Mindfulness Practice and Older Adults' Cognitive Function and Sleep Quality

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Brief Review of Literature

❖ Cross-sectional findings indicate better brain health in older long-term meditators than older non-meditators (Chetelat et al., 2017; Luders et al., 2016)

❖ Mixed findings in experimental/RCT studies. Why?
  ➢ Not enough focus on specific levels of cognitive function/decline of older participants (cog. healthy, SCD, MCI, dementia).
  ➢ Differences in the MBI being used (length of time, types of meditation taught).
  ➢ Controls that may not isolate mindfulness.

More rigorous methods called for, more consistency needed across studies.

Some promising findings:

❖ **Wells et al. (2013):**
  ➢ Pilot RCT of older adults with MCI, n=14. MBSR compared to TAU.
  ➢ **MBSR may reduce hippocampal atrophy and improve functional connectivity in the same areas of the brain most sensitive to MCI and Alzheimer's.**

❖ **Quintana-Hernandez et al. (2016):**
  ➢ 2-year longitudinal study, n=120. Older adults with Alzheimer's on donepezil. MBI group, CST group, PMR group, and donepezil only control group.
  ➢ **MBI outperformed other groups in terms of cognitive function maintenance from 6 months.**

❖ **Sevinc et al. (2021):**
  ➢ RCT (n=146), compared MBI to a cognitive fitness programme in cognitively healthy older adults.
  ➢ **MBI improved cog. performance and strengthened connectivity within the default mode network, which is particularly vulnerable to aging affects, while control did not.**
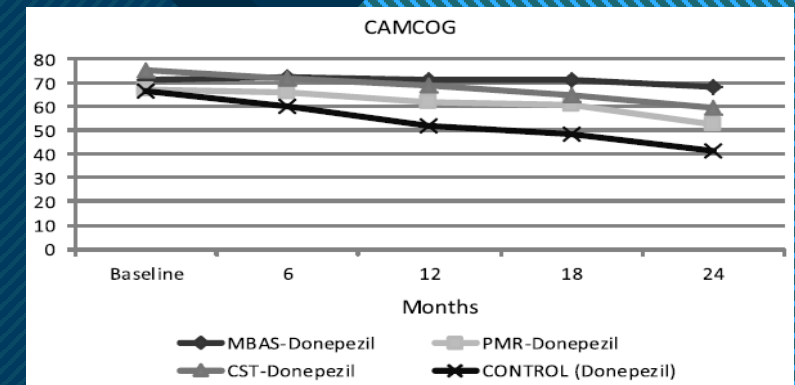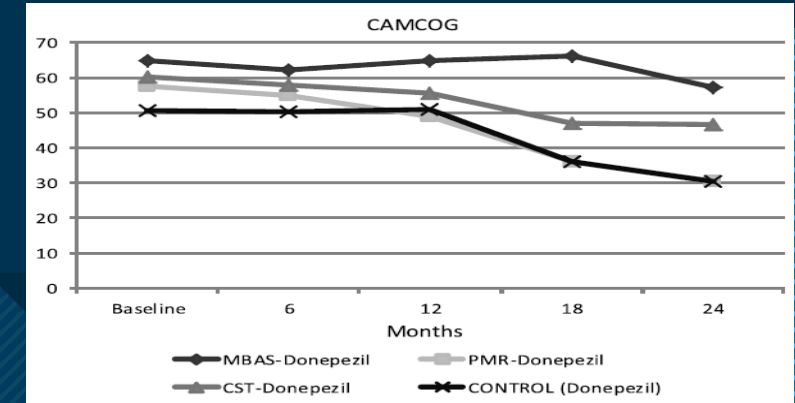
Rationale

Dementia Statistics in Ireland

Estimated number and projected growth in the number of people with dementia in Ireland by age group, 2011-2046

Age group	2011	2016	2021	2026	2031	2036	2041	2046
30-59	2,866	2,935	2,934	2,869	2,854	2,864	2,889	2,991
60-64	1,200	1,301	1,449	1,615	1,738	1,906	2,044	1,896
65-69	2,776	3,287	3,827	4,020	4,485	4,876	5,315	5,645
70-74	4,604	5,532	7,013	7,442	8,367	9,378	10,211	11,188
75-79	7,475	8,213	11,298	12,560	14,055	15,928	17,968	19,692
80-84	10,958	12,265	16,099	17,868	22,348	25,364	29,102	33,196
85+	17,970	21,260	25,595	31,085	40,195	52,512	64,654	77,549
Total	47,849	54,793	68,216	77,460	94,042	112,828	132,182	152,157

The Irish National Dementia Strategy, 2014 (updated 2020)

➢ *Estimated that the average annual cost per person with dementia in Ireland is €40,500.*

➢ *Value of informal care for those with dementia is estimated to be €807 million per annum.*

As per previous findings, mindfulness practice may be a cost-effective method of combatting age-related cognitive decline and reducing risk of dementia.

Aims & Objectives

❖ Aim: to investigate whether practicing mindfulness can improve or maintain cognitive function and sleep quality in older adults.

Objectives

❖ Review and evaluate extant literature on mindfulness, CF, and SQ in older adults (literature review).

❖ Investigate the effect MBI has on CF and/or SQ in cognitively healthy older adults (systematic review and meta-analysis).

❖ Analyse relationships between mindfulness, CF, and SQ in older adults with SCD from RCT dataset (structural equation modelling).

❖ Conduct an RCT or group comparison study informed by the above.

❖ **What's been done:**
  ➢ Literature review 1st draft completed; 2nd draft nearing completion.
  ➢ Systematic review protocol published by Prospero, databases searched, articles selected, data extracted, introduction, methods, risk of bias analysis, (qualitative) results written up.

❖ **Current stage of project:**
  ➢ Meta-analysis and write-up in progress and nearing completion.
  ➢ Data request for next chapter submitted.

❖ **What's next:**
  ➢ Secondary analysis of RCT data.

Systematic Review & Meta-analysis

The review aims to answer three research questions:

1. What is the effect of MBI on cognitive function in cognitively unimpaired older adults?

2. What is the effect of MBI on sleep quality in cognitively unimpaired older adults?

3. Is the relationship between mindfulness and cognitive function mediated by sleep quality?

Study Selection Criteria

➢ Studies must have used MBSR, MBCT, or an MBI closely based on MBSR.

➢ Mean age >60, age range no lower than 55.

➢ Studies excluded if participants were cognitively impaired.

➢ Must be RCT and have min. ten participants per condition.

➢ Must take measures of cognitive function and/or sleep quality.

➢ Published after 2010.

Results

Mindfulness & CF

1. Mallya & Fiocco (2016): n=97. Reading & relaxation control. No sig. difference between groups in CF after intervention.

2. Bubb (2014): n=70. Mind aerobics control. No sig. difference between groups in CF after intervention.

3. Smart et al. (2016): n=36. Psychoeducation control. MBI group showed unique improvement in attention stability.

4. Moynihan et al. (2013): n=201. Waitlist control. MBI group showed sig. improvement in executive function.

Mindfulness & SQ

1. Black et al. (2015): n=49. Sleep Hygiene Education control. MBI showed sig. improvement compared to control in SQ.

2. Gallegos et al. (2016): n=200. Waitlist control. MBI had a sig. effect on SQ.
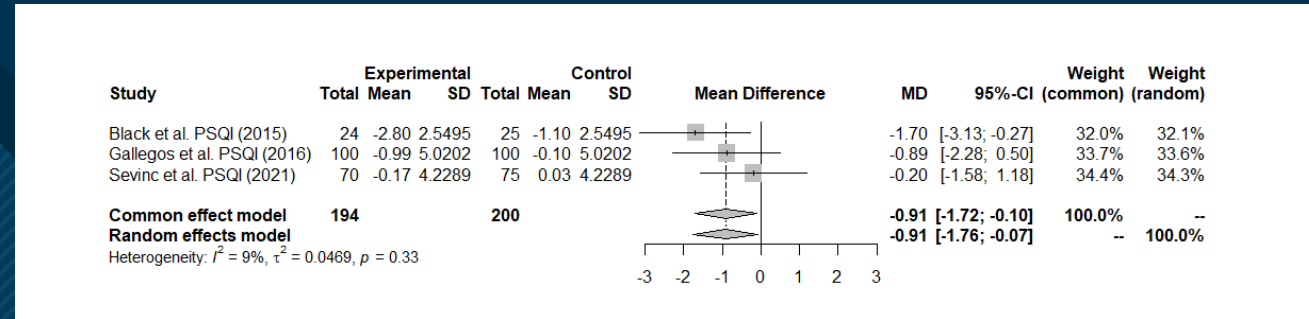
Mindfulness, CF & SQ

1. Sevinc et al. (2021): n=146. Cognitive fitness training control. MBI sig. improved cognitive outcomes
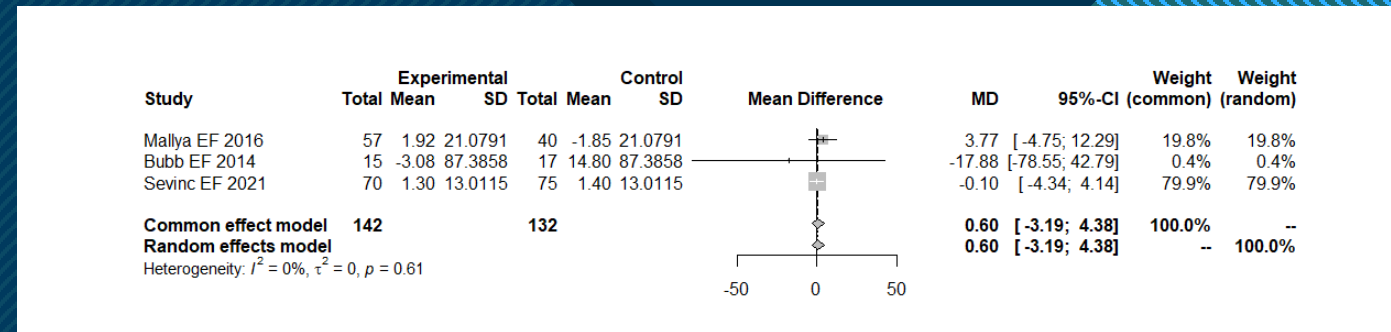
Current stage: conducting meta-analysis where possible with available data.
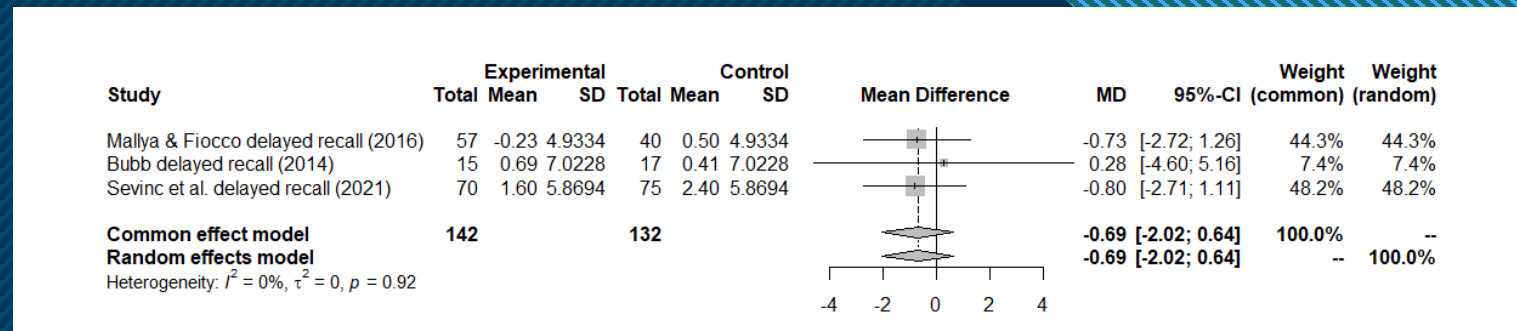
Meta-analysis results

**Sleep quality:**

Executive function:

Delayed recall:
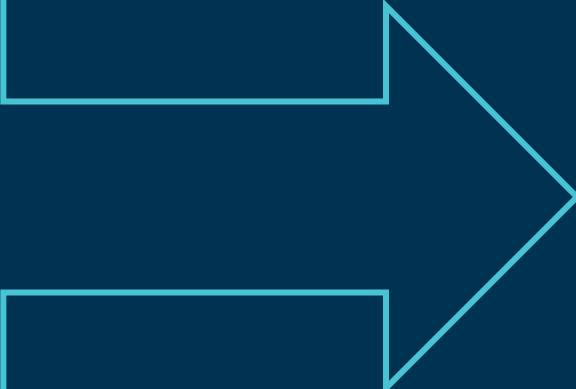
Secondary Analysis of the Medit-Ageing SCD-Well Dataset

Could not address research question three from systematic review.

❖ The SCD-Well is a multicenter, observer-blinded, RCT which is part of the Horizon 2020 European Union-funded "Medit-Ageing" project.

❖ 160 participants with SCD underwent 8-week MBI or a health education control.

❖ Measures of subjective cognition, objective cognition, mindfulness, and sleep quality taken at baseline, post-intervention, and 6-month follow-up.

Preliminary Model
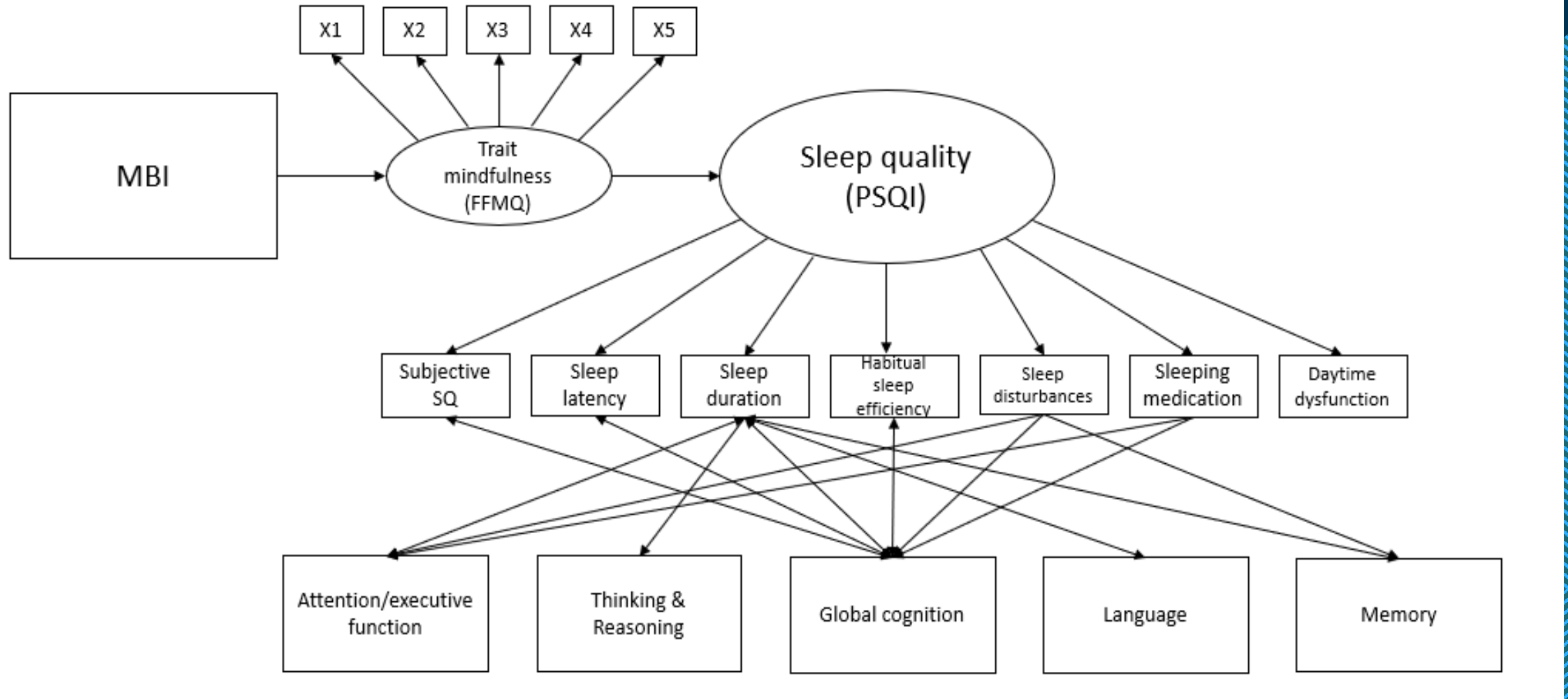
❖ **Literature Review.**

❖ **Systematic Review and meta-analysis.**

❖ **Secondary analysis of dataset** (Medit-Ageing SCD-Well, Silver Sante Study).

Collectively, these will inform a **MBI adapted to suit older individuals** and target age-related cognitive decline.

Thank You

References

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