provided by participants during a semi-structured dialogue with a virtual avatar.
Methods: We use data from a subset of the DAICWOZ dataset consisting in 142 dialogues between participants and a virtual avatar during which the avatar uses several prompts to maintain a conversation with the participant. The avatar uses prompts involving the topics of travel, dream jobs, and memorable experiences. From the speech generated from the dialogue, we extract participant utterances separated by prompt and extract features from the three sets of transcripts. We extract content features from the transcript and acoustic features from the excerpt corresponding to the speech from the participant for the prompt in question.We perform regression experiments on the PHQ8 items using the features extracted from each set of transcripts. Furthermore, we combine the features extracted from each set of transcripts and compute partial spearman correlations between them and the PHQ8 items using gender as a covariate.
Results: With our best regression model we obtain an R2 of 0.1, explaining 10% of the variance in the PHQ total score. Additionally, we obtain a mean absolute error of 1.25, suggesting that the regressor can detect with more or less precision clinically meaningful differences in depression severity between participants. Partial correlations between the total score and the features show significant correlations between features dependent on the amount of speech generated by each participant, along with the complexity of syntactic structures used.
Conclusions: Automatic analysis of spontaneous speech could help with the detection and monitoring of signs of depression. By combining the use of this technology with timely intervention strategies for instance provided by a virtual agent it could contribute to timely prevention.

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EPP0045

The Neural Basis of Major Depressive Disorder in Adults: A Meta-Analysis of Functional Magnetic Resonance Imaging Activation Studies

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Introduction: Major depressive disorder (MDD) is a highly prevalent mental illness that often first occurs or persists into adulthood and is considered the leading cause of disability and disease burden worldwide. Unfortunately, individuals diagnosed with MDD who seek treatment often experience limited symptom relief and may not achieve long-term remission, which is due in part to our limited understanding of its underlying pathophysiology. Many studies that use task-based functional magnetic resonance imaging (fMRI) have found abnormal activation in brain regions in adults diagnosed with MDD, but those findings are often inconsistent; in addition, previous meta-analyses that quantitatively integrate this large body literature have found conflicting results.
Objectives: This meta-analysis aims to advance our understanding of the neural basis of MDD in adults, as measured by fMRI activation studies, and address inconsistencies and discrepancies in the empirical literature.
Methods: We employed multilevel kernel density analysis (MKDA) with ensemble thresholding, a well-established method for voxel-wise, whole-brain meta-analyses, to conduct a quantitative comparison of all relevant primary fMRI activation studies of adult patients with MDD compared to age-matched healthy controls.
Results: We found that adults with MDD exhibited a reliable pattern of statistically significant ($p<0.05$; FWE-corrected) hyperactivation and hypoactivation in several brain regions compared to age-matched healthy controls across a variety of experimental tasks.
Conclusions: This study supports previous findings that there is reliable neural basis of MDD that can be detected across heterogenous fMRI studies. These results can be used to inform development of promising treatments for MDD, including protocols for personalized interventions. They also provide the opportunity for additional studies to examine the specificity of these effects among various populations-of-interest, including youth vs. adults with depression as well as other related mood and anxiety disorders.

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EPP0046

Early Outcomes of Repetitive Transcranial Magnetic Stimulation in Complex Clinical Population

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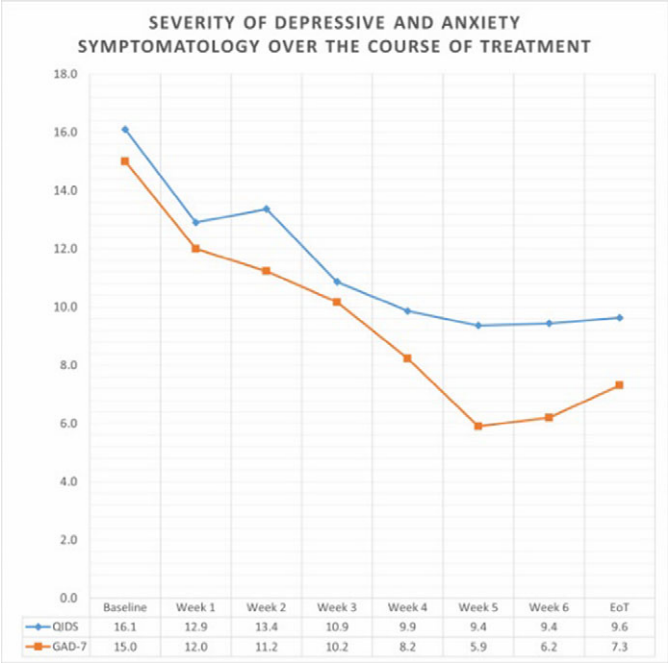
Introduction: Repetitive Transcranial Magnetic Stimulation (rTMS) is a new emerging neuromodulation treatment that has been tried for multiple psychiatric conditions [1, 2]. Its major approved application is treatment-resistant depression (TRD) [1]. At the same time there is a perceived potential for its use for other clinical conditions, primarily other mood and anxiety disorders [2]. At Homewood Health Centre we have been using rTMS as an adjunct treatment for patients with TRD and multiple comorbidities.
Objectives: To evaluate the effectiveness and feasibility of rTMS in complex clinical populations.
Methods: Observational study. Quick Inventory of Depressive Symptomatology (QIDS). Generalized Anxiety Disorder Questionnaire (GAD-7). Descriptive statistics.

Results: We have treated 30 patients, 12 women (40%) and 18 men (60%), with average age of 42.0±15.6 years. All patients had a primary diagnosis of major depressive disorder. The standard questionnaires were used to quantify the severity of depressive symptoms (QIDS) and anxiety (GAD-7). The average baseline scores for depression and anxiety were 16.1±4.9 and 15.0±4.4, respectively. The patients received an average of 28.1±5.1 treatments. All patients but one received the full course of treatment as planned. The average end-of-treatment (EoT) scores for severity of depressive symptoms and anxiety were 9.6±6.5 and 7.3±5.3, respectively. The rates of improvement and remission for depressive symptoms were 66.7% and 36.7%, respectively. The rates of improvement and remission for anxiety symptoms were 76.9% and 30.8%, respectively.

Image:



Conclusions: Our data indicate that rTMS provides significant improvement and recovery rates in complex clinical populations and is well-tolerated. While further research is required, we recommend wider implementation of rTMS for treatment of mood and anxiety disorders.

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EPP0047

Associations in time between salivary cortisol and emotions in depressed patients and controls

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Introduction: Depression can be understood as a complex dynamic system, where depressive symptoms can directly affect each other. Knowledge on this symptom-symptom interaction is still scarce and is likely to differ between individuals. The hypothalamic-pituitary-adrenal (HPA) axis is often implicated in depression, with hypercortisolism and impaired glucocorticoid receptor-mediated feedback inhibition being commonly reported. High salivary cortisol levels may reflect a reaction to symptoms, or may rather be a cause, effectively 'binding' symptoms.

Objectives: We aimed to analyze the temporal interplay between salivary cortisol and emotions in depressed patients and controls by using the novel Dynamic Time Warp analysis (DTW) approach.

Methods: The 'Mood and movement in daily life' (MOOVD) study consisted of 30 pair-matched (15 depressed and 15 control) participants. Salivary cortisol was collected three times a day for 30 days, resulting in 90 measurements per individual. At the same moments, participants completed questionnaires on an electronic diary, which included different momentary positive (PA) and negative (NA) affect items. The dynamic interplay between salivary cortisol and affect were analyzed by DTW, which extends momentarily associations to include one earlier and one later time point, in both undirected and directed analyses.

Results: Individual networks differed substantially within groups. At the group level, undirected and directed network analyses showed differences between depressed patients and controls. In undirected analysis, connectivity of PA items was comparable between depressed patients and controls, but the NA items showed a less dense network in depressed patients. Directed DTW analyses indicated ($p = 0.07$) that increases in salivary cortisol preceded that of some NA items (e.g., tiredness) in controls, but tended to follow upon NA item increase (e.g., not feeling appreciated) in depressed patients.

Conclusions: At the group level, connectiveness between NA items was substantially weaker in depressed patients compared to controls. As in complex systems strong internal connectivity facilitates "critical transitions" to different states, this may reflect (or explain) the persistence of a chronically depressed state. We preliminary conclude that high salivary cortisol in depression may be a consequence of NA, rather than a cause. Replication of these first exploratory findings are needed.

Disclosure of Interest: None Declared