with prediabetes experience brain decline, and could benefit from lifestyle interventions to prevent or delay the onset of such decline.

AFFECTING COGNITION: HOW DO POSITIVE AND NEGATIVE AFFECT PREDICT THE FUTURE COGNITIVE PERFORMANCE OF MIDLIFE ADULTS

Jungmin Lee,[1] Sara B. W. Troutman,[2] Victoria Gertel,[1] Peter Molenaar,[1] and David M. Almeida[3], *1. The Pennsylvania State University, State College, Pennsylvania, United States, 2. The Pennsylvania State University, The Pennsylvania State University, United States, 3. The Pennsylvania State University, University Park, Pennsylvania, United States*

The purpose of the present study is to examine whether positive affect and negative affect can predict the changes in cognitive abilities, assessed by episodic memory and executive functioning, during the transition to late adulthood. Using the longitudinal data from the national survey of midlife development in the United States (MIDUS), this study implements a cross-lagged panel model to test the significance of two pathways; one from affect to cognition and the other in the opposite direction. The results show the three main findings: First, the relationship between affect and cognition is unidirectional in which only positive affect and negative affect during the first occasion significantly predict episodic memory in the second occasion. Second, regardless of the type of affect, higher levels of both positive and negative affect predicts worse episodic memory and this tendency is more prominent in older adults. The combined results emphasize the benefits of using affect as a predictor of changes in the specific types of cognition and suggest using the longitudinal model to account for complex relationships between these psychological constructs.

EFFECT OF SELF-PACED WALKING ON REDUCING COGNITIVE DEMANDS OF WALKING WHILE TALKING

Hyeon Jung Kim,[1] Farahnaz Fallahtafti,[2] Jennifer M. Yentes,[1] Dawn Venema,[3] and Julie Blaskewicz Boron[2], *1. University of Nebraska Omaha, Omaha, Nebraska, United States, 2. University of Nebraska at Omaha, Omaha, Nebraska, United States, 3. University of Nebraska Medical Center, Omaha, Nebraska, United States*

Although walking is considered an automated process, internal and external factors can alter gait performance. Fear of falling leads to walking with a wider base of support and decreased walking speed, due to a combination of shorter stride lengths and/or stride time. Exacerbation of gait deficits have been reported under high cognitive load situations (HCLS, also known as dual-tasks). Talking on a phone is considered an increased HCLS over talking in-person due to visualization of the individual on the phone. The purpose of the study was to explore the added effects of walking while talking on a phone compared to talking in-person. Fifteen healthy older adult subjects (70.86±4.7yrs) performed three conditions while walking on a self-paced treadmill for ten minutes: (1)walking alone, (2)walking while talking in-person, (3)walking while talking on a phone. Mean stride length(SL), stride time(ST), and step width(SW) were compared using one-way, repeated-measures ANOVAs (p=0.10). Dual-task cost of walking while talking in-person and on a phone was calculated for each gait variable and compared with t-tests. Mean gait variables did not differ between conditions (SL p=0.95, ST p=0.77, SW p=0.57). Dual-task costs were not significantly different between talking conditions (SL p=0.99, ST p=0.54, SW p=0.14). Use of a self-paced treadmill allowed the subjects to perform in their "comfort zone", however, walking on a set-speed treadmill may force walking speed outside of the comfort zone, pushing one's "reserve", and revealing differences. Use of a self-paced treadmill better approximates daily life by providing the opportunity to make adaptations under HCLS.

THE AGING BRAIN AND MOTOR LEARNING

Qu Tian,[1] Roger Mullins,[1] Abby Corkum,[1] David Reiter,[2] Daniel Pupo,[3] Eleanor M. Simonsick,[4] Dimitrios Kapogiannis,[1] and Stephanie Studenski[5], *1. National Institute on Aging, Baltimore, Maryland, United States, 2. Emory University, Atlanta, Georgia, United States, 3. Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, United States, 4. Longitudinal Studies Section, Intramural Research Program, National Institute on Aging, Baltimore, Maryland, United States, 5. University of Pittsburgh, Pittsburgh, Pennsylvania, United States*

The effect of aging on motor learning is poorly understood. This study investigated response time and patterns of brain activation induced over the course of a bimanual motor learning task in three age groups. Twenty-two cognitively unimpaired participants (32%women) were grouped into Young (<35,n=6), Middle-Age (36-59,n=10), and Old (60+,n=6). A self-paced bimanual motor learning task was performed during fMRI. The task consisted of using 2 capital and 2 lower case letters in strings of 16 cues with 6 novel alternating with 6 repeated sequence blocks. To assess learning, a repeated measures ANOVA tested whether average time per slide differed over time between novel and sequence conditions. Voxel-wise changes in brain activation between novel and sequence conditions over time were examined using a within-subject repeated measures model. Faster initial time per slide was associated with younger age (p0.05). Old had increased brain activation in repeated sequence than novel conditions in right postcentral and superior parietal regions during the early half of the task compared to the second half (p0.05). We found behavioral evidence of motor learning in Middle-Age and Old, but not Young, perhaps because younger individuals performed quickly and learned sequence almost immediately. Among older individuals, sequence-specific learning in parietal regions challenges the view that it is mediated by only motor areas.

QUADRICEPS STRENGTH IS ASSOCIATED WITH COGNITION IN OLDER ADULTS WITH CHRONIC STROKE

Kimberly Bennett,[1] Rachel A. Crockett,[2] Lisanne F. ten Brinke,[2] Jennifer C. Davis,[3] and

Teresa Liu-Ambrose[2], *1. University of British Columbia, Vancouver, Canada, 2. University of British Columbia, Vancouver, British Columbia, Canada, 3. University of British Columbia - Okanagan Campus, Kelowna, British Columbia, Canada*

Individuals who have suffered a stroke are at risk for developing cognitive impairment and dementia. Thus, it is important to identify modifiable risk factor for cognitive decline in this population. Among older adults without a history of stroke, greater muscle strength is associated with better cognitive function. Whether this relationship also exist in older adults with a history of stroke is not known. Thus, we aimed to examine whether cognition, as measured by both the Montreal Cognitive Assessment (MoCA) and the 13-item Alzheimer's Disease Assessment Scale-Cognitive (ADAS-Cog 13), is associated with lower extremity muscle strength in adults with chronic stroke (> 1 year post stroke). Ninety-one community-dwelling adults, aged 55 years and older, with chronic stroke were included in this analysis. Isometric strength of the quadriceps was measured bilaterally in kilograms. Two linear regression models were constructed to determine the independent association of quadriceps strength (mean kilograms of both legs) with: 1) MoCA; and 2) ADAS-Cog 13, after controlling for age, sex, and mood. Mean quadriceps strength was independently associated with both MoCA and ADAS-Cog scores, after accounting for age, sex, and mood. Specifically, quadriceps strength explained an additional 5.6% of the variable in MoCA scores; total variance explained by the model was 12.0%. For ADAS-Cog 13, quadriceps strength explained an additional 5.4% of the variance; total variance explained by the model was 16.5%. Our current cross-sectional results suggest that the maintenance of muscle strength may be important for cognitive health in older adults who have suffered a stroke.

VISUAL IMPAIRMENT AND ENGAGEMENT IN COGNITIVELY STIMULATING ACTIVITIES

Bonnielin Swenor,[1] beatriz Munoz,[2] and Eleanor M. Simonsick[3], *1. The Wilmer Eye Institute, Johns Hopkins University School of Medicine, Baltimore, Maryland, United States, 2. The Wilmer Eye Institute, Johns Hopkins School of Medicine, Baltimore, Maryland, United States, 3. Longitudinal Studies Section, Intramural Research Program, National Institute on Aging, Baltimore, Maryland, United States*

We examined the relationship between visual impairment (VI) and engagement in cognitively stimulating activities using data from 924 participants in the Cognitive Vitality Sub-Study of the Health ABC Study. At Year 3 (baseline for these analyses), vision was assessed as: visual acuity (VA), contrast sensitivity (CS), and stereo acuity (SA). Participation in cognitively stimulating activities was determined based on responses to 12 questions (administered at Years 3, 5, 7, and 9) assessing frequency of participation ranging from none to daily. We calculated the total number of activities engaged in at least monthly. In cross-sectional analyses adjusted for age, race, and sex, impaired VA (≤20/40, 8%), CS (<1.55, 5%), and SA (<80 secs arc, 29%) was associated with participation in fewer cognitive activities (β=-0.54, 95% CI:-1.06, -0.03; β=-0.59, 95% CI:-0.12, 0.06; β=-0.40, 95% CI:-0.81, -0.18, respectively). Longitudinally, change per year in the number of activities differed by baseline participation levels. Those participating in ≥5 activities at baseline (population median) had a significant decline in the number of activities, irrespective of VI status. However, for those participating in <5 activities at baseline, the increase in these activities tended to be lesser in the VI than in non-VI groups, and for SA this increase was significantly lower for the impaired group (βimpaired=0.004; 95% CI:-0.05, 0.05; βnot-impaired=0.06; 95% CI: 0.03, 0.10; time x SA interaction p=0.0496). These data indicate that older adults with VI participate in fewer cognitive activities and the change in participation over time differs from than those without VI.

ASSOCIATIONS BETWEEN COGNITIVE FUNCTION AND BIOACTIVE FOOD COMPOUNDS IN 100% WATERMELON JUICE

Amy Ellis,[1] Ann Bradford Hansen,[1] Navneet Baidwan,[2] Vinoth Aryan Nagabooshanam,[2] and Kristi Crowe-White[1], *1. The University of Alabama, Tuscaloosa, Alabama, United States, 2. University of Alabama at Birmingham, Birmingham, Alabama, United States*

Objectives: Decline in cognitive function and increases in inflammation and oxidative stress are part of normal aging. Watermelon contains numerous bioactive compounds including lycopene, arginine, and citrulline that exhibit both anti-inflammatory and antioxidant functionality. Thus, the objective of this study was to examine the effect of 100% watermelon juice supplementation on cognitive performance. Methods: A placebo-controlled, randomized, double-blind, crossover trial was conducted with postmenopausal women (n = 16, 60 + 4.1y). Participants initiated a low-lycopene diet during a one-week run-in period and adhered to this diet throughout the study. For four weeks, participants were randomized to consume either two 360 mL servings of pasteurized 100% watermelon juice or a placebo beverage. Following a two-week washout period, participants received the opposite beverage for an additional four weeks. Pre/post each intervention arm, fasting blood samples were collected, and cognitive tests were administered to assess various neurocognitive domains. Statistical analyses included mixed models and Spearman correlations. Results: Serum lycopene exhibited a significant treatment effect (p=0.002); however, lycopene was not correlated with any cognitive test. In contrast, no significant treatment effect was observed for serum arginine or citrulline, yet arginine was significantly inversely correlated with Digit Span Forward (p = 0.005, r = -0.547) and Letter Fluency (p = 0.024, r = -0.507). Conclusion: Despite research supporting the relationship between lycopene and enhanced cognition, lycopene was not related to improvements in cognitive performance in this study. Nevertheless, consumption of 100% watermelon juice may be beneficial for increasing circulating levels of this antioxidant.