

more work is needed, particularly in survivors of pediatric brain tumors. The present study used graph theory to determine whether functional network properties in this population differ from healthy controls; whether graph metrics relate to core cognitive skills: attention, working memory, and processing speed; and whether they relate to a cumulative measure of neurological risk.

Participants and Methods: 31 survivors and 31 matched controls completed neuropsychological testing including measures of attention, working memory, and processing speed. They also underwent resting state functional magnetic resonance imaging. Resting state data were preprocessed and spatially constrained independent component analysis was completed to construct connectivity matrices. Finally, graph metrics were calculated utilizing an area under the curve method, including global efficiency, clustering coefficient, betweenness centrality, and small-worldness. Group differences and associations between graph metrics, cognitive outcomes, and neurological risk were analyzed using SPSS version 28.0.

Results: Results revealed a significant difference such that brain tumor survivors exhibited less small-world properties in their functional brain networks. This was found to be related to working memory, such that less small-worldness in the network was related to poorer performance. There were no significant relationships with neurological risk, but there were nonsignificant correlations of small-moderate effect size such that lower global efficiency and clustering coefficient were associated with greater neurological risk. Comparisons to structural network analysis from a similar sample and additional post-hoc analyses are also discussed.

Conclusions: These findings reveal that survivors of pediatric brain tumor indeed display significant differences in functional brain networks that are quantifiable by graph theory. It is also possible that, with further work, we might better understand how metrics such as small-worldness can be used to predict long-term cognitive outcomes and functional independence in adulthood.

Categories: Cancer

Keyword 1: neuroimaging: functional connectivity

Keyword 2: cognitive functioning

Keyword 3: brain tumor

Correspondence: Eric Semmel, Georgia State University, esemmel15@gmail.com

Poster Session 04: Aging | MCI

2:30 - 3:45pm

Thursday, 2nd February, 2023

Town & Country Foyer

1 Social Support is Associated with Better Memory Performance among Hispanic/Latino, but not Non-Hispanic White Older Adults

Abbey M Hamlin, Jordana Breton, Nazareth Ortega, Joaquin Urquiza-Perez, Lauren Eisenstat, Megan Perry, Thaha Hossain, Sanya Kotian, Alexandra L Clark
The University of Texas at Austin, Austin, TX, USA

Objective: Hispanic/Latino (H/L) older adults are at greater risk of developing Alzheimer's disease and related dementias compared to non-Hispanic whites (NHW), and there is an urgent need to identify important factors that may help prevent and/or reduce age-related cognitive health disparities. Positive psychosocial factors, such as social support, may protect against cognitive impairment and decline. However, recent research has highlighted that the effect of social support on cognitive outcomes may differ across racial/ethnic groups. Given the emphasis placed on family relationships and support in H/L culture, the current study sought to clarify whether H/L ethnicity moderated the association between social support and cognitive functioning in a well-characterized sample of community-dwelling older adults residing in Texas.

Participants and Methods: Participants included 766 NHW and 817 H/L (predominantly Mexican American) older adults ($M_{age} = 66.25 \pm 8.64$) without dementia enrolled in the Health and Aging Brain Study-Health Disparities. Participants completed study questionnaires and a comprehensive neuropsychological battery. Perceived social support was measured using the total sum score from the 12-item abbreviated version of the Interpersonal Support Evaluation List. Episodic memory performance was

operationalized as the z-score composite of the immediate and delayed recall totals from the Spanish English Verbal Learning Test and the Weschler Memory Scale (WMS)-III Logical Memory 1 and 2. Executive functioning was operationalized as the z-score composite of scores from the WMS-III Digit Span, Verbal Fluency (FAS), and Trails B. Analyses of covariance were used to explore racial/ethnic group differences in self-reported levels of social support. Multiple linear regression models examined (1) ethnicity x social support interactions on cognition, and (2) ethnicity-stratified social support and cognition associations. Covariates included age, education, sex, yearly income, and depressive symptoms.

Results: H/L older adults reported less perceived social support compared to NHWs ($F = 41.16, p < .001$). There were no significant ethnicity x social support interactions on episodic memory ($\beta = 0.04, p = .53$) or executive functioning ($\beta = 0.004, p = .95$). However, stratified models revealed that more social support was associated with better memory performance in H/Ls ($\beta = 0.08, p = .01$), but not in NHWs ($\beta = 0.0004, p = .99$). No significant associations between social support and executive functioning were observed amongst H/Ls ($\beta = -0.01, p = .60$) or NHWs ($\beta = 0.04, p = .29$).

Conclusions: Although H/Ls reported lower levels of social support relative to NHWs, we observed that social support was linked to better memory performance within the H/L group only. Results suggest that culturally tailored interventions which encourage strong interpersonal relationships and caring for family could enhance social support in H/Ls and thus help to prevent memory decline. Future work should focus on the development of assessment measures that better characterize unique cultural elements of social support within H/Ls, such as multigenerational households, and explore the direct effects of social support on brain metrics.

Categories: Aging

Keyword 1: aging (normal)

Keyword 2: diversity

Keyword 3: memory: normal

Correspondence: Abbey M. Hamlin, Department of Psychology, The University of Texas at Austin, abbeyh@utexas.edu

2 Water-Based Exercise Improves Cognition and Reduces Neurological-Related Plasma Proteins in Older Adults.

Adriana A Savettiere¹, Peter Louras^{2,3}, J. Kaci Fairchild^{2,3}, M. Windy McNerney^{4,5}

¹Palo Alto University, Palo Alto, CA, USA.

²Sierra Pacific Mental Illness Research, Education, and Clinical Center (MIRECC) at VA Palo Alto Health Care System (VAPAHCS), Palo Alto, CA, USA. ³Stanford University School of Medicine, Department of Psychiatry and Behavioral Sciences, Palo Alto, CA, USA.

⁴Research Health Specialist in the Sierra-Pacific MIRECC at VAPAHCS, Palo Alto, CA, USA.

⁵Clinical Assistant Professor (Affiliated), Psychiatry and Behavioral Sciences at Stanford University School of Medicine, Palo Alto, CA, USA

Objective: In the United States, Alzheimer's disease (AD) is the most common cause of dementia and the seventh leading cause of death. Exercise has demonstrated health benefits in older adults and reduces the risk of developing AD. Exploring underlying biological mechanisms of exercise could aid in identifying therapeutic targets to prevent AD progression, especially for high-risk individuals such as those with Mild Cognitive Impairment (MCI). Many studies of dementia focus on memory; however, executive function and processing speed are also vulnerable to the neuropathology that causes AD. This exploratory study aimed to identify potential mechanisms by which physical activity can facilitate change in cognitive functioning in older adults. This was accomplished by investigating correlations between changes in neurology-related plasma proteins and changes in measures of executive function and processing speed after participation in a water-based exercise intervention.

Participants and Methods: The sample included 20 older adults with amnesic MCI, ages 55-82 years (mean 68.15 ± 7.75). Participants were predominately male (90%), White (70%), and non-Hispanic (85%), with more than high school education (95%). Participants engaged in supervised high-intensity water-based exercise three times per week for six months. Neuropsychological assessments and blood samples were assessed at baseline and after completion of the exercise intervention. Cognitive measures included: the