9th MindBrainBody Symposium 2022

Poster Session C

Posters Nr. C1-C20 (Zoom Breakout Rooms)

Wednesday, March 18, 2022 at 11:00-11:45 (GMT+1)

Discussion Part 2 | Poster Session C & D | Wednesday, March 18, 2022 at 19:00-20:00 (GMT+1)

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C18_Satpathy	Jyoitrmaya	Cognito Fluctuations in Decision Making ***Poster Co-Presenter:*** *Satpathy, Madhubrata*
C19_Puri	Shivam	Contingent capture: Solved?
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Poster Abstracts

C01 **Poster Presenter**: **Folz, Julia**

Facial mimicry and metacognitive judgments in emotion recognition – modulated by social anxiety and autistic traits?

Folz, J. [1,2], Akdağ, R. [3], Nikolić, M. [1,2,4], van Steenbergen, H. [1,2], & Kret, M. E. [1,2]

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Introduction: Both individuals with social anxiety disorder and individuals with autism spectrum disorder show alterations in the perception of others' emotional facial expressions. Additionally, mimicry of an observed expression as well as the assessment of one's own performance, i.e. metacognition, may be altered in these individuals. **Methods:** Using a non-clinical sample (N=57), we examined whether emotion recognition is linked to facial mimicry and confidence in one's performance, as well as potential alterations in this link associated with social anxiety and autistic traits. While participants were presented with videos of spontaneous emotional facial expressions, we measured their facial muscle activity, and asked them to label the expressions and indicate their confidence levels in accurately labelling the expressions. **Results:** Our results showed that confidence in emotion recognition was lower with higher social anxiety trait levels even though actual recognition was not related to social anxiety trait levels. Higher autistic trait levels, in contrast, were associated with worse recognition as well as a weakened link between performance and facial mimicry. **Discussion:** Consequently, social anxiety might not affect emotion recognition itself but the top-down evaluation in an emotion recognition context, whereas individuals with autism may integrate information promoting emotion recognition, i.e. sensorimotor simulations, to a lesser degree.

Functional, Behavioral and Morphological Changes in a Rat Model of Parkinson's Disease: Protective Effect of Curcumin

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Introduction: Parkinson's disease (PD) is a progressive neurodegenerative disorder that affects nerve cells, or neurons, in the part of the brain that controls movement. A hallmark feature of PD is the degeneration of the dopamine neurons in the substantia nigra (SN) pars compacta and the consequent striatal dopamine deficiency. Yet, the pathogenesis of PD remains unclear. The lack of dopamine causes the primary symptoms of Parkinson's disease - tremor, slowness of movement, muscle stiffness and balance problems. In vivo animal models have simulated most, although not all, of the hallmarks of PD and are useful for testing new neuroprotective approaches. Research is devoted to the study of systemic compensatory reactions of the rat's brain developing in response to rotenone-induced animal model of PD under the conditions of neuroprotective intervention of Curcumin. This has raising expectations for the development of new neuroprotective therapies for the prevention of PD.
Methods: Male albino rats were treated with rotenone injections (2.5 mg/ml intraperitoneally) for 21 days. We examined the effects of neuroprotector curcumin (200 mg/kg) on behavior and the electrical activity of hippocampus neurons measured in response to high frequency stimulation (HFS) of entorhinal cortex (EC). In the hippocampus, the excitatory and inhibitory synapses between EC and CA3 pyramidal cells expresses robust forms of short-term plasticity, such as frequency facilitation (post-tetanic potentiation-PTP) and depression (post-tetanic depression- PTD). Motor activity was assessed by cylinder test.
Results: The results showed that Rotenone causes significant reduction of neuronal activity, whereas curcumin can improve the motor impairments and electrophysiological parameters and may be beneficial in the treatment of PD. **Discussion:** Curcumin significantly prevented rotenone-induced impairment of hippocampal synaptic plasticity, which is likely mediated via dysfunction of mitochondrial complex I. It alleviated the deficits behavior in rats as the rearing frequencies of animals were enhanced.

Generalized anxiety disorder: Review of neuroimaging methods.

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Introduction: Generalized anxiety disorder (GAD) is a common mental illness that is characterized by fear, worry and sorrows. Patients are aware of their fears being not realistic and sorrows being exaggerated. The exact mechanism of GAD is not entirely known. Understanding the pathophysiological basis of GAD is a challenging task and different neuroimaging methods are being used to solve this problem. **Methods:** Here, we review the existing literature about neuroimaging methods that have been used to image the function of the GAD patients' brain. **Results:** Lee et al. used single photon emission computed tomography and supposed that the striatal dopamine transporter level could have a role in GAD mechanisms. Kalk et al. found increased MFG blood flow using 99mTc-hexamethylpropyleneamine oxime single-photon emission computed tomography. Jing et al. used F-FDGPet-CT imaging, which showed differences of uptake in prefrontal cortex, lateral striatum, left thalamus in GAD patients compared to healthy group. Moon et al. used proton magnetic resonance spectroscopy and found choline/N-acetyl aspartate metabolic changes in the dorsolateral prefrontal cortex in GAD patients. Xie et al. used f-MRI and ReHo approach and found significantly decreased values in the right orbital MFG, left ACC, right MFG and bilateral supplementary motor area in patients with GAD. Increased ReHo values were found in the left MTG, left STG and right SOG. Authors suggest that the decreased values show destruction of local synchronization of spontaneous low-frequency fluctuations dependent on blood oxygenation levels. **Discussion:** To conclude, we can say that there is change of function of special brain areas in GAD patients. We propose that future studies will be needed to find the best neuroimaging method to diagnose GAD.

The effect of tDCS on the rSTS on reading speed of social sentences is modulated by personality traits

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Introduction: Mathematical models informed by the free energy principle suggest that information processing in the human brain leads to metabolic efficiency. An underlying mechanism might be the minimization of uncertainty about sensory input via a feedback loop between internal models of the world and actual input. This is supported by MR studies showing decreased activity for sensory stimuli that validate participants' predictions. However, whether predictions themselves incur significant metabolic cost over naïve perception is still unclear. **Methods**: The traditionally used BOLD signal is only a proxy for energy consumption, providing relative measurements mainly driven by hemodynamic activity. Here, we have been acquiring data from 21 healthy subjects using novel multiparametric quantitative BOLD methods. We separately measured blood deoxygenation, cerebral blood flow and cerebral blood volume to calculate the cerebral metabolic rate of oxygen ($CMRO_2$) on a voxel level. During a three-day training phase, participants viewed temporal object sequences while performing a cover task to ensure attention. Objects either always appeared in the same order (predictable condition) or always in a random order (unpredictable condition). We tracked the learning progress with a sequence completion test after each session. In the following MR session, we presented the experimental conditions using a block design. **Results:** After the training, participants averaged >80% correct completions of predictable sequences. To estimate the cost of prediction, we contrasted $CMRO_2$ values of predictable versus unpredictable blocks both brain-wide and within the object selective cortex. Results show a significant increase in the predictable condition of 4.3% and 1.94% respectively (all p<.05). These findings are consistent across functional brain networks (Schaefer parcellation) with the smallest changes in the visual network and largest in fronto-parietal regions. **Discussion:** The quantitative evidence for a brain-wide increase in energy consumption suggests that predictive processing and metabolic efficiency are at least partly at odds.

Not my body, not my pain? Pain perception and placebo analgesia in individuals with body integrity dysphoria

Ho, J. T. [1,2], Krummenacher, P. [2], Lenggenhager, B. [1]

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[2] Brainability GmbH

Introduction: Mathematical models informed by the free energy principle suggest that information processing in the human brain leads to metabolic efficiency. An underlying mechanism might be the minimization of uncertainty about sensory input via a feedback loop between internal models of the world and actual input. This is supported by MR studies showing decreased activity for sensory stimuli that validate participants' predictions. However, whether predictions themselves incur significant metabolic cost over naïve perception is still unclear. **Methods**: The traditionally used BOLD signal is only a proxy for energy consumption, providing relative measurements mainly driven by hemodynamic activity. Here, we have been acquiring data from 21 healthy subjects using novel multiparametric quantitative BOLD methods. We separately measured blood deoxygenation, cerebral blood flow and cerebral blood volume to calculate the cerebral metabolic rate of oxygen (CMRO2) on a voxel level. During a three-day training phase, participants viewed temporal object sequences while performing a cover task to ensure attention. Objects either always appeared in the same order (predictable condition) or always in a random order (unpredictable condition). We tracked the learning progress with a sequence completion test after each session. In the following MR session, we presented the experimental conditions using a block design. **Results:** After the training, participants averaged >80% correct completions of predictable sequences. To estimate the cost of prediction, we contrasted CMRO2 values of predictable versus unpredictable blocks both brain-wide and within the object selective cortex. Results show a significant increase in the predictable condition of 4.3% and 1.94% respectively (all $p<.05$). These findings are consistent across functional brain networks (Schaefer parcellation) with the smallest changes in the visual network and largest in fronto-parietal regions. **Discussion:** The quantitative evidence for a brain-wide increase in energy consumption suggests that predictive processing and metabolic efficiency are at least partly at odds.

The Effect of Armenian Viper Venom on Globus Pallidus Neurons in a Rotenon Model of Parkinson's Disease

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Introduction: Parkinson's disease is a chronic progressive brain disease characterized by nigrostriatal degeneration and impairment of basal ganglia functions, particularly the globus pallidus. Parkinson's disease is associated with the degeneration of dopamine neurons in the globus pallidus, responsible for body movement. **Methods:** The aim of the present study was to identify effects of venom of the Armenian viper Montivipera raddei on morphofunctional state of globus pallidus neurons in a rotenone model of Parkinson's disease. For morphological and histochemical study, the method of detecting the activity of $Ca2 +$ - dependent acid phosphatase was used. **Results:** Data analysis revealed that nerve cell lesions in the globus pallidus are abiotrophic in nature. Neuronal damage is accompanied by a decrease in phosphatase activity in the cytoplasm and chromatophilic substance lysis. Long processes react in such neurons, but their phosphatase activity is reduced, and their lead phosphate precipitate is dusty or fine-grained. Various types of cell atrophy are revealed against a background of normal cells. Thus, rotenone intoxication causes abrupt morphological and metabolic changes in intracellular structures, as well as in the globus pallidus. This is a reversible condition. When compared to a Parkinson's disease model, small doses of venom caused positive changes in the structural properties of neurons in the globus pallidus. The morphology is normal; long processes with high acid phosphatase activity react in most cells. In comparison to the rotenone rat model, glial reaction slows down and phosphatase activity in the cytoplasm of cells increases, indicating an increase in metabolism, which was impaired in rotenone-intoxicated rats. **Discussion:** The findings suggest that small doses of venom of the Armenian viper Montivipera raddei act as a neuroprotective agent, but more research is needed to further clarify the mechanisms of action and potential treatments for Parkinson's disease.

C08 **Poster Presenter:** Ajith, Susan *Poster Co-Presenters:* Pandey, Pankaj & Miyapuram, Krishna

Attention Related Experimental Paradigms in Meditation Research

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Introduction: The neuroscientific study of meditation has shown enormous growth in the last two decades due to its effects on multidimensional attributes, including neurophysiology, phenomenology, and cognitive functioning. Studies have reported evidence that regular meditation results in long-term attentional and structural and functional brain changes. Interestingly, despite its wide reach, the field struggles from poor methodological quality. Factors such as cross-sectional studies precluding causal attribution, sampling bias and poor control limits interpretations. As a result, our investigation narrows down to attention-related experimental design paradigms in mediation research, as meditation is an intentional deployment and management of attention. Various designs in meditation research, with their results, as well as their relevance and future scope based on training and techniques, are discussed. **Methods:** Attentional studies conducted on meditators have utilized behavioral paradigms based on reaction time and accuracy as parameters to assess improvements in attention. Attentional network test and other measures specific to the type of attention such as Flanker test, attentional blink task, stroop task, oddball paradigm and multiple object tracking task among various meditators in comparison with novice as well as experienced meditators are implemented. **Results:** Overall, most studies show significant improvement in sustained attention, allocation of attentional resources, executive attention, smaller attentional blink, less interference and improved distractor inhibition. **Discussion:** Future research needs to use actively controlled, longitudinal, randomized designs with larger sample size that compares data at several time points and studies its development from novice to experienced stages of meditation. Essentially, longitudinal studies can direct research towards providing a theoretical basis for meditation. Our understanding will remain nascent unless we understand how the structural and functional brain changes are related to improvement in cognition. Such studies hold high value in decomposing the outcomes of meditation into cognitively measurable parameters, thereby offering a promising treatment of clinical disorders and general well being.

Reliable EEG Neuromarker to discriminate Meditative states across practitioners

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Introduction: In this study, we examined EEG analysis techniques across a variety of meditation traditions in order to identify reliable metrics that could be applied in meditation research, revealing how each tradition interprets eeg signals distinctly. The study's potential is in its future neurotechnological innovations, to increase usage of meditation (by enriching one's internal environment for better equilibration) among users. EEG's high temporal resolution may result in misinterpretation or erroneous correlation if the analyzing technique is unreliable and weak. Overall, investigation of this may provide insight into the complex nature of meditative practice and its impact on the brain. **Methods:** Neuroscientific studies demonstrate several methods from simple to complex, including spectral power, entropy (sample, lempel-ziv), and fractal dimensions (higuchi) etc. Distinguishing expert and naive practitioners involve large-scale dynamics of distinct cognitive and resource allocation across different meditation types. Meditation research includes a comparison of expert meditators with controls, Intervariability across meditation practitioners (Himalayan yoga, Vipassana, etc) with controls. There have been several studies conducted on the effects of mind-wandering on brain rhythms and meditation practice among expert meditators and controls, using thought probes, instructed mind-wandering conditions. **Results:** Meditation-related EEG studies have shown power increases in theta and alpha bands and overall frequency slowing, with the occasional increase in gamma power. Large scale decrease in entropy (Lempel Ziv-Complexity) during meditation states was observed. Contrary to this finding, a study by Vivot et al., 2020 observed increased alpha and gamma power sample entropy across vipassana meditators. Decreased number of transient alpha-theta 2:1 harmonic ratio during meditation conditions among 43 experienced meditators, was revealed. In one study, after Integrated Body-Mind Training (IBMT) of 24 participants, functional connectivity measures were performed. The IBMT group exhibited a larger clustering coefficient, global and local efficiency, and shorter average path length at midline electrodes when compared to controls. **Discussion:** The generation of a neurophysiological marker that is reliable when a person is progressing from one level of meditation to another is still in its infancy. Depending on how different meditation styles are studied and analyzed there might be both similarities and differences in the results, but rigorous scrutiny (preprocessing, experimental design, meditation type, feature extraction, etc.) will provide a better insight into generalizations.

Transmission of mind sound without mechanical waves "Natural or metaphysics"

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Introduction: Abstract The preset work deals with transmission of the mind sound in absence of a physical environment and mechanical waves. By "transmission", we refer to what happens for sound waves in physical environment. By the "sound of mind" we intend something other than what has been examined by many psychologists over the past few years. They utilize the concept with its applied meaning in "inner dialogue" disease. Therefore, the sound wave generated by the brain/mind is intended in this study, which is like the sound generated by one's larynx and can be heard by others. Keywords: Brain, mind, sound, transmission, physical environment, sound of mind, brain waves **Methods:** Methodology The study is a wide and multidisciplinary work that covers theoretical and experimental fields of science. Thus, the methods used in these two groups might be required including: •Descriptive methods; •Experimental methods; and •Historical methods. It is clear that we cannot determine which method will be used in what stage. This question will be answered throughout the study depending on the needs. **Results:** Conclusion Given the above, the following points are notable: -The mind sound in the proposed study is beyond the inner dialogue. -Generated waves by the mind/brain will be transmitted from different distances and received by the brain/mind of the receiver. -The idea is to transmit sound (generated waves and vibrations) from one brain/mind to anther. -The study will also determine if the mind organizes its activity independent from the brain and interacts with it (immaterial and material things) or they are the same and identical. In conclusion, if the nature of mind/brain sound and the environment that the transmission takes place is determined, several new topics and questions will be found each leading to a new world. Sciences like neuroscience, artificial intelligence, virtual economy, virtual world and the like along with philosophy and physics will be measured through a complicated and interwoven relationship. **Discussion:** Take typist A that is trying to establish a virtual connection with typist B from a long distance (say 50km). While typing, the 'mental voice" generated by typist A's brain/mind is transmitted to the brain/mind of typist B and heard/imagined by him (mind and brain interaction). This example is to elaborate on the point that if the transmission of sound from one mind/brain to another is presumably feasible in long distances, how it can be explained in absence of mechanical waves and vibration of brain/mind and the physical environment in which such waves can travel? The point is that previous studies have only managed to record the brain waves using electrodes at the moment of imaging the reception of musical notes. So that these studies have not addressed the transmission of waves from one mind to another. Rather than indirect transmission through recording brain waves and the imagined voice by electors and translating the data, the proposed study will address the direct transmission of waves emitted by one brain/mind to another.

Projected Self-Location and Perspective in Dreams

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Introduction: A wide range of neuroscientific studies suggest that, if we can dream about various preposterous dream characters, our hierarchical generative self-modeling capacity should have already accepted them. Regarding this, all of the dream characters that our dream body encounters with, should be based on the potential to embody other-selves at a certain spatial distance in dreams. Given the role perspective on ownership, we investigated the relationship between projected self distance and perspective in dreams. **Methods:** A total of 379 people were recruited online from Izmir University of Economics students and their relatives. We asked the participants whether they saw their dreams from a first-person (1PP) or a third-person perspective (3PP). We also asked the participants how often they see other dream characters to the specified distances on a picture. **Results:** A 2 (1PP, 3PP) x 3 ([0-90cm], [90-180cm], [180-270cm]) mixed ANOVA revealed that people are more likely to see other dream characters between 0-90 cm distance interval. However, we did not find a significant main effect of perspective and interaction effect. **Discussion:** Our study provided a new perspective to understand the phenomenology of projected dream location and bodily self-consciousness in dreams. Although further research is needed, we suggest that boundaries between self-other overlap within peripersonal space during dream states emphasizing the embodied nature of dreams.

C12 **Poster Presenter:** **Lapomarda, Gaia**

Theta and Delta changes in resting-state EEG activity after regulating emotions

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Introduction: Emotions are powerful determinants of our everyday life, and the ability to regulate them is essential for our well-being. Several studies focused on the neurophysiological mechanisms associated with emotion regulation. Changes in theta and delta frequencies have been associated to the deployment of emotion regulation strategies, as well as a sense of increased wellness and relaxation. One intriguing question is whether regulating emotions can leave a trace in the brain by affecting its oscillatory activity at rest. **Methods:** Thirty-three adults participated in the experiment. 5 minutes resting-state EEG (RS-EEG) was recorded, to provide a baseline measure of brain activity. After that, participants completed an Emotion Regulation task consisting of two randomized sessions, each one followed by 5 minutes RS-EEG. In one session, participants attended to the stimuli and experience the emotions elicited. In the other one, they regulated the elicited emotions by applying distancing, that consists in assuming a detached perspective from an emotional situation. To elicit emotions, 160 picture stimuli (80 neutral, 80 negative) were taken from the International Affective Picture System. Participants rated their emotions on both the valence and arousal dimensions using the Self-Assessment Manikin procedure. **Results:** A nonparametric cluster-based permutation approach was used. This is a data-driven approach that provides appropriate control for multiple comparisons. The analysis indicated an increased RS-EEG activity after regulating emotions, corresponding to two positive clusters at the level of delta (3.6 to 4 Hz, $p = .033$) and theta (6 Hz, $p = .040$) frequencies. **Discussion:** Demonstrating that the application of regulation strategies can alter brain activity at rest may shed light on the influence of affective processes on brain functioning. Furthermore, it can represent a first evidence of the potential effect that psychotherapy can have on the patients' daily life.

Effects of stevia on synaptic plasticity and NADPH oxidase level of CNS in conditions of metabolic disorders caused by fructose

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Introduction: Excess dietary fructose intake associated with metabolic syndrome and insulin resistance and increased risk of developing type 2 diabetes. Previous animal studies have reported that diabetic animals have significantly impaired behavioural and cognitive functions, pathological synaptic function and impaired expression of glutamate receptors. **Methods:** By in vivo extracellular studies induced spike activity of hippocampal neurons during high frequency stimulation of entorhinal cortex, as well as neurons of basolateral amygdala to high-frequency stimulation of the hippocampus effects of Stevia rebaudiana Bertoni plant evaluated in synaptic activity in the brain of fructose-enriched diet rats. **Results:** In this study, the characteristic features of the metabolic effects of dietary fructose on synaptic plasticity in hippocampal neurons and basolateral amygdala and the state of the NADPH oxidase (NOX) oxidative system of these brain formations are revealed, as well as the prospects for development of multitarget and polyfunctional phytopreparations (with adaptogenic, antioxidant, antidiabetic, nootropic activity) from native raw material of Stevia rebaudiana. **Discussion:** Stevia exhibits an antistress, membrane-stabilizing role reducing the level of total fractions of NOX isoforms from central nervous system tissues and regulates NADPH-dependent O_2^- -producing activity.

Predicting Neural Resonance in Naturalistic Scenarios: A Computational Framework to Establish Neural Marker to Observe Internal and External Entrainment

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Introduction: Resonance can be distinguished as a metaphor and physical mechanism. Neural resonance is a physical phenomenon that refers to the synchronization and amplification of brain oscillations to features of internal/external oscillators. Entrainment is a type of resonance, which can be further defined as external and internal. External entrainment involves brain waves correlated to musical rhythms, amplifying/dampening human rhythms while watching/listening to movies/music, brain to brain synchronization between trainer and practitioner during guided meditation. Internal entrainment discusses the breathing style or speed that tunes with natural body frequency, ideas/thoughts that primarily induce pleasantness, positivity, and relaxation. We discuss several measures to establish the neural marker for these effects and future perspectives to develop the computational toolbox incorporating machine and deep learning techniques. **Methods:** We discuss a few important components to compute the resonance effect. Stimulus-Response correlation (SRC) computes the time-varying features of stimulus with brain responses and the commonly used measure is Canonical Correlation Analysis. Frequency tagging and the harmonics discuss the responses frequency-locked to the rhythms at beat and meter frequencies employing steady-state evoked potentials. Inter-Subject Correlation computes the similarity between two brain responses and the time domain can be measured using cross-correlation and coordination in the frequency domain by computing spectral using Fourier or wavelet transform. The synchrony of instantaneous phases of two neural responses at frequency f can be quantified using phase locking value and coherence. The change in brain complexity (entropy) during resonance at a particular frequency may also provide insights. **Results:** Previous studies have observed frequencies related to the musical beat, and discussed entrainment while listening to familiar music as compared to scrambled version. The recent result accompanies graph theory and machine learning measures to observe the differences between high and low enjoyment. **Discussion:** We encompass the different components (temporal, spectral, and spatial) that serve as the framework to develop the computational toolbox to predict neural markers for neural resonance. We discuss incorporating machine and deep learning techniques to investigate this mechanism.

C15 **Poster Presenter:** Koushik, Abhay   *Poster Co-Presenters:* Hofmann, Simon M

Testing the effect of depth on the perception of faces in an online study

Koushik, A. [1,2], Hofmann, SM. [1,3], Klotzsche, F. [1,4], Nikulin, V. [1], Villringer, A. [1,4], Gaebler, M. [1,4]

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Introduction: Faces are socially relevant stimuli, which can be distinguished by 3D spatial arrangements of their features. The perceptual system orders these features in a cognitive "face space", in which distance represents face similarity. In the past, this space has been mostly probed in 2D experiments. We plan an online behavioral study to investigate the effect of 2D vs 3D presentations on face perception, aiming to bridge the gap to naturalistic viewing. **Methods:** We randomly sampled neutral faces (n_female=n_male=50) from the standardized 2D Chicago-Face-Database (CFD) and used DECA - a deep learning-based pipeline that 3D-reconstructed them retaining facial geometry. We implemented an odd-one-out similarity task to acquire pairwise similarity matrices. Two participant groups (n_2D=n_3D=500) are currently tested online with static 2D-images and with rotating 3D-reconstructions on 2D-screens. Representational similarity analysis will be applied on behavioral similarity matrices of human judgements to quantify the difference between viewing conditions. We then feed a shallow neural network with attribute measurements (e.g., face-width) and fit it to the behavioral judgements to extract the most relevant face features for each condition, which serves as a computational model of the cognitive face space. **Results:** To follow (study in progress). **Discussion:** We aim to extract facial dimensions that define similarity judgments, and hypothesize that their order of relevance differs between 2D and 3D representations as spatially defined features are more important for the latter. Differences between 2D and 3D would have implications on previous 2D research and would encourage future studies on face perception with more naturalistic experimental designs. Moreover, our pipeline can be used for different stimulus sets or samples, for example, with different ethnical groups or clinical populations, and for psychophysiological studies.

Cognito - Tectonics In Stress Induced Emotional Behaviour

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Introduction: The success of an institution is mainly dependent on its effective human capital and in execution of strategic sustainable HR functions. Currently, human resources are under colossal pressure to ascertain its value, facing severe demands to create an innovative, result-oriented workforce. Ecological - connect practices save money through awareness and communication while reducing environmental predicaments. Personal or professional engagement of individuals will have a long-lasting effect on the environment. Innovation coupled with business processes can change the mindsets of people and businesses and reduce incremental costs. The hallmark of ecological - connect is that it brings about enduring stress - induced thinking competence. One of the prime doctrines of ecological - connect is maximization of positive benefits of an institution for all stakeholders and specifically it should commence with its domestic human resources. **Methods:** Recent research on psychological well-being has identified the psychosocial dynamics of human contentment. The advancement in the area of positive psychology has greatly facilitated this research. Drawing on these contemporary developments, it is asserted that engagement-seeking and contentment need not be viewed as separated, often incompatible (Devoutness) processes. **Results:** The explication of empirical research attests to the assertion that engagement seeking and contentment constitute a unitary (Devoutness) process. **Discussion:** The positive psychological concepts such self-efficacy, optimism, resilience, emotional intelligence and growth mind-set are well-incorporated in contentment. These positive attributes are also needed for successful engagement seeking emotional behaviour. The self-efficacy offers the confidence of executing a function competently. Optimism provides the supportive cognitive style to pursue both the engagement and contentment. Resilience builds capacity to deal with adversity. Emotional intelligence furnishes the human factors of empathy and compassion. The growth mind-set leverages the abundance of energy. An integrative approach to blend engagement seeking with contentment fulfills the objective of innovation and flourishing

Poster Presenter: **Satpathy, Jyoitrmaya**   **Poster Co-Presenters:** **Satpathy, Madhubrata & Sahoo, Kalpana**

Cognito Fluctuations in Decision Making

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Introduction: We would like to present the Cognito Fluctuations in Decision Making that a rational person experiences during stress. **Methods:** We used the Stress Measurement and ECG methodology **Results:** We observed peculiar cardio fluctuations when a person experiences exposed to stress and how basic neural circuits involved in decision making . **Discussion:** Stress and decision making are intricately connected, not only on the behavioural level, but also on the neural level, i.e., the brain regions that underlie intact decision making are regions that are sensitive to stress-induced changes. Anxiety can cause executive function (your high-level thinking and decision-making) to weaken or shut down. If it does, you make no decision, or you unknowingly base your decision on habit.

Contingent capture: Solved?

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Introduction: Two experiments conducted to examine if abrupt-onset cues capture attention in a contingent way even when the cue is unconscious and how this capture differs from the capture by a conscious abrupt-onset cue. **Methods:** Abrupt-onset cues of conscious (100 ms) and unconscious (16.66 ms) cue duration cued the location of colour targets (experiment 1) and abrupt-onset targets (experiment 2) in a spatial-cueing task. The participant was to look for the target letter (E or H) and report its identity. Reaction-time and accuracy were recorded. This was followed by a visibility test consisting of two parts - a forced-choice cue location identification task (objective measure) and a Perceptual Awareness Scale (subjective measure) to obtain robust measure of cue visibility. **Results:** Spatial cueing task - Significant cue validity effects observed in both the experiments, suggesting that attention capture by abrupt-onset cues may proceed in a stimulus-driven manner. And capture by unconscious cues found to be significantly less than that by conscious cues. Visibility task - Converging evidence obtained via objective and subjective test that cues behaved as expected. Interestingly, valid cues were rated significantly higher than the invalid cues on the PAS scale in experiment 1 whereas the complete opposite was observed in experiment 2 which implies there is a definite relation between the subjective visibility and the cue-target match/mismatch condition. **Discussion:** REPRESENTATION CROSS Model of attention capture is proposed. It states that the cue strength (visibility) is dependent on the interaction of cue type with target/distractor type. The representation of the cue gets strengthened if the target type is not the same as the cue, and it gets weakened if the target type is the same as the cue. This model is based on vector (cross) multiplication and explains the mechanism of attention capture for both stimulus-driven and contingent capture.

C20 **Poster Presenter:** Saeed Modaghegh, Mohammad Ali **Poster Co-Presenter:** Rostami, Mohammad

Study of relationship between second stroke and localization of multi-point stimuli

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Introduction: In physical stimuli, the closer the stimulus points are to each other, the more difficult it is to distinguish the location of the skin stimulation sites. This localization also depends on the location of the stimulus and age. The number of tactile receptors on the shoulder blade and back of the human body is less than the rest of the body, and the fingertips have the largest number of tactile receptors, therefore, the number of stimuli on the fingertips is more likely to be detected than on the shoulder blade and back. Also, with advanced age stimuli detection encounters more mistakes. In this study, the number of separable tactile stimuli in localization that a person can count correctly was measured and recorded, and its relationship with second stroke was studied. **Methods:** Simultaneous multi-point stimulations with standard recognizable distance were conducted in 36 patients for 5 years. These stimuli were applied to the thigh, palm, arm, shoulder blade, and back of the subjects without them watching the place of the stimuli. Then they were asked about the number of stimuli. Patients are examined annually. **Results:** This work demonstrates the relationship between the ability to detect the number and location of stimuli in simultaneous multi-point stimulations and second stroke probability. Subjects with fewer correct responses (in detecting the number of simultaneous stimuli) are more likely to have a second stroke. **Discussion:** Our findings provide evidence that depending on the age of the person and the location of the stimulus, subjects with more mistakes in detecting simultaneous multi-point stimulations are more likely to have a second stroke.