9th MindBrainBody Symposium 2022

Poster Session B

Posters Nr. B1-B20 (Zoom Breakout Rooms)

Monday, March 16, 2022 at 19:15-20:00 (GMT+1)
Discussion Part 2 | Poster Session A & B | Tuesday, March 17, 2022 at 09:30-10:00 (GMT+1)

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B02_Caramés	Maria Ayelen	Frequency and Emotional Priming Could Modulate Complex Decision-making Processes Depending on Task Relevance
B03_Panagoulas	Eleni	Grey matter volume in patients with Central Poststroke Pain
B04_Tawil	Nour	Is curvature preferred over angularity? Exploring psychological responses to indoor environments presented in Virtual Reality
B05_Bachman	Shelby	Isometric handgrip exercise speeds working memory responses in younger and older adults
B06_Ramírez	Verónica Adriana	Role of Gender in Autonomic Reactivity: Analysis of Heart Rate of Preschool Children During Videos with Different Emotional Content
B07_Jeglinski-Mende	Melinda A.	Shaping Negation – Spatial-Numerical Associations in Negative Numbers
B08_Kim	SuHyeong	The adult rats after alcohol exposure in a third – trimester model of FASD showed impairment in spatial working memory dependent delayed alternation task.
B09_Constant	Marika	The Weighting of Prior Information in Confidence
B10_Beccherle	Maddalena	Virtual social touch on embodied avatars in patients with Fibromyalgia
B11_Herman	Aleksandra	Delay and Effort-Based Discounting, and the Role of Bodily Awareness, In People Experiencing Long-Term Pain: A Cross-Sectional Study
B12_Morgenroth	Elenor	Movie-induced emotion experiences modulate dynamically-occurring amygdala-CAPs
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B14_Al	Esra	Cardiac Signals Influence Cortical Motor Excitability and Muscle Activity
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B17_Recart	Emilio	Sentiment analysis in news media headlines in 2019 Presidential Elections: Exploratory Reliability Study Analysis
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B19_Sonkusare	Saurabh	Neural interactions between anterior insula and anterior cingulate cortices link perceptual and physiological processes
B20_Shapouri	Soheil	Emotional Reactions to Natural and Technological Disasters; A Possible Case for Evolutionary Mismatch
B21_Pimpini	Leonardo	Mindset matters: Attentional focus – not body-weight – determines the level of food-related brain activity

Poster Abstracts

B01 **Poster Presenter: Quian, Maria del Rosario** **Poster Co-Presenters*:* Bertoli, Juan Ignacio & Andreau, Jorge Mario**

Evaluating The Hemispheric Asymmetry Model Of Encoding And Retrieval Through Music.

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Introduction: The hemispheric encoding/retrieval asymmetry (HERA) model proposes a differential lateralization in the memory encoding and retrieval processes, with encoding having a preferential activity in the left hemisphere and retrieval having a preferential activity in the right hemisphere. On the other hand, several studies reported that the perception of music also activates the brain in a lateralized way, with the right hemisphere having a greater preponderance. **Methods:** In order to analyze the HERA model through music, our experimental subjects had to recall a list of words by listening to music in the background in encoding or retrieving verbal information. **Results:** Our results will provide new data to better understand hemispheric specialization and the factors associated with it. **Discussion:** This project would allow the development of a novel and inexpensive methodology to test the HERA model.

B02 **Poster Presenter: Carames, Maria Ayelen**

Frequency and Emotional Priming Could Modulate Complex Decision-Making Processes Depending on Task Relevance

Caramés, M. A. [1], Bernal, F. A. [1], Salgueiro, T. A. [1], Brzostowski, A. [2], Nicolas, P. & Larrosa, F. [1].

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Introduction: Complex decision-making processes (CDM) differ from simple ones because they require greater cognitive commitment, in which the precision of the response predominates over the reaction time (RT). **Methods:** Through online cognitive experiments, it was studied if CDM can be modulated by two different conditions: repetition and emotional priming. Faces were sequentially presented with different frequencies (1, 6 or 12 times in 20 repetitions) or with the same frequency (5 times each face) associated to one emotional content phrase (positive, negative or neutral). Subjects were aleatory separated into two analysis groups by asking them to choose one face among four faces to realize an important task (IT) or a non-specified task (NST). Results indicated that: 1. RT in IT is significantly longer than in NST; 2. Face with frequency 12 was significantly more chosen in NST; 3. Faces with positive phrases associated were significantly more chosen in both groups. These experiments raise the role of the task´s nature in a possible top-down mechanism modulating CDM. In this essay a third analysis group was evaluated by choosing faces to realize a not important task (NIT) replicating the same online experiments, comparing with a new NST group. **Results:** Results show that: 1. Face with frequency 12 was significantly more chosen in NST than in NIT; 2. RT in NIT is significantly longer than NST; 3. In NIT the faces significantly more chosen were associated with negative or neutral phrases. **Discussion:** These results support the hypothesis that priming modulation could be affected by the task´s relevance, with a top down mechanism.

B03 **Poster Presenter: Panagoulas, Eleni**

Grey matter volume in patients with Central Poststroke Pain

Panagoulas,E. [1,2,3,4], Maidhof, J. [1], Asseyer,S. [1], Al, E. [1,2], Chen,X.[2], Villringer, K. [1], Krause, T.[1,5], Jungehülsing, G J.[1,5] and Villringer,A.[1,2,3,4]

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Introduction: Central post-stroke pain (CPSP) is a chronic neuropathic pain condition that arises following a cerebrovascular accident affecting the central somatosensory pathway. CPSP develops in at least 8-20% of patients with somatosensory stroke. Once established, it is often refractory to treatment, causing a significant negative impact on patients' quality of life. The aim of this study was to investigate grey matter volume (GMV) changes over time in patients with CPSP and compare them with non-pain sensory stroke (NPSS) patients. **Methods:** A longitudinal and cross-sectional voxel-based morphometry analysis of T1 weighted images was conducted using SPM and the CAT12 toolbox. GMV of CPSP patients was compared to NPSS patients in the acute (days 2-10) and the chronic setting (> 6 months). **Results:** This study reports the first ever longitudinal voxel-based morphometry results of patients with central post stroke pain. In total 51 NPSS patients and 26 (33.8%) CPSP patients were analysed. CPSP patients showed an increase in GMV in the contralesional middle and superior temporal gyrus when comparing GMV before and after pain development. In the acute setting patients that went on to develop pain, showed lower GMV in bilateral superior and middle temporal gyrus as well as in bilateral caudate nuclei, contralesional precentral and middle frontal gyrus compared to NPSS patients. Chronic CPSP patients showed lower GMV in the contralesional insula, ipsilesional cingulate gyrus as well as the contralesional cerebellum relative to NPSS. **Discussion:** These findings are in accordance with previous VBM studies in CPSP patients and offer a unique insight into the profound effect that stroke and CPSP have on brain morphology. Furthermore, it appears that patients already in the acute setting show structural features that might predispose them to develop pain. This supports the argument for early identification and initiation of treatment in this patient group.

B04 **Poster Presenter: Tawil, Nour**

Is curvature preferred over angularity? Exploring psychological responses to indoor environments presented in Virtual Reality

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Introduction: There has been a recent interest in understanding how architectural features affect human brain and behavior. For instance, some studies have proposed that humans prefer curved, as opposed to angular or edgy interiors, with the latter inducing more positive emotions. Whereas the evidence for this hypothesis in the context of abstract shapes and lines seems robust, it does not appear to be as strong in architectural settings, with the scarce available research primarily depending on static, unmatched, or unrealistic stimuli. **Methods:** In a within-subject study, we aimed to systematically examine the curvature preference hypothesis in indoor photorealistic environments, while including style as an explorative second level variable. 42 participants were exposed to four well-matched virtual living rooms representing contrast in contour (angular vs. curved) and style (modern vs. classic). Subjects freely explored the simulated rooms inside which they performed a repeated mental arithmetic task and rated their mood and spatial experience. **Results:** Out of the 33 outcome variables measured, and after correcting for false discoveries, only two eventually confirmed differences in the contours analysis, in favor of angular rooms. Analysis of style primarily validated the contrast of our stimulus set, and showed significance in one other dependent variable. Results of additional analysis using the Bayesian framework were in line with those of the frequentist approach. **Discussion:** The present results provide evidence against the curvature preference hypothesis, suggesting that the psychological response to contour in dynamic architectural settings is more complex. This study, therefore, helps to communicate a more complete scientific view on the experience of interior spaces and highlights the necessity of further investigations by providing directions for future research.

B05 **Poster Presenter: Bachman, Shelby**

Isometric handgrip exercise speeds working memory responses in younger and older adults

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Introduction: Working memory performance is modulated by stress and emotion, but it is unclear how changes in physiological arousal affect working memory. The locus coeruleus (LC), a small brainstem nucleus, is an arousal hub region in the brain. Higher tonic levels of LC activity are associated with poorer task performance. Isometric handgrip exercise modulates arousal and LC activity, with arousal and tonic LC activity elevated during handgrip and reduced immediately after handgrip. In this study, we investigated how changes in physiological arousal - induced through short bursts of isometric handgrip exercise - affected subsequent working memory performance. **Methods:** A sample of 57 younger (ages 18-29) and 56 older (ages 65-85) participants performed blocks of isometric handgrip exercise in which they periodically squeezed a therapy ball, alternating with blocks of an auditory working memory task. Electrocardiogram, respiration, and continuous blood pressure signals were acquired throughout the experiment to assess arousal. **Results:** Compared with those who completed a control task, participants who performed isometric handgrip had faster reaction times on the working memory task. Handgrip-speeded responses were observed for both younger and older adults, across working memory loads. Multimodal physiological responses (heart rate, pupil diameter, and sympathetic tone) indicated that physiological arousal increased during handgrip and subsequently decreased after handgrip. Furthermore, participants with greater increases in physiological arousal during handgrip had faster reaction times on the working memory task. Finally, there was a trend toward lower post-handgrip tonic pupil diameter in the handgrip relative to the control group. **Discussion:** These results suggest that physiological arousal induced through isometric handgrip improves working memory performance. Further, our findings implicate the LC in handgrip's effects on working memory. The potential for acute isometric exercise to temporarily improve processing speed may be of particular relevance for older adults who show declines in processing speed and working memory.

B06 **Poster Presenter: Ramírez, Verónica Adriana**

Role of Gender in Autonomic Reactivity: Analysis of Heart Rate of Preschool Children During Videos with Different Emotional Content

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Introduction: Emotions are complex phenomena that include changes at different levels of organization. Within these levels, the different autonomous measures have proven their usefulness in recent years to show the fluctuations resulting from emotional processes. Heart rate and its variation are particularly robust measures for evaluating these processes. The greater heart rate variation (range) implies greater emotional processing and reactivity. In the preschool years, both emotional processing and autonomic reactivity are in development, so it is of primary interest to study these phenomena at this stage. Several investigations established the importance of gender modulation of emotional processes, due to the different cultural treatment given to emotions in both genders. One of the most widely used methodologies today for the evaluation of emotional processes in children is emotion modulation through the viewing of short videos. For that, this paper aims to compare heart rate variation (range) between girls and boys after viewing short videos with different emotional content. **Methods:** A sample of 43 5-years-old children was formed. Participants were randomly assigned to one of two possible conditions (positive video or neutral video) and their heart rate was registered previously (baseline) and during the video watching. The interest variable was the heart rate range registered during the task. A 2x2 ANOVA was performed in order to examine the interaction between gender and video emotional content. Baseline heart rate was introduced as a covariable. **Results:** Results showed a greater heart rate range in positive condition than in neutral one. Also, girls presented a wider range than boys. However, no interaction was found between the two variables. **Discussion:** These results are consistent with the literature and illustrate the importance of including gender in studies about emotional processing. In addition, the viewing of videos is an emotional modulation paradigm that allows showing differences in the autonomous level.

B07 **Poster Presenter: Jeglinski-Mende, Melinda A.**

Shaping Negation – Spatial-Numerical Associations in Negative Numbers

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Introduction: Recent research has shown spatial associations for positive and negative numbers to horizontally aligned real-word objects. In addition, associations have also been found in vertically aligned symbols and positive numbers. The aim of our study is to extend these findings by using negative numbers. Hereby, we address the question whether negative numbers are aligned on a extended mental number line. **Methods**: Negative (-9, -8, -7, -6, -4, -3, -2, -1) and positive (+1, +2, +3, +4, +6, +7, +8, +9) numbers were presented subsequently together with vertically aligned arrows or rectangles in varying size in a go-nogo task. Participants (n=100) were asked to compare negative numbers to the reference minus -5 (positive numbers to +5). Repeated-measures ANOVA was used to test the effect of congruency, i.e., small positive and negative numbers congruent with downward-pointing arrows or small rectangles, large numbers with upward-pointing arrows and large rectangles. **Results:** We found the expected congruency effect in all positive conditions. There was no overall congruency effect in negative numbers, only in one condition, where negative numbers were presented mixed with positive counterparts and with down-facing arrows. Nevertheless, when presented together with positive numbers and small rectangles, large negative numbers were perceived as small. **Discussion:** Our research shows that different objects elicit different associations in positive and negative numbers: All positive numbers are spatially aligned as expected. In negative numbers, depending on the stimuli-set and context, we found both evidence for alignment on a mental number line that extends the mental number line of positive numbers and for processing by numerical value as if negative numbers were positive numbers. Taken together, spatial-numerical associations in negative numbers are situated in the context while associations for positive numbers are mentally grounded.

B08 **Poster Presenter: Kim, SuHyeong**

The adult rats after alcohol exposure in a third – trimester model of FASD showed impairment in spatial working memory dependent delayed alternation task.

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Introduction: Alcohol exposure (AE) during the brain growth spurt (BGS) results in damage to regions critical for WM: medial prefrontal cortex (mPFC), hippocampus (HC), and thalamic nucleus reuniens (RE). We have shown that AE during the BGS damages the RE and that RE inactivation disrupts mPFC – HC oscillatory synchrony and spatial WM (SWM). From these two separate findings, we hypothesized that AE during the BGS would result in SWM deficits. We compared choice accuracy between AE and sham intubated (SI) groups on a SWM-dependent delayed alternation (DA) task in male and female rats. **Methods**: The AE group was given 5.25 g/kg/day ethanol in milk formula via intragastric intubations on postnatal days (PD) 4-9. The SI group received the same intubation procedure as the AE group without any liquid administered. Adult rats underwent 6 days of DA sessions, consisting of interleaved 10 second (s), 30s, and 60s delay trials. **Results:** A three-way ANOVA was conducted to compare the effect of alcohol on DA choice accuracy between the AE and SI groups in 10 s, 30 s, and 60 s conditions and across 6 sessions. There was a significant 3-way interaction ($F(10,370)=1.94$, $p=.039$). Posthoc analysis showed a significant postnatal-treatment x session interaction for the 30 s delay ($F(5,195)=2.70$, $p = .02$), only a significant main effect of session ($F(5,195)=7.93$, $p < .001$) for the 10 s delay, and no significant main effects and no interaction for the 60 s delay. **Discussion:** These results suggest that the AE and SI groups perform uniformly poorly on the 60 s delay and uniformly well on the 10 s delay. However, for the 30 s delay, the AE group, unlike the SI group, failed to show consistent improvement across days. These findings support the hypothesis that AE during the BGS produces long-term SWM deficits.

B09 **Poster Presenter: Constant, Marika**

The Weighting of Prior Information in Confidence

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Introduction: Literature on Bayesian inference assumes our perception to depend on integrating prior expectations ("priors") and incoming information ("likelihood") to form the posterior belief or percept. Standard Bayesian models of confidence build off of this and consider confidence to be based on the perceived posterior probability that a decision is correct, given the internal evidence and the decision. This assumes confidence computations to optimally integrate priors and likelihoods. However, it remains unclear whether this is true, and how confidence judgments weigh information from priors. Here, we aimed at assessing whether priors are optimally weighted in confidence computations. **Methods:** In a gamified dual-decision task, we varied the precision of priors and likelihoods such that for each posterior precision level, there were two conditions, one in which the prior was more precise and one in which the likelihood was more precise. This allowed us to analyze whether accuracy or confidence would differ between these two conditions, despite equal posterior precisions, which would indicate either over- or underweighting of the priors. **Results:** We found that decision accuracy did depend on condition, indicating suboptimal weighting of priors relative to likelihoods. However, we did not find confidence to depend on the condition. Further, by fitting a Bayesian confidence model with a weighting parameter for the prior information, we could investigate quantitatively how the prior was weighted at both the decision level and confidence level. **Discussion:** These findings suggest that information from priors might be weighted to a different extent at the level of decisions and at the level of confidence. This provides important insight into how priors are integrated in decisions and confidence, which is critical for making quantitative predictions about confidence across different situations.

B10 **Poster Presenter: Beccherle, Maddalena**

Virtual social touch on embodied avatars in patients with Fibromyalgia

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Introduction: Fibromyalgia (FM) is a syndrome characterized by chronic widespread pain. Among all the aspects of quality of life impaired by FM, social functioning is one of the most affected. Considering that social touch represents one of the preferred channels to establish and maintain personal relationships, we investigated how 'vicarious' social touch is perceived in FM, using Virtual Reality (VR), combined with physiological recordings. **Methods:** Two groups of women were recruited (FM and age-matched healthy controls). Participants were lying on a deckchair and were presented with a VR scenario showing a female avatar in underwear matching their real position. 24 virtual pleasant touches (3cm/sec) were delivered by another female avatar on 6 different body parts, categorized in previous studies as neutral (knee and foot), social (head and hands), and intimate (breast and pelvis). Participants were asked to rate the perceived appropriateness, pleasantness, erogeneity, and ownership for the touched body part evoked by each virtual stimulus, using 0-100 Visual Analogue Scales (VAS). Skin Conductance Response and Heart Rate were recorded during teach trial. **Results:** The analysis showed that the virtual touch on the intimate area was perceived as less appropriate, less pleasant but more erogenous as compared to the social and neutral ones in both groups. Furthermore, FM reported higher ratings of appropriateness, pleasantness, and erogeneity as compared to HC. No differences emerged between the groups in ownership ratings, mood, and affective dimensions. **Discussion:** Our results seem to suggest that although the qualitative evaluation of touch and the ownership over the virtual body parts did not vary between the groups, FM patients' ratings were higher than controls. A generalized increased response to touch is suggested, while the hypothesis of anhedonia to gentle touch is not confirmed, at least for virtual touches. These results might be relevant when considering touch as a therapeutic practice for FM.

B11 **Poster Presenter: Herman, Aleksandra**

Delay and Effort-Based Discounting, and the Role of Bodily Awareness, In People Experiencing Long-Term Pain: A Cross-Sectional Study

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Introduction: Pain interventions typically include effortful exercise and long-term treatment – ie, short-term costs (effort) with delayed benefit (improved pain and/or function). Thus, understanding if long-term pain influences decision-making in context of delays and effort is essential given clear relevance to treatment uptake and/or adherence. **Methods:** We evaluated delay and effort attitudes in those experiencing chronic pain (n = 391) and in pain-free controls (n = 263). Additionally, we investigated the role of bodily sensation awareness and/or interpretation as potential contributing factors to altered decision-making. Volunteers completed three discounting questionnaires, assessing the influence of temporal delays (gains, losses) and effort on devaluation of monetary outcomes. **Results:** Individuals with chronic pain showed more short-sighted decisions for monetary gains, but not losses, and decreased willingness to undertake effort for monetary gains than the No Pain group. The Pain group had higher bodily sensation awareness and while this related to higher impulsivity, delay and effort discounting, neither awareness nor interpretation of bodily sensations interacted with pain levels or explained group differences in discounting behavior. **Discussion:** These findings suggest that impaired delay and effort-based discounting is present in people with chronic pain, and that this may be driven by pain-induced changes, but not pain-induced enhancements in bodily sensation awareness and/or interpretation. Exploring the utility of interventions targeting discounting behavior is warranted.

B12 **Poster Presenter: Morgenroth, Elenor**

Movie-induced emotion experiences modulate dynamically-occurring amygdala-CAPs

Elenor Morgenroth [1,2], Laura Vilaclara [1,2], Michal Muszynski [2], Marina Almató Bellavista [2], Maria Ploumitsakou [2], Mariane Brodier [1], Merlin Leuenberger [1], Patrik Vuilleumier [2], & Dimitri Van De Ville [1,2]

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Introduction: Researching the neural basis of emotion experience is a challenge. Facilitated by recent developments in technology and methods, new approaches to investigate dynamic functional connectivity using film as stimuli have gained increasing attention. We investigated films as a means to elicit a rich variety of emotions and to probe brain dynamics and their relationship with experienced emotions. **Methods:** We put together fMRI of 30 participants watching short films with continuous annotations of 13 discrete emotions to unravel dynamic brain states associated with emotion experience during movie watching. A general linear model (GLM) was used to reveal brain areas associated with specific discrete emotions by contrast with the other emotions. We further computed ten amygdala-seeded Coactivation Patterns (CAPs) separately for each short film and matched the resulting CAPs across runs using the Hungarian algorithm. The matched CAP time courses were then used as regressors in ANOVAs to predict their contribution to emotion experience. **Results:** Results from GLM revealed distinct activation maps for each but one emotion, overlapping with well-known functional networks. Further, amygdala-CAPs highlighted several networks coactivated with the amygdalae. Occupancy of all CAPs varied between 6.87-11.43%, demonstrating versatile brain states over time. ANOVAs showed most CAPs to be associated with time courses of experienced emotions. Notably, all emotions were significantly predicted by a linear combination of CAPs. **Discussion:** While many studies in affective neuroscience are limited to few emotion categories, we demonstrate distinct activation patterns for twelve discrete emotions. Amygdala-CAPs incorporate large-scale functional networks and we observe strong relationships between them and time courses of emotion experience in our data, which provides deeper insight into the functional networks and dynamics driving emotion experience beyond the results of GLM. This supports the validity of employing short films as a means for emotion elicitation and for studying dynamic brain changes underlying emotion experience.

B13 **Poster Presenter: Aydın, Tuba Co-Presenter: Önger, Mehmet Emin**

Investigation of marriage and life satisfaction of multiple sclerosis patients in terms of demographic variables

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Introduction: Multiple Sclerosis (MS) is one of the neuro-degenerative disorders. It affects negatively to life satisfaction of its patients. In current literature, it is known that there is a positive correlation between life satisfaction and marriage satisfaction. In this study, we aimed to examine life and marriage satisfaction of patients with MS (pwMS) in terms of demographic variables. **Methods:** This study was conducted between May-June 2019 in Ondokuz Mayıs University, Faculty of Medicine. In data collection Demographic Information Form, Marriage Life Scale (MLS), and Life Satisfaction Scale (LSS) were used. Data were analysed with IBM SPSS V28 software program. The significance level was taken as $p < 0.05$. **Results:** Marriage satisfaction of pwMS did not change according to patient's education level, partner's education level, income level, marriage duration, marriage age, child number, disease duration and total attack number, significantly. Their marriage satisfaction significantly changed according to dating period before marriage in marriage satisfaction. Patients who have 6 or more years dating period before marriage have higher marriage satisfaction than less than one year. In addition, their life satisfaction significantly did not change according to patients' education status, patients' income level, disease duration and total attack number. There was a significant positive correlation between marriage satisfaction and life satisfaction of pwMS. **Discussion:** As in healthy individuals, marriage satisfaction plays important roles in life satisfaction in pwMS. Demographic factors that is related to MS does not affect marriage and life satisfaction as other demographic factors. In a result, by finding out the factors affecting the marital and life satisfaction of pwMS, new strategies can be developed to increase the quality of life of pwMS.

B14 **Poster Presenter: Al, Esra**

Cardiac Signals Influence Cortical Motor Excitability and Muscle Activity

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Introduction: Internal bodily signals such as heartbeats can influence human perception and action. For example, somatosensory perception is impaired both during the systolic phase of the cardiac cycle and following stronger cortical responses to heartbeats. Here, we investigate whether these cardiac effects are associated with general changes in cortical excitability. **Methods:** Cortical and corticospinal excitability was assessed using electroencephalographic and electromyographic responses to transcranial magnetic stimulation (TMS) while monitoring cardiac activity using electrocardiography in thirty-six participants. Single pulses of TMS were applied over the right primary motor cortex of the participants. The experiment included 832 trials divided into four blocks of real and sham TMS conditions. At the end of the TMS experiment, subjects also performed a motor task, in which they squeezed a pinch gauge for three seconds and then relaxed their fingers for three seconds. In this order, subjects performed thirty trials. **Results:** Our results demonstrated that cortical and corticospinal excitability was maximal during systole as compared to diastole. In line with this finding, in the motor task, muscle activity and desynchronization of sensorimotor oscillations (8-25 Hz) were observed to be stronger following muscle contractions during systole. Complementing these results, we also observed that TMS led to heart-rate decreases specifically in systole but not in diastole. In addition to the cardiac cycle effects, increases in cortical responses to heartbeats, as measured by heartbeat-evoked potentials, predicted stronger corticospinal excitability. **Discussion:** These findings show that systolic cardiac signals are associated with a facilitatory effect on motor excitability. This is in contrast to the cardiac-related sensory attenuation previously reported for somatosensory perception. Altogether these findings thus suggest that action and perception have distinct windows in the cardiac cycle for optimal information processing.

B15 **Poster Presenter: Chinchella, Nicola**

Addiction, cure or care?

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Introduction: Addiction has been historically conceived and widely researched as a brain disease. While there has been much criticism on brain-centred approaches to addiction, this paper aims to reject such approaches by applying insights from phenomenology of psychiatry. We claim that when considering addiction as a brain disorder, research fails to account for the psychological feel and the rumination as direct or indirect prediction of addiction experience, and thus fails to provide suitable treatments for those subjects. **Methods:** Applying Merlau-Ponty's insightful distinction between the biological and the lived body we introduce respectively the concept of disease and illness and claim that since the lived body is not reducible to the biological body, illness is not reducible to disease. To support this claim, we leverage the example of schizophrenia which is taken to be a clear instance of this irreducibility, and which provides key features of illness to be tested against addiction. **Results:** Testing the instances of illness derived from schizophrenia against addiction we found that the latter shares important lived body disruptions with the former. Thus, using the same argument for the irreducibility in schizophrenia, we claim that also in addiction the lived body dimension cannot be simply reduced to its biological underpinnings. **Discussion:** The irreducibility of illness to disease unveils the difference between cure-oriented and care-oriented treatments which are directed respectively to the biological and the lived body. We then conclude that, any model which does not encompass both dimensions will fail in providing efficient treatment for addiction.

B16 **Poster Presenter: Stephani, Tilman**

Cortical excitability shapes somatosensory perception with spatiotemporally structured dynamics

Stephani, T. [1, 2], Hodapp, A. [1¶], Jamshidi Idaji, M. [1, 2, 3], Nierula, B. [4], Eippert, F. [4], Villringer, A. [1, 5, 6], & Nikulin, V. V. [1]

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Introduction: Brain responses vary considerably from moment to moment, even to identical sensory stimuli. This has been attributed to changes in instantaneous neuronal states reflecting the system's excitability. However, the spatiotemporal organization of these dynamics and their influence on the perception of external stimuli remain poorly understood. **Methods:** In a series of three somatosensory stimulation paradigms in humans, we examined the interplay of two markers of cortical excitability, pre-stimulus oscillatory activity in the alpha band (8-13 Hz) and thalamo-cortical excitatory post-synaptic potentials (EPSP) inferred from short-latency somatosensory evoked potentials (SEP) in the EEG, as well as their association with the perceived stimulus intensity. Furthermore, we characterized the temporal structure and the spatial specificity of these dynamics on a single-trial level using scaling analysis and source reconstruction of hand- and foot-related SEPs, while controlling for variability in peripheral nerve activity. **Results:** Pre-stimulus alpha oscillations influenced initial cortical SEPs, which were in turn associated with changes of the perceived stimulus intensity – yet unrelated to variability of subcortical or peripheral nerve activity. Furthermore, these fluctuations of cortical excitability consistently followed a temporal power law, thus indicating the existence of long-range temporal dependencies. Moreover, comparing these dynamics between spatially distinct somatosensory regions (i.e., foot and hand areas), we observed a somatotopic organization of the relation between instantaneous neuronal states and stimulus-evoked responses. **Discussion:** Our findings demonstrate that already at initial cortical processing neural excitability modulates how intense a stimulus is perceived. Despite these cortical dynamics representing topologically confined effects, they also seem to be embedded in global system activity that is organized in a scale-free manner, as indicated by the observed long-range temporal dependencies. This may reflect a delicate balance between robustness and flexibility of neural responses to sensory stimuli, enabling the brain to adaptively change the neural encoding of even low-level features, such as the stimulus´ intensity.

B17 **Poster Presenter: Recart Zapata, Emilio**

Sentiment analysis in news media headlines in 2019 Presidential Elections: Exploratory Reliability Study Analysis

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Introduction: In recent years, social networks offer the facility to access political headnews instantly. Despite the growing information, there has been a spread of fake news generating a biased perception to the politics. According to this, new computational models have been developed to identify and predict subjective perception towards social politic content. Reliability has been a widely used tool in measuring agreements that different people arrive at the presentation of the same stimulus. By the other hand, sentimental analysis is a useful tool for analyzing electoral behavior. **Methods:** The purpose of this study was to evaluate the subjective perception of individuals for each presidential formula/force of principal Argentina´s newspapers during 2019 elections using reliability coefficient agreement. For this, 3 participants were recruited to classify 2257 headlines of the principal country's newspapers as positive, neutral, or negative according to their perception. To minimize ideological bias, each formula/force was replaced by a "Target". **Results:** Krippendorf nominal reliability alpha metric yielded adequate inter agreements between the participants. With this tool, we found that Alberto Fernandez (the winning candidate) was mentioned with positive connotation in 387,66 headlines (negative: 239,66), while Mauricio Macri (the outgoing president and the second candidate) in 320,66 ones (negative: 430,66). Other candidates did not exceed 140 positive mentions (negative: <16,66). **Discussion:** According to this, using these metrics could be a useful tool for future studies for classifying the valence of the headlines.

B19 **Poster Presenter: Sonkusare, Saurabh**

Neural interactions between anterior insula and anterior cingulate cortices link perceptual and physiological processes

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Introduction: The dynamic integration of sensory and bodily signals is central to optimally guiding adaptive behaviour. Although the anterior cingulate cortex (ACC) and the anterior insular cortex (AIC) play key roles in this process, their context-driven dynamic functional interactions are unclear. **Methods:** Here, we studied the functional interplay between these two brain regions using intracranial EEG measures of high-frequency activity (HFA) and dynamic effective connectivity acquired while three participants viewed a dramatic film. The rich perceptual and emotional content of the movie allowed us to link exteroceptive (visual and audio) and body physiological (heart rate) features with neural activity and patterns of connectivity within the AIC-ACC circuit. **Results:** We found that HFA of AIC and ACC were strongly correlated. Furthermore, exteroceptive features were related to ACC effective connectivity parameters, suggesting a crucial role of this region in processing extrinsic sensory information. Conversely, AIC parameters were linked to both exteroceptive (audio) and heart rate features, highlighting a core role of AIC connectivity in dynamically linking sensory and physiological information. **Discussion:** These findings provide new evidence for complementary, yet dissociable, roles of neural dynamics between the ACC and the AIC underlying the brain-body responses during an ecologically valid perceptual experience.

B20 **Poster Presenter: Shapouri, Soheil**

Emotional Reactions to Natural and Technological Disasters; A Possible Case for Evolutionary Mismatch

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Introduction: Introduction: Evolutionary mismatch refers to the situation where evolved characteristics or traits of an organism are no longer advantageous due to the rapid changes in the environment which the organisms cannot keep up with. This concept has been used to explain a wide range of observations from human mating to addiction but whether and how it can be applied to the study of threats like natural and technological disasters has not been addressed. We hypothesized that humans experience more negative emotions in response to technological disasters than natural disasters after controlling for severity of these threats. **Methods:** Methods: In the first part of this study, we investigated EM-DAT dataset, an international disaster database, to see which type of disaster, natural or technological, causes more fatalities and injuries. In the second part, we will examine the valence and arousal ratings of visual stimuli depicting natural and technological disasters from affective databases to measure the intensity of negative emotions experienced in response to these threats. **Results:** Results: Our investigation of EM-DAT data shows that natural disasters are more frequent and significantly kill more people and cause more injuries. The results of the second part will be presented at the conference. **Discussion:** Discussion: If our hypothesis is supported by the data, it can open up a whole world of new research possibilities for evolutionary neuroscience.

B21 **Poster Presenter: Pimpini, Leonardo**

Mindset matters: Attentional focus – not body-weight – determines the level of food-related brain activity

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Introduction: A dominant view in the literature is that viewing high-caloric foods leads to increased brain activity in the reward circuitry of overweight people. However, the empirical literature is inconsistent. This may be due to the double-sided nature of high-caloric foods: high in the hedonic, low in the health value. People's attentional focus may frequently switch from a hedonic to a health focus while viewing foods, complicating the interpretation of results in studies where attentional focus is not controlled (e.g., passive view). **Methods:** We hypothesize that food-related brain responses are moderated by attentional focus. In this study, attentional focus (hedonic, health, neutral) was manipulated, using a one-back task with food stimuli, while participants (32 healthy-weight, and 29 obese) were in the fMRI. **Results:** Univariate analysis showed no difference in brain activity for palatable vs. unpalatable foods or for high vs. low-caloric foods. Instead, brain activity was higher in the hedonic than in the health and neutral attentional focus. Multi-Voxel-Pattern-Analysis showed that foods' palatability and calorie content can be decoded in the mesocorticolimbic system (Frontal Gyrus, Anterior Cingulated, Insula), with results not moderated by BMI. **Discussion:** So, the level of brain activity is neither proportionate to the reward value of foods, nor moderated by BMI. Instead, the level of brain activity reflects attentional focus, with food palatability and caloric content represented as patterns of brain activity.