Examining the Effect of a Simple Memory Tool

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Introduction

Memory difficulties can have detrimental effects on independence and quality of life of older adults.

Statistics

In Canada there are approximately:
•5 million older adults who may experience the changes of normal aging [10]
•500,000 older adults with mild cognitive impairment (MCI) [2]
•747,000 older adults with Alzheimer's disease or other dementias [1]

Cognition and Memory Interventions

There have been a wide variety of interventions to assist with cognition and memory of older adults [4, 6, 7, 8]. Many of the interventions focus on retrospective memory and few interventions focus on prospective memory.

Retrospective Memory Interventions

Memory for past events [4, 6, 7]
Interventions have a structure that is similar to the following:
- the participant meets once a week with the researcher for about eight weeks (i.e., the sessions might be individual sessions or group sessions with other participants)
- the researcher provides training each week
- the outcomes are measured with cognition tests or self-reports

Examples of training: memory recall (e.g., stories), memory recognition (e.g., faces), mnemonics

Prospective Memory Interventions

Memory for future events [7, 8]
Many prospective memory studies follow a structure that is similar to the following:
- the participant is given a lab prospective memory task
- an interference task is introduced that may cause distraction
- an assessment determines if the participant performed the prospective memory task
- the authors discuss possible explanations of why participants may or may have not had success with the prospective memory task

Examples of tasks: repeat words while distracted by the television, mail postcards to researcher at a future time

Checklist Interventions

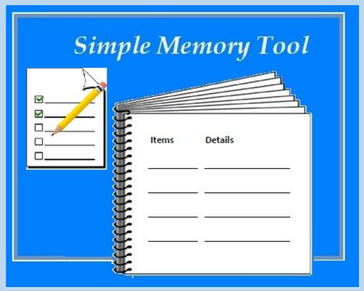
Researchers who have examined the medical and aviation fields have found that checklists of tasks can be useful for remembering to do tasks and for reducing the possibility of errors [3, 5].

Gaps in the Literature

- The tasks in studies are often "lab" tasks (e.g., memorizing a list of non-relevant words) that a person may not do in daily life [4, 6, 7, 8]
- There are few studies that focus on tasks that people do in daily life (e.g., reading newspapers)
- It is not clear if interventions have an impact on daily life memory performance and goal attainment

Objectives

To examine if a simple memory tool would:
1) assist with daily life memory performance and goal attainment of older adults
2) have a different effect for individuals with normal cognition or MCI



Methods

Simple Memory Tool

The simple memory tool was comprised of:
- Memory related goals that participants chose
- Memory strategies which utilized items such as diaries, calendars, checklists, and reminders in order to achieve goals and to assist with memory performance (e.g., recall of recent events)

Simple Memory Tool Example

Example: Goals are 'remember keys' and 'feed dog'. Checklists are used as reminders. Daily diary is used to assist with recall of recent events.

Title	My Goals
Items	Details
Keys	I want to keep better track of my keys because I often forget where I put them
Dog	Remember to feed the dog 1 serving

Title	Checklist Nov 13 Sun
Items	Details
Morning	
☑Keys	Check where keys are
☑Feed Dog	Feed dog 1 serving
Afternoon	
☑Puzzle	Do crossword puzzle

Title	Diary Nov 13 Sun - Nov 19 Sat
Items	Details
Nov 13 Sun	Went for coffee with Brett. She is going on trip to British Columbia next month
Nov 14 Mon	I went to park. I watched movie that I liked.

Sample

- 28 participants
- Age range 57-96

Design

The study used a mixed 2 X 3 design with cognition (normal cognition, MCI) as the between subjects factor and session (e.g., session 1, 2, 3) as the within-subjects factor.

Independent Measures

- **Cognition.** The Montreal Cognitive Assessment (MOCA) was used to determine cognition level (normal cognition, MCI) [9]. A cut-off score of 25 was used to classify participants into normal (N = 19, mean = 27.3, SD = 0.99) versus MCI (N = 9, mean = 23.5, SD = 1.44) groups, consistent with other studies [9].

Dependent Measures

- **Memory recall test**. Recall of events that participant thought was important to remember from the previous week (e.g., went to movie). Memory recall scores were calculated as the sum of the number of events recalled per session (i.e., higher scores meant more events).
- **Prospective and Retrospective Memory Questionnaire (PRMQ)**. Questionnaire gathers information about daily memory difficulties [12]. PRMQ scores (i.e., total scores, retrospective scores, prospective scores) were scored according to PRMQ guidelines (i.e., higher scores meant participants reported more memory difficulties)
- **Goal Attainment Scaling (GAS).** Assessment of goal achievement [11]. Goal scores were calculated according to GAS guidelines (i.e., higher scores meant participants thought they had better goal attainment)

Other Measures

- **A demographics** questionnaire was included to measures age, health, and social activities (e.g., visit friends).
- **A feedback questionnaire** was used to obtain feedback regarding the memory tool (e.g., its usefulness).

Procedure

The study consisted of 3 weekly sessions for each participant, where the participant met individually with the researcher (Daniel Saltel). In between the sessions, the participant worked on goals and memory recall of daily events.

The discussion during the session was tailored toward the participant's preferences. For example, goals may have been chosen based on the participant's reported memory difficulties, events from memory recall tests or interests (e.g., hobbies such as reading).

Statistical Analyses

- Statistical analyses were performed using ANOVAs.

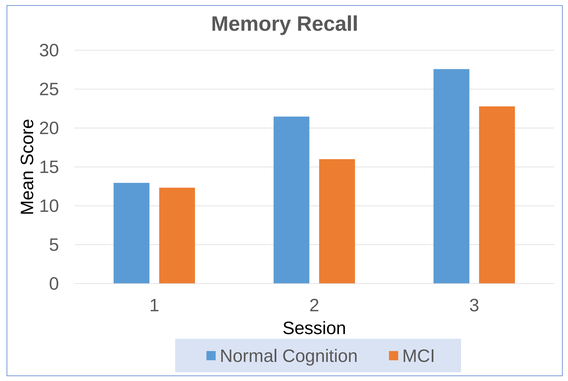
Results

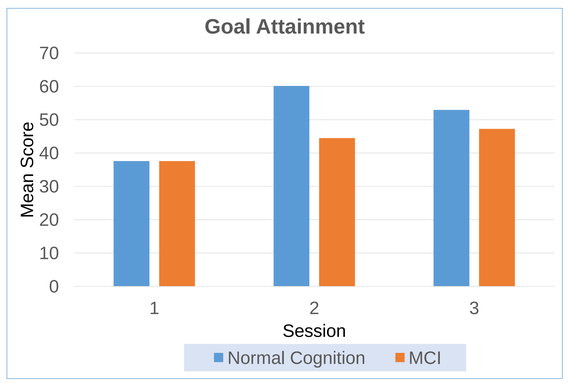
Main Findings

- Findings show that the simple memory tool enhanced memory recall and goal attainment over the three sessions.
- An interaction between cognition and sessions also emerged for goal attainment, where the participants with normal cognition experiencing greater gains for goal attainment than those with MCI.
- An unexpected finding was that the PRMQ retrospective scores increased over the three session, reflective of worsening memory.
- The effects for PRMQ total scores, PRMQ prospective scores, or any of the PRMQ interactions were not statistically significant.

Anova Results

Dependent Variable	Session	Cog	Session X Cog
Memory Recall Test	F(2, 52) = 17.875, p < 0.0001	ns	ns
GAS - Goal Attainment	F(2, 52) = 28.189, p < 0.0001	F (1, 26) = 12.878, p < 0.0014	F (2, 52) = 7.014, p < 0.0021
PRMQ - Retrospective	F(1, 25) = 6.220, p < 0.0197	ns	ns
PRMQ - Prospective	ns	ns	ns
PRMQ - Total Score	ns	ns	ns





Other Findings

- Participants wanted to work on a variety of memory related goals. Popular goals were 'remembering names' and 'finding words to use'. Some other goals included 'birthdate recall', 'reading', 'medication management', 'family history', and 'reminders' (e.g., remembering to take grocery lists, remembering to put items in the same spot)
- Most participants found that the study was useful and participants utilized strategies that they said would assist them in their daily life
- Many participants were very enthusiastic about the study and said that they were now more aware of their memory difficulties

Discussion

Memory Recall

Memory Recall increased greatly from session to session. This may be because participants had: a) more experience with using the memory strategies; and b) social reinforcement from meeting with the researcher. The interaction between session and cognition may have been statistically significant if there was: a) more difference between the normal cognition and MCI groups' ability (i.e., if the participants with MCI had more severe decline); or b) more statistical power.

PRMQ

The items in the PRMQ did not necessarily correspond with the goals that the participants chose, so it was not surprising that PRMQ scores did not improve. Moreover, there were only three sessions, which may not be sufficient time to address issues measured in the PRMQ.

PRMQ – Retrospective

The increase of retrospective scores may be explained by the participants becoming more aware of their memory difficulties. The study made substantial use of diaries and participants mentioned that using diaries made them more aware of retrospective activities.

PRMQ – Prospective

All the participants already had strategies prior to the study for performing future events (e.g., using calendars). This may explain why prospective scores did not change.

Goal Attainment

Most participants accomplished their goals and participants mentioned that the study was motivating them to work on goals. An interesting finding was that many participants in the normal cognition group felt that they achieved their goals better in session 2 than in session 3. However, it did not appear that they always did less work for session 3. Perhaps if participants do really well when they start goals, they set their expectations higher for the subsequent session.

Conclusions

The memory tool intervention could be beneficial for older adults with normal cognition or MCI. A greater number of sessions would be needed to assess changes in the PRMQ.

Strengths and Limitations

Strengths

This study augments the literature by contributing a memory intervention that provided participants an opportunity to choose their own memory related goals that correspond to their daily life activities [4, 6, 7, 8].

The study included participants with normal cognition or MCI.

Limitations

The intervention was individualized and may not generalize to a sample that is more representative of the population. Moreover, there were only three sessions without long-term follow-up to determine continued use of the simple memory tool.

Future Research

Future research might involve:
- Analyzing themes of what older adults report as memory difficulties.
- Developing a manual with common goals and strategies.
- Developing workshop class format of the study.
- Using technology such as applets or audio devices instead of relying on paper format.
- Using the simple memory tool with an increased number of sessions or long-term follow-up.

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