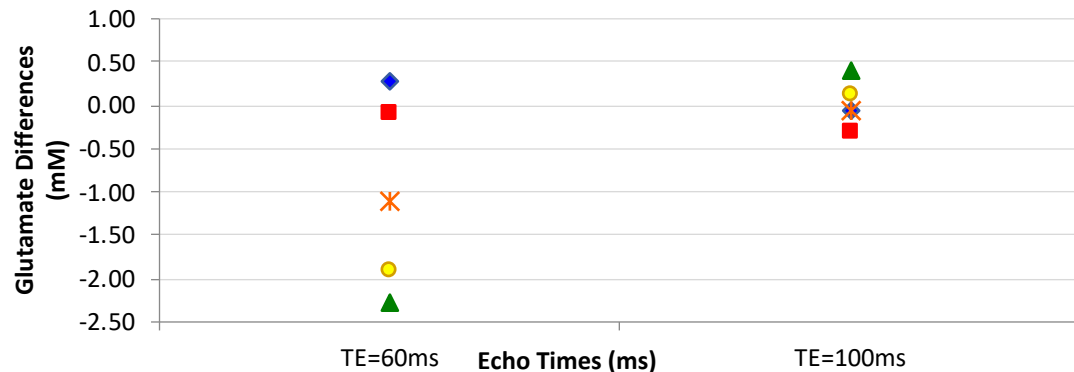


Dynamic glutamate and glutathione measurements in first-episode schizophrenia using 7-Tesla

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Part I: Echo Time Comparison

Typically, magnetic resonance spectroscopy sequences attempting to measure glutamate aim to utilize the shortest echo time achievable to reduce the effects of J-coupling and T_2 relaxation. However, in 2017, Wong *et al.* described the optimal echo time for glutamate detection for 7T semi-LASER proton magnetic resonance spectroscopy (^1H -MRS) to be in the range of 100 to 125ms, which is almost twice longer than the typical shortest echo achievable with this sequence, i.e. 60ms. This work aimed to investigate whether one should choose the shortest echo time or the “optimal” echo time when attempting to detect small glutamate changes in an fMRS paradigm.



Part II: Healthy Controls versus First-Episode Schizophrenia

This study proposes dynamic glutamate and glutathione measurements may be a more sensitive early marker in schizophrenia symptom treatment outcome and aims to show abnormal glutamate/glutathione dynamics in individuals with first-episode schizophrenia (FES) compared to healthy controls (HC). Functional MRS (fMRS) will be used along with a color-word Stroop task cognitive paradigm for stimuli.

