entire population (PTSD, grief). Inviting and lobbying for dissemination of personal reports of Ukrainian health care workers and patients at international conventions, forums, events
3. Empowerment of personnel - strengthening competences required in provision of assistance in war-related disorders, training, projects of activities both across Poland and Ukraine
4. Supporting and responding to the needs reported by local psychiatric assistance centers facilitating and strengthening the competence of personnel in helping refugees

Disclosure of Interest: None Declared

W0026

Digital approaches for predicting posttraumatic stress and resilience: promises, challenges, and future directions

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Abstract: Digital technologies and advances in computational methods have become key drivers of innovation in many medical fields. In precision psychiatry, accurate and reliable measures of mental health are critical for informing patient care and clinical research. There has been growing concern over the limitations of traditional mental health assessments that are typically grounded in nosology defined by the DSM and are based on interviewer-led assessments or patient self-report questionnaires. Whereas such gold-standard clinical assessments can be cost-prohibitive, insensitive to change, and prone to subjective biases, the use of digital technologies provides an opportunity to improve the practical feasibility as well as the inter-rater and test-retest reliability of repeated mental health assessments. The key promise of this approach is to unlock the clinical potential of digital technologies in ways that foster research of high clinical relevance and impact on clinical care. I will discuss these promises and challenges for the future use of machine learning approaches for predicting and monitoring post-traumatic stress and resilience.

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W0027

Generative models as computational assays for psychiatry

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Abstract: Psychiatry faces fundamental challenges with regard to mechanistically guided differential diagnosis, as well as prediction of clinical trajectories and treatment response. This has motivated novel approaches that aim to develop "computational assays" for inferring patient-specific disease processes from neuroimaging data, which can then be incorporated into decision making in everyday clinical practice. Such computational assays are often based on generative models, which describe how measured data may be caused by a particular mechanism. Combining generative models with machine learning allows translating the inferences from computational assays into patient-specific predictions, an approach referred to as generative embedding.
Here, I illustrate the clinical potential of generative embedding for the exemplary case of a generative model of whole-brain effective (directed) connectivity: *regression DCM* (rDCM). First, I introduce rDCM to the audience and highlight its relevance for understanding the pathophysiology of psychiatric disorders. I then provide an initial demonstration of the clinical utility of rDCM. Specifically, we assessed the ability of rDCM for predicting future episodes of depression in never-depressed adults, using a large dataset (N=906) of resting-state fMRI data from the UK Biobank. Over a 3-year period, half of the participants showed indications of at least one depressive episode, while the other half did not. Using nested cross-validation for training and a held-out test set (80/20 split), we found that a generative embedding procedure based on rDCM in combination with a support vector machine enables statistically significant predictions of future depressive episodes, both on the training (accuracy: 0.63, area under the curve (AUC): 0.66, $p<0.001$) and test set (accuracy: 0.62, AUC: 0.64, $p<0.001$). Interpreting model predictions based on SHAP (Shapley Additive exPlanations) values suggested that the most predictive connections were widely distributed and not confined to specific networks.
In summary, generative models of brain connectivity in general, and rDCM in particular, show initial promise to serve as computational assays for psychiatry. Our analyses suggest that (i) fMRI-based generative embedding approaches have some capacity for early detection of individuals at-risk for depression and (ii) achieving accuracies of clinical utility may require combination of fMRI with other data modalities.

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W0028

Quantifying computational mechanisms in psychotherapy

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Abstract: Despite extensive research, the cognitive processes mediating the impact of psychotherapeutic interventions remain poorly understood, and as a result difficult to quantify. Identifying such mechanisms is likely to be extremely helpful: it could help target interventions better, could support dosing therapy through monitoring, and could heighten the speed at which new interventions can be developed. Mechanisms research in psychotherapy has described a number of key difficulties to achieving this. In this and the next talk, we ask whether advances in cognitive computational neuroscience might provide some support. Specifically, the question is whether precise cognitive probes might identify specific mechanisms of interventions. In support of this, I will first describe a pilot study in participants undergoing an adapted behavioural activation therapy. I will then move to present results from two strands of experiments examining whether interventions derived from components of cognitive-behavioural therapy (CBT) are able