(TBI=1251, NoTBI=7294). In a subsample of participants with high quality resting state fMRI data (TBI=311, NoTBI=2269) we compared DMN connectivity between groups and investigated if history of TBI modulated the relationship between DMN RS-FC and internalizing symptoms. **Results:** Participants with a history of TBI had higher levels of internalizing symptoms than those who did not have a history of TBI. In the subset of participants who underwent functional imaging, there was no difference in DMN connectivity between groups. TBI participants displayed differential associations between DMN connectivity and levels of internalizing symptoms such that lower levels of connectivity within the DMN predicted increased symptoms in youth without a history of TBI and lower levels of connectivity between the DMN and other resting state networks predicted higher levels of internalizing symptoms in youth with a history of TBI. **Conclusions:** These results suggest that differential variations in within and between network DMN connectivity are related to internalizing symptoms if there is a history of TBI. **Supported By:** SickKids Foundation; FedEx Catalyst Scholarship **Keywords:** Mild Traumatic Brain Injury, Resting state functional connectivity, Mood disorders, Default Mode Network, Anxiety Disorders

608. Baseline Resting-State fMRI Biomarkers of Depression Response to DLPFC-rTMS: Different Patterns of Functional Connectivity Predict Response to 10 Hz rTMS and Intermittent TBS

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**Background:** Conventional rTMS for treatment-resistant depression (TRD) targets the dorsolateral prefrontal cortex (DLPFC) using 10 Hz stimulation over 37.5 minutes. Briefer protocols, such as intermittent theta-burst (iTBS), could improve rTMS accessibility in TRD. However, it is not fully known what aspects of brain functional connectivity predict either treatment. The aim of this study is to identify the resting-state functional predictors of treatment response to 10 Hz stimulation and iTBS.

**Methods:** 330 TRD patients were randomized to one of two treatment conditions: 10 Hz or iTBS over the left DLPFC. Treatments occurred once daily for a total of 20-30 sessions. On MRI, patients underwent a T1 and 10-minute resting-state functional scan before and after treatment. In accordance with previous findings, we completed a seed-to-voxel-based approach using cortical and striatal seeds to determine functional connectivity predictive of treatment response in the two treatment conditions.

**Results:** In both treatment conditions, treatment response followed a bimodal distribution with distinct rTMS-responsive and non-responsive groups; outcome distributions showed no significant differences. Lower functional connectivity from the ventral striatum to the bilateral frontal pole predicted treatment response in one group, while in the other, lower functional connectivity from the left DLPFC to the left anterior cingulate cortex predicted treatment response.

**Conclusions:** It appears that cortico-cortico and cortico-striatal functional connectivity differentiates response to two different rTMS treatment protocols. This difference in predictors was evident despite very similar clinical outcomes. Further work will also characterize how functional connectivity changes in responders over the course of treatment in both groups. **Supported By:** CIHR **Keywords:** Treatment Resistant Depression, HF-rTMS, Resting state functional connectivity, Biomarkers

609. Cerebrovascular Reactivity is Associated with Cardiovascular Risk Factors and Cognition Among Adolescents

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**Background:** Cerebrovascular reactivity (CVR) is the vascular response to a vasoactive substance; lower CVR indicates worse cerebrovascular health. In adults, CVR is negatively correlated with cardiovascular risk factors (cvRFs; e.g. hypertension) and positively correlated with cognition in some studies. This study examines the association of CVR with cvRFs and cognition in adolescents with and without bipolar disorder (BD), a disease linked with early atherosclerosis.

**Methods:** CVR was measured using blood-oxygenation-level dependent fMRI at 3-Tesla, in total gray matter. Eighteen BD and 40 healthy control (HC) adolescents conducted six 15-second breath-holds, alternating with 30-second free-breathing intervals. Body mass index (BMI), waist circumference (WC) and blood pressure were used as cvRFs. A subsample (12 BDs and 25 HCs) conducted an Intra-Extra Dimensional Set shift (IED) and a Cambridge Gambling Task (CGT).

**Results:** CVR was significantly positively correlated with BMI and trended with WC in BD (r=.512, p=.03; r=.422, p=.09), but not HCs (r=.206, p=.20; r=.080, p=.84). No associations were significant for blood pressure. CVR was significantly negatively correlated with IED scores in HCs but not BDs. CVR trended with CGT scores for BDs (r=.518, p=.09), but not HCs (r=.085, p=.69).

**Conclusions:** This study found that the association of CVR with cvRFs and cognition differs for BD and HC adolescents. Reasons for this may include limited variability of cvRFs within the HC sample, medication effects, and/or disease effects. Larger, prospective studies are warranted to extend these findings and examine for symptom associations with CVR. **Supported By:** Ontario Mental Health Foundation **Keywords:** Cerebrovascular Reactivity, Bipolar Disorder, Adolescents, Vascular Risk, Cognition