Introduction: Attention-deficit/hyperactivity disorder (ADHD) is a highly prevalent psychiatric condition that frequently originates in early development and is associated with a variety of functional impairments. Despite a large functional neuroimaging literature on ADHD, our understanding of the neural basis of this disorder remains limited, and existing primary studies on the topic include somewhat divergent results.
Objectives: The present meta-analysis aims to advance our understanding of the neural basis of ADHD by identifying the most statistically robust patterns of abnormal neural activation throughout the whole-brain in individuals diagnosed with ADHD compared to age-matched healthy controls.
Methods: We conducted a meta-analysis of task-based functional magnetic resonance imaging (fMRI) activation studies of ADHD. This included, according to PRISMA guidelines, a comprehensive PubMed search and predetermined inclusion criteria as well as two independent coding teams who evaluated studies and included all task-based, whole-brain, fMRI activation studies that compared participants diagnosed with ADHD to age-matched healthy controls. We then performed multilevel kernel density analysis (MKDA) a well-established, whole-brain, voxelwise approach that quantitatively combines existing primary fMRI studies, with ensemble thresholding (p<0.05-0.0001) and multiple comparisons correction.
Results: Participants diagnosed with ADHD (N=1,550), relative to age-matched healthy controls (N=1,340), exhibited statistically significant (p<0.05-0.0001; FWE-corrected) patterns of abnormal activation in multiple brains of the cerebral cortex and basal ganglia across a variety of cognitive control tasks.
Conclusions: This study advances our understanding of the neural basis of ADHD and may aid in the development of new brain-based clinical interventions as well as diagnostic tools and treatment matching protocols for patients with ADHD. Future studies should also investigate the similarities and differences in neural signatures between ADHD and other highly comorbid psychiatric disorders.

Disclosure of Interest: None Declared

Neuroscience in Psychiatry

O0070

Nicotinamide Riboside Attenuates Memory Impairment and Depressive-like Behavior in an Alzheimer's Disease Animal Model

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Introduction: Depression in Alzheimer's disease (AD) differs from major depression in terms of clinical features and treatment. Antidepressants do not provide the expected benefits in depressive symptoms accompanying cognitive decline in AD, suggesting distinct mechanisms. Emerging research suggest that compromised mitophagy, the selective removal of damaged mitochondria, may contribute to the pathogenesis of AD. However boosting nicotinamide adenine dinucleotide (NAD+) to induce mitophagy reduces amyloid β (Aβ) aggregation and enhances cognitive function in AD models (Kerr *et al.*,Trends Neurosci 2017;40:151-66). Nevertheless, data on NAD's impact on depression in AD remains limited.
Objectives: This study aimed to examine the impact of the NAD+ precursor nicotinamide riboside (NR) on cognitive and neuropsychiatric symptoms in a AD rat model.
Methods: To induce the AD, a single dose of 5 µl Aβ1-42 was injected into each lateral ventricle of rats (day 0), while the control group received an intracerebroventricular (icv) saline (0.9%NaCl). Four experimental groups were designed: control (icv saline+po saline), NR (icv saline+po NR), Aβ (icv Aβ+po saline), and Aβ+NR (icv Aβ+po NR).After the injection, to reduce Aβ clearance (Kang *et al.* Science. 2009;32 1005-7.) rats were subjected to 96 hours of sleep deprivation.Starting from day 6, rats were given either 700 mg/kg oral NR or saline, and handling test scores were recorded daily.The procedures were repeated daily until the rats were sacrificed on day 28.Behavioral experiments were randomly conducted at the end, and statistical analysis was performed using repeated measures ANOVA, followed by the Tukey post hoc test.
Results: Passive avoidance test results showed that the Aβ group had the shortest latency to enter the dark area. However, the Aβ+NR group exhibited a prolonged latency compared to the Aβ group ($F(3,2)=5.5;p<0.05$). Aβ injection induced depressive-like behavior in rats, as indicated by the forced swim test (FST) for behavioral despair and the sucrose preference test (SPT) for anhedonia. In AD rats treated with NR (Aβ+NR), Aβ-induced depressive-like behavior was reduced, with lower FST immobility scores ($F(3,2)=6.2;p<0.05$) and increased sucrose preference in the SPT ($F(3,2)=7.5;p<0.05$). There were no significant differences in anxiety-like behaviors among the groups, assessed by the time spent in the open arm in the elevated plus maze test ($F(3,2)=1.9;p>0.05$). During the 28-day monitoring period, the Aβ+NR group of rats exhibited a more rapid decrease in aggression levels compared to the other groups in the handling test. This decrease was significant between days 7 and 10 compared to the Aβ group ($F(48,5)=1.5;p<0.05$).
Conclusions: NR improved memory, reduced depressive behavior, and lowered aggression in AD rats. This suggests that NAD+ precursor NR effectively treats cognitive decline and neuropsychiatric symptoms in an AD model.

Disclosure of Interest: None Declared

O0071

Treatment effect of trauma-focused treatment and/or integrated trauma-focused and personality disorder treatment on brain activation during an emotional face task

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Introduction: Post-traumatic stress disorder (PTSD) and personality disorders are highly comorbid. There is some evidence that

trauma-focused treatment normalises activation in brain areas involved in the fear circuit and regions involved in emotion regulation in people with PTSD. Although we assume that working mechanism of personality disorder treatments relies on improving emotion regulation and associated brain regions, there is as of yet little evidence of neurobiological effects of personality treatment on people with PTSD and comorbid PD.
Objectives: To 1) study the effect of trauma-focused and/or trauma-focused and personality disorder treatment n brain activation in participants with PTSD and comorbid personality disorders and 2) relate change in brain activation to symptom improvement.
Methods: Participants with PTSD and comorbid borderline and/or cluster c personality disorders from the PROSPER-trials (Prediction and Outcome Study for PTSD and personality disorders) were randomized to either trauma-focused treatment (TFT) or TFT with personality disorder treatment (TFT+PT). Brain activation was measured with an emotional face task during functional magnetic resonance imaging scanning before and after treatment. Regions of interest for the analyses were the amygdala, dorsal ACC, insula, ventromedial prefrontal cortex (PFC), ventrolateral PFC and dorsolateral PFC. Bayesian multilevel analyses were conducted to analyze change in brain activation. Clinical measures were clinician-administered PTSD severity, self-rated emotion regulation problems, depression severity and dissociation severity.
Results: We included 42 participants with a pre- and posttreatment scan (24 with TFT, 18 TFT+PT). Analyses on the pre-post data are currently being run and will be presented in April.
Conclusions: This is one of the first studies to conduct functional MRI analyses on treatment in participants with both PTSD and personality disorders.

Disclosure of Interest: None Declared

O0072

A Meta-Analysis of fMRI Activation Studies of Ketamine in Healthy Participants

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Introduction: There has been rapidly growing interest in understanding the pharmaceutical and clinical properties of psychedelic and dissociative drugs, with a particular focus on ketamine. This compound, long known for its anesthetic and dissociative properties, has garnered attention due to its potential to rapidly alleviate symptoms of depression, especially in individuals with treatment-resistant depression (TRD) or acute suicidal ideation or behavior. However, while ketamine's psychopharmacological effects are increasingly well-documented, the specific patterns of its neural impact remain a subject of exploration and basic questions remain about its effects on functional activation in both clinical and healthy populations.
Objectives: This meta-analysis seeks to contribute to the evolving landscape of neuroscience research on dissociative drugs such as ketamine by comprehensively examining the effects of acute ketamine administration on neural activation, as measured by functional magnetic resonance imaging (fMRI), in healthy participants.
Methods: We conducted a meta-analysis of existing fMRI activation studies of ketamine using multilevel kernel density analysis (MKDA). Following a comprehensive PubMed search, we quantitatively synthesized all published primary fMRI whole-brain activation studies of the effects of ketamine in healthy subjects with no overlapping samples (N=18). This approach also incorporated ensemble thresholding (α=0.05-0.0001) to minimize cluster-size detection bias and Monte Carlo simulations to correct for multiple comparisons.
Results: Our meta-analysis revealed statistically significant ($p<0.05$-0.0001; FWE-corrected) alterations in neural activation in multiple cortical and subcortical regions following the administration of ketamine to healthy participants (N=306).
Conclusions: These results offer valuable insights into the functional neuroanatomical effects caused by acute ketamine administration. These findings may also inform development of therapeutic applications of ketamine for various psychiatric and neurological conditions. Future studies should investigate the neural effects of ketamine administration, including both short-term and long-term effects, in clinical populations and their relation to clinical and functional improvements.

Disclosure of Interest: None Declared

Child and Adolescent Psychiatry

O0073

A longitudinal study of child and adolescent psychopathology in conditions of the war in Ukraine

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Introduction: According to UNICEF, 2 million children have left the country since the beginning of the war. 2.5 million Ukrainian children are internally displaced persons. Minors often become victims or witnesses of violence.
The events of 2022-2023 are the largest military conflict in the world since World War II. The impact on the mental health of the population is characterized by the variety and mass of traumatizing factors.
Mental trauma causes PTSD, depressive disorders (DD), anxiety disorders (AD), behavioral disorders (CD), attention deficit hyperactivity disorder (ADHD).
Objectives: The aim of the study was to determine the prevalence of PTSD and its comorbidities at different stages of experiencing a traumatic experience.