Activitas Nervosa Superior Rediviva Volume 56 No. 1-2 2014
ANSR561214X01

International C.I.A.N.S. Conference 2014
March 28-30, 2014
Venice, Italy

ABSTRACTS

The authors are solely responsible for the scientific content and linguistic presentation of the abstracts.

PRELIMINARY RESULTS OF THE BRAIN- HEART COHERENCE IN NORMAL SUBJECTS

Andrea Crocetti, Gioacchino Aiello, Silvia Merati, Giulia Toti, Gregorio Aiello, Iacopo Aiello
Neuropsychophysiology surgery Bernareggio(MB) Italy

Some of the first modern psychophysiological researchers to examine the dialogue between heart and brain were made by John and Beatrice Lacey. During 20 years of research throughout the 1960s and '70s, they observed that the heart communicates with the brain in ways that significantly affect how we perceive and react to the world. After extensive research Dr. J. Andrew Armour, one of the early pioneers in neurocardiology, introduced" in 1991 the concept of a functional "heart brain". His work revealed that the heart has a complex intrinsic nervous system that is sufficiently sophisticated to qualify it as a "little brain" in its own right. The heart's brain is an intricate network of several types of neurons, neurotransmitters, proteins and support cells like those found in the brain proper. Its elaborate circuitry enables it to act independently of the cranial brain - to learn, remember, and could even feel and sense. The latest research in neuroscience confirms that emotion and cognition can best be thought as interacting functions or systems, each with its unique intelligence. Our research is showing that the key to the successful integration of the mind and emotions lies in increasing the coherence (ordered, harmonious function) in both systems and bringing them into phase with one another.

In this study, body and central parameters will be registered in order to verify the coherence among the physiological systems. EEG, EDA, HR will be registered. A sound stimulus with fractal composition will be used to check the induction of coherence. N. 10 normal people of age between 18 and 65 years old of both sexes will be recruited..

REFERENCES:
1. Science of the heart. Heartmath Institute,
2. Neuropsicofisiologia Clinica. G. Aiello. Centro Scientifico Editori, Torino.

THE INFLUENCE OF RELAXATION MUSIC ON HEART RATE VARIABILITY

Andrej Harinek, Eva Gabašová, Silvia Hnilicová, Daniela Ostatníková
Institute of Physiology, Faculty of Medicine, Comenius University in Bratislava

Music is used in relaxation and modulation of stress and anxiety. Music may induce psychophysiological reactions, which are mediated by the autonomic nervous system, but the influence of music on heart rate variability (HRV) is less explored. The aim of our study was to explore how relaxation music modulates heart rate (HR) and HRV and to compare these results with the subjective assessment of the degree of relaxation, stress and anxiety. Altogether 32 university students were randomly assigned into music (n = 16) and control group (n = 16). The procedure consisted of initial, exposure and post-exposure phases all in duration of 5.5 minutes. During all phases participants were in lying position and HRV was recorded. In the exposure phase participants of the music group were exposed to relaxation music. All participants evaluated their grade of relaxation, stress and anxiety by Visual Analog Scales before and after the procedure. Both groups demonstrated significant increase in relaxation and decrease in anxiety level after the procedure, but the music group showed also a significant decrease of stress and significant higher degree of relaxation compare to control group. The music group showed no significant changes in HR and HRV parameters. The control group showed significant reduction in HR and increase in normal-to-normal interval in post-exposure phase. Comparison between the groups revealed significant higher high-frequency HRV and marginally significant lower low-to high-frequency ratio in music group in post-exposure phase. Results of HRV are consistent with beneficial effect of relaxing music on subjective state.

THE FUTURE OF MENTAL HEALTH IN YOUTH. AN ITALIAN EXPERIENCE OF EARLY INTERVENTION FOR PSYCHOSIS (PROGRAMMA 2000).

Anna Meneghelli, Maria Meliante, Angelo Cocchi
Programma 2000 AO Niguarda Milano, Scuola ASIPSE, Milano

Based on a recent and growing body of evidence, adolescence and early adulthood are considered as the peak periods for the onset of most severe mental illnesses. Nevertheless, services and treatment provision for young people are still insufficient, inappropriate and not specifically targeted on youngs' needs. As a consequence, help seeking and involvement by young people in treatments are often poor. An Early Intervention movement focusing its clinical, organizational and scientific activity on initial phases of psychosis decisively contributes to preventing enduring and progressing consequences of illness as well as promoting the recovery process. All over the world many innovative, evidence founded and young friendly programs have a fundamental function in finding adequate answers to the multidimensional problems of young people's mental heath.

In Italy Programma 2000, set up in Milan in 1999 and addressed to young people (age:17-30) at onset or at high risk for psychosis, has been the first early intervention program. In time more than 300 young patients have been evaluated through a detailed protocol including Health of the Nation Outcome Scale (HoNOS), Brief Psychiatric Rating Scale (BPRS), Cognitive Behavioural Assessment 2.0, Disability Assessment Schedule, Camberwell Family Interview, Wechsler Adult Intelligence Scale, Early Recognition Inventory (ERIraos), Checklist, Satisfaction Profile (SAT-P) and a test battery for neurocognitive assessment. Treatment includes cognitive

behavioural therapy (CBT), both structured and unstructured psychosocial interventions, pharmacotherapy, when necessary, and intervention with families. Details on assessment, treatment and main results are presented together with the next challenges to face up to.

TESTOSTERONE AND ITS ROLE IN BIOBEHAVIORAL DIAGNOSIS AND TREATMENT OF AGGRESSION IN CHILDREN WITH AUTISM

Anna Pivovarciova, Zuzana Mastenova, Silvia Hnilicova, Veronika Pospisilova, Maria Glasova, Aleksandra Tomova, Silvia Lakatosova, Daniela Ostatnikova, F. Charles Mace
Institute of Physiology, Faculty of Medicine, Comenius University, Bratislava, Slovakia; Department of Pediatric Psychiatry, Children faculty hospital, Bratislava, Slovakia; Behavioural Interventions SK, Zvolen, Slovakia; Autistic Center Andreas, Bratislava, Slovakia; Institute of psychology and Patopsychology, PedF CU, Bratislava, Slovakia, Center for Psychological Studies, NSU, Florida

Autism spectrum disorders (ASD) are pervasive developmental disorders defined by social and communication deficit and stereotypic/repetitive behaviour. Children with ASD often present with a variety of behavior disorders, with the most common behaviour disorder being physical aggression. In Slovakia we mainly use indirect methods in assessment of aggression in these children (parent/teacher questioners). The aim of our project was the diagnosis and quantification of aggressive behaviour based on principles of Applied behaviour analysis (ABA) by Functional analysis and implementation of behavioural treatment based on the results. The body of evidence exists that aggressive behaviour in human is related to testosterone. In the first 3 children assessed by Functional analysis plasmatic levels of testosterone were measured and its relation to characteristics of aggressive behaviour was evaluated. Our goal is to determine the biobehavioral model in diagnosis and treatment of aggression in children with ASD based on biological and behavioural characteristics.

REFERENCES
Ostatníková D. et al. Act Nerv Super Rediviva Vol. 54, No. 2, 2012, p.82

AMBIVERSION AS INDEPENDENT PERSONALITY CHARACTERISTIC

Georgiev Stiliyan, Christina Christova, Dolja Philipova
Institute of Neurobiology – BAS, Department "Sensory Neurobiology", Sofia, Bulgaria

The EEG studies of the personality trait extraversion rarely comment on the intermediate subgroup or the ambiversion. Since the majority of human population falls precisely into the aforementioned intermediate category, it is important to study it more extensively. In this work we examined the influence of the individual personality characteristic ambiversion on sensorimotor and cognitive information processing by studying the auditory Event-Related Potentials (ERPs) of healthy volunteers in auditory mental and sensorimotor discrimination task conditions. The volunteers completed Eysenck Personality Questionnaire and were divided into introverts, ambiverts and extraverts according to their scores on the extraversion scale. The ambivert N1 amplitude is enhanced compared to the same ERP components of the extravert and the introvert subgroups in passive listening, counting the low tone and responding to low tone task series. The data showed an increase of P3 amplitudes for extravert subgroup in all passive, sensorimotor and mental task conditions. In passive listening task condition the extraverts, as well as the ambiverts showed significantly larger P3 amplitude compared to introverts. The obtained results reveal that the personality characteristic ambibersion influences the information processing at central brain level and this reflects in parameters of ERP components.

THE ITALIAN VERSION OF THE SCOFF, A SCREENING TOOL FOR EATING DISORDERS

Federico Colombo (1), Margherita Baruffi (2), Maura Acquistapace (2)
(1) Milan School of Cognitive-Behavioural Psychotherapy (ASIPSE), (2) Centre for Eating Disorders - Valtellina e Valchiavenna Hospital

Eating disorders are common psychiatric disorders, particularly in young women. Their presentation could be cryptic and a simple screening tool could raise suspicion of a likely case rather than to diagnose. The SCOFF questionnaire is a tool similar to the CAGE used in alcohol problems detection. It could help non-specialists to an early detection so to foster the treatment. It is simple, memorable and easy to apply and score. The English version is dated from 1999, it seems highly effective but no Italian version exists.

More than 100 subjects are involved in the Italian adaptation (70% with an eating disorder: 31% anorexia, 29% bulimia, 16% binge eating, 22% Nas). 95% of cases in acute or chronic phase were correctly identified. The false positive rate is an acceptable trade off for very high sensitivity.

REFERENCES
1. Garner D.M. (1995). Eating Disorder Inventory
2. Organizzazioni Speciali, Firenze. Morgan J.F., Reod F., Lacey J.H. (1999). The SCOFF questionnaire: Assessment of e new screening tool for eating disorders. BMJ 319: 1467-1468.

SELECTED HORMONES AND GENES RELATED TO AUTISTIC PHENOTYPE IN SLOVAK CHILDREN

Daniela Ostatníková, Silvia Lakatošová, Eva Schmidtová, Anna Pivovarčiová, Aneta Kubranská, Jan Bakos, Peter Celec
Comenius University Faculty of Medicine, Institute of Physiology, Bratislava, Slovakia

Autism spectrum disorder (ASD) is characterized by social deficits, impaired communication and repetitive behaviors. It is a complex condition involving many altered mechanisms including hormonal and genetic involvement. Besides the single specific genes associated with autism the current theories support the idea that multiple genes are likely to predispose an individual to develop autism. Profound social deficits are a core symptom in all ASD patients and oxytocin is a neuropeptide affecting social behaviour. Therefore we explored plasma oxytocin levels and polymorphisms in oxytocin receptor gene in 108 ASD patients and compared the results with 130 neurotypical children. Since there is a prevalence of boys in autistic patients, testosterone as the main male sex hormone became suspicious in autism etiology. Testosterone is well known to influence relevant brain structures and cognition as soon as during prenatal period exerting organizational effect and modulating the mental states and functions postnatally via its activational effect. We studied salivary testosterone levels and gene polymorphisms involved in testosterone metabolism in 106 ASD patients in comparison with 118 age matched healthy controls. Salivary testosterone and oxytocin levels were measured by ELISA analysis; genetic analyses included isolation of DNA from buccal cells and amplification by PCR prior to determination of gene polymorphisms by RFLP or fragment analysis. The results revealed differences in oxytocin and testosterone levels in boys as well as in gene polymorphisms related to testosterone metabolism.

REFERENCES
Ostatníková D. et al. Act Nerv Super Rediviva Vol. 54, No. 2, 2012, p.82

Supported by grants: VEGA 1/0066/12, APVV 0254-11 and APVV 0253-10

PLASMA TESTOSTERONE LEVEL, DIGIT RATIO (2D:4D) AND VARIABLITY OF ANDROGEN RECEPTOR AFFECT LOVE STYLE IN YOUNG MEN

Jaroslava Durdiaková (1,2), Ivana Koborová (2), Helena Fábryová (2), Lucia Kukulová (1), Daniela Ostatníková (1), Peter Celec (1,2)
(1) Institute of Physiology, Comenius University, Bratislava; (2) Institute of Molecular Biomedicine, Comenius University, Bratislava, Slovakia

Testosterone organizes brain structure prenatally and modulates cognition and behaviour also later by its activation effect. Testosterone was shown to be related to antisocial, risk behaviour or to being unmarried. Androgens can also modulate almost every aspect of sexual behaviour, interests and emotions in romantic relationships. The aim of this study was to analyze how testosterone affects love attitude and style of loving in men. Young healthy men (N=65) provided the sample of venous blood for plasma testosterone level measurement by ELISA method. DNA isolated from venous blood was used for genotyping the number of CAG repeats in gene encoding androgen receptor. Prenatal testosterone exposure was evaluated indirectly using second to fourth digit ratio (2D:4D). The style of loving that men use in personal relationship was examined by paper-pencil questionnaire Love Attitude Scale. Plasma testosterone level in young men negatively correlated with romantic loving style (R2=-0.25, P=0.04). Lower prenatal testosterone exposure indicated by higher 2D:4D enhanced romantic love attitude (R2=0.25, P=0.04). Higher number of CAG repeats in gene for androgen receptor linked with lower androgen signalling was positively correlated with selfless altruistic love (R2=0.28, P=0.03). This study brings the evidence that prenatal and actual testosterone levels are responsible for the way of behaviour that individuals display in relationships. Future studies are needed for better understanding of the mechanism behind testosterone action.

REFERENCES
Durdiaková J. et al. Act Nerv Super Rediviva Vol. 54, No. 2, 2012, p.83-84

FUNCTIONAL BRAIN ASYMMETRY AND EYE MOVEMENT CONTROL

Fedor Jagla
Institute of Normal and Pathological Physiology, Slovak Academy of Sciences, Laboratory of Cognitive Neuroscience, Bratislava, Slovakia

Introduction: Reflexive saccades towards new visual stimuli represent the motor component of visual-oculomotor integration - the most tightly as well as precise form of sensorimotor integration ensuring the interpersonal and person to environment communication.
Methods: The standard electrooculography of horizontal eye movements was used.
Findings: 95% of visually guided saccades towards the motor dominant hemisphere (MDH) are accurate. The rest usually overshoots the target. Latency of corrective saccades is shorter when directed to the MDH. Selection from moving visual stimuli is more frequent when the saccadic component of the optokinetic nystagmus beats toward the MDH. Similar findings concern the nystagmoid eye movements during vivid visual imagery of moving stimuli. Even the optokinetic after-nystagmus lasts longer when beats towards the MDH. On the other hand, after splitting sensory from motor component, as it is with the saccades guided by memory information, the relationship to functional brain asymmetry is lost. It disappears also in persons suffering from several mental problems.
Conclusion: If we assume that the functional brain asymmetry helps a person to utilize available sensory information in a better way, e.g. faster and more appropriately then it is obvious why splitting the visual from the oculomotor component of sensorimotor integration and/or mental problems violate the oculomotor control processes connected to functional brain asymmetry. The internal/external attention focussing balance seems to be the main factor affecting the impact of the functional brain asymmetry upon the oculomotor component of the visual perception.

REFERENCES:
Jagla F. et al. Act Nerv Super Rediviva Vol. 54, No. 2, 2012, 85-86

Supported by VEGA grant 2/0173/11

PRELIMINARY RESULTS OF PSYCHO-ACOUSTIC STIMULATION AND EEG POWER'S TRACES MODIFICATIONS.

Gubert Finsterle, Gioacchino Aiello
AVS Research – Research and experimental Development in the field of Psychology

Introduction: A new Transitional Psycho-Acoustic approach via headphone (HE-PAT©, Pat. Pend.) seems to induce similar effects as standard 4 channel PAT© sessions (EU, US, Int. Patented), apparently inducing same neural global cortical synchronization, deleting dysfunctional neural patterns, and inducing a shift from a frontal activity lateralized on the right brain's side to the left side, recognized related with depressive vs euphoric mood. Four channel PAT sessions showed in the last years to be effective in the treatment of psychological diseases and some neurological disorders, via global cortical synchronization, apparently increasing neural communication and deleting dysfunctional neural patterns (headache, tinnitus). With the aim to research new simpler solutions, a different complex gaussian sound has been created that seems to obtain similar, if not better results via a 2 channel audio system (headphone).
Materials and method: A preliminary study has been made with 5 healthy subjects, recording EEG during stimulation (24 min) and acoustic evoked potentials before and after the sound stimulation.
Results: With all the 5 subjects, neural cortical synchronization were evident, imagined to be the cause of deletion of dysfunctional neural patterns via "loop deleting & resetting" the brain system. This seem to be confirmed with two more tested subjects affected by chronic tinnitus, that showed an evident decrease of the intensity in less than one month of stimulus administration (once a day, every day), bringing in both subjects to the total disappearing of the symptom for some hours or days. The study is in progress. Furthermore, with 3 of the 5 healthy subjects in an evident way, with two less evident, another fact emerged.
Conclusion: The stimulus showed the capability to shift frontal bioelectric activity from the right part to the left, this explaining the decrease of depressive symptoms already measured also with 4 ch PAT sessions, in consonance with the findings of Basar (1992), Davidson (1993), Coan & Allen (2003) that described right bioelectric frontal hyperactivity related with depressive symptoms, while left frontal hyperactivity is related with euphoric mood and decision-making initiative.

DYNAMIC NON LINEAR ANALYSIS OF THE EEG TRACES IN SUBJECTS AFFECTED WITH MAJOR DEPRESSION

Gioacchino Aiello, Silvia Merati, Julia Toti, Gregorio Aiello, Iacopo Aiello
Neuropsychophysiology medical practice Bernareggio (MB) Italy

Introduction: The mathematical tools of the non linear dynamics allow us to analyse the EEG layouts with the aim of verifying the presence of organizational princes not visible to the inspection of the layout itself. Thanks to the possibility of calculating the variable tau, the embedding dimension, FNN, the coefficients of Lyapunov it is possible to identify these organizational princes. In this study these parameters to define the organizational princes submitting to the EEG layouts in patients affected with major depression will be evaluated.
Materials and methods were recruited 20 subjects of both sexes of age included in 18 and 65 years not affected with neurological pathologies what could have induced the depressive symptomatology appearance. The depression diagnosis was done according to the criteria of DSM-IV. Every subject EEG were registered during the phase with open eyes and closed eyes. The methodical of recording was the 10-20 system, the basic impedance was< 5 KΩ, the recording was done with the HF 1,6 Hz and LF 50 Hz the filter NOTCH always inserted the amplitude was regulated from time to time based on the signal feature. From open and closed eyes phases were selected two intervals of the duration of ten s without muscular and ocular artifact. Every single derivation was turned into a file ASCII and analysed with the non linear analysis program.
Results: Patients affected with depression present a non linear organization characterized by a remarkable tendency to the chaotic disorganization, since it will have to be placed to comparison with the normal subjects, which objective will be of a future search for comparison.

REFERENCES:
1. Neuropsychophysiology and cognitive rehabilitation Gioacchino Aiello 2003, Centro Scientifico Torino
2. DATAPLORE IEXELLENCE

THE PROFILE OF PERSONALITY BEING A DIAGNOSTIC TOOL IN THE HEADACHE CAN ?

Gioacchino Aiello, Silvia Merati, Julia Toti, Gregorio Aiello, Iacopo Aiello
Neuropsychophysiology medical surgery Bernareggio (MB) Italy

Introduction: Headache is a multifattorial pathology, factors which can induce this symptomatology can be: vascular malformations, tumours, cranial traumas, metabolic diseases. A lot of these components must always been excluded from diagnosis of a primary headache. At this point, the tools used are a lot, among these, the psychometric evalu-

ation is able to define the personality profile. But a method that combines a psychophysiological parameter and a questionnaire has never been used. The latter allows us to define the personality profile. In this work a profile of personality of this kind has been used combining electrodermic activity with a series of questions, divided into four diagnostic classes : anxiety, depression, compulsive obsessive disorders and personality disorders.The total number of questions was 128, 32 for every clinical class, divided into four levels (normal, mild, moderate, serious). Verifying if the subject's answers were congruous or not. The study's objective is to set up a treatment plan that is not only the cognitive behavioural therapy but also the pharmacological therapy.

Materials and methods: 20 subjects of both sex of age included between 18 and 65, who had primary headache, with and without aura, were recruited. All the subjects were evaluated with the personality profile.

Results: The subjects affected by headache, have EDA levels higher than 12 ìS, the personality profile points out a high level of moderate anxiety associated with a depressive state, with a quite rigid personality and reduced social interaction.

Conclusion: based on this study we thought that the subjects affected by headache have a depressing anxious personality profile with high level of EDA activity. These data allows us to plan a treatment suitable for these subjects with a headache frequency reduction.

REFERENCES:
1. Neuropsicologia clinica e riabilitazione cognitive 2003;
2. Attività elettrodermica e m di Alzheimer 1997

FREE RADICALS PRODUCTION AND C-FOS ACTIVITY: NONTHERMAL EFFECTS OF HIGH-FREQUENCY ELECTROMAGNETIC EXPOSURE IN MICE

Jan Barcal, Dana Jelinkova, Pavel Stopka (1), Frantisek Vozeh, Jan Vrba(2)
Charles University Prague, Faculty of Medicine Pilsen, Department of Pathophysiology; (1) Academy of Sciences of the Czech Republic, Institute of Inorganic Chemistry; (2) Czech Technical University in Prague, Faculty of Electrical Engineering, Department of Electromagnetic Field, Czech Republic

Introduction: Measurement of high-frequency electromagnetic field (HF EMF) absorption in experimental animals and evaluation of the influence of long-term HF EMF exposure on free radical production and c-fos activity as neuronal stress marker were depicted in our experiments.

Material and methods: Adult mice from B6CBA strain, both sexes. A special exposure chamber for small laboratory animals operating at 900 MHz with a Specific Absorption Rate (SAR) measurement was constructed with computing the whole-body averaged SAR using the analysis of scattering parameters. For identification of free radicals in tissue samples the spectroscopy of electron paramagnetic resonance (EPR) was used. It is based on the evidence of short-term living radicals by "spin trapping"; free oxygen radicals react with the spin trapp and more stable compound is generated. Evaluation of c-fos activity was performed by classical method (immunohistochemical staining).

Results: Using an unique exposure chamber we are able to measure SAR values. In the „real measurement" the average SAR in mouse was 1.6 – 3 W/kg, thus the non-thermal effects were expected. A clear increase of free radicals production in HF EMF exposed animals in comparison with controls has been described in four organs including brain. C-fos immunohistochemistry as marker of neuronal activity showed also differences between both groups.

Conclusion: These results confirm previous experiments with indirect assessment of free radicals overproduction (made by enzymatic systems depiction) and strongly support the hypothesis about the possible mechanism and/or harmful effect of long-term HF EMF exposure.

This research was supported by the Charles University Research Fund (project number P36) and by the project CZ.1.05/2.1.00/03.0076 from European Regional Development Fund.

PLASMA LEVELS OF HIGH MOBILITY GROUP BOX 1 IN A SAMPLE OF INDIVIDUALS WITH AUTISM

Katarína Babinská, Silvia Lakatošová, Mária Bucová, Vladimíra Ďurmanová, Aleksandra Tomova, Anna Pivovarčiová, Ján Bakoš, Daniela Ostatníková
Comenius University, Faculty of Medicine in Bratislava, Department of Physiology and Department of Immunology, Bratislava, Slovakia

The aetiology of autism is still unknown and it has been suggested that inflammation may be involved in its pathogenesis. High mobility group box 1 (HMGB1) is an intranuclear protein that can be passively released from necrotic cells or actively secreted by activated monocytes and macrophages. It has been shown to function as an agent involved in excitotoxicity and glial activation; however, it appears to play a double–edged role both in neurodegeneration and in early neural development. Plasma levels of HMGB1 were found to correlate with impaired social interaction in subjects with autism. Our pilot study involved 30 subjects with low-functioning autistic disorder and 18 controls (age range 3-22 y, mean age 10,3 ± 6,3 y). Sandwich ELISA method was used for determination of plasma levels of HMGB1. The levels were significantly higher in the group with autism than in the control group (13,3±11,5 ng/mL vs 8,00±3,9 ng/mL, $p<0,05$). Males tended to have higher levels, but the difference was only of marginal significance. It was hypothesised that levels of HMGB1 may be higher also in the siblings of autistic individuals; however this fact was not confirmed. Similarly, no correlation between HMGB1 and severity of digestive symptoms in autism was found.

Results of our pilot study support the scientific evidence indicating a potential involvement of HMGB1 in multiple molecular pathways altered in ASD. A larger survey will be needed to confirm the clinical utility of the HMGB1 measurement.

REFERENCES
Babinská K. et al.A ct Nerv Super Rediviva Vol. 54, No. 2, 2012, p.82

Supported by the grants APVV 0254-11 and APVV 0253-10

VERBAL AND NONVERBAL AUDITORY PROCESSING IN PATIENTS WITH TEMPORAL LOBE EPILEPSY

Katarína Jariabková (1), Marián Špajdel (2, 3), Mariana Pápayová (4), Gabriela Timárová (4)
(1) Institute for Research in Social Communication, Slovak Academy of Sciences, Bratislava; (2) Institute of Normal and Pathological Physiology, Slovak Academy of Sciences, Bratislava; (3) Department of Psychology, Faculty of Arts, University of Trnava, Trnava; (4) 2nd Department of Neurology, University Hospital, Bratislava, Slovakia

Disorders affecting temporal lobe function may impair the processing of auditory stimuli. Auditory processing in adult patients with temporal lobe epilepsy was examined through dichotic listening, a method for investigating auditory laterality and functional hemispheric asymmetry. A free recall dichotic listening paradigm, using two verbal (consonant-vowel syllables and monosyllabic words) and two nonverbal (environmental sounds and tone sequences) tasks, was employed. Seventeen right-handed patients were divided into groups with right (n=9) and left (n=8) temporal epileptic foci. Nine healthy right-handed participants were included in the control group. The results showed significantly lower overall accuracy (all correct recalls of stimuli presented to the right and left ears) in dichotic listening to words in the right-sided as well as in left-sided epileptic focus groups in comparison with control group. As regards lateral asymmetry, in the monosyllabic word task the difference between right ear and left ear performance was greater in the right-sided epileptic focus group in comparison with control group. Also, a greater difference in favour of right ear performance compared to left ear performance in the consonant-vowel syllables task was found in the group of patients with right-sided epileptic focus than in the group with left-sided epileptic focus. The results suggest that the processing of simultaneously presented different verbal auditory stimuli might be influenced by temporal lobe dysfunction.

This study was supported by VEGA grant No. 1/0829/13

MOLECULAR GENETIC DISSECTION OF HIGHER BRAIN FUNCTIONS

Konstantin Anokhin
Department of Neuroscience, National Research Center "Kurchatov Insititute", Moscow, Russia

Consciousness and memory are tightly linked in neural mechanisms of subjective experience. We have previously shown that memory consolidation involves neuronal expression of immediate-early genes (IEGs) (Maleeva et at., 1989) and that it can be used to map memory assemblies in the brain (Anokhin, 1989). Behavioral induction of IEGs is triggered by subjective novelty of experience (Anokhin & Sudakov, 1993) and occurs during establishment of single-trial episodic-like memories (Anokhin et al., 1991; Ryabinin & Anokhin, 1993). At the level of neuronal activity it is associated with experience-dependent specialization of neuronal responses (Svarnik et al., 2005). In extension of this line of research I propose that imaging of behaviorally induced expression of IEGs can be also used to map traces for the episodes of conscious experience in the nervous system in experimental animals. With this purpose we developed techniques to visualize activation of IEGs during behavior by employing GFP transgenic reporter mice (Anokhin et al., 2012), methods for optical clearing of a whole mouse brain after behavioral episodes of induction of IEGs (Efimova & Anokhin, 2009) and whole brain cell-resolution optical fluorescence tomography to image experience-driven distributed functional systems tagged by IEGs expression (Morozov et al., 2010). I further suggest that linking IEGs promoters to optogenetic tools will allow to move from correlative to causal analysis of neural bases of subjective conscious experience.

ERP MARKERS OF DECISION MAKING STAGE IN SACCADE PROGRAMMING

Maria Slavutskaya, Victoria Moiseeva, Alexey Kotenev, Stanislav Karelin, Valeriy Shulgovskiy
Lomonosov Moscow State University, Biological faculty, Moscow, RUSSIA

The "double step" scheme of visual stimulation has been used to investigate the cortical mechanisms of attention and decision making in human.

The slowing of sensory-motor integration as inhibitory effect of involuntary automatic shift of attention to the second stimulus in the early stages of visual perception was shown. Analysis of saccade latency and ERP components showed that the pattern of saccade response (two or one saccades) depends on the completeness of decision making stages at programming of the first saccade before the moment of second stimulus switch on. Comparison of the amplitude and topography of ERP component P100 in the case of double saccade response and P200 in the case of a single saccade to the second stimulus with their premotor analogue P -100, allow us to consider these potentials as a markers of decision making stage in saccade programming.

The influence of the motor readiness level and directed attention orientation in the period of eye fixation and stimuli expectation to the "pattern" of saccadic response, regardless of visual targets location, was reflected in the amplitude and topography of slow negative components such as CNV.

The obtained data suggest that brain basis of attention and decision-making interaction may serve the frontal - parietal network of saccade control and related with it frontal–medial-thalamic and thalamo–medial-parietal systems of selective attention with predominance of «top-down» mechanisms.

The study was supported by the RFBR (projects 11- 06 – 00306 and 12-04-00719).

THE NON-TARGET STIMULI OF THE ODDBALL TASK ACTIVATE LOCI IN THE PRIMARY MOTOR CORTEX: A CASE STUDY OF A PATIENT WITH DEPTH ELECTRODES.

Miloslav Kukleta(1), Alena Damborska(1,2), Milan Brazdil (1,3), Robert. Roman (1,2), Ivan Rektor (1,3)
(1) Central European Institute of Technology, Masaryk University, Brno; (2) Physiological Institute, Medical faculty, Masaryk University, Brno; (3) Neurological Clinic, Medical faculty, Masaryk University, Brno, Czech Republic

The adaptive interactions with the outer world necessitate an effective connection between cognitive and executive functions. The current study presents one example of such connection. It was obtained during the investigation of late components of the intracerebrally recorded EEG responses evoked by the non-target stimuli of the oddball task. The data analyzed yielded an epileptic patient with chronic depth multilead electrodes implanted for diagnostic reasons into the gyrus cinguli anterior, the dorsolateral prefrontal cortex, the supplementary motor area, the primary motor cortex (M1), and the primary sensory cortex. The aim of the study was to ascertain whether the non-target variant of the task evoked any EEG response in the M1. The main result of the study was the finding of a response to non-target stimuli with a pronounced late component in three different loci of the M1 (the response recorded by three different electrodes; minimal distance between recording contacts 12 mm). The late component was almost perfectly synchronized in all three precentral loci and in one dorsolateral prefrontal locus. The mean amplitude of the component was 31.7 ± 2.5 ìV, the latency of its peak was 730 msec (the mean reaction time in the target trials was 474 msec). The finding is considered as direct evidence of a functional connection between the cognitive network, which underlay the accomplishment of the instructed experimental task and the particular locus in the M1, i.e. in the executive structure par excellence.

Supported by the project CEITEC – Central European Institute of Technology (CZ.1.05/1.1.00/02.0068) from European Regional Development Fund.

COGNITIVE DYSFUNCTION AND QUALITY OF LIFE IN MULTIPLE SCLEROSIS DISEASE.

Nelide Romeo, Giuseppe Tagarelli, Patrizia Spadafora, Maria Liguori
Istituto di Scienze Neurologiche- Mangone-(Cs)- Italy-Consiglio Nazionale delle Ricerche

Multiple Sclerosis (MS) is a chronic, often disabling disease of the central nervous system. The initial symptoms of MS are most often difficulty walking; abnormal sensations such as numbness and needless; and pain and loss of vision due to optic neuritis. Less common initial symptoms may include tremor, lack of coordination; slurred speech; sudden onset of paralysis, similar to a stroke; a decline in cognitive function.

We have specifically considered the impact of cognitive dysfunction on a patient's every-day life. There is now abundant evidence to suggest that cognitive dysfunction has a significant impact on the MS patient's quality of life above and beyond the physical symptoms of the disease.

In 60 patients with MS and in a control group matched for age, sex and education we studied the presence of cognitive impairment. Patients and controls were from same ethnic and socio-economic backgrounds. All patients and controls were evaluated with the Mini Mental State Examination (MMSE). It separates patients cognitive disturbance from those without such disturbance. The MMSE is divided into two sections, the first of which requires only verbal responses and covers orientation, memory and attention. The second part assesses the ability to name, follow written and verbal commands. Write a sentence spontaneously and copy complex polygon. The aim of this study was to demonstrate that in addition to the motor disabilities in MS patients a cognitive impairment can be present. The result of our study showed that 11 patients (18%) had a decline in cognitive function.

CNS EFFECTS OF ANTIHYPERTENSIVE DRUGS ON HYPERTENSION AND MOTOR ACTIVITY.

Olga Pechanova
Institute of Normal and Pathological Physiology and Centre of Excellence for Nitric Oxide Research, Slovak Academy of Sciences, Bratislava, Slovak Republic

Since lowering of blood pressure by inhibition of the renin-angiotensin-aldosterone system within peripheral but also central nervous system was documented, it seems that brain angiotensin II may play a key role in the contribution of CNS to hypertension. The aim of our study was to analyze central effects of angiotensin converting enzyme (ACE) inhibitors, captopril and enalapril on the development of spontaneous hypertension and locomotor activity. Six-week-old SHR were divided into three groups: control and groups receiving captopril or enalapril in the dose of 50 mg/kg/day for 6 weeks. At the end of experiment, systolic blood pressure in both captopril and enalapril groups (121±5 and 141±6 mmHg, respectively) was significantly lower than that in the controls (186±7 mmHg). Blood pressure of captopril group was even lower than that of enalapril group. Horizontal and vertical motor activities were markedly reduced in both groups of ACE inhibitors. Captopril and enalapril increased significantly brain NO synthase activity. Moreover, captopril increased the level of nitrosothiols and antioxidant activity and decreased the level of superoxides. Thus, captopril, beside inhibition of ACE, increased NO synthase activity and nitrosothiols with simultaneous decrease of oxidative stress in the brain. This together may contribute to better prevention of blood pressure increase in SHR. Moreover, effects of single doses of captopril on the electroencephalogram (EEG) and on body sway were studied in twenty healthy male subjects. There were no changes in the EEG with captopril, however a significant reduction in lower frequencies of body sway occurred which was documented

also in the enalapril study. These observations suggest that both ACE inhibitors are free of central effects such as sedation and reduced body sway could reflect improved integration of central and peripheral control of posture.

REFERENCES
Pechanova O. et al. Act Nerv Super Rediviva, Vol. 54, No. 2, 2012, p.89

Supported by grants APVV-0538-07, APVV-0742-10 and VEGA: 2/0190/11, 2/0178/09.

EFFICACY OF A RELAXATION RESPONSE SKILLS TRAINING AS COMPLEMENTARY TREATMENT OF ANXIETY AND DEPRESSION SYMPTOMS IN PSYCHIATRIC OUTPATIENTS

Roberto Truzoli, Maria Cecilia Rovetta, Caterina Viganò, Paola Marianna Marinaccio, Anna Tirelli, Federica Bottarini, Gabriella Ba, Phil Reed (1)
Università degli Studi di Milano, Italy; (1) Swansea University, UK

Objective of this study was to evaluate the efficacy of a Relaxation Response Skills Training (RRST) for psychiatric outpatients with Anxiety and Mood Disorders only partially responsive to pharmacotherapy.
Material & Methods: patients were measured for Overall psychopathological, Depression, and Anxiety symptoms before and after an 8 weekly session Relaxation Response Skills Training in group format, while continuing their drug management treatment. The State-Trait Anxiety Inventory (STAI Y1-Y2), the Beck Depression Inventory (BDI) and the Symptom Checklist-90-Revised (SCL-90-R) were used to measure outcome at 0 and 8 weeks of the program. Participants: 33 patients (17 male, 13 female; mean age: 50.59 ± 11.62, range = 24-73).
Results showed significant reductions in Overall symptoms ($t32 = 5.40$, $p < 0.001$, effect size $d = 0.94$), as well as Depression ($t32 = 2.96$, $p < .01$, effect size $d = .52$) and Anxiety symptoms ($t32 = 2.43$, $p < 0.05$, effect size $d = 0.36$). Patients with initially higher scores of Depression showed greater improvement in Overall symptoms ($t31 = 2.10$, $p < 0.05$); and patients with initially higher scores of Overall symptoms showed greater improvement in Anxiety over the course of the treatment ($t31 = 2.35$, $p < 0.05$).
Conclusions: These results suggest that, even within the frame of an observational study, this short-term Relaxation Training offered a cost-effective tool as complementary intervention to augment management for the most common psychiatric disorders claimed in public health settings, in case of patients partially responsive to pharmacotherapy.

IS IT REASONABLE TO HAVE TWO DIFFERENT ONTOGENETIC MEMORY MECHANISMS IN THE LIVING SYSTEM?

Serkova V.V., Eremina L.V., Nikolskaya K.A.
Biological faculty of the Moscow state University by Ì.Â. Lomonosov, Russia

Nowadays the imprinting is considered as specific mechanism of fixation of information to the long-term memory in early ontogenesis. This process in adult state is possible only after the preliminary analysis and selection of information. How does it justified biologically to create two different memory mechanisms in the ontogeny? The aim was to obtain experimental evidence of possibility of imprinting-type fixation in adult state. This problem was investigated in the original multialternative maze having direct and bypass pathways between feeders. Initially mice were placed in a small maze, where the direct pathway was closed during one trial (3 min). Immediately after that the barriers was removed and the mice found themselves in a maze of full volume. Studies have shown that a short-time exposition of spatial information in maze of small volume was negatively affected on the cognitive process. Short-term exposure of spatial information not only was fixed but also included in behavioural structure. The imprinted-mice tried to combine an instinctive (direct pathway) and acquired spatial preferences (bypass pathway) within a single decision. Negative psycho-emotional reactions indicated that a cognitive dissonance appeared. The data obtained revealed the ability to imprint information not only in the early ontogeny, but also in adulthood. It is suggested that memory mechanism is universal on all stage of the ontogenetic development.

GENE NETWORKS INVOLVED IN PAVLOVIAN CONDITIONING: ANALYSIS IN SUBREGIONS OF BRAIN DURING EARLY STEPS OF REWARD MEMORY

M. Simonneau, S. Kelai, G. Maussion, A.M. Lepagnol-Bestel, E.Chortis, S. Imbaud, F. Noble, J.M. Moalic
INSERM U894 Centre Psychiatrie & Neurosciences, 2 ter rue d'Alesia, 75014 Paris France

We analyzed gene networks using Conditioned Place Preference (CPP) that is a form of Pavlovian conditioning used to measure a preference for a context due to the contiguous association between the context and a drug stimulus. We hypothesized that human susceptibility genes can be identified on the basis of conserved molecular mechanisms in rodent models. We used a short-term cocaine-dependent conditioned place preference (CPP) to identify genetic hallmarks of early steps of reward memory in brain subregions involved in basal ganglia indirect pathway including accumbens nucleus (Acc), globus pallidus (GP) and subthalamic nucleus (STN). Using genome-wide microarray analysis, laser-assisted microdissection and CPP as a quantitative trait, we found that mGluR5 pathway is transcriptionally deregulated in Acc and GP of cocaine-treated animals. Grin3a that encodes a NMDA receptor subunit involved in Ca++ permeability is deregulated in Acc. We also found that mGluR5 and Grin3a expression deregulation is sufficient to induce changes in synaptic plasticity-related genes. Furthermore, Orexin/Hcrt transcript level is decreased in STN, a region known to be involved in discriminating addictive drugs and natural rewards. Altogether, these results suggest

that a combination of and mGluR5 pathway in Acc and GP orexin system in STN can be needed to generate an incentive memory contrasted between addictive drugs and natural rewards. Such pathways may involve clusters of genes that are potentially involved in molecular basis of Pavlovian conditioning.

PHYSIOLOGICAL MECHANISMS PREVENTING RECOVERY OF CONSCIOUSNESS IN VEGETATIVE STATE AND WAYS TO INFLUENCE ON THEM

Svyatoslav Medvedev, Yulia Vaynshenker, Alexander Korotkov, Irina Ivchenko, Galina Kataeva
N.P.Bechtereva Institute of the Human Brain of the Russian Academy of Sciences. St.Petersburg, Russia

Retrospective analysis of clinical and radiological (routine MRI and FDG-PET) data patients in vegetative state (VS) obtained during the course of their treatment showed that more prominent recover of consciousness and communicative activity was observed when functional changes in the brain (glucose hypometabolism) prevail structural pathology. Patients with corresponding functional and structural changes had minimum or lack of recovery. This phenomena might be explained if consider VS as a stable pathological state (SPS), formed under the influence of the primary damaging factors (trauma, hypoxia, etc.) and then "consolidated" by the secondary factors (hypertension-hydrocephalus, low-manifest infectious-inflammatory processes etc.). Correction of factors stabilizing the SPS contributes to its destabilization and improves consciousness.

We found that influence at peripheral level unexpectedly resulted in recovery of higher brain functions: correction of generalized spastic syndrome resulted in improvement of level of consciousness and communicative activity while recurrent increase of spasticity in impairment of higher brain functions. Taking into account the polyfunctionality of neurons we conclude that possible underlying physiological mechanism is that blocking of permanent neuromuscular transmission in spastic muscles reduces the abnormal afferent and efferent hyperactivity of motor and sensory neuronal circuits and thus liberates the functional neuronal brain networks for other activities including maintaining the higher functions.

CEREBRAL ASYMMETRY FOR LANGUAGE: CHANGING PARADIGMS

Tatiana V. Chernigovskaya
St. Petersburg State University, Russia

It's over 150 years since Broca and Wernicke started the story of cerebral specialization for language and some other cognitive functions. It's about the same time since the Paris prohibition of scientific discussions on language origins. We currently know a lot about versatile nature of language localization as seen from brain functional imaging studies in cross-linguistic perspective. We can also evaluate genetic data on language competence - both in the context of ontogeny and ancient DNA analysis. Neurolinguistic debates on modular vs. parallel processing approaches now get experimental evidence of neuronal nets based on probabilities (type and token) shown on different language families, that gives the possibility to discuss universal features of language as well as its origins based in cerebral specialization for linguistic levels.

CAN WISDOM AND IST DIMENSIONS AFFECT MENTAL HEALTH?

Veronika Rohárikova
Institute of Normal and Pathological Physiology, Slovak Academy of Sciences, Laboratory of Cognitive Neuroscience, Bratislava, Slovakia

Background: As a highly appreciated positive personality trait, wisdom has been a long-term focus of the humanities, especially theology and philosophy. Interestingly, nowadays, the significance of wisdom is again recognized not only by psychology, but also by psychiatry as well. It seems that it is the beginning of acknowledgement of the favourable influence of wisdom on mental health. Underlying mechanisms and the mode of interaction between wisdom and health are not known and require therefore further study; an interdisciplinary approach would be the best.
Objectives: In our contribution we focused on the relation of wisdom, its dimensions especially, to psychological resilience and psychopathological symptoms.
Methods: 46 adult volunteers: 20 healthy controls and 26 psychiatric patients with psychosomatic symptoms served as subjects. Wisdom was quantified by means of scores in Three-Dimensional Wisdom Scale (3D-WS), Self-Assessed Wisdom Scale (SAWS) and Adult Self-Transcendence Inventory (ASTI), psychological resilience (hardiness) by the Personal Views Survey (PVS)) and psychopathological symptoms by the Symptom Checklist-90 (SCL-90).
Results: Two of selected wisdom dimensions have proved their positive predictive value towards psychological resilience and negative predictive value towards psychopathological symptoms.
Conclusion: Our results suggest that at least specific wisdom dimensions, reflective and cognitive, can have modulatory effect on mental health and may be useful for desired consecutive goals.

REFERENCES
Rohárikova V. et al. Act Nerv Super Rediviva, Vol. 55, No. 3, 2013, 95–102

Supported by VEGA grant 2/0173/11

SOME FEATURES OF SACCADE PROGRAMMING IN THE EXPERIMENTAL SCHEME WITH DISTRACTORS AT STIMULATION OF THE LEADING AND UNLEADING EYE

Victoria Moiseeva, Maria Slavutskaya, Valeriy Shulgovskiy, Natalia Fonsova
Lomonosov Moscow State University, Biological faculty, Moscow, Russia

For successful goal-directed behaviour, it's crucial to attend relevant stimuli in the visual field while ignoring distractor elements. The oculomotor system is a good model for the study of this competition between different elements. The goal of this research was to analyse spatial-temporal parameters of saccades and presaccadic EEG-potentials at the simultaneous presentation of the target and distracting stimuli to the leading and unleading eye. The complex of the positive and negative potentials was revealed in the saccade latent period. Latency of all components was shorter upon presentation of stimuli to the left, unleading eye that may indicate the earlier saccade preparation. At the same time LP saccades were longer in this conditions ($p<0.05$). The results show that early potentials N1 and P1 were higer in amplitude and dominated in the contralateral parietal-occipital areas. It can be reflection of visual sensory processing. The amplitude of the later negative potential N2 at the stimulation of the right eye increased in the case when target stimulus was at the same location than at the previous realisation. It's possible that N2 component is connected with processes of preliminary extracting of motor program from memory together with attention processes. N2 amplitude was higher when the distance between target and distracting stimuli was 15 degrees in comparison with the minimal distance 5 degrees. It's corresponded with LP data. The findings show an active role of attention and decision-making processes in saccade programing.

The work was executed at the support of RFBR (the projects [1] 11-06-00306 and [1] 12-04-00719)

GAMMA-ACTIVITY IN THE FRONTAL LOBE; REPRESENT SELF-CONSCIOUSNESS AND SUSTAINED ATTENTION OF MUSICIANS AND TRAUMATIC BRAIN INJURED PATIENTS

Yuko Urakami (1), Koki Kawamura (2,3), Yoshikazu Washizawa (3,4, Andrzej Cichocki (3)
(1) Hospital and Research Institute, National Rehabilitation Center for Persons with Disabilities, Tokorozawa, Japan

We have shown that gamma-activity during music perception especially in the prefrontal cortex reflect the processing of music in an integrated self-consciousness and sustained attention. Traumatic brain injured patients (TBI) frequently fail to maintain consistent goal-directed behaviour due to their impairments of sustained attention. This study aimed to clarify the role of gamma activity in normal subjects (including musicians) and in TBI during music perception. Participants were ten normal subjects; five musicians (age: 21~25 years) and five age matched non-musicians and ten patients with TBI (diffuse axonal injury and frontal contusion). Participants listened to the music from ear-phone with eyes-closed sitting in a dim experimental room. We collected spontaneous brain activity in three conditions; resting state with eyes-closed (for 1 minute), music-listening and imaging the music without stimulation, by recording with a 60-ch EEG. Music 1 was Anton Dvorak "From the New World Symphony" and Music 2 was Mozart Requiem K. 626.Significant difference was observed during music-listening, compared with resting state, RMS of gamma activity especially in the prefrontal cortex between musicians, non-musicians and TBI patients. During imaging the music, the musicians' gamma activity was significantly decreased in almost the entire parts, whereas the non musicians' gamma activity increased in the frontal lobe. Gamma-activity of TBI did not significantly change in music-listening.Not significant decrease of gamma-activity in frontal area during music perception in TBI compared with normal subjects suggests that they failed to integrate the music due to sustained attention impairments.

CHANGES OF FECAL MICROFLORA IN CHILDREN WITH AUTISM IN SLOVAKIA

Aleksandra Tomova, Veronika Husarova, Silvia Lakatosova, Katarina Babinska, Daniela Ostatnikova
Institute of Physiology, Faculty of Medicine, Comenius University, Bratislava, Slovakia

Autism spectrum disorders (ASD) are pervasive developmental disorders, presented as social abnormalities, communication impairments, stereotyped repetitive behaviors and are very often accompanied by gastrointestinal (GI) disorders.The aim of this study was to establish the change of fecal microbiota in children with autism in Slovakia and its possible link to the development of GI disorders and other autism manifestations. The participants of our study demonstrated the strong positive correlation of the autism severity (Autism Diagnostic Interview - ADI) with the severity of GI dysfunction. The fecal microflora of children with autism, their siblings and healthy children were investigated by quantitative real-time PCR and it showed a dysbacteriosis represented by a significant decrease of Bacteroidetes/Firmicutes ratio and elevation of *Lactobacillus spp*. abundance in children with autism. It also showed the trend for an elevated *Desulfovibrio spp*. incidence in children with autism reaffirmed by a very strong association of Desulfovibrio spp. abundance with the severity of autism in the ADI restricted and repetitive behavior subscale score. The probiotic implementation normalized the Bacteroidetes/Firmicutes ratio, *Desulfovibrio spp*. and improved *Bifidobacterium spp*. abundance in feces of autistic children. This pilot study demonstrates that gut microbiota may be involved in autism development, possibly as a part of the "gut-brain" axis, and it is a starting point for further inter-

disciplinary approach of investigation of mechanism of autism pathogenesis and combined treatment of children with autism.

Supported by grant APVV0254-11

EFFECTIVENESS OF GROUP COGNITIVE-BEHAVIORAL THERAPY FOR DEPRESSED IRANIAN ADULTS IN AUSTRIA

Atefeh Fathi, Walter Renner, Barbara Juen
University of Innsbruck, Department of psychology, Innsbruck, Austria

Although little is acknowledged about the composed efficacy of Cognitive-Behavioral Therapy and Group Therapy, many studies recommended that Group Cognitive-Behavioral Therapy can be recognized as a well-rounded remedy for depression. The purpose of this study was to evaluate the effectiveness of Group Cognitive-Behavioral Therapy among Iranian adults with Major Depressive Disorder in Austria. Twenty-three Iranian women and men with an average, 40.4 years old that met DSM-IV criteria for MDD received the interventions. Nine of them were randomized to the GCBT, six to the CBT, and eight to the Waiting-List control condition. All three types of interventions comprised 17 sessions, lasting 60 minutes for CBT and 120 minutes for GCBT. Depressive symptoms, intensity of depression and the types and severity of Automatic Thoughts were assessed by the Brief Symptoms Inventory, the Beck Depression Inventory and the Automatic Thoughts Questionnaire respectively. Qualitative analysis was based on the clinical interviews and the summaries of therapy sessions. Considering the limited sample size, non-parametric statistical methods were applied. The results showed a significant reduction in depression symptoms in GCBT group (BDI: Z= 2.12, p=.034, BSI: Z = 1.97, p=.049, ATQ: Z = 2.20, p=.028). The same results were found for the CBT group as well (BDI: Z= 2.06, p=.039, BSI: = 2.03, p=.042, ATQ: Z= 2.04, p=.041). No significant group differences were observed. The findings suggest that GCBT for Iranian adults with MDD may be as efficacious as CBT and its effectiveness can be influenced by culture.

PSYCHOPHYSIOLOGY OF JOB RISK SENSITIVITY

Andrea Crocetti, Gioacchino Aiello
Scuola ASIPSE srl, Milano, Italy

In this study we assessed subjective general risk sensitivity and job risk sensitivity in two groups (n. 20 subjects per group) attending a school in the field of construction industry: a) students engaged in three months education training on risk prevention in working setting; b) workers also attending to a similar training (duration: one month and a half). Assessment has been done using a questionnaire and psychophysiological stress profile. These measures were administered before and after a term of three months, while subjects attended to the training. Results, obtained through statistical analysis of questionnaire's answers before and after training, pointed out that workers have developed during the experience good risk sensitivity ($p < 0.01$). Students increased their attention to general risk behaviors ($p = 0.01$), but not about risks in job environment. The inter group comparison showed differences in general risk perception.

Psychophysiological stress profile revealed during the rest period a lower arousal condition in the workers-group, more useful to cope with the environmental stimulus, since students group was more activated; this difference were maintained during stress and recovery period. Stress reactivity was improved in students by the training experienced in those three months: compared to pre training values, post psychophysiological measure was more suitable (lower), especially sEMG measure ($p < 0.01$).

We conclude that workers have good risk sensitivity, related to an arousal fit for cope with stimuli. Even if after the training workers were again in a better psychophysiological condition, students developed an enanchement after the training.

STUDY OF INTER-TRIAL BEHAVIORAL INHIBITION IN RATS – THE NOVEL MODEL FOR COGNITIVE IMPULSIVITY

Daniil Berezhnoy, Anatoliy Inozemtsev
Moscow State University, Department of Higher Nervous Activity, Moscow, Russia

Cognitive impulsivity attracts great attention as being a reverse side of self-control and as a main symptom of such pathological states as ADHD, OCD, different manias and addictive disorders. The main objective of this study was to develop an adequate behavioral measure for simple testing of inhibitory control during operant behavior learning. We used the original behavioral model in an automated shuttle-box chamber. The experimental apparatus was modified to work with positive food reinforcement by adding a food-dispenser in both halves of the chamber. Experimental animals (10 Wistar rats) could obtain food pellet by reaching the dispenser in an opposite half of the chamber during the conditional stimulus action. Inter-trial responses (moving between the halves, dispenser pokes) led to no reinforcement. We used the fixed-interval learning schedule. The conditional light stimulus lasted 20s and inter-trial interval lasted 30s. The analysis of experimental results shows two distinct phases in the learning process: (1) the establishment of the low-latency conditioned reaction and (2) elimination of the excess reactions - inter-trial responses. The second process showed big variability between experimental animals (from 0 to 86% decrement) and caused the stress-like state in some animals. This process, treated in this study as a "behavioral optimization", could reflect the ability of animals for the behavioral inhibition and self-control. The quantitative analysis of inhibition process, performed via the rate of inter-trial reactions and their latent period allows

to classify the animals on the basis of their cognitive control/ impulsivity.

SEXUALITY: AN ISSUE NOT YET ASSESSED IN ONCOLOGY

Malihe Shams (1), Daniela Maretto (1), Marta Ghisi, Gioia Bottesi, Ezio Sanavio
(1) IRRCS - Veneto Oncological Institute, Padua;
Department of General Psychology, University of Padua, Padua, Italy

It is difficult for a couple to share problems related to their private sexuality and intimacy, even when speaking to a health care worker.

In the realm of oncology, this issue tends to be overlooked, mainly due to the fact, that in the case of such patients, sexuality should be a secondary issue (1). The scientific literature confirms the lack of sexual assessment in oncological patients in Italy (2). The present research project, for this reason, will assess any challenges relating to sexuality in oncology. The sample examined, will consist of male and female patients, presenting a diagnosis for neoplasia involving the sex organs or breast, in case of women. This group will be matched, for age, gender and educational level, with two other control groups, composed of healthy people and patients presenting different types of neoplasia. It will be administered a battery of questionnaires: Brief Index of Sexual Functioning-Male/Female (BISF-M*/F**)(3), composed of three scales, sexual interest/desire, sexual activity and sexual satisfaction; BIS (4) to manage Body Image; COPE-NVI (5) to value Coping skills; BAI (6) to detect anxiety symptoms and to measure depressive symptoms BDI-II (7). In order to detect any differences between the three groups, it will be carried out a one way analysis of variance. In particular, we attend to observe more difficulties about sexuality in the sample group of patients with neoplasia involving the sex organs or breast.

THE USE OF METAPHOR IN THE DISCOURSE ON CANCER

Malihe Shams, Beatrice Bellini
I.R.C.C.S., Veneto Oncological Institute, Padua, Italy

Metaphors used in doctor-patient communication are particularly powerful in discourses on cancer, where language is the key to access the experiences of the disease causing effects on "identity".

The patient understands the concept of disease as part of his/her individual experience, but he/she understands the medical conception of disease in a scientific framework, which is disconnected from the real significance of the situation. A metaphor can bridge the gap between personal experience of the disease and the scientific world 1. The metaphors with which to cancer is now referred are mainly two: the "war" and the "journey"2. In these metaphors, cancer is seen as the enemy to defeat or an event that may change the direction of lives 3. These reductionist metaphors, however, have their limits; they may evoke feelings of helplessness, dehumanize the patient and divert attention from the how one experiences cancer and from the coherence of the characteristic events of the disease. To be aware that the use of the metaphor means being able to adapt on the basis of various characteristics of the patients, whereas the use of a common language between doctor and patient, can be seen as a resource for more effective communication. Asking patients whether metaphors are appropriate is important since no metaphoric concept is inherently good or bad but each is contextual 4. The narratives then become one of the most powerful tools we have to negotiate and establish a shared social world.

RAT AUDIOGENIC FIT INTENSITY AND POSTICTAL CATALEPTIC STATE DEVELOPMENT

Irina Fedotova, Natalia Surina, Zoya Kostina, Inga Poletaeva
Biology Department, Moscow State University, Russia

Rats of Krushinsky-Molodkina (KM) audiogenic prone strain and rats of other genotypes were used which differed in audiogenic seizure proneness. The intensity of audiogenic seizures, evaluated in these animals using traditional arbitrary units, acquired in the laboratory, correlated with the intensity and duration of post-ictal "audiogenic" catalepsy which was visualized by means of inducing abnormal posture in an animal and it's ability to maintain this posture. Rats of KM strain demonstrated the capacity to develop the pinch-induced refractory catalepsy which previously was demonstrated in mice only.

In KM and Wistar rats and rats of the new strain "0", selected for the absence of audiogenic seizures, the numbers of striatal D1, D2 and NMDA binding sites differed. The alcohol consumption (in the choice paradigm) was also different between KM and strain "0" rats.

Corazole injection (dose 40 mg/kg, which is subconvulsive according to literature) to rats of "0" substrain did not induce seizures, but promoted the appearance of the typical AE fit in response to sound, which were not characteristic for these rats before injection. The same corazole dosage proved to be convulsive for the most animals tested from KM strain, their AE fits were also shown to be of abnormal pattern. Corazole and audiogenic seizures in KM rats were accompanied by the development of cataleptic state or (alternatively) or muscle atonia, which evidence for the brain dopaminergic system to be involved in the process. The current genetic model of seizure proneness (KM strain + "0" substrain), is the valuable tool for experimental epileptology, which permit to induce seizures by non-invasive way and reiterate them reliably, exploring the effects of different factors on epileptogenicity.

The study was supported by RFBR grant N 12-04-00360

DETERMINANTS OF PASSIVE SMOKING IN THE SAMPLE OF SLOVAK WOMEN

Lubica Argalášová, Ludmila Ševčíková, Jana Jurkovičová, Zuzana Štefániková, Jana Babjaková, Andrea Kánovicsová, Michael Weitzman (1)
Institute of Hygiene, Faculty of Medicine, Comenius University, Bratislava, Slovakia; (1) New York University, New York, USA

Environmental Tobacco Smoke is one of the greatest and the most frequent environmental toxic exposures presenting a high risk to children and to their mothers.

The survey has been designed to evaluate environmental, behavioral, and psychosocial factors in the lives of mothers living in the common household with smokers and to assess their physical and mental health. The data were obtained from women being seen for follow-up at the OB/Gyn Department of the Faculty Hospital and Clinic and at Private gynecological out-patient department in Bratislava. The Medical Outcomes Short Form-12 (SF-12) was used to quantify the mental and physical health of mothers. Bivariate and multivariate statistical analyses (multiple linear, logistic regression) were performed.

From the total sample of 617 women, 36.9% (219) were pregnant. There were 325 mothers with at least one child under 18 years of age involved in the study.

The living with smoker reported 24.2% of non-smoking non-pregnant women and 30.4% of the pregnant women. Non-smoking women living with a smoker are older ($p = 0.0414$), live in the rural areas ($p= 0.0429$), have fewer years of education ($p=0.007$), lower personal health perception ($p = 0.0471$), and lower PCS score (46 ± 8.7) ($p = 0.0139$). Pregnant women living with a smoker have fewer years of education ($p= 0.0003$) and lower MCS scores (49 ± 10.1) ($p=0.0532$). Our results show that living with a smoker is independently associated with worse physical and mental health of Slovak mothers, which is an important argument for intervention in families.

PSYCHOLOGICAL COUNSELLING IN ONCOLOGY FOR DIAGNOSTIC SCREENING

Malihe Shams (1), Maria Concetta Carlucci (1), Oscar Bortolami (2), Ezio Sanavio (3)
(1) Unit of Psycho-Oncology, Istituto Oncologico Veneto IOV-IRCCS, Padova; (2) Research Support Unit and Biostatistics, Verona University Hospital, Verona; (3) Department of General Psychology, University of Padova, Padova, Italy.

Introduction: Anxiety and worries can lead people to avoid screening tests, with high risks for health. Diagnostic tests have a deep emotional impact on oncology patients. A single arm, pilot study was organized to evaluate the feasibility and efficacy of psychological counselling for cancer patients who demonstrated anxiety for diagnostic tests. The hypothesis was that taking part in Psychoeducative Training could offer a new modality to reduce anxiety, before and during tests, and also the possibility to reinforce coping strategies.
Methods: The Psychoeducative Training follows the cognitive-behavioural model. The Training was organized in 6 weekly meetings lasting two hours. Each group was composed of 6 participants. In the first part of every meeting, theoretical aspects about stress and anxiety were explained, while in the second part some relaxation techniques were taught. Anxiety was measured with Beck Anxiety Inventory1, and the coping style with Coping Orientation to Problems Experienced-New Italian Version2. For the study, 43 people were recruited.
Results: Only 4 patients did not conclude the training (drop out 9.3%; confidence interval at 95%: 2.6%-22.1%). The feasibility of the study was confirmed. The outcomes of BAI highlighted an anxiety decrease equal to 10 points in median. The secondary outcome for Coping underlined a change in Social Support.
Conclusion: This study provided preliminary evidence of a decrease in anxiety of patients attending the training sessions. We'll perform a randomized study to confront data between two groups, a control and an experimental group, to have a confirmation of the preliminary evidence.

LANGUAGE BREAKDOWN AS A RESULT OF LIMITED PROCESSING RESOURCES

Veronika Prokopenya
St.Petersburg State University, Laboratory for Cognitive Studies, St.Petersburg, Russia

We investigated the nature of interpretation of referential dependences by patients with agrammatic Broca's aphasia, whose general speech comprehension appears to be normal. However, previous studies demonstrated that such patients have problems interpreting passive and distant constructions, sentences involving word movement and double embedding, and personal pronouns. The question is, whether the problems are caused by language loss in Broca's aphasia, or by a lack of processing resources and a limitation in the working memory? We tested the interpretation of pronouns in seven types of constructions, where the reference assignment depends on both grammatical and pragmatic factors. Six agrammatic speakers, thirty schizophrenic patients and twenty six adult non-brain-damaged subjects took part in the experiment. The results demonstrated that grammatical knowledge is preserved in Broca's aphasia, and the patients are able to encode the pronominal referential dependency in simple transitive sentences, but a reduced capacity to use syntactic information and a limited working memory volume often don't allow them to establish the pronominal reference, that leads to a performance at chance level. Furthermore, the very similar results for all seven conditions were shown by a group of five schizophrenic patients without any specific language breakdown. This lets us claim that patients' problems with the interpretation of pronouns are not evoked by the lack of grammatical knowledge, but are due to the limited processing resources.