

Comparative Effectiveness of Behavioral Interventions for MCI

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Recommendations for Management of MCI

- AAN Practice Guidelines:
 - “In patients with MCI, clinicians *may* recommend cognitive interventions.”
- Potential benefit of improving *cognitive* function.

Cognitive Rehabilitation

- 2 Modes:
 - Restore or improve the cognitive function itself (restitution)
 - Train to adapt to the cognitive difficulty (compensation)
- Compensation:
 - Internal strategies like mnemonics
 - External strategies like pill boxes/calendars.

Memory Notebook & Computer Training



The screenshot shows a computer training interface. At the top, there are four buttons with the words 'bid', 'dip', 'tip', and 'tig'. Below these is a landscape image of Arches National Park with the text 'Arches National Park'. At the bottom, there is a 'Summary' table and navigation buttons for 'Volume', 'Exit', and 'Guide'.

Summary			
	Exercise	Total Score	Progress Steps (in difficulty)
Summary	High or Low? Processing Speed	3681	<div style="width: 100%;"></div>
High or Low?	Tell Us Apart Discriminating Sounds	1216	<div style="width: 25%;"></div>
Tell Us Apart	Match It! Sound Precision	2412	<div style="width: 75%;"></div>
Match It!	Sound Replay Sound Sequencing	743	<div style="width: 20%;"></div>
Sound Replay	Listen and Do Working Memory	0	<div style="width: 0%;"></div>
Listen and Do	Story Teller Narrative Memory	226	<div style="width: 5%;"></div>
Story Teller	You are on session: 6 You have 34 sessions left		
Progress Check-In	<div style="width: 100%;"></div>		

Support for Both Calendars and Computers

- Compared to randomized controls (RCs), memory notebooks help in
 - maintenance of function out to a year
 - decreased caregiver depression and burden by 6 months post calendar training

Greenaway et al., 2012 *Int J Geriatr Psych*

- Compared to RCs, computers helped improve processing speed and working memory

Smith et al., 2009, *J Am Geriatr Psych*

Making the Recommendation Isn't Enough

- Efficacy of recommending that they use a calendar and take notes?



Not Just Cognitive Outcome

- AAN Guideline recs also highlight the importance of quality of life, daily function, general health
- We assume cognitive improvement or maintenance = QOL and wellbeing outcomes, but that is not necessarily true
- In our studies, calendar training appeared to have more impact on sense of self-efficacy and IADLs than computer training

Chandler et al., 2017, *Brain Sciences*

Meta-Analysis Results

Significant overall median effect sizes were seen for ADLs ($d = 0.23$), mood ($d = 0.16$), and metacognitive outcomes ($d = 0.30$); not QOL ($d = 0.10$).

Outcome	Computer	Therapist Based	Multimodal
Mood	+	-	+/-
Metacognition	-	+	+
ADLs	-	+	+/-
QOL	?	-	-

Chandler, et al, 2016, *Neuropsychology Review*

Other AAN Practice Guidelines for MCI

- Education of the patient and the partner about medications and future planning
- Counseling about management of exacerbating factors like sleep disorders and depression
- Encouraging physical exercise

PCORI Comparative Effectiveness

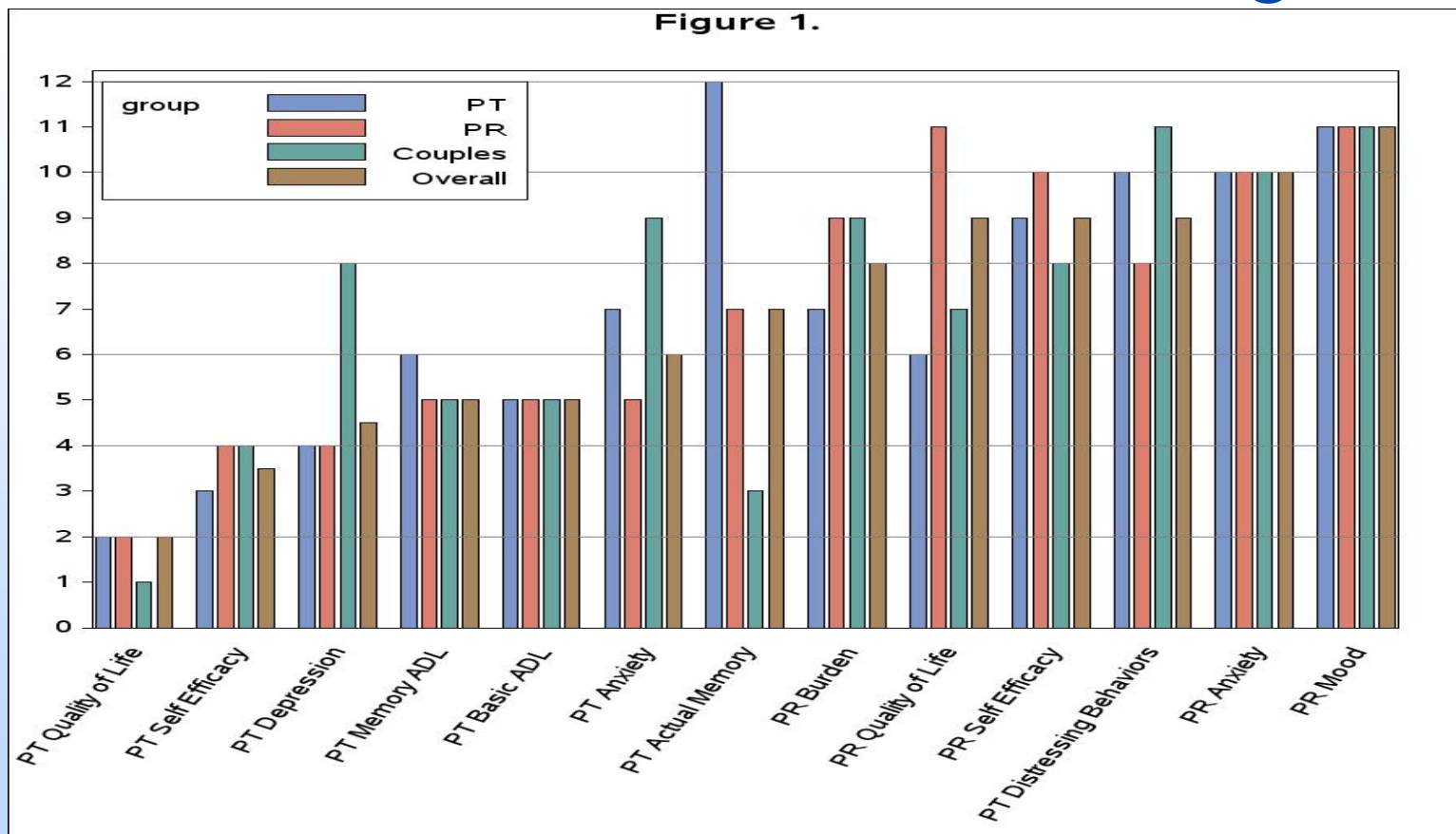
- Trial to examine the comparative effectiveness of 5 behavioral interventions for MCI
- Patient Centered Outcome Research Initiative:
 - Outcomes and study design were informed by patient advocate groups
 - Goal is to compare interventions not compare an intervention to a control

Major Impacts of that Design?

- Suppress one intervention at a time; don't give one intervention at a time
- Examine patient selected outcomes

Patient/Partner Outcome Rankings

Figure 1.



5 Behavioral Interventions

- Memory Support Training (Compensation Rehab)
- Brain Fitness (Restitution Rehab)
- Physical Exercise/Stress Management (Yoga)
- Support Group (mood and communication)
- Wellness Education (latest recommendations on diet, sleep management, mood management, etc.)

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Sample

QOL Effect Size

Self-Efficacy Effect Size

Mood Effect Size

mADL Effect Size

One Year Outcomes

High Tech versus Low Tech?

Developing a Menu of Interventions to Suite the Patient

- Just a start to tease apart affect of interventions on various outcomes.
- Future goal is not just what interventions are effective, or which are better than others, but for who, as the answer will not be the same for everyone

Thank you to the PCORI HABIT Team

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