced data sets show a significant improvement of prediction performance compared to the learning with imbalanced data. Here are also comparatively presented the features of different classification algorithms.

CHARACTERISTICS OF PERCEPTUAL IDENTIFICATION OF THE DISTORTION DEGREE OF FRICATIVE /Š/ DURATION IN TRAINED AND UNTRAINED LISTENERS

Silvana Punišić^{1,2}, Slobodan Jovičić^{1,3}, Zorka Kašić⁴

¹Life Activities Advancement Centre, Belgrade, Serbia

²Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia

³School of Electrical Engineering, University of Belgrade, Serbia

⁴FASPER-Faculty for Special Education and Rehabilitation, Belgrade, Serbia

Representation of facts on perceptual information processing in examination of the quality of speech sounds is aimed at pointing out the complexity of assessment based on perceptual identification of examiners. Also, this technique is invaluable in analysis of acoustic characteristics of speech (typical as well as atypical) in diagnostics and treatment.

In this experiment, we have used fricative /š/ in initial position in the word /suma/, segmented and modified in duration (shortened or prolonged), extracted from the speech base of typical speakers aged 10 and 11. We have created two groups: a) trained listeners (speech therapists) b) untrained listeners. Both groups listened to 160 stimuli in two sessions. Based on auditory perception, they were asked to identify and classify the stimuli into four categories: *typical, mild, moderate and severe*.

Results of the technique of trained (expert or experienced) and untrained listeners in identification of the level of distortion of acoustic characteristics in *duration* of the speech sound /š/, have shown a correlation between identification function of the perception of distortion of duration and the global assessment of atypical pronunciation. This result has not been replicated in untrained listeners.

This is the first study of its kind for the Serbian language. Review of this research field shows a relatively small body of similar studies for other languages.

Key words: perceptive identification, fricative /š/, listeners: trained (speech therapists) and untrained.

CHANGES IN EEG THETA RHYTHM PEAK FREQUENCY AND AMPLITUDE IN FRONTAL MIDLINE CORTICAL REGION DURING SHORT-TERM AUDITORY MEMORY FORMATION FOR WORDS AND NON-WORDS

Miodrag Stokic^{1,2}, Zorana Radovanovic¹, Vanja Nenadovic^{1,2}, Slavica Maksimovic^{1,2}

¹Life Activities Advancement Centre, Belgrade, Serbia

²Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia

Past decade is dedicated to brain research with special emphasis on memory processes. The role of Theta rhythm in short-term memory processes is well documented in recent literature. In this research, we wanted to examine cortical distribution of maximal amplitude of EEG theta rhythm and peak frequency during resting state and formation of short-term memory for words and non-words. Sample comprised 10 adult participants. Participant's task was listening one stimulus (word or non-word) and to memorize it. The interval between listening and repeating was 5 seconds. We wanted to analyze only time interval between listening and repeating. EEG was recorded using Nihod Kohden apparatus, 19 electrodes in longitudinal monopolar montage. Additional

EOG electrodes were used in order to register horizontal and vertical eye movements. One hundred five-second artifact free periods were analyzed offline using spectral analysis (FFT algorithm). Results showed increase in theta rhythm amplitude in frontal midline cortical region with alterations in peak frequency in frontal and temporal regions during both words and non-words when compared to resting state. Differences in anterior and posterior brain regions between words and non-words are discussed in this paper.

Key Words: theta rhythm, peak frequency, amplitude, short-term memory, words, non-words

THE SPEECH ACT OF APOLOGY IN SPOKEN VERBAL COMMUNICATION

Deyana Peneva
Shumen University
Bulgaria

The paper dwells on the structure of apology speech act in both English and Bulgarian languages with regard to spoken verbal communication and also comments on the felicity conditions which contribute to the successful performance of the apology speech utterances. The paper further focuses on spoken discourse and the analysis is based on a corpus of data taken from recorded and transcribed oral monologue and dialogue interactions from English and Bulgarian serials and attention is paid on ordinary everyday conversation. Another point to take into consideration in the structure of the apologetic interaction is the opening and closing of the exact speech act; how the apologetic speech act is initiated and how it is closed down; are the openings and closings are negotiated by 'ritual' exchanges; are there any stereotyped phrases or class of verbal formulae characteristic for the specific speech act; is there a strict organization of apology utterances and basically when the apology is viewed as successful. The second problem discussed in the paper refers to the felicity conditions which are considered to be the conventions that the interlocutors in a speech event (the speaker and the hearer) use as a code to produce and recognize actions. In the speech act of apologizing the speakers (apologizers) use the felicity conditions for actions as a means for encoding their actions into sentences with a specific linguistic structure that they produce via utterances. Hearers (apologizees), on the other side, use the same set of felicity conditions for actions as a means of decoding the speaker's actions from the linguistic structure of the sentences the speaker produced. Four basic conditions are discussed and analyzed: propositional act condition, preparatory condition, sincerity condition and essential condition.

MOUTH ACTIONS IN SIGN LANGUAGES: THE ROLE OF MOUTHING IN HZJ

Anet Marčič, Marina Milković
University of Zagreb, Faculty of Education and Rehabilitation Sciences
milmarzg@gmail.com

From the first sign language linguistic studies has been passed more than 50 years. Up to date, numerous studies have been carried out whose results repeatedly indicate the independence and unity of the grammar of sign languages in relation to the grammar of the spoken languages. Nevertheless, there are still many misconceptions about sign languages.

One of them is that sign languages include both signing and speaking. In that case it should be noted that we talk about simultaneous communication where the syntactic structure of spoken language at the same time follow the lexical units of sign language and this form of communication is deprived from grammar and makes it incomplete linguistic system. At the other extreme we find the misleading that linguistic structure in sign languages are fully marked manually, that is, articulated by hands only.

The purpose of this paper is try to suppress those popular prejudices, and to provide evidence of the importance of other articulators and language elements that are characterized by non-manual (nonmanual markers). More specifically, it addresses to mouth actions, respectively to *mouthing* in Croatian Sign Language (HZJ).

The *mouthing* is defined as the silent articulation of the whole or part of a word that resembles the word from the spoken language, but most often is semantically associated with the sign. The research show that *mouthing* has special function in the formation of linguistic message, which includes the following features: a) the extension of meaning, or semantic modification of the sign, b) the distinction of manual homonyms, c) non-manual connect parts of a sentence, and d) emphasizing the certain manual information. Given the above functions, *mouthing* shows the effect on phonological, morphological, syntactic and semantic level in HZJ

Key words: mouthing, mouth actions, non-manuals, Croatian Sign Language (HZJ)

ASPECTS OF RELATIONSHIP BETWEEN SPECIFIC LANGUAGE IMPAIRMENT AND SPECIFIC DYSLEXIA

Tsvetanka Tsenova
Sofia University
cenova_cc@abv.bg

The relationship between disorders of oral and written language was studied. It is an often discussed topic, which have led up to the concept of the specific language disorders and the specific dyslexia like pathology with two age manifestations. There is much evidence for early deficits in oral language, detected in dyslexia and this is a factor for occurrence of dyslexia. But it is not known whether this insufficiency relates to all children with dyslexia or to part of them. This issue is a subject of the experimental study.

The purpose of this study was:(1) to explore the status of oral language in children with specific dyslexia in comparison with their peers without disorders, (2) to find out the differences between both populations (overall and by gender),and (3) to determine what part of the children with dyslexia have oral language disorders. The oral language of 60 fourth-grade children was examined. They were separated in two groups: experimental (30 children with dyslexia) and control (30 children without dyslexia or other disorders). All of them were tested by 4 methods, revealing the status of lexical-semantic language component. The data obtain from the survey was interpreted on the basis of average value (\bar{X}) and t-criterion of Student - P (t).

Results showed lower level of oral language for the children from the experimental group than these from the control group. Gender differences in the language status were not found in both groups. The comparison of individual scores showed the same level of language development in some students from both groups, despite significant differences between the groups. This important fact led to conclusion that although the disorders of oral language are in general typical in children with dyslexia, such disorders are not present in all of children, they are present only in some of them.

The study contributes to the knowledge about causes of written language disorders and emphasizes the necessity of early treatment of oral language disorders as prevention of developmental dyslexia.

Keywords: Dyslexia, Early Language Impairment, Specific Language Disorders

EEG APPLICATION IN AUDITORY CORTEX STUDIES IN PATIENTS WITH COCHLEAR IMPLANTS

Sanja Đoković¹, Slavica Maksimović², Vanja Nenadović², Sanja Ostojić¹, Selena Todorović³

University of Belgrade, Faculty for Special Education and Rehabilitation¹,

Life Activities Advancement Centre², Belgrade

Institute for Experimental Phonetics and Speech Pathology³, Belgrade

Functional monitoring of cochlear implant effects at the level of reorganization of cortical structures demands a complex methodological procedure, expensive technology, high-quality and adequately educated experts. Different methods and biomedical instruments are being used worldwide, in order to uncover valuable results on auditory cortex functioning following cochlear implantation. These are most frequent methods: EEG (Electroencephalography), AEP (Auditory evoked potential), PET (Positron Emission Tomography), SPECT (Single Photon Emission Computed Tomography), MEG (Magnetoencephalogram) and others. Selection of methods to be applied in a study depends on numerous factors, the subject and aim of the study being one of them. The goal of this study was meta-analysis of contemporary EEG studies in order to create a state of the art methodological framework for future similar studies, as well as to present current results. The meta-analysis was used as a method of combining and synthesis of current studies. Results are diverse and hold significance for future similar studies, in light of the fact that there are a small number of studies on patients with cochlear implants in Serbia. The significance of results of EEG studies is their wide application in all phases of cochlear implantation from selection of cochlear implantation candidates to follow-up of functional reorganization of the auditory cortex of patients with cochlear implants referred for re/habilitation.

Key words: EEG, cochlear implant, auditory cortex

NEURAL NETWORK-BASED RECOGNITION OF WHISPERED SPEECH

Đorđe Grozdić^{1,2}, Branko Marković³, Jovan Galić⁴, Slobodan Jovičić^{1,2}, Draško Furundžić⁵

¹Life Activities Advancement Center, Laboratory for Psychoacoustics and Speech Perception, Belgrade, Serbia

²School of Electrical Engineering, University of Belgrade, Telecommunications Department, Belgrade, Serbia

³Čačak Technical College, Computing and Information Technology Department, Čačak, Serbia

⁴Faculty of Electrical Engineering, University of Banja Luka, Department of Electronics and Telecommunications, Banja Luka, Bosnia and Herzegovina

⁵Mihajlo Pupin Institute, Belgrade, Serbia

This paper presents experimental results of whispered speech recognition in comparison to normal speech recognition, using the artificial neural network (ANN). *Whi-Spe* corpus, which consists of the whispered/ normal paired words, was used in speaker depended experiments. As an input of the ANN three sets of acoustic features, the MFCC (Mel

Frequency Cepstral Coefficients), the TECC (Teager Energy Cepstral Coefficients), and the TEMFCC (Teager Energy based Mel Frequency Cepstral Coefficients), were applied. Results showed nearly equal efficiency of the ANN in normal speech recognition (99.9%) and whispered speech recognition (99.86%) and preferred both the TECC and the TEMFCC over the MFCC feature. Specifically, in the case of whispered speech recognition with the TECC feature, when ANN was trained for normal speech, the recognition was 68.32% and, in the opposite case, when ANN was trained for whispered speech, the normal speech recognition was 74.32%.

Keywords: speech recognition; whisper recognition; neural networks; whisper-red speech database.

THE POWER OF WORD IN EDUCATION AND UPBRINGING

Ljiljana Klajić

Institute for Experimental Phonetics and Speech Pathology, Belgrade

The time of technological expansion that we live in carries great ordeals and brings huge challenges for the teachers and educators of children and youth.

The children-inappropriate contents, which can be found almost everywhere, from aggression-promoting television programs, which are poorer and poorer in affirming healthy values, attention-grabbing Internet and social networks that are taking away the work and life energy of children and youth, to scandalous headlines of tabloids with even more obscene messages.

This causes the value system, which is basis of healthy and complete education, to lose significance and be replaced with „instant values“, leaving little time and motivation for creative engagement of kids that, in fact, do have great potentials.

With parents being busy with work and becoming more and more absent from the lives of children, the educators and teachers are left to face the problems which will inevitably arise.

The verbally violent communication, overruled by dangerous models and patterns of behaviour, often causes physical violence. There's an old saying in Serbia that goes: "A kind word opens even the iron door". This seems to have become forgotten. Being aware of this problem, we confront it with PROPER SPEECH.

Our approach to PROPER SPEECH certainly doesn't refer only to the ESTETIC VALUES of the speech but and above all to the CONTENT and MESSAGE we send by it. We learn through reading and describing, listening to the most beautiful poetry ...

We interpret and visualize with words...

That is our School of Beautiful Speech

MOĆ REČI U VASPITANJU I OBRAZOVANJU

Ljiljana Klajić

Institut za eksperimentalnu fonetiku i patologiju govora, Beograd

Vreme tehnološke ekspanzije u kome živimo donosi velika iskušenja i nosi ogromne izazove u zadacima koji se nameću za rešavanje vaspitačima i edukatorima dece i mladih.

Neprimereni sadržaji koji su deci dostupni svuda, počev od TV programa koji promoviše agresiju u crtanim filmovima i serijama, a sve je siromašniji za afirmaciju pravih vrednosti i poučnu priču, Interneta i društvenih mreža koje gutaju pažnju, crpu radnu i životnu energiju dece i mladih, pa do skarednih naslovnih strana tabloida, sa još besprizornijim porukama i komentarima...

Vrednosni sistem na kome počiva zdravo i temeljno obrazovanje tako gubi na značaju i aktuelnosti i biva zamenjen instant vrednostima, pa premalo vremena i motiva ostaje da se deca kreativno angažuju i uposle mnogobrojnim potencijalima koje poseduju.

U takvoj atmosferi, uz sve redje prisustvo roditelja koji najveći deo dana provedu na poslu, vaspitačima i predavačima ostaje da se suoče sa posledicama koje su u ovakvim okolnostima neminovne i odražavaju se veoma loše na vaspitanje i obrazovanje dece i mladih. U kontekstu vršnjačkih odnosa zbog osiromašene i verbalno nasilne komunikacije u kojoj preovladavaju pogrešni modeli i obrasci ponašanja, neretko dolazi i do fizičkog nasilja. Ona istinita i svestrelena izreka: „Lepa reč i gvozdene vrata otvara“, kao da je zaboravljena.

Svesni svih aspekata pomenutog problema, mi smo mu suprotstavili LEP GOVOR.

Naš pristup lepom govoru svakako se ne odnosi samo na formu, već pre svega i nadasve, na sam sadržaj i poruku koju njime šaljemo drugima. Učimo ga kroz čitanje, opisivanje, osluškivanje, najlepše stihove...

Dočaravamo i slikamo rečima, čutimo lepotom koju radja reč kada se oglasi... To je naša Škola lepog govora.

ABILITY OF NOMINATION IN CHILDREN WITH PHONOLOGICAL DISORDERS

Marijana Panić, Vivien Đorđević, Selena Todorović

Life Activities Advancement Centre, Belgrade

Institute for Experimental Phonetics and Speech Pathology, Belgrade

In this work we present results which are getting by the examination ability of nomination in children with and without phonological disorders. We exam 60 children with phonological disorders (35 boys and 25 girls, middle ages six years and six months) which are made experimental group, and 74 children without phonological disorders (40 boys and 34 girls, the same middle ages), which are made control group. Groups were unification in relation on sex, growth and educational level of their parents. During the examination we used test "Lexical readiness". We gave table review with quantitative and qualitative analysis. We establish that children without phonological disorders in active lexicon have bigger number of words (3809) then children with phonological disorders (*3067). Nomination of the parts body, domestic and wild animals, clothes and foot-wearers, foods and drinks, flowers and toys are most frequently. Nomination of travel vehicles, birds, parts of houses and buildings, machines and different between villages and cities (there no statistical differences in relation on answering numbers $p > 0.05$). Children with phonological disorders nominate "jeep" ($p < 0.01$) most often. Children without phonological disorders nominate "water" ($p < 0.01$), "wall" ($p < 0.001$), "machine for washing dishes" ($p < 0.05$), "car" ($p < 0.01$), "train" ($p < 0.03$), "airplane" ($p < 0.01$), "back" ($p < 0.05$), "chicken" ($p < 0.05$) and "pig" ($p < 0.05$).
Key words: nomination ability, children with phonological disorders.

AUTOMATIC DETECTION OF STRIDENCE IN SPEECH USING THE AUDITORY MODEL

Ružica Bilibajkić¹, Zoran Šarić¹, Silvana Punišić¹, Miško Subotić¹, Slobodan Jovičić^{1,2}

¹Life Activities Advancement Centre, Belgrade

²School of Electrical Engineering, University of Belgrade, Belgrade

r.bilibajkic@add-for-life.com

Stridence as a form of disorder in Serbian speech is manifested by the appearance of an intense and sharp whistling. Although various forms of stridence manifestation are successfully diagnosed by speech therapists, there is a need for its automatic detection and evaluation. In this paper, a procedure for stridence detection using the Patterson's auditory model is presented. Detection algorithm consists of two steps. In the first step a potential contours of spectral peaks that can be perceived as stridence are detected. In the second step auditory perception model is use to evaluate the ability of selected spectral peaks contours to be perceived as stridence and to make ternary decision: a) stridence, b) no stridence, and c) unable to make decision. The quality of stridence detection is tested on the speech corpus of 26 subjects with stridence and 27 subjects without stridence, which gave high correspondence of subjective measures and automatic detection.

Keywords: speech pathology detection, stridence detection, time-frequency analysis, gammatone auditory model, auditory image

CONDITION OF VERBAL ASSOCIATIONS IN PRESCHOOL AGE CHILDREN (NEUROPSYCHOLOGICAL ANALYSIS)

Neli Vasileva

Sofia University "St. Kliment Ohridski "

vasnel@abv.bg

Problem statement. Literature data, concerning dyslexia problems, underline its correlation with disorders in phonological awareness and rapid automated naming. This requires studying of neuropsychological profiles of preschool-age children as markers for the development of dyslexia. The ability of expressing verbal associations interacts with rapid naming, and may be referred as a prognostic sign for learning difficulties. *Purpose.* Testing rapid naming of verbal associations in children aged 4 – 6. *Methods.* "Associative arrays" test in the frameworks of a neuropsychological battery, which investigates the ability for words retrieve from long-term memory, and the 'switching' from one word to another, and from one semantic category to another. Three associative tasks are probed: independent associations, associations foractions, associations for fruit and vegetables. The performance of the first and third tasks correlates with the left hemispheric posterior lobes and the second task is related to the frontal areas processing. The research encloses 365 children with normal psychic development, grouped by age into three age categories - 4, 5 and 6 and by settlement - capital, city, small town. *Results.* The analysis of the independent associations test represents a statistically significant effect of the results, deriving from the factors "age" and "settlement". The "age" factor relates strongly to the number of associations made, and a better performance of the children from the capital is evident. Only the "age" factor has statistical influences in associations for actions. Associations for fruit and vegetables exhibit the same correlation tendency. *Conclusions.* The sensitivity of the age period towards the formation of mechanisms for updating various associations is outlined. The tasks for independent associations receive the best performance, compared

with those for actions. Research data suggest rapid structural and functional development of the posterior brain areas, contrasting with the slow one of the frontal lobes.

Key words: neuropsychological profiles, pre-school age, independent verbal associations, actions associations, associations for fruit and vegetables.

TRANSIENT EVOKED OTOACOUSTIC EMISSION DETECTION USING AUXILIARY PROBE AND NONLINEAR ADAPTIVE FILTERING

Zoran Šarić¹, Miško Subotić¹, Slobodan Jovičić²

¹Life Activities Advancement Centre, Belgrade, Serbia

²School of Electrical Engineering, University of Belgrade, Serbia

Transient otoacoustic emission (TEOAE) is a method widely used in clinical practice for assessment of hearing quality. The main problem in TEOAE detection is its much lower level than the level of environmental and biological noise. While the environmental noise level can be controlled, the biological noise can be only reduced by appropriate signal processing. This paper presents a new two-probe preprocessing TEOAE system for suppression of the biological noise by nonlinear adaptive filtering. The system records biological noises in both ears and applies a nonlinear adaptive filtering approach for suppression of biological noise in the ear canal with TEOAE. The adaptive filtering includes Volterra filter applied on derived non-linear response (DNLR) method usually used in TEOAE detection. Experimental evaluation of the proposed TEOAE detection method was performed on nine volunteers. The method was tested by three quality measures: signal-to-noise ratio (S/N), reproducibility of TEOAE, and measurement time. Experiments showed a considerable improvement of TEOAE detection in comparison to the ordinary used DNLR TEOAE detection method.

ACQUISITION OF APPROXIMANTS IN CROATIAN

Diana Tomić

Faculty of Humanities and Social Sciences

University of Zagreb

dtomic@ffzg.hr

This paper reports a study on the speech sound development of Croatian children aged 3;0-7;0. Speech samples of 600 children (300M and 300F) were collected from randomly selected preschools in wider Zagreb area and analyzed to obtain normative data for the acquisition of approximants. Liquids and trill are considered to be the last sounds appearing in children's phonologies and according to the published Croatian norms, these sounds should be developed by the age of 4;0 f- /l/ or 4;6 -/lj/ and /r/. However, the results from this study show that the age of acquisition shifts forward and it is 4;6 for /l/, 5;6 for /lj/ and 6;0 for /r/. The results for /v/ and /j/ agree with the published norms, and those sounds should be developed by the age of 3;0. The paper discusses the dynamics of the development of liquids and trill considering phonological processes (error patterns or substitutions) and developmental distortions, the age of their suppression and the proportion of their occurrence in the speech of typically developing children. The results are rather different from the existing norms and show that the development of /l/ is characterized by high proportion of distorted realizations, while the development of /lj/ is predominantly characterized by substitutions with /l/ which is also one of the most frequent error pattern in the developmental course of /r/. The results show no gender differences in the phonological development within the same age group. Finally, the paper discusses some important criteria for determining the age of speech sound acquisition.

Key words: speech sound development, approximants, Croatian

THE INFLUENCE OF FEATURE VECTOR SELECTION ON PERFORMANCE OF AUTOMATIC RECOGNITION OF WHISPERED SPEECH

Jovan Galić¹, Branko Marković², Đorđe Grozdić³, Slobodan Jovičić⁴

¹ Čačak Technical College, Computing and Information Technology Department, Čačak, Serbia

² Faculty of Electrical Engineering, University of Banja Luka, Department of Electronics and Telecommunications, Banja Luka, Bosnia and Herzegovina

³ Life Activities Advancement Center, Laboratory for Psychoacoustics and Speech Perception, Belgrade, Serbia

⁴ School of Electrical Engineering, University of Belgrade, Telecommunications Department, Belgrade, Serbia

In this paper the influence of feature vector and frame shift on the performance of a isolated words speaker independent recognizer will be analyzed. The part of Whi-Spe corpus with male speakers will be used for training and test. Due to significant degradation of performance in mismatched training/test conditions, four training/test scenarios of normally phonated speech and whispered speech will be examined, for three features:

Mel Frequency Cepstral Coefficients (MFCC), Perceptual Linear Prediction Coefficients (PLP) and Teager Energy Cepstral Coefficients (TECC). The HTK, toolkit for building Hidden Markov Models created by Cambridge University Engineering Department, will be used for training and test. The percentage correct, as well as optimum set of feature vectors, will be determined for all scenarios with modeling of monophones and triphones.

INTRODUCING PUPILS INTO WRITING SKILLS

Zorica Cvetanović¹, Kristina Šulović Petković²

University of Belgrade, Teacher Training Faculty;

Educational Centre Torbica, Belgrade

zorica.cvetanovic@uf.bg.ac.rs

The development of writing skills in lower classes of primary school has a communicative function which is used to convey thoughts, ideas and descriptions through writing clearly and precisely. The aim of developing the skills and habits of writing is to make a pupil gradually become independent when it comes to written forms. The transition from writing sentences to writing shorter compositions is the most important phase in functional literacy of pupils and that transition should be gradual and methodically planned. Pupils are not supposed to improvise. They should be gradually introduced into the technique of writing a comprehensive expression with the help of a teacher by encouraging their creativity. It is necessary to continually work on enriching vocabulary, adopting spelling rules and getting to know the characteristics of forms as well as stylistic elements of an expression. That is why learning to write i.e. develop writing skills is a complex process through which pupils gradually and with the help of their teacher learn the fundamentals of this form of articulation. A pupil has to write and practice on his own in order to learn to write and a teacher is there to help and lead him. The paper shows methodical fundamentals for introducing pupils into writing skills that comprise constructive elements, making a plan and forms that are applied from the first grade of primary school. 380 teachers have been surveyed about these segments of literacy classes. They gave their opinion about the ways how they prepare pupils for writing and how they encourage them to find constructive elements of expressing themselves in a written form. They also pointed out the most frequent form of writing (narration, retelling or describing). The aim of this paper is a review of theoretical and methodical fundamentals for introducing pupils into initial literacy. Teachers' opinion about the forms of initial ways of writing in lower classes of primary school has also been presented in this paper.

Key words: writing skills writing sentences, essay, retelling, narration, describing

DEVELOPMENTAL DYSPHASIA – SOME BASIC CHARACTERISTICS

Plamen Stefanov Petkov

Special Pedagogy Department, Faculty of Pedagogy, Shumen University "Bishop Konstantin Preslavsky"

plamendes@abv.bg

The results of an enquire of language operations of children with developmental dysphasia are presented within the article. The main goal is to establish what kind of difficulties the children with developmental dysphasia have. The enquire is directed to the understanding of nouns, understanding of verbs, understanding of prepositions, text and context comprehension. An important point is the research of perception of idioms. Children's ability to express their ideas is also researched. Under the visual stimuli children with developmental dysphasia verbalize different situations, they also retell some stories. Spontaneous speech is enquired – children describe their important impressions and experiences. The aim of the enquire refers to the definition and description of the follow processes, functions and operations – semantic representation, lexical diversity, using of grammatical rules and word learning. When the results of the enquire have been elaborated, some conclusions have been inferred. First – children with developmental dysphasia understand the meanings of many words especially when the context is supplied by visual stimuli. Second: they have many difficulties comprehending text. They reproduce the text changing the main plot and actually they create new story which is not the same or similar to the story they have to reproduce. Third – they are not able to understand idioms. Fourth – they make grammatical mistakes when they spoke spontaneously. Basic conclusion – children with specific language impairment use the meanings of many words (predominantly such of them which refer to the concrete conceptions) but do not comprehend sufficiently phrases and context. The main disadvantage is their inability to use and interpret grammatical rules correctly and as a result of that they can not understand the complex sentences and text although their intellectual development is normal.

Key words: developmental dysphasia, grammatical functions, semantic representation, lexical diversity, word learning, expressive language performance, impressive language performance, idioms, comprehension, verbalization

THE COMPARISON OF CONSCIOUS AND UNCONSCIOUS ACTIVITY IN THE BEHAVIOUR OF THETA AND BETA EEG RHYTHMS DURING SILENT REHEARSAL OF THE KNOWN PRAYER AND RESTING STATE

Mirjana Sovilj, Zoran Radicevic, Ljiljana Dobrijevic

Life Activities Advancement Centre, Belgrade, Serbia

Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia

The examination of young adult female during the silent production of previously known text, prayer “ Our Father”, showed that in contrast to the experience of the silent peaceful state, are significantly activated EEG regions responsible for receiving and analyzing auditory information as well as the regions responsible for emotional expression and emotional reception. The paper discusses these findings in relation to the mapping formula of activated regions involved unihemispherical or bihemispherical in sub - theta and beta rhythms, in terms of differences in the intensity of the activation, coherence index and the possible meanings of the findings for the explanation of learning.

Keywords: conscious and unconscious operations, theta and beta rhythms, silent speech

LANGUAGE PROFILES OF CHILDREN WITH SUBCLINICAL EPILEPTIFORM EEG DIAGNOSED WITH SPECIFIC LANGUAGE IMPAIRMENT

Vanja Nenadović^{1,2}, Miodrag Stokić^{1,2}, Sanja Đoković³, Zoran Radičević^{1,2}

¹Life Activities Advancement Centre, Belgrade, Serbia

²Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia

³Faculty for Special Education and Rehabilitation, Belgrade, Serbia

The diagnosis of specific language impairment excludes cases with epileptiform discharges. However, EEG findings on children with specific impairment tend to show subclinical EEG abnormalities in a part of this population. It is uncertain whether subclinical epileptiform activity can cause some forms of language impairment. In this study, language profiles were examined in 10 cases of children diagnosed with specific language impairment, with registered subclinical epileptiform activity. The study draws attention to characteristics of language profiles in this subpopulation of specific language impairment, compared to children with specific language impairment with no EEG abnormalities registered. Conclusions are made in regard with divergent study results in this field of research. Also, results are discussed in light of speech therapy dynamics and prognosis.

Key words: language profile, specific language impairment, EEG

AUDITORY PERCEPTION - BASIS OF SPEECH AND LANGUAGE DEVELOPMENT

Slavica Maksimović^{1,2}, Sanja Đoković³

¹Life Activities Advancement Centre, Belgrade, Serbia

²Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia

³Faculty for Special Education and Rehabilitation, Belgrade, Serbia

Auditory perception is a complex process, which consists of a series of processes that take place in real time, from the conversion of acoustic information that the listener receives through auditory mechanisms to the psychological processing of certain linguistic concepts. Auditory perception is a prerequisite for proper development of speech and language structures and the formation of regular feedback to their own speech and the speech of the environment. Minimal auditory perception deficits in children cause the difficulties in phoneme perception, the perception of quick verbal signals, the perception of time sequence of parts of speech, and causing a short range of verbal memory. The aim of this study was to investigate the perception of speech in children with disorders of verbal communication. The sample comprised 65 children aged 5-8 years with verbal communication disorders (articulation disorder, developmental dysphasia) and children with typical speech and language development. All of the children underwent speech audiometry.

The results indicate the specificity of speech perception in children with disorders of verbal communication.

Keywords - speech perception, impaired verbal communication, articulation disorder, developmental dysphasia, typical speech and language development, speech audiometry, number of errors, types of errors.

ON APPLICATIONS OF FUZZY SYSTEMS IN AFFECTIVE COMPUTING

Dragan Šaletić

School of Computing, University “Union”, Belgrade, Serbia¹

DZSaletic@gmail.com

The application of fuzzy systems theory in the part of computer science, affective computing, is considered. Basic notions of fuzzy systems and of affective computing are, shortly, given. Emotions are considered. Data of

research in connection with the considered topic are given. A possibility of emotion recognition in natural speech, based on fuzzy expert systems, is discussed. Conclusions are given and it is pointed out on possibilities of applications of the approach considered.

Keywords : fuzzy systems, affective computing, emotion recognition, natural speech

10 KEY MOMENTS TO HUMAN EVOLUTION

Olga Gouni

Prebirth Psychologist, Prebirth Psychology Lecturer

Cosmoanelixix prebirth psychology center, Hellenic Union for Prenatal and Perinatal Psychology and Medicine
info@cosmoanelixix.gr

In the continuum of life from before conception to death, there is hardly a split second that does not hold the seeds of evolution. However, there are certain moments that make a big difference. Looking at our human experience from the perspective of prenatal psychology, 10 critical points are chosen from preconception to weaning at 3 1/2 years of age. Their significance will be mapped in terms of psychosomatic health, quality of life and relationships created as well as their contribution to the global shift to the direction of peace and civilization.

CHANGE OF PULSATILITY INDEX OF MIDDLE CEREBRAL ARTERY AFTER PRENATAL SOUND STIMULATION IN NO RISK TERM PREGNANCIES

Svetlana Jankovic-Raznatovic^{ab}, SnezanaPlesinac^{ac}, MirjanaSovilj^{de}, TatjanaAdamovic^{de}, DarkoPlecas^{ac}, DjurdjicaCecez^a, LjiljanaDobrijevic^{de}, DjuroKoruga

^aDepartment of Obstetrics and Gynecology "Narodni front", Belgrade, Serbia

^bBelgrade University Medical School, Belgrade, Serbia

^cInstitute for Obstetrics and Gynecology, Clinical Center of Serbia, Belgrade, Serbia

^dInstitute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia

^eLife Activities Advancement Center, Belgrade, Serbia

^fBiomedical engineering, Faculty of Mechanical Engineering, University of Belgrade, Serbia

Background. Our experimental study evaluated variations of fetal middle cerebral artery (MCA) circulation after the defined prenatal acoustical stimulation (PAS). Prenatal auditory stimulation (PAS) is a method of early detection of development of fetal auditory and behavioral function.

Methods. Study included 119 healthy pregnant women with no risk pregnancies, without complications of any kind, with the delivery at time. Our examination was performed in period from 37 to 41 weeks of gestational age. Gestational age was determined in relation to last menstruation and estimated by ultrasound examination. Experimental study has been organized as a part of multicentric prospective clinical trial under the supervision of Ministry of Health and Education of Republic of Serbia, (2011-2014). Project included Belgrade University Medical School, Belgrade, Serbia (Department of Obstetrics and Gynecology "Narodni front" and Institute for Gynecology and Obstetrics, Clinical Center of Serbia) and Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia. We analyzed fetal middle cerebral artery (MCA) circulation using Toshiba Nemio with Doppler and color-Doppler convex sector-probe 3.5 MHz, before and after PAS.

Results. Analysis of the Pulsatility index basic (PIB 1), before PAS and Pulsatility index reactive after (PIR 2), show high statistical difference ($p < 0.01$), representing high influence on the fetal brain circulation.

Conclusion. Our results have shown influence of sound stimulation on fetal brain circulation. They also introduce the second stage of investigation correlated to the newborn and adequate postnatal hearing and neurology tests and help us detecting of various hearing and verbal problems in an early childhood and start with exact therapy as soon as it is possible to earn better results.

Key words: fetus, sound stimulation, prenatal acoustical screening, fetal cerebral circulation

PALATAL LATERAL APPROXIMANT /ʎ/ AS ONE OF THE MAIN TROUBLEMAKERS IN LEARNING CROATIAN AS L2

Arnalda Dobrić, Jordan Bićanić

Department of Phonetics, Faculty of Humanities and Social Sciences

adobric@ffzg.hr

According to the verbotonal theory, speakers of L1 choose the closest sound from their own phonological system instead of the correct sound when learning L2 in adult age and the errors are consistent regarding their common L1 as well as targeted L2. Guberina (2003a) defines this practice as the *system of errors* that happens due to perception of the L2 that is based on perception of L1. Most of adult speakers of different L1 learning Croatian as L2 often have major problems pronouncing palatal lateral approximant /ʎ/, so it is usually substituted by alveolar lateral approximant /l/ or, less frequently, by palatal approximant /j/. According to some authors (Céldran et al., 2009 and Landau et al., 1999) Spanish and Croatian have the same phoneme in their

phonological systems but the sound /ʎ/ is hardly ever pronounced correctly by adult Spanish speakers who learn Croatian as L2. This could be explained by the fact that this sound is pronounced in different ways by Spanish speakers coming from different regions of Spain and South America no matter only one symbol is used to describe them all. Moreover, it is well known that IPA sometimes uses same symbols for different sounds within different languages and that symbols should be considered within languages respectively. In terms of articulation, possible explanation based on palatography and X-ray examination of the languages containing the same sound (Catalan, Italian, Portuguese and French) might be that the sound exhibits alveopalatal closure, and less often (in Spanish and Italian), the sound is produced with a very front closure at the alveolar zone (Recansens and Espinosa, 2006). Electropalatographic and X-ray examination of Croatian /ʎ/ are to be done.

Four male and four female native Spanish speakers from Latin America were recorded before and after ten sessions of speech training (correction) based on auditory-phonetic approach (Mildner and Bakran, 2001) that aims toward better auditory perception in trainees. During the sessions optimal speech material (Mildner, 1999) was used and the signal was manipulated (Guberina, 2003b) in order to facilitate perception of the targeted sound. The recordings of the words with the observed sound in the initial, middle or final position, as well as in different speech sounds surroundings, were made and used in a perceptive test and an acoustic analysis. In the perceptive test native speakers of Croatian decided on the scale from one to seven how acceptable the pronunciation of a certain word was. The difference before and after correction sessions was statistically significant. Acoustic analysis in Praat was used to objectively confirm the differences in pronunciation of words containing /ʎ/ before and after correction. In the majority of words a reasonably higher F2 in /ʎ/ in second recording of the same utterance was found (Figure 1 and Figure 2) and the results confirmed the results of the perceptive test. Moreover, some previous results that took into consideration global structure before and after speech training are also mentioned and compared to the results of this study (Mildner and Tomić, 2007; Tomić et al., 2011) showing how change in pronunciation of a single sound may affect whole utterance.

ARTICULATORY-ACOUSTIC CHARACTERISTICS OF FRICATIVES

Miško Subotić¹, Silvana Punišić^{1,2}, Nataša Čabarkapa^{1,2}, Milan Vojnović¹

¹Centar za unapređenje životnih aktivnosti, Beograd

²Institut za eksperimentalnu fonetiku i patologiju govora, Beograd
ifp2@ikomline.net, silvanapunisic@hotmail.com

This paper presents an overview of research on the analysis of fricatives. Especially the articulatory, acoustic and perceptual characteristics of fricatives are discussed. The review of the correlation of certain acoustic and perceptual characteristics is given. It turned out that their relationship is very complex; that a particular perceptual feature may be correlated with several acoustic parameters as well as to an acoustic parameter can be assigned a number of perceptual features. Voice group of fricatives in different languages have their articulatory-acoustic similarities and differences so one should be very cautious in generalizing the results to different languages as well as in the selection of acoustic parameters to describe the phenomena related to the fricatives.

Keywords: fricatives, articulatory, acoustic, and perceptive characteristics of fricatives, correlation.

BASIC COMPETENCIES IN GENETICS FOR SPEECH – LANGUAGE PATHOLOGIST

Igor Buzganović^{1,2}, Bojana Bobić Gece^{1,2}

¹Life Activities Advancement Center, Belgrade, Serbia;

²Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia
buzganovic83@yahoo.com

The evolution of scientific discoveries in genetics during the last decade has provided information with potential for tremendous influence on health care. Understanding the role genetics plays in health and disease provides the means to integrate such information into prevention, diagnosis and treatment of various communication disorders. Genetic discoveries are already making their way into mainstream healthcare, and patients are asking providers questions about genetic services. The forward motion for developing this list of ideal competencies related to genetics was to support speech-language pathologists to integrate genetics knowledge, skills, and attitudes into routine clinical practice in order to provide effective service delivery to individuals and their families. The goal of preventive activities is early stimulation treatment.

Keywords: genetics, speech and language, prevention, detection, early stimulation treatment

APPLICATION OF DTW METHOD FOR WHISPERED SPEECH RECOGNITION

Branko Marković¹, Jovan Galić², Djordje Grozdić³, Slobodan T. Jovičić⁴

¹Faculty of Electrical Engineering, University of Banja Luka, Department of Electronics and Telecommunications, Banja Luka, Bosnia and Herzegovina

²Čačak Technical College, Computing and Information Technology Department, Čačak, Serbia

³Life Activities Advancement Center, Laboratory for Psychoacoustics and Speech Perception, Belgrade, Serbia

⁴School of Electrical Engineering, University of Belgrade, Telecommunications Department, Belgrade, Serbia

This paper explains the results of recognition for whisper and normal speech using the DTW method. The patterns for recognition are based on the Whi-Spe database. For these experiments the subset of this database which contains words of colors and numbers is used, and speakers were male and female. The vectors for comparison are based on MFCC coefficients including delta and delta-delta parameters. The DTW algorithm took in consideration two scenarios: the first, when there is no constraints on the global path, and the second, where constraints are of CE2-1 type. The results are given in form of tables and diagrams.

CHILDREN WITH ADHD- PERCEPTION OF EMOTION IN SPEECH

Vladan Plecevic¹, Ana Kesic²,

¹Cabinet of Defectology and Speech- Language Therapy "Plecevic", Belgrade, Serbia

²Clinic for Neurology and Psychiatry for Children and Adolescents, Serbia
plecadiv@gmail.com

Background: Perception of the speech signal includes speech recognition and understanding of the voice message. It is known that speech, in addition to linguistic information also carries information about the speaker's emotional state. There are few studies that are about understanding and recognizing emotions in children with ADHD. Emotional state have affects on somatic signs (physiologically plan) and on a facial expression (behavioral plan) and these manifestation are largely in direct correlation with verbal expression, which is manifested through linguistic and acoustic manifestation.

Methods: The study included 20 children with ADHD (experimental group) and 20 children with normal physiological development (control group). In order to assess the ability to recognize emotion in speech studied groups of children, was used GEES (speech corpus expression of emotions and attitudes) (Jovicic S. and co.). From the corpus we extracted sentences that manifest emotions of anger, joy, fear and sadness. Natural speech was elected as a reference. Of the attitudes and intentions the command and threat were selected. The task of the respondents is to identify the expression of emotions and attitudes based on communicative and life experience.

Results and conclusions: Results of application of this auditory test will provide us important indicators about perception of emotion and guidance in therapeutic work particularly in developing strategies for modeling the behavior of children with ADHD.

VOWEL FORMANT FREQUENCIES ESTIMATION FOR NEWBORN CHILDREN

Milan Vojnović¹, Ivana Bogavac^{1,2}, Ljiljana Dobrijević^{1,2}

¹Life Activities Advancement Center, vojnovicmilan@yahoo.com

²Institute of Experimental Phonetics and Speech Pathology, ivbogavac@gmail.com

The main problem in the analysis of vowel formant frequencies, spoken by children under the age of one year, is the great centralization of utterance. Another problem is that the physical dimensions of the vocal tract in children of this age are not known. Recognitions of vowels are difficult because of the centralized pronunciation, so for this early stage of language development, it is better to analyse the maximal vowel space (MVS). On the other hand, for the calculation of MVS, it is necessary to know the physical dimensions of the vocal tract. Estimation of vowel formant frequencies in one-year old children was done in two phases: defining the MVS and then vowel discrimination on the basis of such defined MVS. Estimated vowel formant frequencies and MVS shows the general trend of changes in pronunciation of vowels in the first year of children life, which can be used for early diagnosis of untypical speech. This method of early screening process is suitable because it is not based on a "stimulus-response" what is inappropriate for children of this age. If this screening method is combined with an analysis of the chronology of the adoption of certain sounds, we can get a more complete and precise evaluation child's language development at an early stage of development.

Key words: children speech, maximal vowel space, vowel formant frequencies

THE ROLE OF THE BASAL GANGLIA IN SPEECH MOTOR CONTROL
Marina Vujović¹, Ljiljana Jeličić Dobrijević^{1,2}, Biljana Bedričić^{1,2}, Marijana Rakonjac^{1,2},
Ivana Bogavac^{1,2}

¹Institute of Experimental Phonetics and Speech Pathology

²Life Activities Advancement Center

ivbogavac@gmail.com

This review addresses the possible bond between the basal ganglia circles (BG) and stuttering. BG are responsible for the automatic execution of a sequence of motor programs that are covered by the learned motor plan. Important conclusions about the impact of BG on stuttering were performed on the basis of facts when the stutter step up and when and in what situations people who stutter are fluent. Stuttering is reduced when introducing compensatory timing cues such as speech with a metronome, choral speech and singing. It is assumed that the thalamocortical motor circuit of the basal ganglia through the putamen plays a key role in the onset of stuttering. This paper discusses the presumed subcortical dysfunction in stuttering, which is reflected as a failure of the basal ganglia to provide timing cues for the initiation of the next motor segment in speech as well as the synchronization of speech in general.

Key words: basal ganglia, stuttering, timing cues

THETA AND ALPHA RHYTHM AMPLITUDE CHANGES DURING AUDITORY PERCEPTION OF WORDS AND NON-WORDS

Zorana Radivojević¹, Miodrag Stokic^{1,2}, Dragana Pecenica^{1,2}, Misko Subotic²

¹Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia

²Life Activities Advancement Center, Belgrade, Serbia

This paper represents the research of power and distribution of theta and alpha rhythm during auditory perception of words and non-words. Our research comprised of 10 adult subjects, native speakers of Serbian language with no history of hearing disorders. All participants were not using medication that may influence EEG signal. They passed standard hearing screening before experiment. They were recorded in standard EEG conditions, at 16 points of EEG registration and in longitudinal bipolar montage. Two sets of stimuli were used in the experiment. The first set consisted of words and the second set consisted of non-words, every with ten stimuli. Word lists were recorded. The period of auditory perception lasted 300-500ms with a pause of ten seconds between two stimuli. Results in the observed theta and alpha rhythm indicate differences in their distribution between brain regions during auditory perception of words and non-words, which opens possibility for more detailed analysis of processing in theta and alpha rhythm as well as the role of these brain rhythms in auditory processing in general.

Key words: EEG, theta rhythm, alpha rhythm, auditory perception, words, non-words.

MAKSIMAL VOWEL SPACE

Milan Vojnović

Life Activities Advancement Center, vojnovicmilan@yahoo.com

In the analysis of the vowel formant frequencies spoken by children under the age of one year, it is difficult to define exactly which vowel is pronounced. Therefore, it is better to do the analysis of the maximal vowel space (MVS). This global analysis of changes in vowel formant frequencies can later be used for more accurate discrimination of spoken vocals. Primary information for determining the MVS is a shape of vocal tract and the freedom degree of its individual parts, or restriction of the articulator organs movement. In the case where the acoustic model of the vocal tract is detailed (approximation of a vocal tract with large number of cylindrical segments) estimation MVS can not be done by calculating the formant frequencies for all possible cases, because there are too many. The number of possible vocal tract shapes should be reduced as much as possible to obtain the correct (real) field vowel formant frequencies changes. At the same time, computational time for MVS estimation has to be in "reasonable" limits. MVS estimation procedure is analyzed on the example of Russian vowels where the vocal tract is modeled with thirty cylindrical segments. The length of cylindrical segments are 5 mm. Changes in cross-sectional area of the vocal tract are statistically dependent (there are no sudden changes in the shape of the vocal tract), which was used to reduce the degrees of freedom of changing the shape of the vocal tract.

Key words: maximal vowel space, vocal tract model, vowel formant frequencies

INTUITION SPEECH

Vesnica Kljajević¹, Dragana Portić²

¹Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia

²Life Activities Advancement Center, Belgrade, Serbia

Every man has the intuitive ability, so called intuition, which constantly subconsciously use. Although we do not notice its presence and activities, that ability greatly influence the decision-making in everyday life. If a person learns to listen and follow that inner voice, that clearly occurs, he will have an increasing amount of opportunities to create new ideas, develop optimal strategies for making the best decisions in addressing the challenges and problems. Although human perception is reduced to the five senses, it is not the question whether intuitive skills exist or not, but how to make more effective link between the mind and the ability (intuition), how to hear it and how to establish a confidential relationship and turn it into an action. The goal is consciously making the best decisions that rely on intuition or emotionally knowledge and rational thinking or logical knowledge. So, the question is how to establish a visible, perceptible relationship with our own intuition. A precondition for establishing the right connection is the achievement of inner peace. The messages that come through intuitive abilities are always sent in a very simple form: words, simple sentences, clear picture, clear sound, quietly. Often, the overlooking of such messages, because they are considered too simple, zu reaction "...it cannot be that simple," or" ... it cannot be intuition ... "Usually great sensations, miracles are expected, But this is precisely the great strength and power of intuition. It occurs without emotion, of course, from a deep inner peace. In the event of inner speech which carries a negative emotion, anxiety, agitation, anger, it may have something with the fear, but not with intuition.

Very Often a person makes decisions based on rational thought, although the intuitive part had "said "otherwise. This is called defensive decision-making that does not contain its own responsibility, but the responsibility is transferred to the environment. By developing the intuition, one comes to the core of his spiritual being and to the knowledge of the existence and functioning of the living creatures.

Key words: intuitive abilities, inner voice, speech, an emotional knowledge, defensive decisions making.

GOVOR INTUICIJE

Vesnica Kljajević¹, Dragana Portić²

¹Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia

²Life Activities Advancement Center, Belgrade, Serbia

Svaki čovek poseduje *intuitivne sposobnosti*, tj. intuiciju, koju stalno podsvesno koristi. Iako se ne primećuje njeno prisustvo i delovanje, te sposobnosti u mnogome utiču na donošenje odluka u svakodnevnom životu. Ukoliko čovek nauči da sluša i prati taj unutrašnji glas koji se jasno javlja, imaće sve veću količinu mogućnosti stvaranja kreativnih ideja, razvoj optimalnih strategija za donošenje najboljih odluka u rešavanju izazova i problema.

Iako je ljudska percepcija svedena na pet čula, ne postavlja se pitanje postojanja intuitivnih sposobnosti, već kako uspostaviti što delotvorniju vezu između uma i tih sposobnosti (intuicije), kako je čuti i uspostaviti poverljivu vezu i pretvoriti je u akciju. Cilj jeste svesno donošenje najbolje odluke koje se oslanja i na intuiciju ili *osećajno znanje* i na racionalno razmišljanje ili logičko znanje.

Dakle, postavlja se pitanje kako uspostaviti vidljivu, uočljivu vezu sa svojom sopstvenom intuicijom. Preduslov za uspostavljanje prave veze jeste upravo postizanje unutrašnjeg mira. Poruke koje dolaze preko intuitivnih sposobnosti uvek bivaju poslate u vrlo jednostavnom obliku: reči, prostih rečenica, jasnih slika, jasnih zvukova, tiho. Često se dešava da previdjanje takve poruke, jer se smatraju suviše jednostavnim, zu reakciju " ...ne može biti tako jednostavno!" , ili " ...to ne može biti intuicija...!" Obično se očekuju velike senzacije, čuda, ... Medjutim, upravo se u tome ogleda velika snaga i moć intuicije. Ona se javlja bez emocije, jasno, iz dubokog unutrašnjeg mira. Ukoliko se javi unutrašnji govor koji nosi negativnu emociju, nemir, uznemirenost, bes, ... verovatno se radi o strahu, ali ne i o intuiciji.

Često čovek donosi odluke na osnovu racionalnog razmišljanja, iako je intuitivni deo "rekao" suprotno. To je tzv. *defanzivno donošenje odluka* koje ne sadrži sopstvenu odgovornost, već se odgovornost prenosi na okolinu. Razvojem intuicije, čovek dolazi do jezgra svog spiritualnog bića i do saznanja funkcionisanja i postojanja samog bića.

Ključne reči: intuitivne sposobnosti, unutrašnji glas, govor, osećajno znanje, defanzivno donošenje odluka.

INTERDENTAL SIGMATISM – DIACHRONIC FOLLOW UP IN PRONUNCIATION OF SERBIAN SPEAKERS

Silvana Punišić^{1,2}, Slavica Golubović³, Miško Subotić¹

¹Life Activities Advancement Centre, Belgrade

²Institute for Experimental Phonetics and Speech Pathology, Belgrade

³FASPER-Faculty for Special Education and Rehabilitation, Belgrade

The subject of this study is diachronic follow up of quantitative and qualitative distortion indicators known as interdental sigmatism (IS) in pronunciation of speakers with an automatic articulation base of the Serbian language. The study has been carried out in the period of 27 years with four target tests for each of the four intervals.

The phenomenon has been studied through: a) global frequency, b) single speech sound frequency, c) level of IS, d) IS speech sound analysis within the spectral domain, e) speaker's awareness of atypical realization and his attitude towards it. *A*, *b* and *c* have been analyzed at the last two points. We have used the Global articulation test in tangent points in all studies. (GAT); in the two last points, we have additionally used the Test for Analytic Assessment of Serbian Speech Sounds (AT) as well as interdental sigmatism speech sound analysis within the spectral domain, which results in more reliable and objective indicators for study of this speech phenomenon. Results have shown persistency of IS in time and an increase of speakers with this type of atypical form. There is also an appearance of non-typical speech sounds for this pathology, such as dental plosives, which is a finding different from studies in the eighties.

Key words: diachrony, interdental sigmatism, articulation and acoustic features of speech sounds.

ABILITIES OF PHONOLOGICAL ANALYSIS IN FIRST AND SECOND GRADE ELEMENTARY SCHOOL CHILDREN

Nina Stanojević, Marina Randelović

Institute for Experimental Phonetics and Speech Pathology „Djordje Kostic” Belgrade, Serbia

ninastanojevic88@gmail.com

Phonological awareness is the ability of phonemes segmentation and knowledge of the phonemes-graphemes relationship and represents the basis of functioning of a language. According to *Golubovic S.*, (2003, 2005, 2006, 2007, 2011, 2012), this in itself grouping a number of functions that contribute to the understanding and application of precision automated phonetic system of a language. One of these functions is auditory analysis, the ability to in a certain word of recognize phonemes which the given word consists of. Ability of auditory analysis phonemes in word represent one of preconditions for the development and acquisition of reading skills. The aim of this study was to investigate the ability of phonological analysis of the initial and final phonemes in the words of the first and second grade elementary school children.

Sample consisted of N =60 children, of which N = 30students of the first grade, while the N = 30students of the second grade. The percentage of females was 60%, while the percentage of men was 40%. All subjects were students from the elementary school 'Arcibald Rajs' in Belgrade. For assessment we used group of tasks B-2-4: Phonological analysis of voices from the Diagnostic kit for assessment the ability of speech, language, reading and writing (*Bjelica J. Posokhova, 2001*).

The results show that the maximum number of points on tasks of auditory analysis of the initial phoneme in the word, maintained 67% of the children first grade and 97% of children of second grade, while the tasks of auditory analysis of the final phoneme maximum points occurred in 57% of the children first grade and 94% in the second grade children. The values of mean scores for the total number of points in both sets of tasks for children first grade and second grade children show a statistically significant difference ($p < 0,05$).

Keywords: phonological awareness, analytic phonological skill, children of first and second grade

LONGITUDINAL MONITORING OF VOICE QUALITY AT SPEECH THERAPISTS

Marina Randelović, Nina Stanojević

Institute for Experimental Phonetics and Speech Pathology „Djordje Kostic” Belgrade, Serbia

marincester@gmail.com

A source of voice are the vocal cords, which vibrat in glead to periodic thickening and thinning of air currents. The voice is very multivariable component of speech and the need for its quantitative description as led to the progress of a wide range of clinical tools. Professional engagement vote means a highly specialized human activity, the preconditions high quality voice and speech, which requires optimal functioning of both biological and psychological, and social factors (*Petrovic-Lazic, 2008*).

This paper describes a longitudinal study of acoustic voice characteristics for speech therapy for a period of one year with the help of a multidimensional voice analysis.

The study included 17 men and women, ages 25 to 45. Multidimensional voice program “Kay Elemetrics” 4300, was used for voice analysis in this research.

Statistical packet SPSSv. 13 was used in data processing. The methods of descriptive statistics were applied, as well parametric and non- parametric analysis of correlation between evaluated variables.

The results showed that there were statistically significant differences between analyzed parameters of voice at speech therapists during the period, which indicate that vocal fatigue lead to changes in the average values of the parameters of vote. Professional use of voice, along with smoking habits can also be linked to voice change in a speech therapist.

Keywords: acoustic voice characteristics, speech therapist, vocal fatigue.

PRENATAL COMMUNICATION: HOW IT REFLECTS ON EARLY CHILD DEVELOPMENT

Dobrijevic Lj^{1,2}, Rakonjac M^{1,2}, Vujovic M¹, Bogavac I^{1,2}

¹Institute for experimental phonetics and speech pathology, Belgrade

²Life activities advancement center, Belgrade

Certain stimulations in the prenatal period in most cases irreversibly affect all later stages of human cognitive and emotional maturity. The development of prenatal communication (unborn child-mother-parents) is extremely under the influence of emotions and is based on different types of stimulation.

Research aim was to estimate the early psychophysiological development of children who were intensely stimulated in the prenatal period.. The study included four male children ages 2-2.5 years, who were intensely stimulated by their mothers during the prenatal period. Methodological procedures included: taking anamnestic data, the application of The Scale for estimation of psychophysiological abilities of children from 0-7 years, and testing by the Global articulation test (IEPSP Battery tests).

The paper discusses the achievements of the children in relation to the type of stimulation applied in prenatal period. It is emphasized the early stimulation and development of prenatal communication with the positive effects they have on children's early speech and language, cognitive, motor and emotional development.

Key words: prenatal communication, early stimulation, child development

SPEECH AND LANGUAGE INFORMATION PROCESSING OBSTRUCTION IN A BILINGUAL CHILD

Radičević Z, Dobrijević Lj, Stokić M, Subotić M, Stankovic I

¹Institute for experimental phonetics and speech pathology, Belgrade

²Life activities advancement center, Belgrade

Theta EEG disturbance gives different effects in the processing of speech and language in formation in a child that has grown up in a bilingual environment, but is under the dominant influence of one linguistic area in relation to the other, which is estimated in the stimulation procedure in EEG mapping for Neurofeedback treatment.

Method: Cartographic EEG patterns consisting of longitudinal bipolar electrode assembly schedule by utilizing 10/20 in a quiet period and during stimulation procedures that include speech and language basis. A boy aged 9 years, son of the Greek father and Serbian mother, by birth living in the Greek language area where he began his education, and from year 9 he moved to the Serbian-speaking area in which he continues his education.

Listening and retelling of textual material in the Greek language were disrupted by increased values of theta frequency in areas thought to reflect linguistic interpretation (analysis, negotiation, decision-making) left or right hemispheric (listening– right, retelling-left), while disruption of listening and retelling material in Serbian was intense, and not just in the areas of understanding and thoughtful language interpreting, but also in the areas responsible for speech and motor performance. Obstruction by theta load showed the difference in speech language interpretation of an image in Greek, when affected are regions predominantly responsible for the cognitive speech and language preparation as opposed to interpreting the Serbian language when they predominantly affected region responsible for primary and perceptual processing of the observed image.

This paper discusses aspects of impact of speech and language environment from an early age in relation to speech and language preference of parents, with special emphasis on the contribution of particular regions responsible for the participation of different levels of the CNS and in the processing of information.

Results: EEG neurofeedback mapping tests and measurements have shown that despite the relatively uniformly reduced total beta activity amplitude, in the child who uses two languages, there are significant differences in terms of regions loaded by high values of theta when analyzing periodic stimulation of listening and repeating, as well as read and observed material (shown graphically) the presented in Greek and Serbian.

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**Marina Vujović¹, Ljiljana Jeličić Dobrijević^{1,2}, Biljana Bedričić^{1,2}, Marijana Rakonjac^{1,2},
Ivana Bogavac^{1,2}**

¹Institute for experimental phonetics and speech pathology, Belgrade

²Life activities advancement center, Belgrade

This review addresses the possible bond between the basal ganglia circles (BG) and stuttering. BG are responsible for the automatic execution of a sequence of motor programs that are covered by the learned motor plan. Important conclusions about the impact of BG on stuttering were performed on the basis of facts when the stutter step up and when and in what situations people who stutter are fluent. Stuttering is reduced when introducing compensatory timing cues such as speech with a metronome, choral speech and singing. It is assumed that the thalamocortical motor circuit of the basal ganglia through the putamen plays a key role in the onset of stuttering. This paper discusses the presumed subcortical dysfunction in stuttering, which is reflected as a failure of the basal ganglia to provide timing cues for the initiation of the next motor segmenting speech as well as the synchronization of speech in general.

Key words: basal ganglia, stuttering, timing cues

**EVALUATION OF PHONEMES QUALITY ARTICULATION USING NEURAL NETWORK
ENSEMBLES**

Draško Furundžić¹, Slobodan Jovičić², Miško Subotić³, Đorđe Grozdić²

¹Mihajlo Pupin Institute, Belgrade, Serbia

²School of Electrical Engineering, University of Belgrade, Serbia

³Life Activities Advancement Center, Belgrade, Serbia;

Ensembles of neural networks show greater ability to generalize over all the individual members of the ensemble. The advantage of the ensemble are based on the uniformity of the distribution of knowledge representation which is a generator of training data and test data set. Generalization ability of individual members of the ensemble are based on the representation of knowledge stored in the form of weight matrix. The determination of the weights is an optimization process with multiple local minima, which depends on the initial values of weight and training data set. Aggregation of ensemble members is effective if all members are different and at the same time have the high level of accuracy. The problem is how to combine members in order to find compromise between two conflicting conditions. Here we present several different methods of aggregation ensemble of neural networks applied to assess the quality of articulation. Results obtained by the ensemble were compared with the results of the best ensemble members. On the basis of the comparison showed that the ensembles are more reliable and accurate tool for detection of articulation irregularities of phonemes, compared to the ensemble member with best performance.

**ETHICAL CHALLENGES AND ALTERNATIVE POSSIBILITIES FOR IMPROVING CHILD'S
ABILITIES AND BEHAVIOR**

Biljana Bedričić, Marina Vujović

¹Institute for experimental phonetics and speech pathology, Belgrade

²Life activities advancement center, Belgrade

bbedricic@gmail.com

According to the research evidence provided by Institute for Experimental Phonetics and Speech Pathology "Djordje Kostic" in Belgrade, children applying for diagnostics and treatment, mostly complain about specific learning difficulties connected with symptoms such as: hyperactivity, perceptual motor disorder, coordination and attention disorder, difficulties with writing and reading, speech and hearing disorder, irregular EEG activity, emotional lability and impulsiveness. Problematic child's behavior is conditioned by many factors, which makes the decision about the crucial reason for problem very difficult. Parents and teacher most frequently interact with children and they are usually the first to notice any signs of disturbances. One of the most commonly registered challenges among children is inability to focus followed by hyperactivity, also known as ADHD – medical condition for which drug therapy is easily prescribed even though it can contribute to major chemical changes in the brain functioning. With all the information available about chemical imbalances which these drugs can create, it is more than important to adequately recognize the symptoms, diagnose disorder and provide children with the best possible treatment. Their parents are therefore faced with an ethical dilemma, whether or not to treat a child with drugs, which can create addiction or keep them away from it, even though it can contribute to regular functioning of their brain.

The aim of this paper is to demonstrate ethical dilemmas which parents of children with attention deficits and hyperactivity disorders are facing, as well as to offer less invasive methods of health improvement with long lasting positive effects.

Key words: ADHD, ethical dilemma, Neurofeedback treatment, Pediatric pharmacotherapy issues

PROBLEMS OF CHILDREN IN SCHOOL WORK

Ivana Pavkovic

¹Institute for experimental phonetics and speech pathology, Belgrade

²Life activities advancement center, Belgrade

In recent years there were lot of problems for children in school work. The reasons for the failure need to look at the different and complex relationships in relation to the causes. Often failure in school work related to implementation of the physical, emotional, social and intellectual development.

The aim of this research was to determine whether children independently solve problems in school work or seek proper help.

The sample consisted of 30 normal hearing and 30 hearing impairment children from 10 to 14 years (grades 3-8) in elementary schools on the territory of Belgrade.

Adequate statistical analysis of the study results confirm that the majority of children with normal hearing problems in school work solved independently, while hearing impaired children seek help from a parent or professional.

Key words: problems in learning, hearing impaired children, children with normal hearing, expert assistance

VACCINE INJURY AND ITS TREATMENT WITH HOMEOPATHY.

Dubravka Markovic – LCHom, MBRCp, after Kate Birch- RSHom (NA)

Prior to the introduction of the vaccination, there were no clinical trials carried out to measure the effectiveness of vaccines in preventing disease. Their justification was and still is solely their ability to produce an antibody response. Assuming that certain vaccines succeed in stimulating the body into producing certain antibodies, this still leaves many questions unanswered. Are immunised people healthier than unimmunised individuals or are they more likely to contract more serious diseases? Is natural immunity safer, longer lasting and more effective? Vaccinations can be directly responsible for conditions as mild as a sore throat, headache, fever or rash to more severe conditions such as neurological disorders, sudden infant death syndrome (SIDS), cancer and auto-immune diseases. Fortunately homeopathy has the potential to treat vaccine damage. For individuals with vaccine injuries, if given the chance, the time and the dedication of the invested party, homeopathy can bring about remarkable changes. The following is a brief outline of what can be expected in treatment. In acute cases of post-vaccinal reaction, only one remedy is needed and the case will be cleared in a relatively short period. In cases where several vaccines have been given and the child is stuck in an immune system reaction phase, with fevers and infections repeating, and some conditions – both mental and emotional and some development delays, several remedies may be given in a short amount of time as the immune system response activates and removes the foreign material. In cases that have developed into full autistic spectrum disabilities, severe food allergies, brain damage or other conditions will require years of homeopathic care with accompanying measures to change behaviour conditions, detoxify the body and clear the imprinted vaccine states.

Key words – Vaccination, vaccine injury, homeopathy, immunity, immune system, prevention.

IMPACT OF PREMATURITY ON ARTICULATING STATUS OF 5 YEARS AGED CHILDREN

Ivana Stanković Miličević, Selena Todorović, Vivien Đorđević, Maja Milenković

¹Institute for experimental phonetics and speech pathology, Belgrade

iva_milicevic@yahoo.com

Speech, language implementation, the ability of people to accomplish a message that is acoustically designed and linguistically organized, with the articulation of sounds and their quantitative companions. Articulation means excise sounds based on its motion peripheral speech organs to adapt to each individual's sound, as well as all possible variations of their articulatory variables in words. Articulation disorders or dyslalia are unable or irregularities in the pronunciation of certain sounds.

Aim of this study was to evaluate the incidence of articulation disorders in preterm children, aged 5 years, compared with their peers born at term.

The study included 60 children divided into two groups of 30 subjects: control (children born at term) and experimental (premature babies). All children were tested with a global articulation test.

The results show that there is a statistically significant difference in the incidence of disorder excuses in premature infants compared with children born at term ($p < 0,05$). Premature children have the disorder excuses more votes than children born at term.

It is necessary to early detection, diagnosis and habilitation in order to prevent and mitigate the disruption of verbal communication.

Key words: articulation, articulation disorder, prematurely born infant

AUTOMATIC DETECTION OF SPEECH PATHOLOGY - TOWARD THE EXPERT SYSTEM

Ružica Bilibajkić¹, Slobodan Jovičić^{1,2}, Zoran Šarić¹, Silvana Punišić¹, Miško Subotić¹

¹Life Activities Advancement Centre, Belgrade

²School of Electrical Engineering, University of Belgrade, Belgrade

e-mail: r.bilibajkic@add-for-life.com

Starting from the review of variety of approaches that can be found in existing literature dealing with automatic detection of speech pathology, in this paper an ongoing work on expert system for automatic detection and classification of voice pathologies is described. The advantages of systems for automatic detection of speech pathology are manifold, not only due to the fact that the impact of human factors is significantly reduced but also because of the extended availability. This system employs non-invasive, non-expensive and fully automated measures that could be used in screening, diagnosis and early detection of voice pathology as well as reliable tool that can assist professional speech therapists. In order to solve this complex problem, methods of acoustic analysis, parametric and non-parametric feature extraction, automatic pattern recognition and statistical methods were used. The interdisciplinary research was conducted with the aim to create and implement an expert system for the detection of speech pathology disorders, including those specific to the Serbian language.

Key words: speech pathology detection, speech pathology classification, expert system.

LINGUISTIC CAPACITY OF CHILDREN WITH DI GEORGE SYNDROME

Selena Todorovic, Vivien Djordjevic, Mariana Panic

Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia

Di George syndrome is a genetic condition with different varieties in patients. It occurs as a result of genetic deletion of the long section of the chromosome 22th. This syndrome was discovered in the 60s (endocrinologist Angelo Di George). Typical problems associated with this syndrome are heart defects, cleft palate, velopharyngeal failure, specific phenotypic characteristics, especially the face, problems in acquiring speech and language skills, which later lead to difficulty in the learning process and the development of social skills. Sometimes they are associated with mental disorders, endocrine problems (hypothyroidism, hyperthyroidism rarely), and scoliosis. Considering neurological disorders, often present are clumsiness and ability to control the global and fine motor skills.

The aim of this paper is to examine speech and language skills of a child with this syndrome, which comes in IEFPG audiolinguistic treatments. Research Methodology: A battery of IEFPG tests, audiological procedures

Keywords: di george syndrome, speech and language development, cognitive development

THE INFLUENCE OF RH INCOMPATIBILITY TO SPEECH AND LANGUAGE DEVELOPMENT

Igor Buzganović^{1,2}, Mirjana Sovilj^{1,2}, Nataša Čabarkapa^{1,2}

¹Life Activities Advancement Center, Belgrade, Serbia;

²Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia
buzganovic83@yahoo.com

Speech and language, as the most compound human's psychophysiological functions, are very susceptible to negative influence of many risks factors that affect the development of CNS, and the consequences to speech and language depend on the time of their onset and the intensity of their influence. RH incompatibility is the most common risk factor of speech and language with children and it considers the presence of antibodies in the blood of Rh negative mother and they can go through placental barrier and connect to fetal erythrocytes and cause their decay and destruction (hemolysis of fetal erythrocytes). The decay of fetal erythrocytes causes fetal anemia and high increase of bilirubins in fetal blood. Bilirubin from decayed erythrocytes can deposit in different parts of the brain and cause its hard damage. The consequence of the influence of the mentioned pathological factors are shown later – from the period of speaking to preschool and school period showing slow speech-language and psychomotor development, also including consequences of adopting school skills, behavior, attention and psychosocial development, too. The aim of this research is to determine the influence of RH incompatibility on speech-language development at children. In this research 34 children was tested by verbal memory test and semantic test. Early detection of abnormalities and deviations from normal development, and taking appropriate preventive measures can prevent the development of disorder. Thanks to the plasticity of the central nervous system (CNS) to alter their structure and function under the influence of environmental stimulation, it is possible to its reorganization. The goal of preventive activities and early stimulation treatment in KSAFA system is to promote normal development of speech and language, as disturbances of speech would not have occurred or to prevent the occurrence of secondary consequence.

Keywords: RH incompatibility, speech and language development, prevention

LEXEMES AND PHRASES IN ASSOCIATIVE FREQUENCY DICTIONARY OF PRESCHOOL CHILDREN

Nataša Čabarkapa, Saška Fatić, Igor Buzganović, Zorana Milosavljević
Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia
natasadcabarkapa@gmail.com

Lexeme is a linguistic unit which presupposes all grammatical forms and all the meanings of a word, while the definition of the phrase is defined as a syntactic unit which is a group of words related to the meaning and function. The object of our study is the characteristics of lexical phrases in associative-frequency vocabulary in children aged five to seven years.

The aim of our study was to examine the characteristics of lexical and grapheme in verbal associations and their maximum frequency, as well as gender and age differences between the experimental and control groups.

The study included two groups: 100 children with developmental dysphasia, which form the experimental group and 200 children with normal speech and language development, which consists of a control group. As a measuring instrument was used to test of associations by Natasha D. Cabarkapa consisting of 40 word stimulus. The results show that children in both groups showed statistically significant differences in all forms of testing. Children in the control group (children of normal population) provide a higher percentage of loanwords and phrases in verbal associations, while the children in the experimental group (children with developmental dysphasia) associated to each word a lot longer to answer, among them are more frequent omission of speech, echolalias associative answers of conflict and on what basis it is concluded that the lexical and syntactic development of children with developmental dysphasia significantly different from children with normal speech and language status.

Key words: lexeme, phrase, verbal associations, children with development dysphasia, children with normal speech- language development

THE INFLUENCE OF EARLY COMMUNICATION ON CHILD DEVELOPMENT AND LEARNING

Marijana Rakonjac^{1,2} Ljiljana Dobrijević^{1,2}

¹Institute for experimental phonetics and speech pathology, Belgrade, Serbia

²Life activities advancement center, Belgrade, Serbia

To find out what causes the communication and language disorders in some children, it is of an invaluable importance to understand early learning process and to study recent studies of early communication development. Normal development of preverbal communication positively affects subsequent normal speech - language development. Preverbal and verbal communication, in addition to be able to fulfill social needs, are also the foundation of learning, cognitive and social development of the child. In order to avoid developmental problems and decrease parental uncertainty as well as prevent further disturbances and recognize the disorder at a proper time with providing adequate therapy, it is crucial to understand the early predictors of speech-language disorders. There are four variables that have predictive validity for later language development: babbling, development of joint attention, lexical comprehension and combinatorial-symbolic play.

This paper discusses the counseling and prevention programs which aim is to help parents in optimization the factors that influence the encouraging of communication development of their child.

Key words: early learning process, preverbal communication, early predictor of speech and language disorders

GRAPHOMOTOR SKILLS OF CHILDREN WHO STUTTER

Nina Stanojević¹, Marina Randelović²

^{1,2}Institute for Experimental Phonetics and Speech Pathology "Djordje Kostic"

Belgrade, Serbia

ninastanojevic88@gmail.com

Graphomotor ability requires the development of complex perceptual-motor abilities that depend on the maturity of the brain and the integration of higher cognitive, perceptual and motor abilities. Production of fluent speech is based on linguistic and motor programming and neural signals that initiate execution of motor movements. Given that speech involves coordination of sequential movements of speech organs and as people who stutter have a problem with this ability, this implies an examination of their abilities related to other motor movements such as precise hand movements.

The aim of this study was to investigate and analyze graphomotor skills of children who stutter.

The study sample consisted of N =10 children who stutter, ages 6 to11 years who are receiving treatment at the Institute for Experimental Phonetics and Speech Pathology "Djordje Kostic". For the evaluation of graphomotor skills of these children subtests of Acadia test development skills were used: subtest 2-Visual-motor coordination, subtest 4-Draw shapes.

The results suggest that the graphomotor skills of the children in our sample are lower than expected for their chronological age.

Keywords: stuttering, graphomotor skills, visual-motor coordination

NEUROBIOLOGICAL BASIS AND LINGUISTIC MANIFESTATIONS IN AUTISM SPECTRUM DISORDERS

Svetlana Torbica Marinković
Center for education Torbica+

In regard to autism there is no commonly accepted definition containing everything that encompasses and describes autism spectrum disorders. Also, it is not always about one and the same disorder which is characterised by the same clinical picture, but it is about different disorders which are similar in some aspects and seem to resemble one another, i.e. to be the same, yet the next developmental aspect shows their diversity. Autism, i.e. autism spectrum disorder, is the most severe developmental disorder of Pervasive Developmental Disorders group. Pervasive Developmental Disorders include Rett syndrome, Asperger syndrome, pervasive developmental disorder not otherwise specified, etc. The main clinical features of autism are stereotyped patterns of behavior, different impairments regarding communication, social interaction and cognition. Most of the time each form of autism can be discovered and diagnosed in a child by the age of three, however recent studies and practical work with children suggest that this disorder can be observed with certainty around the age of 14 months. Speech and language disorders, Cognitive deficits impairments regarding social interaction, as well as epilepsy, are common clinical symptoms observed and noted in autism patients. One of the definitions asserts that autism is neurological developmental disorder which effects are seen throughout life and impact the development of social interaction and communication most (Solomon, 2008). Being a developmental disorder, this disorder is evident in an early age. As clinical picture of autism and similar disorders is well-known, it is possible to diagnose it by the end of age two, and symptomatology alone can be present in an even earlier age. In the above mentioned text these disorders are referred to as Pervasive Developmental Disorders, and pervasive means omnipresent, all-inclusive. In these disorders changes in different brain structures are observed, in terms of communication, social interaction, cognition, behavior, etc. Different approaches, including clinical assessment, neuroimaging and neuropathological studies, are used in determining structural and morphological brain changes in people with autism. Other studies on the volume of cortical and cerebral white mass are indicative of interregional disconnection, and potentially results in inadequate integration through or within neurobehavioral developmental possibilities. Analysing clinical, neuroimaging and neuropathological studies together, one can draw the same conclusion that autism is a disorder on the level of neuro-cortical organisation, which is caused by the change in information processes on different levels of nervous system, from synaptic and dendritic organisations to brain structures. The above mentioned neurobiological changes will most likely influence the development of social interaction and communication in early childhood, and everything points to the fact that pathological changes develop under the influence of genetic factors and environment. Some of the morphological abnormalities point to the activities which are included in pathogenesis PRP, for example the first and second trimester of the gestation are sensitive periods for appearance and development of some developmental disorders.

Key words: autism spectrum disorders; neuroimaging; structural and morphological brain changes

SEMIOTIC ANALYSIS OF SPANISH ADVERTISEMENT ENTITLED "AUTISMO HABLA" – "AUTISM SPEAKS"

Ivana Mitrović Đorđević¹, Vojislav Todorović²

¹OŠ "Dušan Dugalić", Beograd

²Faculty of Culture and Media

mitrovicdjordjevic@gmail.com

vojatodorovic@gmail.com

This work was performed semiotic analysis of Spanish commercial "Autism Habla" meaning "Autism Speaks", produced by the Madrid Federation of autism. Sometimes the child does not communicate with others as expected. Instead, it appears to have been in "his world" and the world that has a repetitive routines, odd and specific behaviors, communication problems and a complete lack of social awareness or interest in another. These are characteristics of developmental disorder called autism. A child with autism is usually difficult to cope with anything that has to do with social communication. Social practice shows that it is necessary to implement various activities for the children to gain the opportunity to develop their skills, expand their interests and knowledge, and as much as possible participate in social life (different types of workshops, sports, concerts, theater...). Advertising of such themes, different types of social groups, approaching the problems of children with mental disabilities in a certain way, enforce signal for increased occurrence of autism as well as the willingness of families to recognize the symptoms of autism spectrum.

Keywords: Semiotics, autism, children with developmental problems

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