Symposium
Symposium Title: Depression: Autonomic Correlates and Neuromodulation

Chair: Henrique Sequeira
University of Lille, France

Research on understanding Depression and investigating therapeutic strategies invaded the literature and is a major goal of public health. Depression is characterized by emotional deficits, which express themselves at behavioural, neurocognitive and autonomic levels, and attentional disturbances over the visual field. Hence, an integrated approach, including neurocognitive and autonomic indices, made it possible to disentangle dysregulated emotional responses in depression. Besides, this approach opens perspectives on the potential benefits of attention training and biofeedback procedures on depressive symptoms. In parallel, advances have been made in improving non-invasive brain stimulation procedures in the treatment of treatment-resistant depression. These advances particularly concern the personalization of these stimulation procedures, but also their coupling with other therapeutic strategies, especially those based on behaviour or autonomic components. The proposed Symposium will be scheduled as follows : (1) Dr Lucas De Zorzi (male*, France) will describe the behavioural and autonomic reactivity to emotion in patients with major depressive disorder; (2) Stéphane Ranfaing (male, France) will present the association between autonomic reactivity and attention orientation to pleasant and depressive symptoms; (3) Dr Salvatore Campanella (male, Belgium) will speak about a therapeutic setting combining transcranial direct current stimulation (tDCS) and mindfulness-based cognitive therapy (MBCT) for patients with drug-resistant depression; (4) Dr Chris Baeken (male, Belgium) will speak about the prediction of clinical effects of accelerated intermittent Theta Burst Stimulation (aiTBS) by brain perfusion patterns. (*3 contacted colleagues, females, were not available for required dates).

doi:10.1016/j.ijpsycho.2021.07.048

Visual Position Impacts the Emotional Responses in Depression

Lucas De Zorzi
SCALab UMR CNRS, Université de Lille

Emotional deficits in major depressive disorder lead to changes in the distribution of attention in the visual field. We investigate the impact of unpleasant and neutral pictures, presented in central (0°) and peripheral vision (12°; 24°), in 15 depression patients (DP) and 15 matched healthy controls (HC). Heart rate, skin conductance responses (SCRs) and electroencephalogram (EEG) were recorded. A spatiotemporal principal component analysis (PCA) was applied to the EEG, and ANCOVAs controlling for participants' state- and trait-anxiety and patients' medication were performed to assess the effects of visual eccentricity and emotion. Unlike HC, DP showed for CV stimulation 1/ greater sensitivity with a response bias toward unpleasant pictures, 2/ larger SCRs, especially to unpleasant pictures, and 3/ deeper cardiac deceleration. Furthermore, eccentricity and emotion modulated cerebral components. Finally, results bring a new vista on visual capture of negative information and support methods to enlarge the attentional span of depressed patients.

doi:10.1016/j.ijpsycho.2021.07.049

Attentional Bias, Autonomic Reactivity and Depression

Stephane Ranfaing
SCALab UMR CNRS 9193, Université de Lille

Depression is characterized by attentional bias to emotional information and dysregulated autonomic reactivity. Despite its relevance to understanding depressive mechanisms, the association between attentional bias and autonomic reactivity to emotional information remains poorly characterized.

This study compared behavioural and autonomic responses to emotional images in 32 participants in whom subclinical depressive symptomatology was quantified using the Beck Depression Inventory. Pairs of emotional and neutral images (unpleasant-neutral, U-N; pleasant-neutral, P-N; neutral-neutral, N-N) were presented while attentional indices (eye movements) and autonomic activity (skin conductance responses, SCRs and heart rate, HR) were recorded. Results showed that all recorded ocular parameters indicated a preferential orientation and maintenance of attention to emotional images. Besides, SCRs were associated with a valence effect on fixation latency: lower fixation latency to pleasant leads to lower SCRs whereas the opposite was observed for unpleasant stimuli. Finally, stepwise linear regression analysis revealed that latency of fixation to pleasant and scores of depression predicted SCRs of participants. Thus, our research reveals an association between autonomic reactivity and attentional bias to pleasant information on one hand and depressive symptomatology on the other. Present findings therefore suggest that depressive individuals may benefit from attention training towards pleasant information in association with autonomic biofeedback procedure.

doi:10.1016/j.ijpsycho.2021.07.050

Efficacy of a tDCS-Mindfulness Program Compared With a tDCS-Relaxation Program to Treat Resistant Depression

Salvatore Campanella
University of Brussels

The relapse rate is still huge in many psychiatric disorders, as for drug-resistant major depressive states. A main challenge for current clinicians and researchers is to find add-on tools to current and typical treatments, mainly based on medication and psychotherapy. In this view, combining neuromodulation tools with psychological intervention could be highly relevant. In a pilot study exploring a therapeutic setting combining transcranial direct current stimulation (tDCS) and mindfulness-based cognitive therapy (MBCT) for patients with drug-resistant depression, thirty-one treatment-resistant depressed patients have been assigned to an experimental treatment condition [tDCS combined with MBCT ($n = 15$)] or to a control condition [tDCS combined with relaxation ($n = 16$)]. Patients have completed both an intensive treatment block (eight consecutive days) and a single remind session 2 weeks after the intensive treatment. Clinical (depression, anxiety, and rumination) and cognitive (general cognitive functioning, mental flexibility, and working memory) symptoms of depression have been assessed through different questionnaires at baseline (t0), after the first block of treatment (t1), and after the remind session (t2). Results seem to indicate a positive impact of both treatment conditions on clinical and cognitive symptoms of depression at t1. However, the treatment condition combining tDCS with mindfulness has been found to better