

Announcing the Inaugural Annual Research Day

The Department of Psychiatry at SUNY Upstate Medical University is pleased to host its inaugural ****Annual Research Day****, which will now take place each fall. This event provides a valuable opportunity for students, trainees, and faculty to present their latest research and scholarly activities.

Designed to foster academic engagement and collaboration, the day will include presentations, discussions, and networking opportunities aimed at highlighting the department's research achievements and building connections within our academic community.

We invite all members of the department to participate and contribute to this important event.



1.

Title: Capacity's Impact on The Use of Electroconvulsive Therapy in Individuals Suffering from Malignant Catatonia

Author(s): Sean Tyndall

Co-Author(s): Justin P Meyer & Kelsey M Wagner

Abstract: Electroconvulsive Therapy (ECT) remains the definitive treatment for malignant catatonia, a medical emergency with a high degree of morbidity and mortality. Unfortunately, there is frequently a lag between symptom onset and treatment due to a variety of issues. Most individuals suffering from malignant catatonia lack capacity to consent to ECT due to their condition. This may be one of the causes for delay in treatment.

OBJECTIVE: To explore how lacking capacity may delay care for individuals with malignant catatonia and if this delay causes further complications.

METHODS: A search of the PubMed for the terms "capacity, consent, electroconvulsive therapy" revealed a total of 45 articles. Only three of these articles pertained to ECT in catatonia or malignant catatonia.

RESULTS: There is limited literature examining the consent process for ECT in individuals suffering from malignant catatonia. Despite the necessity, safety and efficacy of ECT for malignant catatonia, select states require special court processes for ECT, which can delay treatment leading to further morbidity. This process is unlike other lifesaving medical treatments in which a health care proxy may be used in nonemergent circumstances.

CONCLUSIONS: More research may elucidate the harm this delay causes individuals. Additionally, improved advocacy and education about ECT may change public policy, allowing ECT to be treated like other medically necessary treatments. This may prevent potential complications for other patients in the future.

2.

Title: Assessing the knowledge, attitudes, and practices of psychiatric trainees in the treatment of mental health disorders associated with infertility

Author(s): Ejay Kao

Co-Author(s): Ejay Kao, Elizabeth James, Kristina Deligiannidis, Ljiljana Marina, and Nevena Radonjic

Abstract:

OBJECTIVES: Patients undergoing infertility treatment and receiving assisted reproductive technology (ART) have an increased risk for mental health disorders. The purpose of this study is to assess the knowledge, attitudes, and practices (KAP) of psychiatry residents in treating mental health disorders of patients with infertility.

METHODS: We developed a 31-question KAP survey following the standard guidelines. The anonymous survey was distributed via the Research Electronic Data Capture (REDCAP) application to psychiatry trainees across the United States through the listservs of the following organizations: American Association of Directors of Psychiatric Residency Training, American Society for Reproductive Medicine, Postpartum Support International, and Marcé of North America.

RESULTS: 71 trainees from the United States responded to the survey. During medical school, there was limited didactic and clinical exposure to infertility and available treatments. In terms of knowledge, residents were limited in their knowledge of the prevalence, definition, and comorbid mental health disorders related to infertility. The majority of residents agreed that psychiatrists need to have a good understanding of infertility and available treatments and its impact on mental health. The level of confidence was low related to knowing the ability to adequately counsel patients related to the use of psychotropic medications during infertility treatment.

CONCLUSIONS: Although residents find that the impact of infertility on mental health is of high clinical importance, there is a lack of sufficient clinical and didactic exposure to infertility, which may contribute to the observed lack of confidence in managing and treating this population group.

3.

Title: Application of Graph Neural Networks to Genomic Data for Predicting ADHD

Author(s): Ankita Saxena

Co-Author(s): Steven V Faraone

Abstract: Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder that affects approximately 5.3% of children and 2.5% of adults worldwide. Individuals with ADHD experience deficits in multiple cognitive domains and show impaired psychosocial functioning. To date, the etiology remains unknown, although recent Genome Wide Association Studies (GWAS) have been able to identify up to 27 genome-wide significant risk loci. However, they were found to account for a minute amount of heritability, while all common variants explained ~14%. Consequently, polygenic risk scores that condense the risk alleles through the entire genome into one value have been used in research studies to predict disease status in ADHD and other psychiatric diseases. However, these scores cannot register genomic relationships and provide less information to predictive models. Graphs are an alternative way to structure GWAS data that can granularly capture the multivalent associations between genomic variants. This work utilizes GWAS data from 2455 ADHD cases and 8432 controls of European descent, obtained via 9 cohorts from the Psychiatric Genomic Consortium, to construct individual graphs, and applies Graph Neural Networks (GNNs) to perform graph level classification to predict risk. It further leverages explainability *METHODS* to extract disease associated genomic networks. We compare several different GNN approaches, including graph convolutional networks, attention networks, and contrastive learning with existing State of the Art *METHODS*.

4.

Title: Building Resilience: The Role of Trauma-Adapted Yoga (TAY) in Staff Wellness Initiatives**Author(s):** Nayla M Koury**Co-Author(s):** Theresa Chung, Jacquelynn S Duquette, Kathryn M Hagen, and Nayla M Khoury

1. Norton College of Medicine at SUNY Upstate Medical University

2. Department of Psychiatry, SUNY Upstate Medical University

Abstract:

OBJECTIVES: Chronic stress in healthcare workers (HCW) can lead to various illnesses including mental health disorders, cardiovascular disease, and shift work sleep disorder. Distressing patient outcomes can also traumatize HCWs. HCWs additionally develop musculoskeletal disorders related to patient handling, positioning, and sustained awkward postures in patient care delivery. Trauma Adapted Yoga (TAY) adapts yoga to be gentle and avoids re-traumatization by individualizing the practice. We explored TAY training as a staff well-being intervention to grow a trauma-informed community and integrate TAY into clinical practice for patients and staff.

METHODS: The study protocol was submitted and deemed exempt by the IRB. In collaboration with TAY founder Josefin Wikstrom, a TAY training program was offered to Upstate staff and interest sought via hospital TAY offerings by trained clinicians. The training was five full days in both virtual and in-person formats. Interest was measured by enrollment number. Changes in wellbeing were assessed using pre- and post-training WellBeing Index (WBI) scores and the post-training Connor-Davidson Resilience Scale. TAY practice small groups were created based on job locations, such as pediatric and inpatient adolescent units, and the community hospital. Participants were encouraged to practice together and co-lead TAY for patients and staff with previously trained clinicians.

RESULTS: 24 staff members, including physicians, residents, nurses, social workers, administrative staff, and medical students, are being trained in TAY. Initial WBI scores showed elevated stress, burnout, and suicidal ideation compared to staff not in training. At the in-person training, 60% of participants found the group aspect most helpful, highlighting interdisciplinary community building. Motivations for training included personal trauma and coping with patient loss, and usage in clinical practice; we hypothesize that the group was self-selecting based off this. TAY practice has expanded within Upstate with various session formats, times, and locations. This is an on-going pilot program to evaluate TAY's effects on staff wellbeing, so findings are preliminary.

CONCLUSIONS: HCWs can be trained to provide TAY to colleagues and patients, fostering a culture of wellbeing, community, and connection. Training staff in TAY may be an effective wellbeing intervention, particularly due to its trauma focus and potential for interdisciplinary connection.

5.

Title: Riding the wave: A wellness intervention for healthcare providers using Trauma Adapted Yoga

Author(s): Nayla M Koury

Co-Author(s): Theresa Chung & Mihika Nepal

Abstract:

OBJECTIVES: As a result of the high-stakes and demanding work environment, hospital staff can experience burnout and detriments to physical health. Current literature supports yoga as a therapeutic and wellness intervention, citing its positive impact on physical and mental wellbeing, self-regulation, and coping strategies (Ciezar-Andersen et al. 2021; Cocchiara et al. 2019; Hilcove et al. 2021). Trauma Adapted Yoga (TAY) enhances basic yoga principles with its focus on upregulating the parasympathetic nervous system by creating a safe and supportive environment, which can be beneficial to anxiety and distress in acute treatment settings. To review lessons learned in piloting TAY for wellness and offering TAY training to hospital staff and clinicians. To share a TAY practice and explore trauma-informed principles and language. To share next steps for integrating TAY into larger organizational wellness efforts.

METHODS: Data on participants was collected through pre and post measures of subjective units of distress, TAY training interest and feedback through an anonymous survey.

RESULTS: Participant numbers are growing. Offerings have increased by demand to offer practices more integrated with work schedules. Preliminary data suggests improvement in subjective stress. To date, 20 new participants have signed up to receive TAY training to grow organizational offerings.

CONCLUSIONS: Clinicians can be trained to offer TAY for patients and colleagues. Practicing TAY with staff at the end or start of a busy shift for 20-60 minutes can promote a sense of community and connection, and improve physical and mental wellbeing. Ultimately, TAY can contribute to a trauma informed culture that recognizes the widespread prevalence of trauma, seeks to avoid traumatization, and instead empowers individuals to connect with their own body and practice in gentle and compassionate ways.

6.

Title: Peripheral markers of blood brain barrier disruption and immune cell transmigration are related to asociality and mesial temporal lobe cortical thickness reductions in neuroinflammatory schizophrenia

Author(s): Cynthia Weickert

Co-Author(s): Cynthia S Weickert, Roxanne Daniels, John Burns, Yunting Zhu, and Thomas W Weickert

Abstract: Inflammation markers (specifically CD163+ macrophages) are found in brains of patients with schizophrenia. Immune cell transmigration into human brain involves blood brain barrier (BBB) alterations with increased Vascular Endothelial Growth Factor (VEGF) and shedding CD163. We hypothesized that soluble CD163 (sCD163) and VEGF would be increased in serum of patients with schizophrenia especially in those with other increased inflammation markers. We also predicted VEGF and/or sCD163 serum levels would inversely correlate with brain cortical thickness. The Australian Schizophrenia Research Bank (N=1,143, m/f=581/562) provided serum. CRP, VEGF, and sCD163 proteins were measured by ELISA in 499 patients with schizophrenia/schizoaffective disorder and 644 healthy controls. Participants were classified as normal or elevated (>3 µg/ml) CRP. Negative symptoms were measured via SANS. Structural 1.5T MRIs (n=280) were performed to determine cortical thickness via FreeSurfer. Diagnostic X inflammatory subgroup differences were determined by ANOVA. Patients with schizophrenia had elevated sCD163 $t(1085)=4.32$, $p<.0001$, and VEGF levels $t(1082)=4.51$, $p<.0001$, versus controls. sCD163 and VEGF were significantly different by inflammatory subgroups ($F's>13.00$, $p's<0.00001$). Elevated inflammation schizophrenia patients displayed higher VEGF and sCD163 levels than control subgroups ($p's<0.0001$). sCD163 correlated positively with age and illness duration ($p's<0.01$ and 0.02). VEGF levels were inversely correlated with parahippocampal gyrus thickness ($r=-0.40$, $p<0.01$) in patients with schizophrenia and elevated inflammation and sCD163 levels were related to asociality scores. BBB alterations and macrophage migration are increased in patients with schizophrenia and elevated peripheral inflammation. These alterations relate to mesial temporal lobe reduction. Treatments blocking immune cell transmigration may benefit patients with schizophrenia.

7.

Title: Prolonged Maturation of Perineuronal Nets in the Human Prefrontal Cortex**Author(s):** Jack Cimino**Co-Author(s):** Maree Webster, Yunting Zhu, Juliana Natale, Rachel Sager, Rick Matthews, and Cynthia Shannon Weickert

Abstract: In the human cortex, perineuronal nets (PNNs) play a role in neuron maturation and limit excessive plasticity once neural circuits are fully developed. Abnormalities in PNNs are associated with conditions like autism, schizophrenia, epilepsy, and neurodegenerative diseases, but their time course of development in the normal human brain remains unclear. Aggrecan (ACAN) is a critical proteoglycan component of PNNs which are composed of a specialized extracellular matrix (ECM) and mainly envelop inhibitory parvalbumin-positive (PV) interneurons. In this study, we examined temporal changes in ACAN-positive PNNs and ACAN mRNA levels across postnatal developmental in the human dorsolateral prefrontal cortex, from 3 months of age to 65 years, to chart when PNNs first appear and reach maturation. Our *RESULTS* demonstrate a significant, age-dependent increase in ACAN+ neuron density, with PNNs first clearly appearing during the school-age period (5-10 years) and increasing into adolescence, with markedly elevated levels observed in young, middle-aged and older adults compared to neonates, infants, and toddlers [$H(7)=41.28$, $p<0.000001$]. There was a robust positive correlation between ACAN+ neuron density and age ($r_s = 0.912$, $p<0.000001$). Interestingly, this cell density increase was inversely associated with ACAN mRNA levels ($r_s = -0.572$, $p<0.00001$), which peaked during toddlerhood. These findings suggest that PNNs are slow to appear in the human prefrontal cortex taking over 2 decades to reach mature levels. The inverse relationship between ACAN+ neuron density and mRNA levels suggests that once PNNs are constructed there may be a negative feedback loop that restrains ACAN transcription possibly slowing down ACAN synthesis.

8.

Title: Neutrophil to lymphocyte ratio as a measure of peripheral inflammation and reduced grey matter volume in schizophrenia and related psychoses

Author(s): Thomas Weickert

Co-Author(s): Thomas W Weickert, Seetha Ramanathan, Samantha Ballas, Maryanne O'Donnell, Dennis Liu, Cherrie Galletly, Rhoshel Lenroot, and Cynthia S Weickert

Abstract: Peripheral inflammation measures are needed for use as prognostic and theragnostic biomarkers of schizophrenia. We compared neutrophil to lymphocyte ratio (NLR) as a measure of peripheral inflammation among three independent samples of acutely ill patients with psychosis and chronically ill patients with schizophrenia and related psychoses (totaling 568 patients) to establish reliability, patient proportions, and biological, cognitive, and clinical factors of inflammation in schizophrenia. Peripheral blood assayed for complete blood count was obtained from independent samples of 174 acutely ill inpatients with psychosis from Sydney, Australia, 297 acutely or chronically ill inpatients with schizophrenia and related psychoses from Syracuse, NY, USA, and 93 chronically ill outpatients with schizophrenia or schizoaffective disorder from Sydney, Australia. Cognitive, structural MRI, and clinical factors were obtained from the 93 chronically ill outpatients from Sydney, Australia. Groups from each cohort were classified based on NLR as having elevated (>2.2) or normal (< 2.2) peripheral inflammation. There were 111/174 (63.8%) acutely ill patients from Sydney, 119/297 (40.1%) acutely or chronically ill patients from Syracuse, and 52/93 (55.9 %) chronically ill patients from Sydney classified as having elevated peripheral inflammation. Elevated inflammation patients had significant reductions in middle frontal, anterior cingulate, temporal, insula, and parstriangularis volumes (p 's $< .05$). Based on independent samples of over 500 patients with psychosis, NLR was a reliable measure of peripheral inflammation in a substantial proportion of patients that may be useful as a prognostic marker of illness and may direct early novel treatment with anti-inflammatories in patients with elevated peripheral inflammation.

9.

Title: An Analysis of 'Effort' and Psychopathology in Children: Imputation of Brain-Region-Specific Gene-Expression Levels with BrainGENIE

Author(s): Stephen Glatt

Co-Author(s): T. Mitchell Mazza, Jonathan L Hess, Nicholas H Nguyen, Jiahui Hou, Avery B Albert, Sarah Elfstrom, Patricia Forken, Steven D Blatt, Wanda P Fremont, Stephen V Faraone, and Stephen J Glatt

Abstract: The U.S. National Institute of Mental Health established the "Research Domain Criteria" (RDoC) to serve as a disorder-agnostic, investigative framework for examining biological mechanisms for psychopathology through several domains of behavior. The "Positive Valence Systems" domain of RDoC, which encompasses reward-related behaviors remains understudied at the genomic. This study addresses this gap by expanding upon our recent genome-wide association study of reward valuation at the gene expression level. The current study utilizes the novel BrainGENIE (Brain Gene Expression and Network Imputation Engine) software to determine if the genetic basis for reward behavior is accompanied by transcriptomic features in the brain. This study examines a sample of blood-based RNA-sequencing data from a sample of 96 child participants (6-12 years, half of whom have a psychiatric diagnosis, and half of whom are typically developing) to impute gene-expression levels in ten brain regions. Through linear regression, statistically significant gene-expression levels were identified by their association with two quantitative measures of 'effort' derived from the Effort Expenditure for Rewards Task (EEfRT). Reward-associated transcripts were also grouped and evaluated for biological or molecular enrichment according to gene-set-enrichment analyses utilizing Gene Ontology and Reactome databases. Further analyses examine the proportion of variance of EEfRT outcomes explained by differential gene expression. BrainGENIE identified statistically significant variance in all ten brain regions as well as upregulated and downregulated genes sets identified in biologically relevant pathways. While serving as one of the first external analyses utilizing BrainGENIE, these *RESULTS* demonstrate the unique capabilities of its software for accurate identification of in vivo transcriptomic features in the brain. Its findings serve to further validate 'effort' as a relevant subconstruct of reward-related behavior at a transcriptomic level, thus bolstering RDoC as a framework for assessing disorder-agnostic psychopathology.

10.

Title: Polygenic Resilience Scores are Associated with Lower Penetrance of Schizophrenia Risk Genes, Protection Against Psychiatric and Medical Disorders, and Enhanced Mental Well-Being and Cognition

Author(s): Jonathan Hess

Co-Author(s): Eric J Barnett, Jiahui Hou, Stephen V Faraone, and Stephen J Glatt

Abstract:

OBJECTIVES: In the past decade, significant advances have been made in finding genomic risk loci for schizophrenia (SCZ). This, in turn, has enabled the search for SCZ resilience loci that mitigate the impact of SCZ risk genes. We identified the first genomic resilience profile for SCZ, completely independent from known risk loci for SCZ, though it remains unclear whether resilience loci foster protection against adverse states associated with SCZ involving clinical, cognitive, and brain-structural phenotypes.

METHODS: We analyzed genomic and phenotypic data from 459,784 participants from the UK Biobank, using regression models to estimate interaction effects of resilience and SCZ risk scores on phenotypes spanning multiple scales.

RESULTS: We found that resilience loci for SCZ afforded protection against lifetime psychiatric (schizophrenia, bipolar disorder, anxiety, and depression) and medical disorders (such as type 2 diabetes, cardiovascular, digestive and metabolic disorders). Resilience loci also moderated the impact of SCZ loci, associated with protection against self-harm behavior and greater fluid intelligence scores. Main effects of resilience also observed in the absence of a moderating effect in some instances, such as associations with larger brain structures.

CONCLUSIONS: Overall, this study highlights a wide range of phenotypes are significantly associated with resilience loci within the general population, revealing distinct patterns separate from those associated with SCZ risk loci. Resilience loci may protect against serious psychiatric and medical outcomes, co-morbidities, and cognitive impairment. Therefore, it is conceivable that resilience loci facilitate adaptive processes linked to improved health and life expectancy.

11.

Title: Insomnia and E-Cigarette Use: A Case Report.

Author(s): Daniel Nichols

Co-Author(s): Jiwon Kim, Tolani Ajagbe, and Zsuzsa Szombathyne Meszaros

Abstract:

OBJECTIVES: To describe a case of a 50-year-old male who developed a sleep disorder associated with e-cigarette use and experienced improvement in sleep after discontinuation of e-cigarettes with the assistance of Varenicline.

METHODS: The patient presented to our nicotine dependence treatment program with a primary complaint of insomnia associated with e-cigarette use. His history included a two-year use of e-cigarettes following a 20 pack-year history of combustible cigarette smoking. The patient underwent a structured cessation program utilizing Varenicline, and his sleep quality and patterns were monitored and evaluated through standardized scales.

RESULTS: E-cigarettes, which contain more nicotine but emit a less offensive odor than combustible cigarettes, facilitate the use of nicotine in environments typically off-limits to tobacco smoke. This led the patient to increase indoor vaping, including in his bedroom, resulting in significant sleep disturbances and daytime fatigue, during e-cigarette use. Shortly after initiating Varenicline and discontinuing e-cigarettes, the patient noted marked improvement in sleep quality and daytime alertness.

CONCLUSIONS: This case highlights the distinct sleep effects associated with e-cigarette use in comparison to combustible cigarettes. Healthcare providers should be aware of the possible sleep-related side effects of e-cigarette use and consider them in the management of patients presenting with sleep disorders.

12.

Title: Brain-regional gene expression imputed from the blood transcriptome by BrainGENIE recapitulates dysregulation observed in the postmortem brain in Alzheimer's disease

Author(s): Ali (Shervin) Razavi

Co-Author(s): Jiahui Hou, Ali Razavi, Shu-Ju Lin, Jonathan Hess, Chunling Zhang, and Stephen J Glatt

Abstract:

OBJECTIVES: The postmortem state of the brain tissue poses significant challenges and considerations for gene-expression analysis, such as the confounding effects from agonal factors. Studying RNA levels in living individuals via imputation of brain-regional gene-expression levels circumvents some of the major issues plaguing postmortem brain analyses. To fill this gap, we developed the Brain Gene Expression and Network Imputation Engine (BrainGENIE), which is a method for predicting gene-expression levels in the brain from peripheral blood that goes beyond assessing monotonic relationships of genes expressed in both tissues. In this study, we aim to use BrainGENIE-imputed gene expression to identify genes and gene-sets that are differentially expressed in the brains of living individuals with AD, and to improve our understanding of similarities and differences across brain regions showing AD-associated gene-expression changes.

METHODS: In each of eight blood transcriptomic studies of AD, we used BrainGENIE to impute brain-regional gene-expression profiles across 10 brain regions, including amygdala, anterior cingulate cortex, cerebellum, dorsolateral prefrontal cortex (DLPFC), hippocampus, hypothalamus, caudate nucleus, nucleus accumbens, putamen, and substantia nigra. For each brain region, we identified AD-associated gene-expression changes by pooling imputed data from 777 AD cases and 779 cognitively unimpaired comparisons.

RESULTS: We identified genes that were significantly differentially expressed (FDR- $p < 0.05$) in AD cases in nine brain regions (except for substantia nigra), with the number of genes ranging from six to 705. For cerebellum and DLPFC, differential gene-expression effect sizes estimated from imputed gene-expression profiles were significantly correlated with those estimated from directly measured gene-expression profiles (Spearman's $r = 0.351$, $p = 3.5e-180$; Spearman's $r = 0.281$, $p = 1.5e-144$; respectively). Among the AD-associated genes identified in directly measured brain data, we found two genes in cerebellum and six genes in DLPFC that were significantly replicated in the BrainGENIE-imputed data (FDR- $p < 0.05$). Across 10 imputed brain regions, we found a total of 493 distinctly up-regulated and 326 distinctly down-regulated Reactome pathways in AD cases (FDR- $p < 0.05$). We found two up-regulated pathways shared between those identified from imputed and directly measured DLPFC gene-expression profiles (Fisher's exact test, Bonf- $p = 0.015$). We found an overlap of 24 down-regulated pathways between imputed and directly measured gene-expression profiles, including 12 in DLPFC (Fisher's exact test, Bonf- $p = 6.4e-08$) and 12 in cerebellum (Fisher's exact test, Bonf- $p = 7.6e-12$).

CONCLUSIONS: Our study demonstrated that BrainGENIE-imputed brain-regional gene-expression profiles of AD could parallel transcriptomic changes in the postmortem brain to some

extent, and could help identify previously undetectable patterns of transcriptome abnormality in the brains of people actively suffering from AD.

13.

Title: Decreasing Morbidity and Mortality among Unhoused through Universal Varenicline Distribution

Author(s): Charlene Esteva

Co-Author(s): Sunny Aslam

Abstract: Tobacco use disorder (TUD) is one of the most prevalent chronic conditions among the unhoused population as a means to cope with factors such as adverse living conditions, stress, and trauma. Smoking prevalence among unhoused individuals in the U.S. is 70-80%, which has not changed over the last 50 years (15% in the general population). Varenicline is used as a first-line outpatient medication tablet for smoking cessation used to treat individuals with TUD which functions by reducing cravings and other nicotine withdrawal symptoms. We compared the prevalence of addiction and psychiatric disorders in two different population sets seen by addiction psychiatrists in practice together: one a group of unhoused patients of a community focused addiction psychiatrists and a clinic-based addiction psychiatrist.

14.

Title: The prevalence of reported allergies in persons with borderline personality disorder

Author(s): Ismet Yesilada

Co-Author(s): Mina Hagen, Gracy Lin, Bennett Simone and Nevena Radonjic

Abstract: While somatization is not a DSM-5 criterion for borderline personality disorder (BPD), persons with this condition tend to have significant comorbid somatic complaints. Somatization may manifest as a perceived sensitivity to medications, which can lead to increased reporting of allergies in patients with BPD. **OBJECTIVE:** The primary objective of this study is to investigate the prevalence of allergies in BPD compared to non-BPD psychiatric patients and those without any psychiatric history. The secondary objective is to compare the number of active prescribed medications for all three groups. **METHODS:** This retrospective cross-sectional study analyzed data from electronic medical records. We included three groups: patients diagnosed with BPD, those with non-BPD psychiatric diagnoses, and those without any psychiatric history. All three groups included a sample size of 668 each and the patients were matched by age and sex. **RESULTS:** Individuals with BPD had significantly higher allergy counts (2.30; SD = 3.89) compared to non-BPD psychiatric patients (1.80; SD = 2.85) and non-psychiatric patients (1.31; SD = 2.63)($p < 0.001$). Both BPD (9.67; SD = 8.36) and non-BPD psychiatric groups (10.32; SD = 8.01) had more active medications than non-psychiatric patients (7.20; SD = 6.26), with no significant difference between the BPD and non-BPD psychiatric groups ($p = .318$). **CONCLUSION:** Our findings support the hypothesis that persons with BPD tend to have a higher number of reported allergies compared to those without BPD and the non-psychiatric population. We posit that this is connected to the higher prevalence of somatization in BPD. Based on the **RESULTS**, we plan to expand our study in the future to investigate other conditions with somatic etiologies in BPD.

15.

Title: Correlation between PANSS N5, Mood Differentiation Questionnaire, and Pictogram Test scores in diagnosing patients with Schizophrenia

Author(s): Luba Leontieva

Co-Author(s): Palak Atul Fichadia, Hotaik Sung, Sreya Kongala, Daria Weber, Dongliang Wang, and Luba Leontieva

Abstract: Schizophrenia is a complex psychiatric disorder that is often difficult to distinguish from other conditions with similar symptoms. A correct diagnosis of schizophrenia is paramount for selecting an appropriate course of treatment. One of the unique features of schizophrenia is thought disorder and concreteness. There is a great need for efficient tests for distinguishing thought disorders and, consequently, improving the validity of schizophrenia diagnosis. To examine the feasibility of utilizing a new psychological test battery to aid in the diagnosis of schizophrenia, we have attempted to combine PANSS-N5, the Mood Differentiation Questionnaire (MDQ), and the Pictogram Test (PT). A total of 40 patients were recruited: 20 patients with schizophrenia spectrum condition (SSC) and 20 patients without such diagnosis (C). The three tests were administered to both groups by medical school graduates after they were trained and scored by other professionals with psychology and medical degrees. Test results were analyzed and the area under the ROC curve was presented as an overall measure of the classification accuracy for test discrimination between SSC and C groups. MDQ did not significantly differentiate between SSC and C groups; the PT and PANSS N5 reached a significance level and could significantly discriminate SSC from C. PANSS N5 and the PT provided significant discrimination between SSC and C patients. This test battery demonstrated the feasibility and accuracy of diagnosing schizophrenia patients with just brief training. This battery could be implemented on acute psychiatric floors where timely diagnosis is paramount in selecting treatment and follow-up care.

16.

Title: Dissecting the role of epigenetic reader PHF21B in social interaction**Author(s):** Junchi He**Co-Author(s):** Huang, Yike, Ma, Qi, Ruan Hongyu, Licinio, Julio, and Wong, Ma-Li

Abstract: Social cognitive impairments are a significant concern and a central feature of several neurodegenerative and neuropsychiatric disorders. The plant homeodomain finger protein 21B (PHF21B) is a member of the histone demethylases superfamily that functions as an epigenetic reader whose dysfunction is implicated in major depressive disorder. Our previous data show that PHF21B is an epigenetic reader for H3K36me3. Alterations in genes encoding for methyltransferases specific for H3K36me3 can cause defects in social interaction. However, the effect of PHF21B on social interaction remains unclear. The objective of this study is to investigate the role of PHF21B in social interaction. We generated a PHD finger protein 21B-depleted (Phf21b depleted) mutant CRISPR mouse model (hereafter called Phf21b Δ 4/ Δ 4) to examine Phf21b's role in social interaction. Three-chamber tests and five-trial tests were used to evaluate social memory. The resident-intruder paradigm was utilized to test aggressive behavior. The olfactory habituation/dishabituation test was performed to investigate olfactory function. Immunofluorescence was performed to detect AMPAR subunit glutamate receptor GLUR1-expressing synapses and PSD95-positive synapses in the hippocampus, as well as oxytocin in different brain regions. Glutamatergic synaptic transmission in the hippocampus was evaluated ex vivo by electrophysiology. PHF21B and H3K36me3 binding to the promoter region of oxytocin and oxytocin receptor was tested by chromatin immunoprecipitation (ChIP). Western blot was used to detect oxytocin expression in forebrains. Enzyme-linked immunosorbent assay (ELISA) was performed to examine oxytocin levels in serum and plasma. We found that Phf21b Δ 4/ Δ 4 mice exhibited impaired social memory and increased aggression but showed no effect on olfactory ability. A reduction in synaptic protein expression and impaired long-term potentiation was observed in Phf21b Δ 4/ Δ 4 hippocampi. Furthermore, PHF21B modulated oxytocin and oxytocin receptors, which are associated with social behaviors. Phf21b Δ 4/ Δ 4 mice have reduced the level of oxytocin in the forebrain, third ventricle, pituitary, and cerebral cortex. In conclusion, these *RESULTS* establish PHF21B as an important upstream regulator of social behavior-related genes and a potential therapeutic target for neurobehavioral disorders in mice.

17.

Title: Neurofeedback in the treatment of anxiety, depression, stress, and trauma

Author(s): Christine Tyrrell Baker

Co-Author(s):

Abstract: Clients with mixed diagnoses were provided passive infrared hemoencephalography (pIR HEG) neurofeedback in a mental health private practice treatment setting. This is the first formally documented investigation of pIR HEG neurofeedback applied to a mental health population. Both qualitative and quantitative data were collected. *RESULTS* from 66 clients showed that five sessions of neurofeedback resulted in statistically significant changes in anxiety, depression, limbic overload, and coping self-efficacy. For clients who completed 10 or 15 sessions, *RESULTS* showed robust changes in anxiety, depression, limbic overload, general self-efficacy, coping self-efficacy, and dissociation.

18.

Title: Trauma adopted yoga for inpatient adolescents

Author(s): Stephanie Carbone

Co-Author(s): Emily LePage, Jacquelynn Duquette, John Cote, Cecelia Peters, Yanli Zhang-James, Kathryn Hagen, and Nayla M Houry

Abstract:

OBJECTIVES: Current literature supports yoga as a therapeutic intervention, citing its positive impact on physical and mental well-being, self-regulation, and coping strategies. Trauma Adapted Yoga (TAY) enhances basic yoga principles with adaptations that account for commonly occurring mental health problems. Resulting upregulation of the parasympathetic nervous system is hypothesized to be of benefit to anxiety and distress in acute treatment settings. This retrospective study explores the logistics, feasibility, and subjective benefits following implementation of TAY groups in an acute care psychiatric hospital.

METHODS: Over a 10-week trial period, 45-minute TAY groups were held twice weekly on the 8-bed acute adolescent unit. The population consisted of a convenience sample of 63 adolescent inpatients, 12 to 18 years old, who participated in at least 1 group. Subjective Units of Disturbance Scales were encouraged as a way for adolescents to observe any potential benefits as part of the yoga group, with a short debrief after the class. Leaders also participated in ongoing discussions with unit staff regarding patient level of interest, barriers to participation, and miscellaneous logistical concerns.

RESULTS: During the trial, an average of 5/8 admitted adolescents opted to participate in each yoga group. Data were analyzed using a repeated-measures mixed model. Of those that participated, they reported statistically significant decreases in anxiety ($\chi^2 = 28.3$; $p < .0001$) and emotional pain ($\chi^2 = 11.4$; $p < .0008$) after a yoga session, but not physical pain. Additional verbal feedback from the unit staff and director outlined several observed benefits including improved shift changes and the use of skills outside of yoga sessions.

CONCLUSIONS: This poster adds to the evidence supporting the therapeutic effects of TAY in the treatment of psychiatrically hospitalized youth while adding a new perspective on additional benefits to staff and milieu. Although the lessons learned from the process were numerous and further add to a discussion on considerations for creating therapeutic groups in the acute setting, the retrospective nature and lack of a control group in the study were limiting and warrant further research.

19.

Title: Resurgence following voluntary abstinence from alcohol self administration in rats

Author(s): Emily Ferris

Co-Author(s): Kate E Derrenbacker, Charlene N Agnew, William E Sullivan, Emily L Baxter, Henry S Roane, and Andrew R Craig

Abstract: Contingency management (CM) entails providing nondrug incentives for sobriety. Although CM is effective at reducing substance use while in place, relapse or resurgence of substance use often occurs following termination of the intervention. Resurgence as it is typically studied in the laboratory necessitates extinction of the target response. This method is not face valid for modeling resurgence following CM, wherein elimination of the target response is produced through voluntary abstinence. The present study aimed to develop a procedure to modeling resurgence of alcohol seeking following voluntary abstinence treatment contingencies in the rat laboratory. Concurrent chains schedules of reinforcement provided initial-link choices between alcohol and non-alcohol (sucrose) contexts. When sucrose reinforcement was available we observed voluntary abstinence from alcohol choice. When sucrose was unavailable, however, resurgence of alcohol self-administration occurred.

20.

Title: Alternative-reinforcer magnitude effects on resurgence across successive relapse tests in mice.

Author(s): Beatriz Arroyo Antúnez

Co-Author(s): Beatriz Arroyo, Kate E Derrenbacker, Charlene N Agnew, William E Sullivan, Henry S Roane, and Andrew R Craig

Abstract: Alternative-reinforcement based treatments are common strategies for reducing maladaptive behavior in humans. When conditions of alternative reinforcement are made worse in some way, however, behavior that was targeted for elimination may resurge. Using rats, we previously showed that high-magnitude (relative to low-magnitude) alternative reinforcers produce faster elimination of target behavior but more resurgence once removed. In this experiment, we systematically replicated our procedures to assess cross-species generality of these effects to mice. Further, we evaluated changes in resurgence across successive determinations by cycling between periods during which alternative reinforcement was present or absent. Data collection is ongoing, but preliminary outcomes suggest that alternative-reinforcer magnitude affects the behavior of mice similarly to the way that it affects the behavior of rats.

21.

Title: Tug of war between clozapine and CYP450 inducers

Author(s): Guarav Taneja

Co-Author(s): Luba Leontieva

Abstract: The management of schizoaffective disorder bipolar type often involves a combination of pharmacotherapy and psychotherapy. Clozapine, an effective antipsychotic for treatment-resistant schizophrenia, and oxcarbazepine, a mood stabilizer, is a commonly prescribed medication. We present a case report of a 56-year-old male with schizoaffective disorder bipolar type who experienced subtherapeutic clozapine levels despite dose adjustments, leading to deteriorating symptoms. Oxcarbazepine, a weak CYP450 inducer, likely contributed to the subtherapeutic levels. Additionally, the pharmacogenetic analysis revealed a CYP1A2 *1F/*1F genotype, indicating normal activity with a potential for decreased serum levels and adverse events in the presence of inducers. The patient was eventually stabilized on a regimen of lithium, paliperidone, and quetiapine, avoiding oxcarbazepine. This case highlights the importance of considering individual patient factors, including pharmacogenetics when managing treatment-resistant patients. Monitoring serum clozapine levels and assessing enzyme activity before initiating therapy may help optimize treatment outcomes and minimize adverse events.

Title: Exploring Neurotransmitter Imbalance Hypothesis: A Case Report of Bupropion, Delta-8-THC, and Nortriptyline Use in a Catatonic Patient

Author(s): Saaduddin Shaikh

Co-Author(s): Saad Ather & Scott F Ulberg

Abstract:

OBJECTIVES: Catatonia is a behavioral syndrome often seen in patients with unipolar major depression or bipolar disorder. The pathophysiology of catatonia remains elusive but neurobiological hypotheses suggest a dysfunction in pathways connecting the basal ganglia, cortex, and thalamus. Neurotransmitter studies indicate that catatonia may be associated with decreased activity at gamma-aminobutyric acid A (GABA-A) and dopamine D2 receptors, and increased activity at N-methyl-D-aspartate (NMDA) receptors. This case represents the first documented instance where the combined effects of bupropion, delta-8-tetrahydrocannabinol (delta-8 THC), and nortriptyline likely contributed to neurotransmitter imbalances, particularly the inhibition of GABA-A receptors leading to the patient's acute presentation of psychosis with excited catatonia.

METHODS: Patient was interviewed while in the emergency room and upon getting admitted to the unit. Partial Busch Francis Catatonia Rating Scale (BF CRS) was completed while the patient was present in the ED and prior to any medical intervention. Patient's chart was reviewed for relevant medical, surgical, and psychiatric history including a complete list of all current and past medications. Appropriate labs were obtained at the hospital and were non-actionable. Informed consent was obtained from the patient for the case report.

RESULTS: A 46-year-old woman with a history of affective disorder (MDD vs. Bipolar II Disorder), and Cannabis Use Disorder, with recent use of delta-8-THC, presented to the ED with acute psychosis and catatonic features, scoring 16 on the Bush-Francis Catatonia Rating Scale. Four months prior, she started on nortriptyline and later bupropion, with the bupropion dose increased shortly before her presentation. Lorazepam administration and discontinuation of nortriptyline and bupropion was recommended. The patient was admitted to the inpatient unit where her condition improved with lorazepam 1 mg oral TID. She was discharged with a short course of lorazepam and instructed to hold other psychiatric medications until seen by an outpatient provider.

CONCLUSIONS: Bupropion affects the GABAergic system by inhibiting non-dopaminergic (primarily GABAergic) neurons through dose-dependent nicotinic acetylcholine receptor antagonism and dopamine auto-receptor inhibition. Delta-8 THC activates CB1 receptors, which indirectly modulate neurotransmitter release, particularly glutamate and GABA, in the anterior cingulate gyrus (ACC). Consequently, CB1R activation at GABAergic interneurons in the ACC reduces GABA release into the synapse. Bupropion also inhibits CYP450 2D6, raising nortriptyline levels (metabolized by cytochrome P450 2D6) and exacerbating its CNS effects. The case underscores the need for careful consideration of drug interactions and vigilant patient monitoring by clinicians for adverse effects, especially in individuals with a history of substance use. The case also highlights the neurotransmitter hypothesis for catatonia, particularly the role of the GABA-A receptor, suggesting further research into neurotransmitter pathways could aid in better understanding pathogenesis and targeted therapeutic interventions.

23.

Title: Impact of cortisol on differentiation of neural progenitor cells to neurons**Author(s):** Rogayah Alamarie**Co-Author(s):** Abigail McVearry, Richard Kopp, and Chunyu Liu

Abstract: The ratio of excitatory to inhibitory neurons (E/I) is tightly regulated in the human brain, though the mechanism of this regulation is not well understood. Schizophrenia is a neurodevelopmental disease that is characterized by abnormal E/I in several areas of the brain. Stress is associated with the onset of schizophrenia symptoms. The goal of this study was to determine if the stress hormone cortisol could alter E/I in a model in vitro neuron differentiation system. Induced pluripotent stem cells (iPSCs) (clone SCTi-003A) were differentiated to neural progenitor cells, followed by differentiation to neurons, with cortisol applied a day after neuron differentiation was initiated and maintained in the media for 48 hours. RNA was isolated from cells immediately following the cortisol treatment, and sister wells were continued through the neuron maturation process. Immunofluorescence imaging was used to determine E/I of the mature neurons after 10 and 20 days of maturation. Expression of TSC22D3, a gene known to be responsive to cortisol, was not statistically different among treatments. E/I was also not significantly impacted by cortisol. The percentage of experimental control cells that differentiated to neurons (~60%) was substantially lower than expected (90+%) suggesting a problem with our cell culture system. The nature and magnitude of observed variation suggests that our experimental system requires further optimization and *RESULTS* reported here should be considered preliminary. This experiment will be repeated with modifications to several procedures.

24.

Title: Aggression and Reward in Families of Children with Features of Bipolar Disorder and other Psychiatric Features

Author(s): Ankita Saxena

Co-Author(s): Ankita Saxena, Jordan Donegan, Steven D Blatt, Wanda P Fremont, Stephen J Glatt, Stephen V Faraone, and Yanli Zhang-James

Abstract:

OBJECTIVES: Bipolar disorder sometimes onsets in youth, with younger onset being associated with inferior outcomes. Bipolar disorder during childhood frequently has an atypical presentation with chronic irritability, more rapid fluctuations in behaviors, and prolonged aggressive temper outbursts, which *RESULTS* in difficulties and delays in diagnosis. These symptoms are correlated to severe mood dysregulation and reward dysfunction. The objective of this study was to investigate reward dysfunction in mood-dysregulated youth and their family members.

METHODS: 1213 adults and their 1531 children (ages 6-12) completed various measures of aggression via the Reactive/Proactive Aggression Questionnaire (RPQ), and reward functioning, as defined in the Research Domain objective Criteria (RDoC). Psychopathology was assessed using the Child Behavior Checklist (CBCL) and Adult Self Report (ASR). Participants - index children, siblings, and parents - were divided into DP, non-DP but positive for psychopathology, and not positive for psychopathology groups based on T-scores; measures of reward and aggression were compared across sets. Using CBCL-based Dysregulation Profile (DP), 95 children with pediatric bipolar disorders were identified and compared for their reward and aggression measures with typically developing (TD) children, and children without elevated DP but with other psychopathologies. We also compared the reward and aggression measures among siblings and parents with or without family members with DP.

RESULTS: The most substantial significant difference was found for the RPQ scores across all comparison groups in the study. In smaller effect sizes, though still significant, differences were also noted in several other assessments of reward dysfunction among the different comparison groups.

CONCLUSIONS: The *RESULTS* of this study support the hypothesis that mood-dysregulated youth and their family members have a dysfunctional reward system and elevated measures of aggression.

25.

Title: Post-COVID-19 Mental Health Distress in 13 Million Youth: A Retrospective Cohort Study of Electronic Health Records

Author(s): John Clay

Co-Author(s): Yanli Zhang-James, John W.S Clay, Rachel B Aber, Hilary M Gamble, and Stephen V Faraone

Abstract:

OBJECTIVES: To investigate the impact of the SARS-CoV-2 infection on the rates of mental disorders in youth.

METHODS: The study involved 7,519,465 children and 5,338,496 adolescents from the TriNetX Research Network, all without prior mental disorder histories. Among them, 290,145 children and 223,667 adolescents had SARS-CoV-2-positive tests or confirmed COVID-19 diagnoses. Kaplan-Meier survival analysis was used to evaluate the probability of developing new mental disorders (any codes in International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) F01-F99 category and suicidal behaviors) within 2 years post infection, compared to the propensity score-matched youth who were never infected.

RESULTS: Within 2 years post SARS-CoV-2 infection, children had a probability of 0.15 in acquiring new psychiatric diagnoses, compared to 0.026 for matched non-infected children; adolescents had a 0.19 probability against 0.05 for their non-infected counterparts. The hazard ratio (HR) was 6.0 (95% CI = 5.8-6.3) for children and 4.2 for adolescents (95% CI = 4.1-4.4), with children vs adolescents HR of 1.4 (95% CI = 1.36-1.51). Elevated HRs were observed for almost all subcategories of mental disorders and suicidal behaviors, with variations based on sex, severity of SARS-CoV-2 infection, and viral variants. COVID-19 was similar to other respiratory infections and was associated with a similarly increased rate of mental disorders in adolescents, but had a significantly higher effect on children (HR = 1.57, 95% CI = 1.53-1.61).

CONCLUSIONS: This study revealed significant mental health distress following SARS-CoV-2 infection in youth, which was more pronounced in children than in adolescents. These findings underscore the urgent need to support at-risk youth, particularly those who contracted SARS-CoV-2 at younger ages and had more severe infections.

26.

Title: Ketamine Kaleidoscope: Challenging Conditions , Personality Perils and The Demand for Diligent Follow-up

Author(s): Jai Ahuja

Co-Author(s): Jai Ahuja & Luba Leontieva

Abstract:

OBJECTIVES: This report investigates the paradoxical exacerbation of suicidal thoughts in a 75-year-old South Asian woman with treatment-resistant depression after ketamine therapy, despite ketamine's known antidepressant effects and subsequent US Food and Drug Administration approval (Yavi et al., 2022). It highlights the drug's complex effects and its potential risks, especially for patients with complex backgrounds or personality disorders.

METHODS: The patient is a South Asian immigrant with a history of breast carcinoma in remission and treatment-resistant depression, who experienced worsened depressive symptoms and suicidal ideation after four ketamine therapy sessions, and presented to the emergency department after two suicide attempts in 45 days. The patient had historically displayed ego strength, with resilience against life's adversities including immigration, separation, breast cancer, and subsequent early retirement. The patient's psychosocial background, characterized by significant losses, a lack of meaningful connections, and a relocation that left her feeling unsupported by her family, accentuated the therapeutic challenge. She also presented with personality traits which were suggestive of narcissistic and borderline tendencies.

RESULTS: Studies suggest that ketamine may increase impulsiveness and suicidality in some, particularly those with borderline personality disorder (Vanciek et al., 2022). The patient's post-treatment anxiety and suicidality might stem from her personality, cultural beliefs, and ketamine's acute effects (Ceban et al., 2021). Anxiety during ketamine treatment can predict worse outcomes (Aust et al., 2019), and its impact on enhancing traumatic memories may trigger emotional distress in vulnerable individuals (Sluzenski et al., 2006).

CONCLUSIONS: The report concludes that despite various recognized benefits, ketamine may pose risks for those with atypical personality traits or diverse cultural beliefs. It recommends a cautious approach to its use and suggests complementary therapies such as Dialectical Behavioral Therapy for complex cases.

27.

Title: The Role of CYLD-M719V in Frontotemporal Dementia Pathogenesis**Author(s):** Aparajita Baral**Co-Author(s):** Aparajita Baral & Wei-Dong Yao

Abstract: Frontotemporal dementia (FTD) is the second most common cause of dementia after Alzheimer's Disease and the leading form of dementia in people under 60 years old. Greater than 50% of FTD cases present with the behavioral variant, characterized by changes in personality and social behavior. Up to 40% of FTD cases are inherited, with more than 15 genes linked to FTD, most of which are involved in autophagy. CYLD is a recently discovered FTD gene, with a gain-of-function missense mutation M719V proposed as a pathogenic variant. CYLD is a k63-specific deubiquitinase and a tumor suppressor involved in inhibition of NF- κ B signaling activation in the immune system and an activator of autophagy in neurons. Several variants of CYLD have been associated with FTD. Among them, CYLD-M719V, a missense mutant reported to increase deubiquitinase activity, has been reported to be potentially pathogenic and autosomal dominant. The underlying pathogenic mechanism remains unknown. We aim to uncover the mechanism by which M719V dysregulates neuronal autophagy, impairs intrinsic and synaptic properties, and mediates FTD pathogenesis. Toward this goal, we generated somatic transgenic mice expressing M719V or EGFP or wild-type CYLD (as controls) via intracerebroventricular (ICV) AAV injection at postnatal day 1 (p1). Behavioral profiling indicated that M719V mice showed age-dependent FTD-related behavioral impairments, including hyperactivity, risk-taking behavior, reduced social interaction, and loss of empathy, compared to wild-type and controls. Moreover, slice electrophysiological analysis revealed profound loss of neuronal excitability, characterized by reduced spiking, increased rheobase, and decreased input resistance in mutant neurons expressing M719V compared to WT and EGFP controls. These *RESULTS* establish AAV-based somatic M719V transgenic mice as a potential robust mouse model of CYLD-FTD that can be used to elucidate the pathogenesis mechanisms by which CYLD mutations, and autophagy dysregulation in general, induce FTD.

28.

Title: Oxytocin in the dorsomedial prefrontal cortex regulates empathy-driven consolation in mice

Author(s): Aya Kobeissi

Co-Author(s): Wei-Dong Yao

Abstract: Impaired empathetic behaviors are prevalent in neuropsychiatric and neurodegenerative disorders; however, treatments remain limited and the underlying neural mechanisms are largely unknown. Consolation is an empathy-driven prosocial behavior aimed at comforting distressed conspecifics. Male and female rodents display allogrooming and body contact towards distressed conspecifics, leading to social buffering. Additionally, oxytocin receptor antagonism in the anterior cingulate cortex and chemogenetic inhibition of neuronal activity in the dorsomedial prefrontal cortex (dmPFC) reduce consolation. However, the mechanisms by which oxytocin mediates consolation remain unknown. To elucidate the neural mechanisms by which oxytocin regulates consolation, we performed behavioral, pharmacological, and neurophysiological experiments in adult C57BL/6J male and female mice. Compared to saline control, we found that systemic administration of the oxytocin receptor antagonist L-368,399 significantly reduced consolation towards distressed conspecifics, without impairing social investigation or emotional contagion. To assess the brain regions involved in consolation behavior, we conducted an activity-dependent c-Fos brain mapping assay and found that neurons expressing oxytocin receptors in the dmPFC were activated during consolation. We next administered L-368,399 into the dmPFC through implanted cannulae and found that oxytocin receptor antagonism in the dmPFC was sufficient to reduce consolation. To investigate whether oxytocin is released in the dmPFC during consolation, we injected an oxytocin sensor, GRABOT, and characterized oxytocin release dynamics in the dmPFC. Further, to assess how oxytocin alters dmPFC neuronal function, and thereby regulate consolation behavior, we conducted slice electrophysiology and characterized the effects of oxytocin on membrane excitability, action potential waveform, and ion channel properties. These *RESULTS* suggest that oxytocin modulates consolation behavior through action in the dmPFC. Ongoing experiments aim to delineate the specific cell receptors and ion channels, synapses, and circuits that are modulated by oxytocin to promote consolation and to target these identified mechanisms to restore consolation in disease models.

29.

Title: Associations Between Overweight, Obesity, and the Risk of Dementia: Evidence from a Large-Scale Cohort Study

Author(s): Hanqing Luo

Co-Author(s): Xiaoxiao Song, Tatiana Mikhailova, and Chunyu Liu

Abstract:

OBJECTIVES: To investigate the impact of overweight and obesity on the incidence of Alzheimer's disease and vascular dementia.

METHODS: This retrospective cohort study utilized data from the TriNetX Linked Database, encompassing 16,096,575 patients. We identified 57,543 patients aged ≥ 60 years with diagnoses of overweight or obesity and matched them 1:1 with control patients without overweight or obesity by sex and age (± 2 years). At baseline, patients with metabolic comorbidities were excluded. Kaplan-Meier survival curves were used to illustrate differences in the incidence of Alzheimer's disease and vascular dementia between the two groups. Cox proportional-hazards models, adjusted for demographics and follow-up metabolic conditions, were used to estimate hazard ratios (HR). Mediation analysis assessed whether metabolic disorders mediated the relationship between obesity/overweight and dementia.

RESULTS: After matching, each group included 49,157 patients (53.1% female, average enrollment age 58.8 years). The median follow-up was 7.8 years. Alzheimer's disease was diagnosed in 178 (0.4%) patients with overweight or obesity and 334 (0.7%) controls. For vascular dementia, the numbers were 55 (0.1%) vs. 160 (0.3%) in the control group. Overweight or obesity was associated with a lower risk of Alzheimer's (HR=0.54, 95% Confidence Interval (CI): 0.45-0.65) and vascular dementia (HR=0.36, 95% CI: 0.27-0.49). Mediation analysis indicated a protective effect of obesity/overweight on dementia, while metabolic disorders had a positive association.

CONCLUSIONS: Overweight or obesity without metabolic disorders may be protective against Alzheimer's disease and vascular dementia.

30.

Title: Risk Factors for Suicidal Behavior in Youth and the Impact of SARS-CoV-2 Infection: A Retrospective Case-Control Study

Author(s): Kathleen Hensin

Co-Author(s): Michelle Montero, Stephen V Faraone, and Yanli Zhang-James

Abstract:

OBJECTIVES: Suicide and self-harm remain critical concerns in youth. This study compares patients with and without suicidality or self-harm (SOSH), suicidality (SI/SA), and COVID-19 to investigate 53 pre-existing risk factors associated with suicidality in patients with and without COVID-19.

METHODS: A retrospective case-control study was conducted using TriNetX data from 111,631,250 patients across 78 healthcare networks. This study included patients aged 0-21 with any healthcare visit between January 20, 2020, and May 11, 2023. **RESULTS:** Comparison groups shared many risk factors, with specific differences. Children with SOSH and COVID-19 had higher odds of support group problems, personality disorder, thyroid disorders, and insomnia; children with SOSH without COVID-19 had higher odds of upbringing problems, anxiety and nonpsychotic disorders, sleep disorders, and autism. Adolescents with SOSH and COVID-19 had higher odds of parent-child conflict; adolescents with SOSH without COVID-19 had higher odds of education and literacy problems. Children with SI/SA and COVID-19 had higher odds of support group problems, personality disorders, and asthma; children with SI/SA without COVID-19 had higher odds of autism. Adolescents with SI/SA and COVID-19 had higher odds of asthma. The effect size of COVID-19 was not significant. SOSH was associated with increased odds of prior SARS-CoV-2 infection in children (OR 2.42) and adolescents (OR 1.88).

CONCLUSIONS: This study confirms known SOSH risk factors and demonstrates their association with suicidality. We observed a significant association between SOSH and preceding SARS-CoV-2 infection. This underscores the need to focus on suicide risk in youth affected by COVID-19.

31.

Title: Psychiatry Resident Compliance With the Informed Consent Process for Voluntary Psychiatric Hospitalization

Author(s): Cecilia Zemanek

Co-Author(s): James Knoll

Abstract: The Accreditation Council for Graduate Medical Education (ACGME) guidelines on forensic training in general psychiatry training have remained sparse and vague (1). As a result, many psychiatric residencies have limited exposure to important medico-legal aspects of psychiatric hospitalization. The 1990 U.S. Supreme Court case of *Zinermon v. Burch* held that a person who is incompetent to give informed consent for voluntary admission to a psychiatric hospital is denied constitutionally guaranteed procedural safeguards when hospitalization is merely assented to (2). Thus, a patient who is willing to sign forms, but is incapable of informed consent cannot be relied on to protest a voluntary admission and is in danger of extended confinement without procedural safeguards. After the Court's ruling in *Zinermon v Burch*, The APA Task Force on Consent to Voluntary Hospitalization recommended that each patient be assessed by an admitting psychiatrist upon presentation at the hospital (3).

OBJECTIVES: In this survey study, we aimed to identify whether any gaps existed in resident presentation of voluntary paperwork to patients that would preclude suitability for hospitalization. In particular, we sought to measure the percentage of residents who routinely informed patients of provisions governing their release and possible conversion to involuntary status. **METHODS:** Survey data was collected at an academic hospital in upstate New York. 35 residents completed a survey on this topic across 4 years of general psychiatry training at the end of their respective academic years and descriptive statistics were conducted. **RESULTS:** Almost 100% (33/35) residents evaluated patient understanding that they were signing into a unit for psychiatric treatment 100% of the time. On the other hand, intermittent compliance was noted in informing patients of provisions governing release and possible conversion to involuntary status. 58% (7/12) PGY-1s informed patients of this 50% of the time or less. 54% (6/11) PGY-2s informed patients 50% of the time or less, 36% (3/8) PGY-3s and 0% (0/4) PGY-4s informed patients 50% of the time or less. It was noted that 54% (19/35) of all residents were never observed going through the informed consent process and had never received feedback.

CONCLUSIONS: These findings suggest that resident physicians are not fully compliant with the informed consent process for patients, particularly the criteria governing release. It was noted that over the 4 years of training, compliance steadily improved, suggesting residents received either the education clinically and/or didactics on the importance of the informed consent process. The ACGME recommends that residents obtain experience in evaluating potential to harm self or others, appropriateness for commitment, decisional capacity, and competency. Given the findings of this study, another recommendation would be for residents to obtain experience in evaluating appropriateness for voluntary hospitalization. Without the appropriate didactic and/or clinical education on this matter, patients are at risk for being denied constitutionally guaranteed procedural safeguards.

32.

Title: A Meta Analysis of Treatment Efficacy in Intermittent Explosive Disorder**Author(s):** Joshua Schaeffer**Co-Author(s):** Joshua Schaeffer, Justin Lok, John Paliakkaraa, Yanli Zhang-James, and Joseph Strayhorn**Abstract:**

OBJECTIVE: Intermittent Explosive Disorder (IED), is characterized as discrete events of outburst or aggression out of proportion to provocation. IED has been associated lower levels of productivity, social functioning, and quality of life. Due to the large individual and societal burden of IED, we aim to improve the understanding of current available evidence and research in treatment efficacy.

METHODS: The systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The study protocol is registered in PROSPERO (registration ID CRD42024524230). Systematic search queries using the keyword phrase "intermittent explosive disorder" and associated vocabulary were conducted in PubMed, EMBASE, CINAHL, Scopus, PsycINFO, Cochrane Library, and Web of Science collections.

RESULTS: Limited current research exists on the topic of IED treatment efficacy. We identified 9 studies with 387 participants. The pharmacological agents demonstrated mixed efficacy, with a SMD of -0.52 95%CI [-0.94, -0.10] for fluoxetine, and a SMD of -0.04 with 95% CI [-0.32, 0.24] for mood stabilizers. CBT showed promising **RESULTS** with and SMD of -1.10 with 95% CI [-1.52, -0.69].

CONCLUSIONS: CBT shows promising efficacy with pharmacological agents demonstrating a mixed efficacy. These **RESULTS** must be understood with multiple limitations. The CBT studies were not conducted blind, compared to pharmacological studies. Additionally, controls in the CBT studies varied from supportive therapy no waitlist participants or no control. These **RESULTS** demonstrate promise in treatment, however there remains limited research on the topic suggesting a need for greater exploration in the area.

33.

Title: Psychiatric Sequelae of the SARS-CoV-2 Infection in Children and Adolescents: A Systematic Review and Meta-Analysis

Author(s): Abha Japi

Co-Author(s): Abha Japi, Rachel B Aber, John Clay, Therese Biazon, Nicholas Vazquez, George Saad, Reem Dergham, Anson Cheng, Jonny Zhao, Cathy Liu, Abigail Smith, Stephen V Faraone, and Yanli Zhang-James

Abstract:

OBJECTIVES: There is copious literature illustrating the effects of social isolation from the COVID-19 pandemic on mental health. However, the association between the SARS-CoV-2 infection and psychiatric complications has not been studied to the same extent, especially in youth. We conducted this systematic review and meta-analysis to evaluate and quantify the psychiatric symptoms and diagnoses reported in youth following SARS-CoV-2 infection.

METHODS: We searched publications in five scientific databases dating from November 1, 2019 to May 3, 2022. Inclusion criteria consisted of papers investigating youth with "SARS-CoV-2 infection" or "COVID-19 disease," and a subsequent diagnosis of various mental, behavioral or neurodevelopmental disorders. Meta-analysis using random effects modeling was conducted with STATA 18 to calculate aggregate odds ratios with studies reporting the numbers or proportions of those who developed mental disorders in at least 10 subjects from both comparison cohorts of youth who had infections and those who did not.

RESULTS: 158 studies met the inclusion criteria for systematic review, and the most common mental health symptoms examined in youth with SARS-CoV-2 infection were depression, anxiety, insomnia, and aggression. Eight studies provided sufficient data and were included in a meta-analysis, including a total number of 319,680 subjects. Our overall aggregate odds ratios for all mental disorders was 1.39 (95% CI: 0.98, 1.97). Subgroup odds ratios were 1.37 for anxiety (95% CI: 0.70, 2.66), 1.11 for depression (95% CI: 0.57, 2.15), 2.10 for sleep problems (95% CI: 0.69, 6.39), 2.47 for hallucinations (95% CI: 0.10, 60.69), 0.46 for aggressiveness (95% CI: 0.15, 1.42) and 4.05 for unspecified psychiatric symptoms (95% CI: 0.70, 23.41). The overall heterogeneity was high across these studies ($I^2=85\%$).

CONCLUSIONS: While there was a large volume of literature examining the relationship between SARS-CoV-2 infection and mental health outcomes in youth, most of the quantitative studies were those of small cohorts with high heterogeneity. Although our meta-analysis did not find significant evidence to support the notion that SARS-CoV-2 infection is associated with an increased risk of mental disorders, there is a need for more quantitative research with large sample sizes to further clarify this relationship.

34.

Title: Transcriptome analysis provides insight into the role of the epigenetic reader PHF21B in modulating murine synaptic plasticity

Author(s): Yike Huang

Co-Author(s): Junchi He, Qi Ma, Hongyu Ruan, Julio Licinio, and Ma-Li Wong

Abstract:

OBJECTIVES: Synaptic dysfunction, the outcome of perturbations in physiological synapse structure and function, is a manifestation of several neurobehavioral and neurological disorders. A major therapeutic challenge for synaptic dysfunction lies in uncovering the upstream regulatory factors controlling synaptic processes. Plant homeodomain finger protein 21B (PHF21B) is a member of the histone demethylases superfamily that functions as an epigenetic reader whose dysfunctions are implicated in neurological disorders. Albeit essential, little is known about the molecular mechanisms linking PHD protein deficits to disease. **METHODS:** To address this, we generated a PHD finger protein 21B-depleted (Phf21b-depleted) mutant CRISPR mouse model (Phf21b Δ 4/ Δ 4) to examine Phf21b's roles in the brain. Next, we performed genome-wide transcriptome profiling by using hippocampal tissues from the Phf21b $^{+/+}$ and Phf21b Δ 4/ Δ 4 animals. Sequencing was done on NextSeq 500 (Illumina) and data analysis were conducted using the Linux and R software environments, including FastQC (v0.11.8), Trimmomatic (v0.39), STAR aligner (v2.7.3a), featureCounts (v1.6.4), edgeR (v3.28.1) and clusterProfiler (v4.6.2) packages.

RESULTS: A set of 378 differentially expressed genes (DEGs) were identified with an FDR of less than 0.05 and a $|FC| > 1.5$ -fold. These DEGs were enriched for synaptic processes, including synaptic signaling, neuropeptide signaling, regulation of exocytosis, regulation of neurotransmitter, ion channel activity, gated channel activity and neuromuscular synaptic transmission. We further examined neuronal synapses in the Phf21b Δ 4/ Δ 4 and Phf21b $^{+/+}$ hippocampus via Golgi staining. Similar numbers of dendritic spines per unit length were observed in Phf21b Δ 4/ Δ 4 and Phf21b $^{+/+}$ hippocampal neurons. However, the Phf21b Δ 4/ Δ 4 neurons had a larger proportion of thin spines than the Phf21b $^{+/+}$ neurons.

CONCLUSIONS: The discovery that PHF21B is a key regulator of a sizable group of synaptic genes is meaningful to expanding the knowledge of epigenetic mechanisms of synaptic plasticity.

35.

Title: Role of dorsomedial prefrontal cortex SST-inhibitory circuit in consolation behavior.

Author(s): Rukayat Ibrahim-Abdulkareem

Co-Author(s): Huihui Dai and Wei-Dong Yao

Abstract: Frontotemporal dementia (FTD) is the leading cause of presenile dementia. There are different variants of FTD with behavioral variant being the most common with loss of personality and emotional dysregulation being its hallmark. Empathy is the cognitive ability to share other people's thoughts and feelings. Consolation is an attribute of empathy, and it is a comforting behavior directed to a distressed party. Cortical inhibitory neurons (INs) play significant role in balancing the activity of the excitatory neurons in the brain and their loss has been linked to many neuropsychiatric disorders. SST-INs in the prefrontal cortex (PFC) controls the activity of the pyramidal neurons via its inhibitory circuits, however, the role of these neurons in consolation behavior remains undetermined. Here we performed a chemogenetic behavioral studies using our distress-induced affiliative (DIA) behavioral paradigm to determine the role of SST-INs in consolation in SST-Cre mice. We found out that inhibition of SST-INs in the dorsomedial PFC *RESULTS* in loss of consolation behavior while the activation of these same neurons showed modest increase in consolation behavior. These preliminary result shows that SST-IN plays a pivotal role in consolation. Future experiment will determine the neural and circuit mechanism by which SST-INs promotes consolation behavior and their relevance to FTD.

36.

Title: A Case of Suspected SSRI- Activated Postpartum Psychosis in a 9-month Postpartum Woman.

Author(s): Cecilia Zemanek

Co-Author(s): Nevena Radonjic

Abstract:

OBJECTIVES: Postpartum psychosis is a rare event that typically presents within the first 4-6 weeks postpartum and is considered a psychiatric emergency with urgent need for hospitalization. Women with a diagnosis of bipolar disorder are particularly vulnerable. There are few reports of postpartum psychosis occurring outside a 3-month postpartum window.

METHODS: We present a case of a 32 year-old 9-month postpartum female with a family history of Bipolar I disorder who presents to the ED with 1-week of religious and paranoid delusions, disorganized speech, decreased need for sleep, and waxing-waning orientation with trial of escitalopram within 2 weeks of emergence of psychotic symptoms. Medical work-up was nonactionable. She was noted to have a partial response to olanzapine 20 mg and after 24 days without ongoing improvement in symptoms, lithium was initiated. Within 2 days of lithium initiation, the patient had profound and sustained remission of all psychotic symptoms.

CONCLUSIONS: It is highly suspected that the patient had an undiagnosed bipolar disorder given her positive family history of bipolar I. It is hypothesized that the initiation of an SSRI may have incited the event, causing destabilization of the underlying bipolar illness similar to SSRI-induced mania and prompting the emergence of postpartum psychosis. With a diagnosis of postpartum psychosis in mind, there is data to suggest that lithium leads to the greatest response to treatment and remission of illness. This was observed in our patient. This study exemplifies the importance of screening for risk factors for postpartum psychosis.

37.

Title: Time on Task in Psychotherapeutic/Psychoeducational Intervention with Intermittent Explosive Disorder.

Author(s): Yanli Zhang-James

Co-Author(s): Joseph Strayhorn & Stephen V Faraone

Abstract:

OBJECTIVES: Anger control has been seen as a set of learnable skills. How much time is necessary for such learning? Comparisons with time requirements for other skills make it plausible that for many people, learning anger control may require well over 100 hours of time on task. Research interventions have been shorter -- a mean of 9 sessions was reported in one meta-analysis. In this study, our goal was to examine how much psychotherapeutic intervention is being delivered in the "real world" to patients with Intermittent Explosive Disorder.

METHODS: We studied a de-identified electronic health record data from TriNetX, collected from 87 medical institutions. We studied 32,322 individuals with Intermittent Explosive Disorder. We examined the distribution of the number of individuals across numbers of sessions received.

RESULTS: The distribution for the numbers of sessions is highly skewed, resembling a curve of inverse proportion, or a Pareto function. The mode and the median were zero. Only about 25% of patients received any psychotherapy. For that subset, the median was 5 sessions, and the mean was 16. Approximately 10% received 9 visits or more; 5% 30 or more; 2% 50 or more. A large fraction of the psychotherapeutic labor was devoted to a small fraction of the patients: 80% of the sessions went to 7.5% of the patients.

CONCLUSIONS: The ability of health care systems to reduce the societal problem of aggression, at least by psychotherapeutic intervention, appears limited by the factors leading to low, or no, time on task.

38.

Title: Cardiometabolic Comorbidities of ADHD**Author(s):** Yanli Zhang-James**Co-Author(s):** John Paliakkara, Ruth S Weinstock, and Stephen V Faraone

Abstract: Understanding the potential links between Attention-Deficit/Hyperactivity Disorder (ADHD) and cardiometabolic risks is crucial for comprehensive patient care. This study explores the association between ADHD and a full range of cardiometabolic conditions, investigating the impact of age at ADHD diagnosis on these risks. **OBJECTIVES:** To assess the relationship between ADHD and cardiometabolic risks, including the influence of age at ADHD diagnosis. **Design, Setting, and Participants:** This retrospective cohort study utilized a large electronic health record database, comprising 2.8 million patients, including 25% with ADHD and 1:3 demographically-matched control patients who never had ADHD. The analysis used Kaplan models to estimate hazard ratios (HRs) for cardiovascular and metabolic diseases in those with ADHD compared to controls. The study also examined the effect of age at ADHD diagnosis on cardiometabolic risks.

METHODS: ADHD diagnosis as determined by diagnostic codes in the electronic health records. The primary outcome was the association between ADHD and the risk of developing cardiovascular and metabolic diseases.

RESULTS: Patients with ADHD exhibited substantially heightened risks for all cardiovascular and metabolic diseases compared to those without ADHD. Further stratification by disease category and individual disorders corroborated these findings. Furthermore, ADHD diagnoses made after age 12 were associated with significantly higher risk ratios and the impact of ADHD is significantly worse for females across all age groups compared to males

CONCLUSIONS: This study presents robust evidence of the substantial link between ADHD and increased risks of cardiovascular and metabolic diseases. Importantly, earlier diagnosis of ADHD diagnosis may offer a potential protective effect against cardiometabolic risks. These findings emphasize the significance of comprehensive health management for individuals with ADHD. Further investigation is warranted to decipher underlying mechanisms and explore interventions to mitigate cardiometabolic risks.

39.

Title: Psychiatric, Neurological, and Somatic Comorbidities in Intermittent Explosive Disorder: a retrospective cohort study of electronic health records.

Author(s): John Paliakkara

Co-Author(s): Yanli Zhang-James, John Paliakkara, Joshua Schaeffer, Joseph Strayhorn, and Stephen V Faraone

Abstract: Intermittent Explosive Disorder (IED) is an understudied psychiatric condition, presenting with episodes of impulsive aggression and dysregulated emotional control, resulting in interpersonal/societal consequences. Better understanding of comorbidities allows for enhanced screening/diagnosis/treatment.

OBJECTIVES: Investigate prevalence and associations of IED with psychiatric/neurological/somatic disorders.

METHODS: Matched cohorts of patients with or without IED diagnosis were identified using TriNetX Research Network (until January 31, 2024). Cox proportional hazard models estimated and compared the probabilities of acquiring other diagnoses. 30,357 individuals with IED and equal number of demographically matched individuals without IED. ICD-10-CM diagnostic categories and root codes for disorders and health conditions in both cohorts. Main measures are total numbers and proportions of patients with diagnostic codes, as well as adjusted hazard ratios for IED diagnosis.

RESULTS: Although only 0.03% of the total patient population had an IED diagnosis, we found extensive and widespread comorbidities with psychiatric, neurological, and somatic conditions. A 95.7% of individuals with IED had another psychiatric diagnosis. All psychiatric sub-categories and 95% of the psychiatric diagnoses were significantly associated with IED, with HRs ranging from 2 to 77. Among neurological/neurodegenerative diseases and epilepsy had the highest HRs, followed by extrapyramidal/movement disorders, cerebral palsy, and sleep disorders. Notable metabolic associations included obesity, hyperlipidemia, hypertension, and GERD.

CONCLUSIONS: Our findings illuminate the extensive comorbid relationships between IED and psychiatric/neurological/somatic disorders. This underscores the necessity for an integrated diagnostic and treatment approach. Additionally, this highlights the need for more accurate and inclusive diagnosis of IED.

40.

Title: Feasibility of Using Dynamic Assessment of Situational Aggression (DASA) Scoring to Reduce Violence on An Inpatient Psychiatric Unit.

Author(s): Diane Mathew

Co-Author(s): Diane Mathew, Dongliang Wang, Derek Empey, Elena Carmen Nichita, and Lubov Leontieva

Abstract: Agitation on inpatient psychiatric units is common and is an important area for research to determine methods of prevention given the impact on staff and patients. This study explores the validity of the DASA-IV nursing scoring tool on two acute care inpatient psychiatric units in upstate NY over a two-and-a-half-month period. The study investigated the association of DASA nursing scores with interventions such as emergent medication, seclusions or restraint. The study also investigated nursing perspective of the scoring tool through an anonymous survey. The analysis showed no association between the DASA score and intervention. Potential reasons for these results could be associated with multiple factors including the nature of agitation on these inpatient units and the barriers to compliance with the tool.

41.

Title: Using co-expression networks of transcriptome, translome, and proteome to dissect the risk of schizophrenia

Author(s): Qiuman Liang

Co-Author(s): Qiuman Liang, Yu Wei, Chao Chen, and Chunyu Liu

Abstract: Genes cannot function independently; they co-work on molecular functions, and co-regulate phenotypes. Multiple omics approaches, including transcriptomics via RNA-seq, translomics via ribo-seq, and proteomics via mass spectrometry, quantify genes in their corresponding forms at various steps of the information flow in the Central Dogma. Co-expression modules of each omics can capture the organized regulatory relationships among genes at each level and help us uncover their genetic regulation.

METHODS: Transcriptome, translome, proteome and genotype data of 185 prefrontal cortex samples were obtained from PsychENCODE BrainGVEX consortium. After the exclusion of low expressed genes and outlier samples, a total of 7,750 genes were detected across the three omics. Co-expression modules were identified by Weighted correlation network analysis (WGCNA) employing a signed network approach. Each module was required to contain a minimum of 30 genes. Modules with a pairwise correlation exceeding 0.93 at a significance level of $P > 0.05$ were merged. Corresponding genotype data were utilized as an independent variable, with module eigenvalue as a response variable to identify genetic regulations of co-expression modules, referred to as mod-QTLs. The Zsummary statistic was to assess if one module in one omics dataset is preserved in another omics dataset. Modules with a Zsummary greater than 10 were considered preserved.

RESULTS: A total of 44, 37 and 22 co-expression modules were detected for transcriptome, translome and proteome, respectively. Through this genome-wide search, 206 mod-QTLs were identified for transcriptome, 459 for translome and 193 for proteome at P value $< 5e-8$. Only 10 mod-QTLs were found by either cis-QTLs or trans-QTLs of module genes, emphasizing the importance of mod-QTLs. Notably, it was observed that the transcriptomic M29 module exhibited the most of genetic regulations (136 M29 mod-QTLs out of 206 all mod-QTLs, 136/206=66%), as did translomic M2 module (268/459=58%) and proteomic M13 module (142/193=74%). Furthermore, 33 out of 44 transcriptomic modules were not preserved in either translome or proteome, implying the dynamic changes of regulatory relationships through the Central Dogma. Six transcriptomic modules were preserved in the other two omics. Two of the transcriptomic modules preserved only in translome and three only in proteome. These two scenarios may involve more complicated mechanisms, such as the combined effect of post-transcriptional and post-translational regulations. Finally, using two-sample mendelian randomization, transcriptomic M29, M30 and M43 modules were found to contribute to schizophrenia risk. Similarly, the translomic M2, M35 and M36 modules, as well as proteomic M2 and M21 modules, were also identified to contribute to schizophrenia risk.

CONCLUSIONS: Co-expression network analyses indicate that genes are clustered differently in transcription, translation and protein levels. Genetic regulations of several modules were identified. Genetic regulators of distinct modules at different omics contribute to schizophrenia risk.

42.

Title: Suvorexant-Induced Suicidal Ideation Following Initial Dosing in a Patient with Chronic Insomnia: Prolonged Driving and Dissociation.

Author(s): Jason Grullon

Co-Author(s): Sai Gillela & Luba Leontieva

Abstract: Suvorexant is a dual orexin antagonist with better efficacy and lower rates of adverse effects compared to benzodiazepine receptor agonists for treating insomnia. Suvorexant's manufacturer warns of new-onset suicidal ideation in 0.2-0.7% of patients with several days between treatment initiation and symptom onset. Here, we report a case of a patient with a history of chronic insomnia and anxiety who developed suicidal ideation soon after starting treatment and attempted to overdose on Suvorexant. The differential diagnosis included an acute exacerbation of underlying anxiety and insomnia by Suvorexant with the possibility of drug-drug interactions with her existing cardiac medications. The patient improved immediately after discontinuation of Suvorexant and initiating Trazodone for insomnia and Escitalopram for anxiety/depression symptoms. The patient was discharged home after 11 days in a stable condition. Therefore, patients starting on Suvorexant may require careful monitoring for new-onset suicide ideation, especially among females and those with other psychiatric disorders.

43.

Title: Demographic and Clinical Profiles of Hormonal vs. Non-Hormonal Intrauterine Device (IUD) Users in Real-World Settings

Author(s): Rachel Aber

Co-Author(s): Rachel B Aber, Raveena Gill, Yanli Zhang-James, Nevena Radonjic

Abstract:

OBJECTIVE: Research on how hormonal contraceptives impact women's mental health is mixed, and real-world factors influencing the choice between hormonal vs. non-hormonal contraceptives are unclear. This study investigates the demographic, clinical, and mental health characteristics of users of hormonal (levonorgestrel) vs. non-hormonal (copper) IUDs, focusing on mental health profiles at initiation.

METHODS: We used de-identified medical records from the TriNetX Research Network to identify all copper and levonorgestrel IUD-users among 65.2 million female patients aged 12 or older. We first investigated demographic differences, then controlled for them using propensity score matching. We compared clinical characteristics, including pre-existing psychiatric disorders, obstetric and gynecologic diagnoses, and baseline depression and antidepressant use. We then performed a second round of matching for both demographics and OBGYN factors and assessed the same outcomes.

RESULTS: Among female-born individuals over age 12 in TriNetX, more women used hormonal IUDs (N = 308,139) than copper IUDs (N = 47,110). The average age at IUD insertion was older for hormonal (31.1 ± 9.5) than copper IUD users (29.9 ± 7.4). A statistically significant majority of patients were White (Levonorgestrel: 71.5%; Copper: 68.3%) and not Hispanic or Latino (Levonorgestrel: 78.6%; Copper: 67.0%). After demographic matching, hormonal IUD-users (22.1%) were more likely than copper users (19.2%) to have a mood disorder diagnosis and use antidepressants (26.0% vs. 20.8%). Conversely, copper IUD-users (36.6%) had more prior labor/delivery complications than hormonal IUD-users (29.8%). After further matching for OBGYN factors, hormonal IUD-users continued to show higher rates of depression and antidepressant use.

CONCLUSIONS: Users of hormonal and non-hormonal IUDs differ in demographic and clinical characteristics. Hormonal IUD-users had higher rates of depression and antidepressant use, suggesting factors influencing IUD choice. These insights support patient-centered counseling and personalized reproductive health care.

44.

Title: MINDonline: A novel approach to treat nicotine dependence

Author(s): Zsuzsa Szombathyne Meszaros

Co-Author(s): Baris Ors, Susan Sperry, Tolani Ajagbe, Mandy Kirsch

Abstract:

Motivational Interviewing (MI) is an evidence-based, client centered, collaborative, directional, time-limited individual form of psychotherapy which facilitates behavior change by exploring and working through ambivalence. A comprehensive meta-analysis has found MI to be effective for smoking cessation in the general population, especially when it is delivered by primary care physicians

To our knowledge, our team is the first to provide experiential, manual based, directly observed online training for medical students in motivational interviewing on real patients during their 3rd year psychiatry clerkship. Eligible participants were New York state residents, 18 years old and older with nicotine dependence (smoking, vaping, chewing tobacco), who considered cutting back or quitting nicotine use.

Sessions were 30 minutes long and held twice weekly for 4 weeks. Medical students were the primary therapists, and faculty members (SS, ZSM) were present for the duration of the sessions providing live supervision via chat. Patients were offered nicotine replacement, varenicline and bupropion for smoking cessation.

Patient satisfaction surveys were conducted after the last session. Students' medical knowledge and satisfaction were assessed with a pre-and post-clerkship survey. IBM SPSS Statistics 26 was utilized to perform statistical analyses (descriptive statistics and Mann-Whitney U test).

Between 6/5/23 and 10/13/23 four 4-week cohorts were completed, including 63 students and 49 patients (some patients completed multiple cohorts). Patients were 43.7 ± 11.7 (mean \pm S.D.) years old, and attended on average 5 of the 8 sessions (4.9 ± 2.6).

Based on these preliminary results, MINDonline is an effective way to treat nicotine dependence and teach medical students MI skills.

45.

Title: A Unified Model of Psychological Stress

Author(s): Chunyu Liu

Co-Author(s): Haixia Gu, Yangyang Lei, Yun Zhang, Junhua Dang, Chao Chen

Abstract:

Background: Psychological stress is a significant risk factor for various psychiatric disorders, yet it is often overlooked in research and clinical practice due to diverse definitions and measurement tools. This fragmentation hinders comprehensive evaluation and understanding of stress exposure levels.

Objective: To develop a unified definition and measurement tool for psychological stress that encompasses all forms of stress and can be used in both research and clinical settings.

Methods: We integrated and extended existing models, including Lazarus's transaction model, Deci & Ryan's self-determination theory, and Maslow's hierarchy of needs, to create a new definition and a comprehensive questionnaire. The new definition considers stress as the perceived unmet needs or demands, quantified by the distances between internal needs, external demands, and their corresponding resources. A formula, the law of psychological stress, was developed to quantify stress levels, incorporating biological and genetic factors.

Results: A new 133-item questionnaire was created to assess 21 factors of stress. Ongoing studies are collecting data from healthy individuals and patients to establish norms across different age groups and refine the questionnaire.

Innovations: The new model includes internal needs as stressors and highlights the role of biological/genetic factors, making stress a biologically regulated process. The law of psychological stress provides a quantitative measure of stress levels.

Potential Applications: The model can be used in basic research to explore environmental and genetic risk factors for psychiatric disorders and in clinical settings to target the root causes of stress, thereby reducing the risk or symptoms of disorders and improving therapeutic outcomes.

Conclusion: This unified model and comprehensive measurement tool aim to provide a standardized approach to understanding and evaluating psychological stress, facilitating better research and clinical practices.