Re-Vitalize: A Combined Mindfulness and Cognitive Training Intervention in Older Adults

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BACKGROUND

- Prior research has shown that interventions such as computerized cognitive training and Mindfulness Based Stress Reduction (MBSR) can be beneficial "brain health" in older adults

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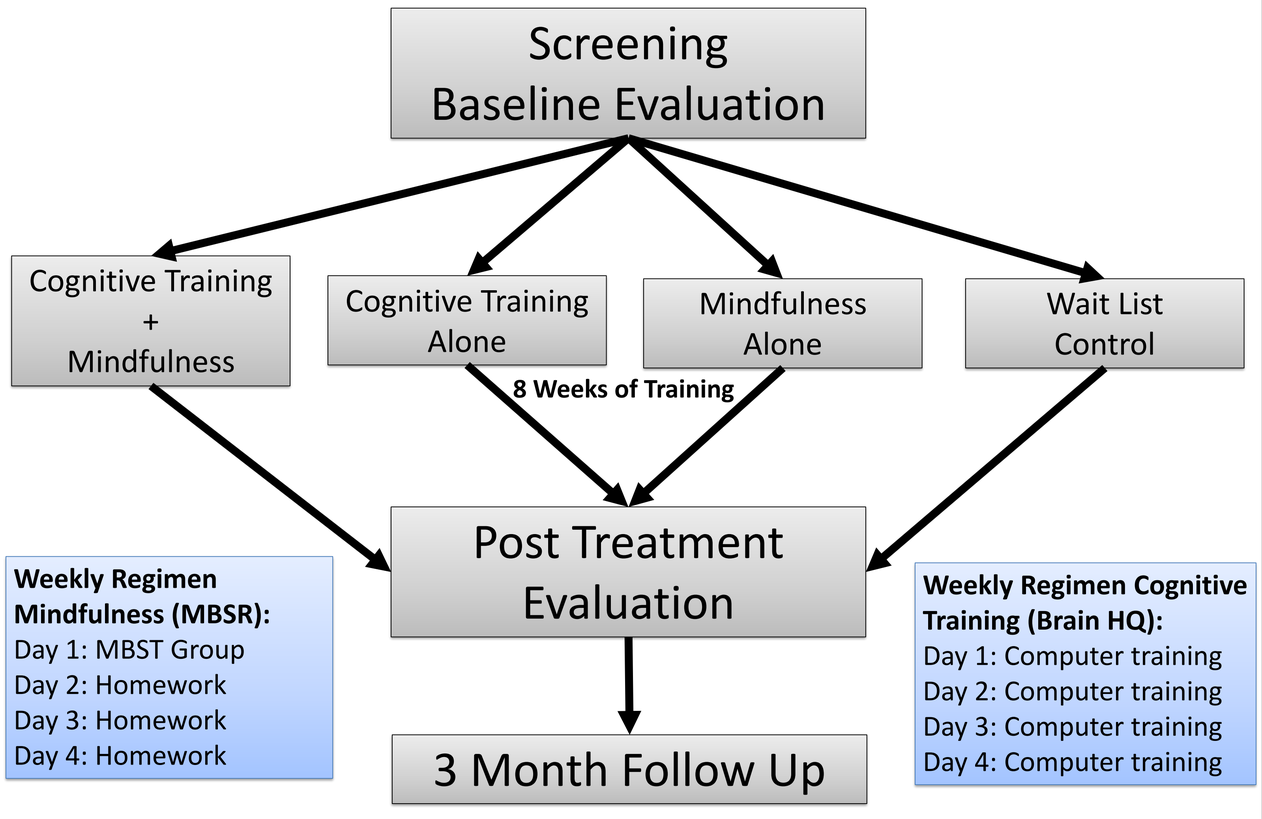
- The **Re-Vitalize Program** aims to learn how mindfulness-meditation (MBSR) and PositScience Brain HQ cognitive training might improve thinking and memory
- Cognitive training and mindfulness interventions are thought to positively influence attentional processing, executive attention (inhibition and set shifting), and working memory (Chiesa et al, 2011; Ball et al, 2002; Lampit et al., 2014)

- **AIM 1**: Determine whether there are group differences in executive attention (set shifting and cognitive inhibition) following an 8-week intervention
  - DV = Cognitive Control Composite
- **AIM 2**: Determine whether there are group differences in auditory and visual working memory following an 8-week intervention
  - DV = Working Memory Composite

STUDY PROCEDURE

Re-Vitalize Program: A randomized, parallel-group study of cognitive training combined with mindfulness meditation in healthy older adults located in a retirement community (The Village, Gainesville, FL)



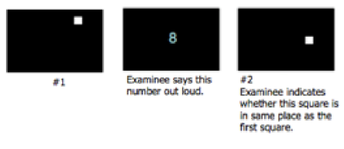
Primary Outcomes: NIH Examiner Computerized Assessment

Cognitive Control Composite

Flanker Task + Number of Errors + Set Shifting Task

Working Memory Composite

N-back 1 and 2 Tasks +



Dot Counting Task

PARTICIANTS

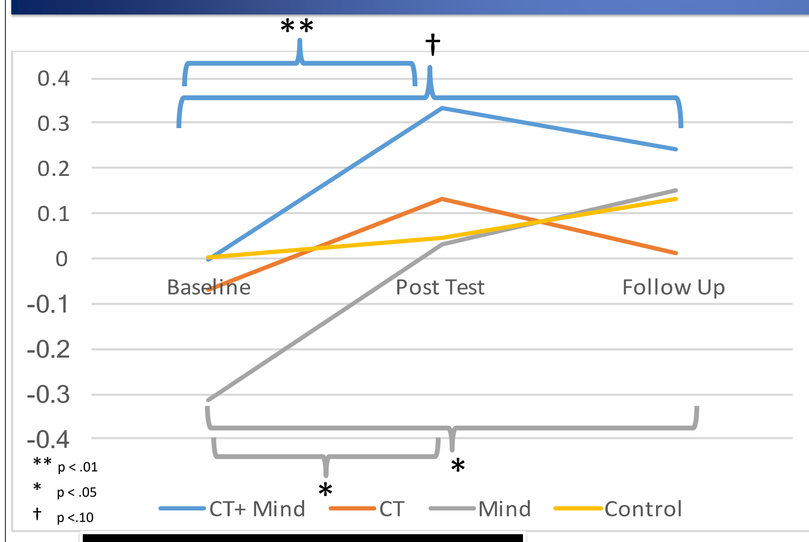
- Participants (**N=59;** 71% female) were recruited from the local Gainesville community.
- All participants' MMSE scores were >24 (clinical cutoff for cognitive impairment)

Total Sample	Mean	SD	Range
Age	76.8	7.8	61-92
Education	16.8	2.3	12-21
MMSE	28.9	1.2	26-30
GDS	3.8	3.8	0-20

STATISTICS

- **Six Multilevel Models** were used to examine intervention effects
  - Predictor Variables: Group, Time (Occasion), Age (covariate)
  - Dependent Variables (z scores): Cognitive Control Composite, Working Memory Composite, Letter Fluency Composite, Category Fluency Composite, Reaction Time Composite

RESULTS



AIM 1: Cognitive Control

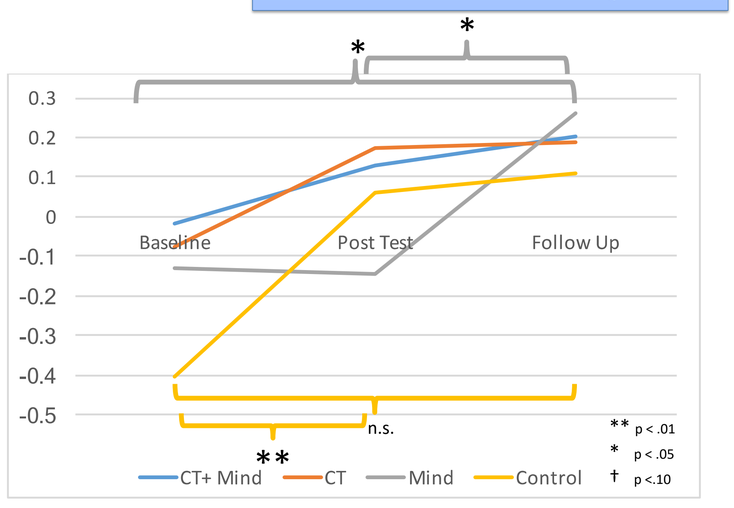
Age main effect
F(1,56.3) = 15.2, $p < .001$
Group x Time
F(6,50) = 3.14, $p = .011$
Age x Group x Time
F(1,50.2) = 3.36, $p = .007$
Post-hocs

- Mindfulness improved significantly between BL and PT (p=.015) and BL and FU (p =.001)
- CT+Mind improved significantly between BL and PT (p=.013) but not between BL and FU (p =.059)

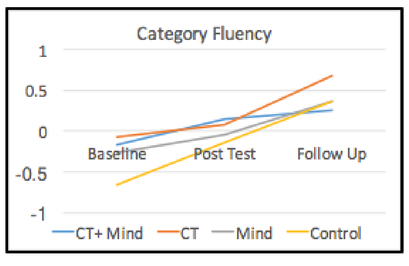
AIM 2: Working Memory

Age main effect
F(1,61.6) = 4.14, $p = .046$
Group x Time
F(6,36.8) = 3.72, $p = .005$
Age x Group x Time
F(1,37.1) = 3.87, $p = .004$
Post-hocs

- Mindfulness improved significantly between BL and FU (p = .029) and PT and FU (p = .034)
- Control improved significantly between BL and PT (p = .008) but not between BL and FU (p = .111)



- Significant Age Main Effect for **Category Fluency**
  - F(1,55.8) = 9.73, $p = .003$; ↑ age = ↓ fluency
- Significant Group x Time interaction for **Category Fluency**
  - F(6,60) = 2.35, $p = .044$
  - All groups showed significant improvement at FU
  - Group differences between BL and PT
- No significant improvements in **Letter Fluency** or **Reaction Time**



CONCLUSIONS

- Mindfulness meditation, alone and when combined with cognitive training, may improve cognitive inhibition, attentional processing, and set shifting in a sample of independently living older adults
  - Improvements appear to be specific to executive attention abilities
- Future analyses will examine if there are further group differences in the component tasks/ variables: flanker, set shifting, number of errors, n-back, and dot counting

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