Characterizing the mechanisms of altered gaze processing in psychosis & bipolar disorder using drift diffusion modeling & EEG

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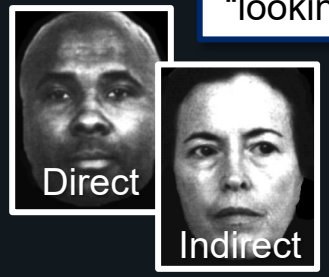
“ Processing of social information – like eye gaze – is disrupted in schizophrenia and bipolar disorder, contributing to poor functional outcomes. But the latent mechanisms are poorly understood, impeding the design of targeted interventions.

The Present Study

N = 100 with schizophrenia (SZ), bipolar disorder (BD), or controls (HC)

Stimuli:

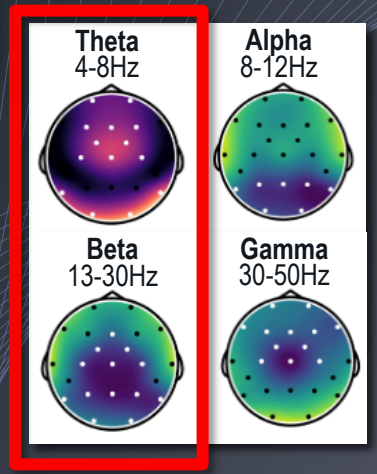


Task:
"looking at me?" (y/n)

EEG:
TF Analysis

Neural Correlates of Decision Processes:

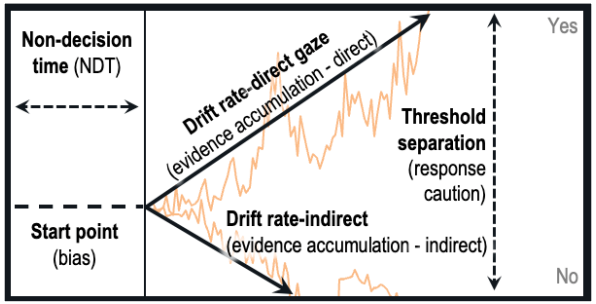
Stim-evoked power:



Latent Decision Processes:

RTs & Choices:
Hierarchical Bayesian Drift Diffusion Model (DDM)

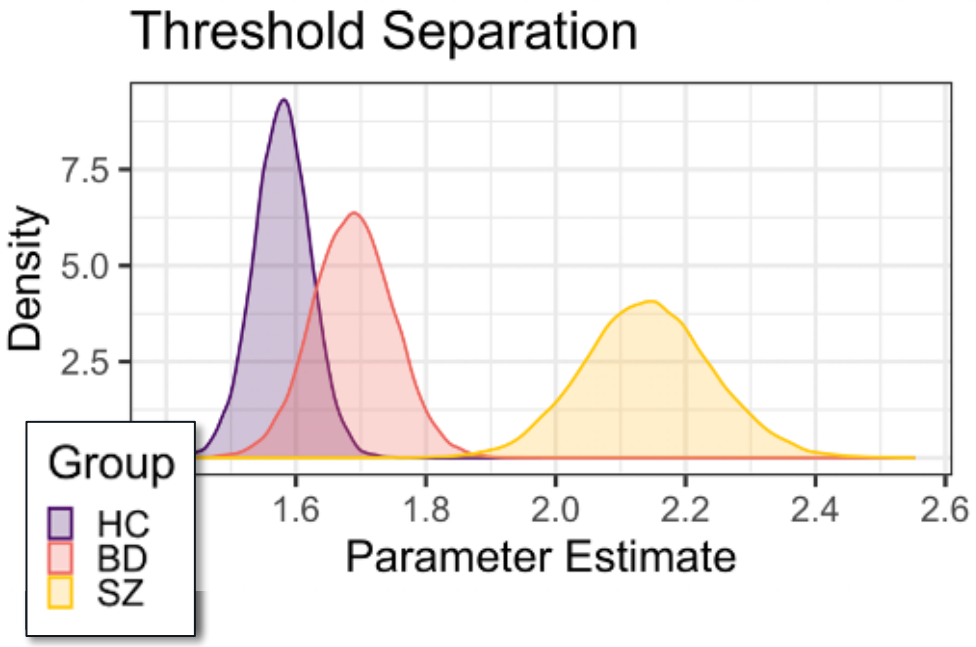
Ratcliffe, 1978



DDM Results

SZ and BD accumulated evidence less efficiently than HC for indirect gaze

SZ had ↑ response caution than BD and HC



EEG Results

Theta power:

A) ↓ in SZ and BD

Grove et al 2020, Lasagna et al 2023

B) ↑ theta related to ↑ efficiency of evidence accumulation

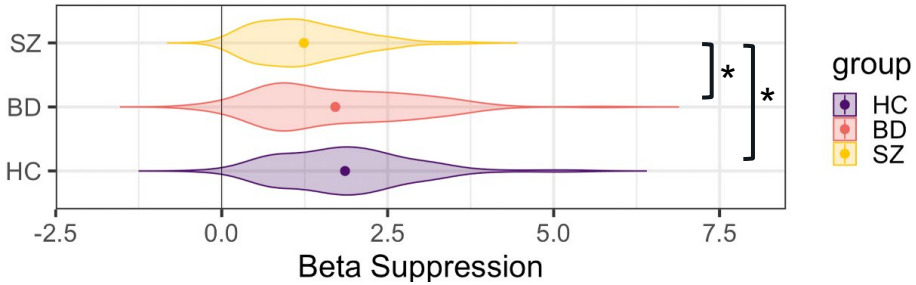
Beta suppression:

A) ↓ in SZ

Grove et al 2020

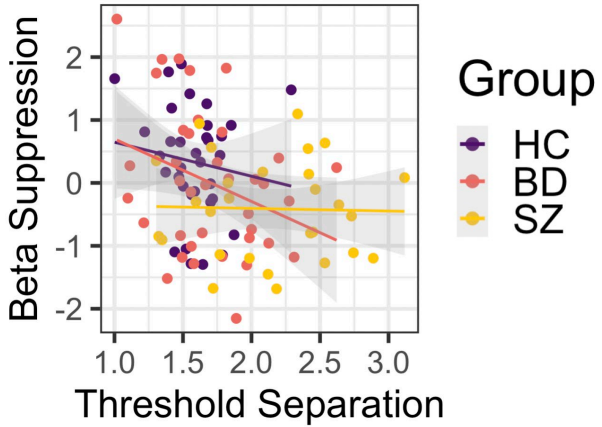
B) ↑ beta power suppression related to ↓ response caution

A) Group Diffs: Beta Suppression



B) Correlations: Beta Suppression & Threshold Separation

Rho = -0.30, *p* = .003



Conclusions

It is possible that altered evidence accumulation/theta power in SZ and BD and altered response caution/beta power in SZ are each jointly signaling a common underlying abnormality. Future work will examine/model this directly.

Thank you

Contact: clasagna@umich.edu

Poster session today from 5:30-6:30pm:

“Characterizing the mechanisms of altered gaze processing in schizophrenia and bipolar disorder using drift diffusion modeling and EEG"

Funding:

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