ADRC Participant Access Request

Access Request Goal

Goal - Preliminary inquiry for further discussion

Principal Investigator

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No Co-PI listed in survey

Study and Theme Details

Hypothesis

A combination of useful field of view cognitive training with sustained attention-, and executive function- training exercises (i.e., CTabc) will result in the largest IADL improvements.

Specific Aims

Aim 1. To determine which cognitive training (CT) arm results in the largest functional performance gains among persons with MCI. Evidence from multiple RCTs indicates CTa improves IADL performance. In phase II a, we will determine if other combinations of CT, which include exercises to improve sustained attention and executive function, result in larger functional performance gains. Hypothesis: A combination of CTa with sustained attention-, and executive function- training exercises (i.e., CTabc) will result in the largest IADL improvements.

Aim 2. To quantify the effect size of CTbp to reduce ADRD incidence among persons with MCI. At interim analyses, the CT arm with the largest functional performance improvements, which has the best probability to reduce ADRD (i.e., CTbp, the “winner”), will be chosen for further investigation. In phase IIb, we will quantify the effects of the chosen, efficacious CTbp arm on ADRD across 2 years to inform a phase III trial. Hypothesis: CTbp will reduce incident ADRD.

Exploratory Aim 3. To explore neuroimaging- and blood-based biomarkers as moderators of CT effects. We apply the Alzheimer’s Disease Neuroimaging Initiative 3 (ADNI-3) neuroimaging protocol to quantify brain structure, white matter hyperintensities (WMH), hippocampal size, cerebral microbleed and perfusion, white matter integrity, and resting state connectivity. Hypothesis: Smaller hippocampal volume, less functional connectivity of the default mode network, lower cerebral perfusion, and higher WMH load will attenuate functional gains from CT. We will further explore blood biomarkers amyloid beta 42/40, p-tau 181, and neurofilament light (NfL) as moderators of CT. Hypothesis: Higher levels of p-tau and NfL will be associated with attenuated CT gains. Results will identify who is most likely to benefit from CT.

Study related to Deep South Disparities

As you know, there is greater prevalence of dementia among individuals who are Black or African American race. We are working on interventions to improve function and delay or prevent dementia.

Funding and IRB Details

Funding source - Already funded

Entity - NIH funded grant/application

Details - NIA AG075014

IRB Contact - Yes, we have IRB approval

IRB Protocol # - WIRB 20192632

Subject Sample Size and Profile

Sample size by cognitive ability

MCI all subtypes

Additional inclusion/exclusion details

Inclusion (to be met at baseline)
• 55 to 89 years of age
• Diagnosis of MCI in the past 90 days based on multidisciplinary evaluation that included standardized neuropsychological testing - or -
o History of some change in cognitive function relative to established baseline and a CDR of 0.5 will be considered MCI - or -
o A Montreal Cognitive Assessment Score of 18-27 inclusive and cognitive performance on one or more subtests (i.e., Craft Story Recall, Benson Figure Test, Number Span Test, Multilingual Naming Test, Fluency
[phonemic and category], Trail Making Test or UFOV) at least 1 SD lower than expected for sex, age, and education will be considered MCI.
• If reports use of medications typically prescribed for dementia such as, but not limited to, Namenda, Memantine, Namzaric, Donepezil, Aricept, Rivastigmine, Exelon, Razadyne, Galantamine, Reminyl, Aduhelm,Aducanumab, Leqembi or Lecanemab, dose has been stable for at least 30 days
• Adequate auditory capacity to understand normal speech. No greater than moderate hearing loss evident by thresholds less than or equal to 50 dB at 1000 and 2000 Hz in at least one ear determined by an audioscope (or audiometer).
• Adequate visual capacity to read from a computer screen at a normal viewing distance as measured by binocular visual acuity of 20/50 or better tested with a standard near visual acuity chart
• Reports and shows adequate motor capacity to touch a computer screen or control a computer mouse.
• Willing to complete all study activities
• Willing and capable of providing informed consent at baseline
All of the above criteria are to be met at baseline

Exclusion
• Currently enrolled in another randomized clinical trial, or treatment trial, or another

research study that assesses cognition (ADRC participants are not excluded as long as NACC data are obtainable)
• Dementia diagnosis
• Clinical Dementia Rating Scale of 1 or greater
• History of large vessel stroke with significant residual motor or cognitive impairment
• History of moderate to severe traumatic brain injury with residual cognitive symptoms
• History of brain tumor
• Undergoing or plans to undergo surgery requiring anesthesia, chemotherapy, or radiation treatment in the six months following screening (can be rescreened and enrolled later)
• Congestive heart failure diagnosis
• Primary diagnosis of idiopathic Parkinson's disease
• Multiple sclerosis or Amyotrophic lateral sclerosis (ALS) diagnosis
• Evidence of a non-neurodegenerative neurological disorder that would interfere with the ability to carry out study activities.
• Evidence of any other unstable medical conditions that would interfere with the ability to carry out study activities or cause fluctuations in cognition (for example, but not limited to, unstable diabetes, chronic obstructive pulmonary disorder dependent on oxygen)
• Geriatric Depression short scale score >5/15. Participants with mood disorders that are treated and stable and have a GDS score < 6/15 are not excluded.
• Any other clinically significant or unstable medical condition (for example, but not limited to, ongoing alcohol dependency or drug abuse, schizophrenia, psychosis) that in the assessor's opinion would interfere with the ability to carry out study activities.

• Previous participation in 10 or more hours of a computerized cognitive intervention program in the past two years
• Previous participation in cognitive intervention research at the study site in the past 2 years
• Planning on going away or being otherwise unavailable for a period of more than three weeks in the six months following screening (can be rescreened and enrolled later)

Racial minorities and other stratifcation

This study does NOT test hypothesis on racial disparities

Additional stratification details

Assuming by “stratify” it is meant examine as moderators of intervention effects, then yes, we hope to examine MCI subtype

Requested Resources

Human subject involvement

Study procedures

Phase 1 complete cognitive and functional testing at in person visit. Complete CDR, NACC, and see study clinician at in person visit, if not completed/diagnosed with MCI in last 90 days. Complete two sessions to learn intervention with trainer guidance. Continue to complete intervention at home (iPad provided and internet, if necessary) across 20 weeks.
Phase 2: Complete immediate post-testing cognitive and functional measures.
Phase 3: Complete 2 year follow up repeat of cognitive and functional measures. If not completed within last 90 days, complete CDR and NACC and see study clinician to confirm cognitive status/diagnosis.

Study duration

24

Compensation

$150 and free ipad. Access to cognitive training.

Statistical support

Statistician has already been consulted - Samuel Wu