applications (part of the U-PGx consortium, a Horizon2020 funded project on clinical relevant PGx in the EU).
Results: Imputed data contains over 11 million SNPs of 77,639 individuals.
Conclusions: We expect results in the end of 2020.

Disclosure: We thank the iPSYCH consortium, in specific the iPSYCH PI's (Merete Nordentoft, Anders Børglum, Preben B. Mortensen, Ole Mors, Thomas Werge and David M. Hougaard). The iPSYCH project is funded by the Lundbeck Foundation Denmark and the universities and un
Keywords: genotype; phenotype; Pharmacogenetics

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Identification of robust and interpretable brain signatures of autism and clinical symptom severity using a dynamic time-series deep neural network

K. Supekar*, S. Ryali, R. Yuan, D. Kumar, C. De Los Angeles and V. Menon

Psychiatry And Behavioral Sciences, Stanford University, Stanford, United States of America

*Corresponding author.
doi: 10.1192/j.eurpsy.2021.397

Introduction: Autism spectrum disorder (ASD) is among the most common and pervasive neurodevelopmental disorders. Yet, despite decades of research, the neurobiology of ASD is still poorly understood, as inconsistent findings preclude the identification of robust and interpretable neurobiological markers and predictors of clinical symptoms.
Objectives: Identify robust and interpretable dynamic brain markers that distinguish children with ASD from typically-developing (TD) children and predict clinical symptom severity.
Methods: We leverage multiple functional brain imaging cohorts (ABIDE, Stanford; N = 1004) and exciting recent advances in explainable artificial intelligence (xAI), to develop a novel multivariate time series deep neural network model that extracts informative brain dynamics features that accurately distinguish between ASD and TD children, and predict clinical symptom severity.
Results: Our model achieved consistently high classification accuracies in cross-validation analysis of data from the ABIDE cohort. Crucially, despite the differences in symptom profiles, age, and data acquisition protocols, our model also accurately classified data from an independent Stanford cohort without additional training. xAI analyses revealed that brain features associated with the default mode network, and the human voice/face processing and communication systems, most clearly distinguished ASD from TD children in both cohorts. Furthermore, the posterior cingulate cortex emerged as robust predictor of the severity of social and communication deficits in ASD in both cohorts.
Conclusions: Our findings, replicated across two independent cohorts, reveal robust and neurobiologically interpretable brain features that detect ASD and predict core phenotypic features of ASD, and have the potential to transform our understanding of the etiology and treatment of the disorder.

Disclosure: No significant relationships.
Keywords: autism; biomarkers; brain dynamics; fMRI

O216

One treatment fits all: Effectiveness of a multicomponent cognitive behavioral therapy program in data-driven subtypes of perinatal depression

A. Waqas* and A. Rahman

Institute Of Population Health, University of Liverpool, Liverpool, United Kingdom

*Corresponding author.
doi: 10.1192/j.eurpsy.2021.398

Introduction: It has been well established that depressive disorders including perinatal depression are very heterogeneous, which partly explain the ineffectiveness of available treatments for many patients. Recent innovations in data science can help elucidate the nature of perinatal depression especially the heterogeneity in its presentation.
Objectives: The present study aime to elucidate heterogeneous subtypes of PND and assess the effectiveness of a multicomponent cognitive behavioral therapy (CBT) across heterogenous subtypes of PND.
Methods: This study was conducted in 2005 in two rural areas of Rawalpindi, Pakistan. Out of a total of 3,898 women, 903 pregnant women were identifed with PND (using DSM-IV) and randomly assigned to intervention and control group. Baseline assessments included interviewer admininstered Hamilton Depression Scale (HDS) and social risk factors. Follow-up assessments were conducted at 6 months and 12 months post-intervention. Principle component analysis was run to reduce dimensionality of the HDS. Two step cluster analysis was then run to elucidate subtypes of PND using the dimensional scores. Thereafter, effectiveness of CBT was compared across these subtypes of PND using multilevel modelling.
Results: Principle component analysis revealed a four component solution for the Hamilton depression rating scale. Using these dimensional scores, cluster analysis (average silhouette= 0.5) revealed a parsimonius four cluster soultion of participants with mild PND symptoms (n=326); predominant sleep problems (n=311) c) predominant atypical symptoms (n=80) and d) comorbid depressive and anxiety symptoms (n=186). CBT yielded moderate effect sizes across all these subtypes of PND (cohen's d > 0.8).
Conclusions: Multicomponent CBT is effective across hetergeneous presentations of PND.

Disclosure: No significant relationships.
Keywords: cluster analysis; Postpartum depression; phenotypic subtypes; heterogeneity

Prevention of mental disorders

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Home environment as a factor in maintaining the mental health of the individual in the family

E. Gutkevich[1]*, E. Shalygina[1], Y. Maltseva[2] and S. Vladimirova[3]

[1]Psychology Department, National Research Tomsk State University, Tomsk, Russian Federation; [2]Endogenous Disorders Department, Mental Health Research Institute, Tomsk, Russian Federation and [3]Department Of Coordination Of Research, Mental Health Research