E-Poster Viewing - 7–9 April: Psychophysiology

E-PV0737

Bridging neurophysiology and clinical neuropsychology through the RDOC

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Background and aims.– Neuropsychological practices have been focused on promoting a deeper understanding of cognitive functioning and its relation to behavior and everyday functioning through a greater sophistication of the neuropsychological assessment process. A recent review of these advances has stated the importance of early detection of brain changes as a way of improving knowledge on brain-behavior relationships.
Our goal was to explore the advances in neuropsychological assessment under the aegis of the Research Domain Criteria (RDoC) framework, focusing on the use of neuropsychological tasks with EEG to extract Event Related Potentials (ERP) and examine the neural correlates of psychopathological and neurological conditions.
Methods.– The RDoC Cognitive Systems Domain was reviewed considering the neuropsychological tests and neurophysiological correlates proposed by the framework. Potential applications were explored given the functional relevance of RDoC constructs to mental health disorders.
Results.– The RDoC framework adds value to neuropsychology by establishing neurophysiological correlates relevant to the early detection of psychopathological and neurological conditions, which may be obtained from consensually used neuropsychological tasks. Changes in specific neural correlates of persons with certain psychopathological and neurological conditions may be detected even in the absence of deficits in neuropsychological tasks.
Conclusions.– Considering the already established validity of the classical neuropsychological tasks, future advances in neuropsychological assessment might benefit from the integration of multiple levels of analysis to provide a more detailed neuropsychological characterization and early diagnoses.
Disclosure of interest.– The authors have not supplied a conflict of interest statement.

E-PV0741

Motor functions recovery after traumatic brain injury of mild severity in adolescents

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Background and aims.– Restoration of motor functions in the long-term period of mTBI in adolescents in many cases is satisfactorily, however, in the course of a neurological diagnostics, even minor movement disorders are considered as pathological.
The objectives of the study included attempts to identify the features of the state of motor functions in adolescents after mTBI in the acute period and to assess the dynamics of recovery over half a year.
Methods.– The study is based on the original set of techniques designed by A.R. Luria.
31 patients with mTBI (mean age was 11,5 + 1,3) and 20 healthy subjects (mean age was 12 + 1,5) took part in the study.
Results.– Analysis of the results showed that the main component of motor disorders in the acute period after mTBI is a violation of the dynamic component, in the form of failures during the test, and also assimilation to inert stereotypes.
A month after the injury, the symptoms from the posterior regions were eliminated, as well as most of the frontal brain regions, which arose as irregularities in samples for reciprocal coordination, dynamic praxis, as well as a significant amount of impulsive errors when performing other motor tests.
Such indicators as the speed and efficiency of completing assignments, productivity, which do not decrease to the level of normative results even in a remote period, remain deficient to a large extent.
Conclusions.– Residual motor disoders affects not only the overall motor activity and success in sports, but also the attitude of the peers to the adolescent.
Disclosure of interest.– The authors have not supplied a conflict of interest statement.

E-PV0742

Cognitive and somatic trait anxiety: subjective and psychophysiological responses

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Background and aims.– Anxiety is part of an emotional system that foster defensive behaviours towards non-specific stimuli perceived as potentially threatening, therefore able to jeopardize the organism. When anxiety is more persistent (as a trait) there is an increased risk of psychopathology. Because anxiety encompasses a set of physiologic, behavioural and cognitive responses, recent self-report measures have been developed as to reflect these different dimensions (specifically, cognitive and somatic anxiety). However, no study has yet investigated whether these dimensions are reflected in differentiated patterns of response (subjective reports and psychophysiology, respectively).
To assess the pattern of subjective and psychophysiological responses to the induction of emotions as a function of cognitive and somatic trait anxiety (high and low).
Methods.– A non-clinical sample of 37 participants watched three sets of videos inducing different emotions (fear, happy, neutral) while their cardiac response was recorded. Emotional state was reported before and after the emotional induction, using a visual analogical scale for happiness, anxiety, fear and stress.
Results.– The group with higher cognitive anxiety evidenced a less differentiated heart response in comparison with the group with low cognitive anxiety, than in neutral and happy conditions. Subjective data also showed differences between groups, but only in neutral condition, with a lower variation of anxiety reported by the group with high somatic anxiety.
Conclusions.– This study shows that high cognitive and somatic trait anxiety is differently related to variations in the psychophysiological and subjective responses towards non-threatening stimulation, reflecting a non-adaptive hyperarousal.
Disclosure of interest.– The authors have not supplied a conflict of interest statement.