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Maya Strod

Washington University in St. Louis

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PERSONALITY AND BIOMARKERS FOR PREDICTING BRAIN VOLUMES IN OLDER ADULTS

Maya Strod

Mentor: Denise Head

Aging of the brain progresses in similar ways throughout the human population, with variation depending on multiple factors including personality and presence of neuropathology. The proposed work will examine the interactive effects of personality traits (i.e., neuroticism and conscientiousness) and AD biomarkers on regional brain volumes in cognitively normal individuals. Higher conscientiousness, combined with lower AD biomarkers, may be related to larger brain volumes, while the combination of higher neuroticism and higher AD biomarkers may be related to particularly smaller brain volumes. CSF measures of AB_{42} , tau, and ptau will be obtained from the ADRC. Measures of neuroticism and conscientiousness will be derived from the NEO Personality Inventory. MRI scans from the ADRC will be processed using FreeSurfer to derive regional brain volume estimates. The results of the statistical analysis suggest that the interaction between neuroticism and tau culminates in larger hippocampal and parahippocampal gyrus volumes. The results also suggest that the interaction between neuroticism and amyloid plaque (AB_{42}) culminates in larger hippocampal volumes, although not larger parahippocampal volumes. This suggests that with the presence of higher neuroticism in a subject, there are a higher amount of AD biomarkers as well as larger brain volumes related to neuropathology. The relationship between specific brain changes and personality in normally aging individuals may predict symptomatic AD earlier than current diagnosing practices.