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CASA

CASA Committed Actions for Successful Aging

Our team is proposing a feasibility study to examine the impact of a mentally stimulating intervention that systematically targets
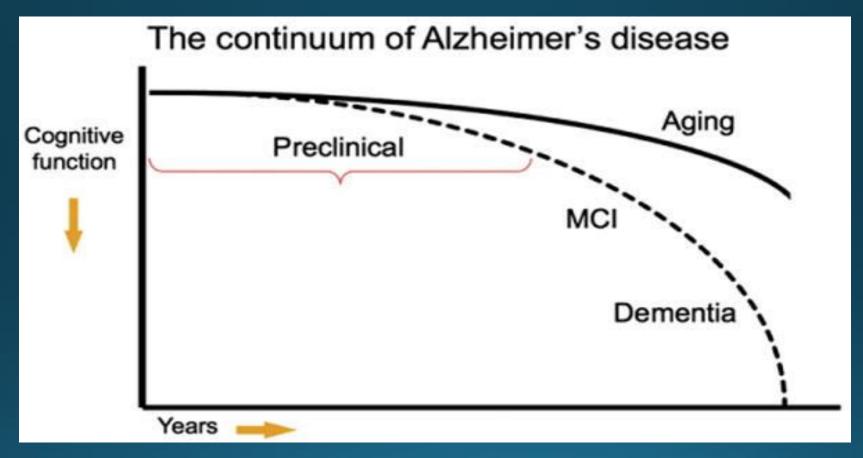
Thoughts

Emotions

Behavior

In order to promote sustained attention, quality of life in cognitively normal individuals 50 years and older

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Aging is universal

Age is the number one risk factor of Alzheimer's disease

Alzheimer's disease (AD), is the most common cause of dementia (Chong and Sahadevan, 2005)

It is crucial to delay the onset of dementia. The global prevalence of AD would decrease by 22.8 million cases if it were possible to delay the onset of dementia by about two years (Brookmeyer et al 1998, 2007)

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The continuum of Alzheimer's disease

Sperling R et al *Alz and Dementia* 2011

Cognitive Continuum

Normal

Mild Cognitive Impairment

Alzheimer's Disease

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Mild Cognitive Impairment (MCI)

Cognitive complaint : noticed by subject or informant

Not normal for age
Not demented

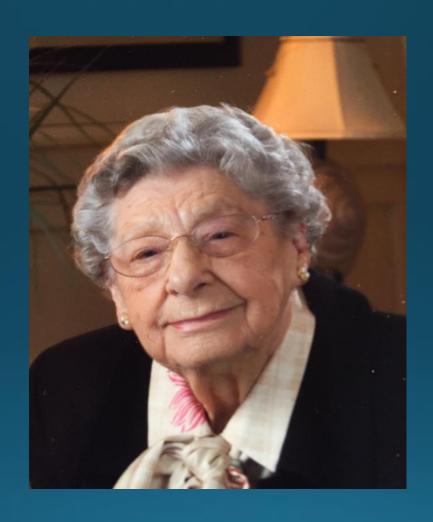Essentially normal functional activities

(Petersen et al 1999, 2004)

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Subjective Cognitive Complaint

Cognitive complaint that is not corroborated by psychometric or mental status tests (Reisberg et al, 2008)

"The person knows, but the doctor doesn't"

Cannot be entirely explained by psychiatric disorders (Caselli et al 2014, Reisberg and Schulman 2010)

May be associated with biomarkers associated with AD such as amyloid-β deposition (Perrotin et al 2012, Stewart et al 2011) as well as APOE ε4 carrier status (small et al 1999, Laws et al 2002

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CASA rests on 2 Pillars

The principles of ACT Therapy (Hayes S et al 1999)
The principles of Neuroscience (Mesulam M 1998)

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Hypothesis:

We hypothesize that the CASA intervention is associated with a measureable change in sustained attention, and quality of life among cognitively normal subjects 50 years and older.

Five Major Large-Scale Partially Segregated and Overlapping Neurocognitive Networks

1) *Left hemisphere dominant*

   Language network

2) *Right hemisphere dominant*

   Visuospatial (sense of direction) network

3) *Epicenters in hippocampus and amygdala*
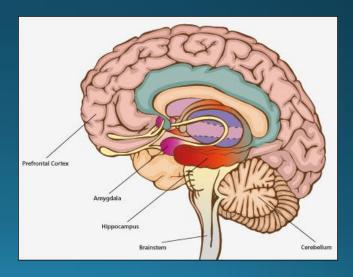
   Memory-Emotion network

4) *Prefrontal network* **Executive-comportment functions**

5) *Ventral occipito-temporal/mid-temporal cortex*

   Human face and object recognition network

Mesulam MM. Brain. 1998; Mesulam MM – Textbook of Behavioral Neurology 1986, 2000

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Prefrontal Cortex : Planning / Executive function

Amygdala: epicenter of emotion

Hippocampus: epicenter of cognition

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Methods:

Study Design: within group time series design:

Group 2 begins with the intervention after Group 1 has finished the intervention. Similarly, Group 3 begins with the intervention after Group 2 has finished the intervention.

The three groups will undergo the same tests pre and post CASA intervention

Each group will sequentially undergo the identical intervention as per protocol

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Study Participants:

Volunteers from the community :
We aim to form 3 groups of 10
Sample size of 30

We anticipate that the drop-out rate will be 10-20%.

Cognitively normal

Aged 50 and above

Equal number of males and females

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Exclusion:

Depression
as measured by PHQ-9 (>7) Spitzer et al.(1999)

Cognitively Abnormal
as measured by Mini-Mental-State Exam (<27)
     Folstein et al (1975)

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Pre and Post measures:

Quality of life: WHOQOL (1998)

Satisfaction with Life scale: SWLS Diener, E. et al (1985)

Cogstate: 4 computer card games Manruff et .al. (2009)

MoCA (Montreal Cognitive Assessment
Nasreddine et.al. (2005)

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Default mode network: fMRI (10 participants)

One scan pre intervention

One scan post

Participant will be task free: lying still

Popular: functional images, radiation free.

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Intervention:

6 Sessions in total

1 initial group session: Video and overview 3 hours

4 individual sessions: 1.5 hours each
- values / committed action
- Moment / self as context
- values / committed action

1 final group session 3 hours

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	Monday	Tuesday	Wednesday	Thursday	Friday
Week 0	Pre-testing (Quality of life, Cogstate, MoCA, fMRI individual appointment				
Week 1	Group session		Group session		
Week 2					
Week 3	S 1 – 3	S 4 - 7	S 8 - 10	S 11- 14	
Week 4					
Week 5	Post- testing (Quality of life, Cogstate, MoCA, fMRI): individual appointment				

Table 1: Planned weekly study schedule for one group involving 14 subjects
Abbreviation: S = subject; in week 1, subjects can choose between 2 dates for the group session in week 1

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Acknowledgements