

IDENTIFYING COGNITIVE IMPAIRMENT WITH PRIMARY CARE IMPLEMENTATION OF THE BRIEF INTERVIEW FOR MENTAL STATUS

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Overview: An estimated 5.7 million Americans are affected by Alzheimer's disease (AD; 2018 Alzheimer's disease facts and figures, 2018, p. 367). Cognitive impairment fails to be identified in the primary care setting as often as 76% of the time (Moyer, 2014, p. 793). Screening can identify patients with emerging impairment who might otherwise appear cognitively intact (Grober, Wakefield, Ehrlich, Mabie & Lipton, 2017, p.191). Early identification of cognitive impairment promotes evaluation of treatable causes (Possin et al., 2018, p. 150), and access to early treatment for irreversible disease, facilitating future planning (Swallow, 2017, pp. 57, 63). Methods: This quantitative study's aim was to identify patients with occult cognitive impairment. After training staff in a Palm Beach County Florida primary care practice, the Brief Interview of Mental Status (BIMS) was administered to patients aged 45 years and older. Results: Seven of 120 screened patients, with no known AD diagnosis, scored as moderately impaired. One of these patients was 64 years of age, the remaining six ranged from age 71 to 93. Fourteen patients scored at the lowest range of "cognitively intact," eight were under age 65. Conclusion: Cognitive screening of primary care patients with no known diagnosis of AD identified approximately 7% scoring as moderately impaired; an additional 12% scored at the lowest range of "cognitively intact," suggesting a potentially emerging cognitive impairment warranting follow up evaluation for treatable causes, developing AD, or a related neurocognitive disorder.

EFFECT OF STIGMA ON OUTCOMES OF A MEMORY TRAINING INTERVENTION

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Cultural stereotypes equated with aging that emphasize decreasing competence and increasing forgetfulness can be threatening to older adults. Even brief exposure via entertainment media or the patronizing behavior of others may induce stigma in elders and thereby impair memory and executive functions. The sample was recruited for an RCT known as Senior WISE and conducted in Central Texas. The average age was 75 years and average of 14 years of education. Sex and minority status were consistent across groups. Data were analyzed using SPSS, v21. First, Pearson Rs were calculated between stigma (MIA Anxiety subscale) and memory outcomes at baseline. Stigma related significantly to Rivermead (RBMT), HVLTL, and Memory Self-Efficacy (MSQ). Then, after controlling for the effects of trait anxiety, stigma explained a significant portion of the variance within scores on the RBMT ($\beta = -.139$, R^2 MIA Change = .016, $p = .037$), HVLTL ($\beta = -.145$, R^2 Change = .017, $p = .032$), and MSQ-35 ($\beta = -.253$, R^2 Change = .053, $p < .001$). Change in stigma was significantly associated with change in HVLTL scores among those in the memory training group, $r(105) = -.228$, $p = .018$. Reductions in stigma were related to increases

in HVLTL score, $\beta = -.14$, $F(1, 201) = 3.021$, $p = .084$, R^2 Change = .015; however, the overall regression model was not a good predictor of HVLTL change, $F(4, 201) = 1.793$, $p = .132$, $R^2 = .034$. Stigma is a high priority area of scientific inquiry and a self-fulfilling prophecy.

OPTIC FLOW IMPROVES SPATIAL GAIT FUNCTIONING ESPECIALLY IN MEDIOLATERAL DIRECTION

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Instances where multiple tasks are completed simultaneously are considered high cognitive load situations (HCLS, also called dual-task), potentially affecting gait performance in older adults. Walking while talking is a common HCLS that requires additional cognitive resources. Optic flow (OF) provides visual information about speed and direction of self-motion, and thus, may ameliorate gait deficits under HCLS. This study aimed to identify the effect of HCLS, as well as OF, on gait performance in older adults. The HCLS included walking while talking on the phone, compared to walking alone. Fifteen older adults (70.86 ± 4.7 yrs) underwent four experimental conditions: walking alone with(1) and without OF(2), as well as walking while talking with(3) and without OF(4). Step width, step length, and double support time were measured and examined with 2(HCLS) x 2(OF) repeated-measures ANOVAs. There was a main effect of OF; step width was narrower with OF compared to without OF ($p = 0.048$). For step length, there was a significant interaction between HCLS and OF ($p = 0.045$). Without OF, there were no differences in step length; however, with OF step length was significantly longer when walking alone compared to when walking while talking ($p = 0.002$). Double support time was not affected by HCLS or OF. Considering younger adults have longer and narrower steps compared to older adults, OF may have enhanced step width regardless of HCLS and step length when walking only. Using OF in training programs designed for older adults, could be a potential factor to improve spatial gait function, more so in the mediolateral direction.

EFFECTS OF COGNITIVE TRAINING ON WHITE MATTER MICROSTRUCTURE AND COGNITION IN OLDER ADULTS: A SYSTEMATIC REVIEW

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Adults who remain cognitively active may be protected from age-associated changes in white matter (WM) and cognitive decline. To determine if cognitive activity is a precursor for WM plasticity, the available literature was systematically searched for Region of Interest (ROI) and whole-brain studies assessing the efficacy of cognitive training (CT) on WM microstructure using Diffusion Tensor Imaging (DTI) in healthy adults (> 40 years). Seven studies were identified and included in this review.

Results suggest there are beneficial effects to WM microstructure after CT in frontal and medial brain regions, with some studies showing improved performance in cognitive outcomes. Benefits of CT were shown to be protective against age-related WM microstructure decline by either maintaining or improving WM after training. These results have implications for determining the capacity for training-dependent WM plasticity in older adults and whether CT can be utilised to prevent age-associated cognitive decline. Additional studies with standardised training and imaging protocols are needed to confirm these outcomes.

INVESTIGATING WALNUT CONSUMPTION AND COGNITIVE HEALTH IN A REPRESENTATIVE SAMPLE OF OLDER U.S. ADULTS

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Population aging increases the need to identify modifiable risk factors of cognitive decline such as nutritional intake. Several nutrients found in walnuts appear to play a neuro-protective role, yet few studies examine whole walnut consumption or draw from representative longitudinal samples. We draw observations from the nationally-representative Health and Retirement Study and Health Care and Nutrition Study to investigate the association between walnut consumption and cognitive trajectories among older US adults. The analytic sample consisted of 6,639 adults age 50 and over in 2013, representing a population of 77,726,682 community-dwelling older adults. Walnut consumption was a categorical measure representing no consumption, moderate consumption (< one serving per week), or high consumption (≥ one serving per week). Indicators of cognitive function representing working memory (immediate and delayed word recall) and global cognitive function (Telephone Interview of Cognitive Status, TICS) were measured at 3 time points (2012, 2014, and 2016). Latent growth models were used to estimate each linear trajectory while adjusting for covariates and complex survey design. Walnut consumption was positively associated with word recall and global mental status at baseline, but was not associated with change over the four year observational window. For example, those with high walnut consumption had baseline TICS scores .89 units greater (SE = .17, $p < .001$) than those consuming no walnuts. These results indicate that walnut consumption appears to have a positive association with cognitive health, but walnut consumption does not appear to be associated with short-term change in the cognitive outcomes measured.

PARALLEL DEVELOPMENT OF MEMORY, DISABILITY, AND COMORBIDITY IN U.S. ADULTS AGE 65 AND OLDER

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Cognitive health, physical function, and chronic disease represent interdependent health outcomes that may exert influence on the course of each other's development. To investigate the association between baseline health in each

domain and developmental change across domains, we estimated trajectories of working memory, mobility limitations, and comorbidity among US adults age 65 and older over 18 years. We drew observations from the nationally-representative Health and Retirement Study with an analytic sample consisting of 5,963 adults age 65 and over in 1998. Immediate word recall, an 11-item Nagi scale of mobility limitations, and a summary count of eight doctor-diagnosed chronic conditions were measured biennially from 1998 to 2016. Parallel-process quadratic growth models with individually-varying time scores were used to estimate non-linear trajectories of each health measure, allowing identification of associations between baseline health and developmental change in each health process at both earlier and later stages of older adulthood. All estimates adjusted for covariates, complex survey design, and missing data. Greater baseline immediate word recall was associated with less rapid increase in mobility limitations at earlier ages. More baseline mobility limitations were associated with faster increase in comorbidity at earlier ages. Greater baseline chronic conditions were associated with more rapid increase in mobility limitations at later ages. These results highlight the importance of conceptualizing health among older adults as an interdependent and developmental process and should help clinicians recognize that single-domain health status may influence the progression of other health outcomes at different stages of older adulthood.

TUNING ENVIRONMENTAL LIGHTING TO IMPROVE SLEEP QUALITY AND COGNITIVE PERFORMANCE IN OLDER ADULTS

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Sleep is important for memory consolidation, hence the disruption of normal sleep patterns as a result of age-related changes in the circadian system could be one of the contributors to memory impairment among older adults. It is now well-established that light is the main environmental element that synchronizes circadian rhythms. An appropriate lighting condition can be considered as a non-pharmacological solution to improve the sleep quality of individuals and consequently their overall health and well-being. The present study investigates the effectiveness of two proposed whole-day lighting interventions (L1 and L2) applied by Tunable White Lighting Technology (TWLT) on sleep quality and cognitive performance in older adults. Both lighting interventions provide a high illuminance level (500 lux) in the morning and then the illumination is dimmed gradually throughout the day and reached 100 lux in the evening. However, while L1 offers a constant Correlated Color Temperature (CCT) of 2700K, during the L2 intervention, the CCT is changing in the range of 6500K – 2700K from morning towards evening. Fifteen healthy older adults (mean age = 73.2 years; 12F) participated in a 41-day counterbalanced crossover study. Participants were exposed to each lighting condition for 9 days. Actigraphy, standard questionnaires (PROMIS and PSQI), and tests (Trail Making Test (TMT) A & B and Digit Symbol Substitution Test (DSST)) were employed to measure sleep quality and cognitive performance before, during, and