components that relate to speed and accuracy. Future investigations will be aimed at relating these behavioral processing differences to neural systems dysfunctions among individuals with mood and anxiety disorders.
Supported By: NIMH R01 MH101453
Keywords: Computational Psychiatry, Research Domain Criteria (RDoC), Approach/Avoidance, Depression, Anxiety

870. Induced Anxiety Leads to Underestimating Time

Ioannis Sarigiannidis[1], Monique Ernst[2], Christian Grillon[2], Jonathan Roiser[3], and Oliver Robinson[3]

[1]NIH Oxford-Cambridge, [2]NIMH/NIH, [3]Institute of Cognitive Neuroscience, University College London, UK

Background: Our subjective experience of time is an integral part of our mental life and is intimately linked to our emotional state. Hedonic events are associated with quick passage of time but the picture is less clear for negative experiences. For example, during an anxiety-provoking interview time might fly but during traumatic events it might be reported that time froze. However, no study up to date has investigated how anxiety affects time perception.
Methods: In two experiments we used threat of unpredictable shock to induce anxiety in healthy individuals performing two-alternative forced choice tasks, a subsecond (Experiment 1, n=25) and a suprasecond (Experiment 2, n=25) temporal bisection paradigm. Specifically, participants viewed stimuli that remained on the screen for different time intervals (Experiment 1: 300-700ms, Experiment 2: 1400-1600ms) and then decided whether their duration was “short” or “long” compared to anchor durations they had in mind.
Results: In line with our hypothesis, in both experiments, participants significantly underestimated time in the anxiety condition, as indicated by a rightward shift of the psychophysical function. Factors that affected this effect are discussed.
Conclusions: Our results are in line with the idea that anxiety is associated with the underestimation of time. Future studies could explore the possibility that during a fearful event, time might freeze (i.e. time overestimated) in line with reports that this is so under threat of imminent physical harm. This line of research might help explain day-to-day difficulties of anxious individuals in everyday tasks that involve keeping track of time.
Supported By: Wellcome Trust
Keywords: Anxiety, Time Perception, Psychophysics, Emotion perception

871. Modulation of the Insula and Somatosensory Cortex by Ondansetron

Emily Stern[1], Rebbia Shahab[1], Katherine Burdick[1], Evan Leibu[1], James Murrough[1], Lazar Fleysher[1], Barbara Coffey[1], and Wayne Goodman[2]

[1]Icahn School of Medicine at Mount Sinai, [2]Baylor College of Medicine

Background: Ondansetron is a 5-HT3 receptor antagonist used to treat nausea and vomiting. In addition to its potent anti-emetic effects, ondansetron reduces neuropathic pain and pruritus, and small trials have found reductions in overall symptom severity in obsessive-compulsive and Tourette’s disorders. Despite these promising data, the neural mechanisms underlying ondansetron’s effects are unknown. Here we investigated the effects of ondansetron on brain activation using fMRI in order to test the hypothesis that modulation of activity in insula and somatosensory regions may underlie the drug’s efficacy in treating a variety of psychiatric and sensory conditions.
Methods: Data were analyzed from 40 healthy controls using a double-blind placebo-controlled single-dose challenge design to examine the effects of 8 (n=12), 16 (n=15), or 24 (n=13) mg of ondansetron on brain function. Subjects performed an fMRI task previously shown to elicit activation in insula and somatosensory cortex. Preliminary analysis examined changes in activation for ondansetron vs. placebo in each dose group separately using whole-brain t-tests at a threshold of $p<0.005$ (uncorr).
Results: 24-mg ondansetron was associated with reduced activation in bilateral somatosensory cortex, mid-posterior insula, premotor areas, and prefrontal cortex compared to placebo. Activity in left somatosensory regions was also reduced for the 16 and 8-mg doses, although effects were much less widespread than for the 24-mg dose.
Conclusions: Results from these preliminary analyses point to a dose-dependent reduction of somatosensory and insula activity with single doses of ondansetron. These findings suggest that high-dose ondansetron could be useful in treating disorders associated with hyperactivation of these regions.
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Keywords: Insula, somatosensory, OCD, sensory processing, pharmaco-fMRI

872. Mechanisms of Peer Influence on Decision-Making in Adolescence

Andrea Reiter[1], Andreea Diaconescu[2], Shu-Chen Li[3], and Ben Eppinger[4]

[1]Max Planck Institute, [2]ETH Zürich, [3]TU Dresden, [4]Concordia University

Background: In general, adolescence is characterized by a high degree of physical health. Health dangers mostly emerge by decisions teenagers themselves make: Epidemiological research has found higher rates of unprotected sexual intercourse, risky driving, delinquency and experimenting with drugs in adolescence as compared to any other period in life. Previous research also emphasizes the important impact of social factors, i.e. peers, on these maladaptive behaviors. However, mechanisms which underlie the influence of peers on decision-making in adolescents are so far poorly understood.
Methods: We use two social decision-making tasks in combination with behavioral computational modeling in adolescents (n=30, 12-14y) and young adults (n=30, 20-32y). In a within-subjects-design, both age groups underwent the task once while interacting with a peer or a player of the other age group.

Results: We show that 1) that decision-making in social contexts is informed by uncertainty estimates in both adolescents and young adults 2) how social decision-making mechanisms differ as a function of a) our participants' age group b) whether they are interacting with own-age players ("peers") or other-age players 3) how this relates to real-life factors like social network size, substance consumption and real-life risk-taking behaviors.
Conclusions: Social Learning paradigms in combination with computational modeling of behavior appear as a promising step to finegrain our understanding of the often times postulated "social brain in adolescence" and might prove useful to define risk factors for predicting maladaptive behaviors and psychiatric disease, also later in life.

873. Dissociable Temporal Effects of Bupropion on Behavioural Measures of Emotional and Reward Processing in Major Depressive Disorder

Annabel Walsh[1], Michael Browning[1], Wayne Drevets[2], Maura Furey[2], and Catherine Harmer[1]

[1]University of Oxford, [2]Janssen Research & Development, LLC

Background: Early in treatment serotonergic and/or noradrenergic antidepressants remediate negative biases in information processing observed in major depressive disorder (MDD). However, it remains unclear whether dopaminergic antidepressants exert similar early actions on information processing. Here we investigate the early and longer-term effects of bupropion on behavioural measures of emotional and reward processing in MDD.
Methods: 41 MDDs and 40 healthy controls (HCs) participated in a repeated measures study involving open-label administration of bupropion to just the MDDs over 6 weeks. All participants completed the Emotional Test Battery and a reward task at baseline, week 2 and week 6.
Results: Only the bupropion-treated MDDs displayed a significant decrease in the misclassification of faces as sad (F1, 80 = 4.09, $p < 0.05$; t41 = 2.72, $p < 0.05$) and false recall of negative self-referent words (F1, 81 = 5.73, $p < 0.05$; t42 = 2.12, $p < 0.05$) between baseline and week 2. Conversely, bupropion was found to significantly worsen performance on the reward task between baseline and week 2 (t14 = 4.17, $p < 0.01$) prior to normalisation to HC level at week 6 (t14 = -10.5, $p < 0.001$; t28 = −0.25, p = 0.80).
Conclusions: Early in treatment bupropion does act to reduce negative biases in emotional processing but may worsen reward processing with the beneficial actions only occurring later in treatment. Such dissociation in the temporal effects of bupropion on emotional and reward processing has implications in the treatment of the different symptom domains of negative affect and anhedonia in MDD.
Supported By: J&J
Keywords: Major Depression, Bupropion, Emotional processing, Reward processing

874. Pathways to Late-Life Suicidal Behavior: Cluster Analysis and Predictive Validation

Katalin Szanto[1], Hanga Galfalvy[2], John Keilp[2], and Alexandre Dombrovski[1]

[1]University of Pittsburgh, WPIC, [2]Columbia University

Background: Clinical heterogeneity is a key challenge in understanding suicidal risk, and distinct pathways to suicidal behavior are likely to exist. We aimed to identify pathways as indicated by latent classes of late-life depression cases, relating them to the history and characteristics of suicidal behavior.
Methods: Cluster analysis was performed on four cognitive/decision-making, eleven personality/social support variables, and depression severity. Predictive validation was assessed via the individuals' past and prospective (30 months) suicidal ideation and behavior. Sample: 189 depressed elderly (60+), and 57 non-psychiatric controls.
Results: The cluster analysis selected five-clusters, three of which conferred high suicide risk: 1) Combination of cognitive deficits, personality and environmental risk factors, low delay discounting, 100% with attempt or ideation at baseline, majority with high-lethality attempts; 3) Cognitive deficits and exaggerated delay discounting, 87% with attempt and ideation; and 4) Personality-pathology based cluster (i.e. low self-esteem), minimal cognitive deficits, 82% with attempt or ideation at baseline, 12% with high-lethality attempts. In contrast, Cluster 2 participants had uniformly lower risk scores, 32% with suicidal ideation or attempt at baseline. There were significant between-cluster differences in the number of emergency hospitalizations during follow-up, as well as the number ($p<0.001$) and lethality ($p=0.002$) of suicide attempts prior to baseline, and during follow-up ($p=0.006$, 30 attempts by 22 participants, two of them lethal).
Conclusions: Combinations of known risk factors define distinct pathways to suicidal behavior in late-life depression. This analysis identified five subgroups of depressed participants ranging from extremely high risk for fatal suicide attempts to subgroups with much lower suicide risk.
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Keywords: Late-life, Suicide, Cluster Analysis, Predictive Validation, Decision Making

875. Differences in Neural Activation during Implicit Facial Emotion Processing in Youth and Adults with Bipolar Disorder

Isabelle Bauer[1], Nithya Ramakrishnan[1], Stefan Ursu[1], Kirti Saxena[2], Giovana Zunta-Soares[3], Mary Phillips[4], Danielle Spiker[1], and Jair Soares[5]

[1]The University of Texas Health Science Center at Houston, [2]Baylor College of Medicine, [3]The University of Texas Science Center at Houston, [4]University of Pittsburgh, [5]The University of Texas Medical School at Houston