

# Comparing Functional Abilities Between Older Adults with Mild Cognitive Impairment and Healthy Older Adults

Nhu Huynh; Abigail Holder; Reanne Cunningham, MA; & Maureen Schmitter-Edgecombe, PhD  
Washington State University, Department of Psychology



## INTRODUCTION

- The world's population is aging, and so too is the number of older adults with mild cognitive impairment (MCI).
- Cognitive changes associated with MCI can greatly impact an individual's everyday functional ability.
- Traditional cognitive assessment tools currently do a poor job of predicting everyday functional abilities.
- The Night-Out Task (NOT) is a naturalistic functional assessment administered in a laboratory setting that was developed to map on to everyday functioning and to provide insight into compensatory strategies used to offset cognitive decline.
- Compensatory strategies are measured using process approach variables to indicate behaviors such as checking, self correcting, planning, and multi-tasking.
- We hypothesized that participants with MCI would perform more poorly on the NOT than healthy older adults (HOAs) even with the use of compensatory behaviors.

## METHODS

### Participants

- 9 participants with MCI and 18 HOAs; age, education, and gender matched at a 1:2 ratio (see Table 1).
- All participants were age 50+ and individuals with MCI had to self-report memory complaints and score at least 1.5 SDs below the norm in at least 1 cognitive domain.

Table 1. Participant Demographic Data

	Age ( $\mu$ )	Education ( $\mu$ years)	Gender (% female)
MCI	61.44	17.00	66.70
HOA	61.89	16.94	66.70

### Procedure

- Participants were administered multiple cognitive tests and completed the NOT, an assessment that requires participants to complete eight subtasks in preparation for a "night out" (see Table 2).
- The NOT has four main variables: total time spent on the NOT, total errors, task accuracy score (see Table 3), and the sequencing score; and five process approach variables (see Table 4).

Table 2. Eight NOT Subtasks

- Plan movie trip
- Get correct movie change
- Prepare tea (takes 3 min)
- Choose a movie snack
- Locate recipe and gather ingredients
- Pack travel bag
- Phone friend just prior to leaving
- Bring travel bag to exit

Table 3. Subtask Completion Score

- 1= no errors
- 2=  $\geq 1$  inefficient error
- 3=  $\geq 1$  inaccurate/incomplete error
- 4= not attempted

Table 4. Process Approach Variables

Self-corrections	Correcting mistakes
Double checking	Checking over work
Mid-task planning time	Planning engaged in during task
Multi-tasking	Number of times all tasks were interrupted
Pre-planning time	Planning before beginning task

## RESULTS

- As seen in Table 4, the MCI group performed poorer on NOT Task Accuracy,  $t(25)=2.49$ ,  $p=.036$ , Sequencing,  $t(25)=-2.88$ ,  $p=.008$ , and Total Errors,  $t(25)=2.12$ ,  $p=.044$ , scores.
- The two groups did not differ significantly in total time or self-corrections.
- Process approach variables revealed that the MCI group spent significantly greater time pre-planning,  $t(25)=2.26$ ,  $p=.032$ , and engaging in more online or mid-task planning,  $t(25)=2.09$ ,  $p=.046$ , whereas HOAs demonstrated more multi-tasking,  $t(25)=-2.41$ ,  $p=.023$ , and self-monitoring (i.e. double-checking),  $t(25)=-3.02$ ,  $p=.006$ , behaviors.

Figure 1. Example NOT Testing Room



Figure 2. Cupboard A

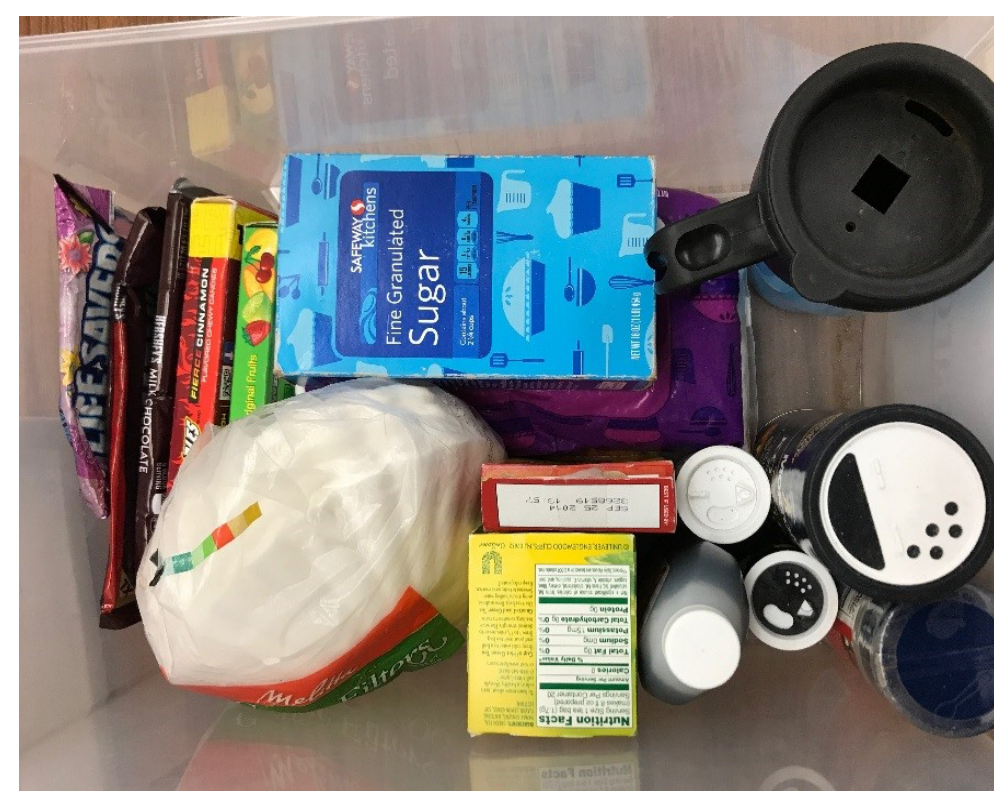


Figure 3. Cupboard B

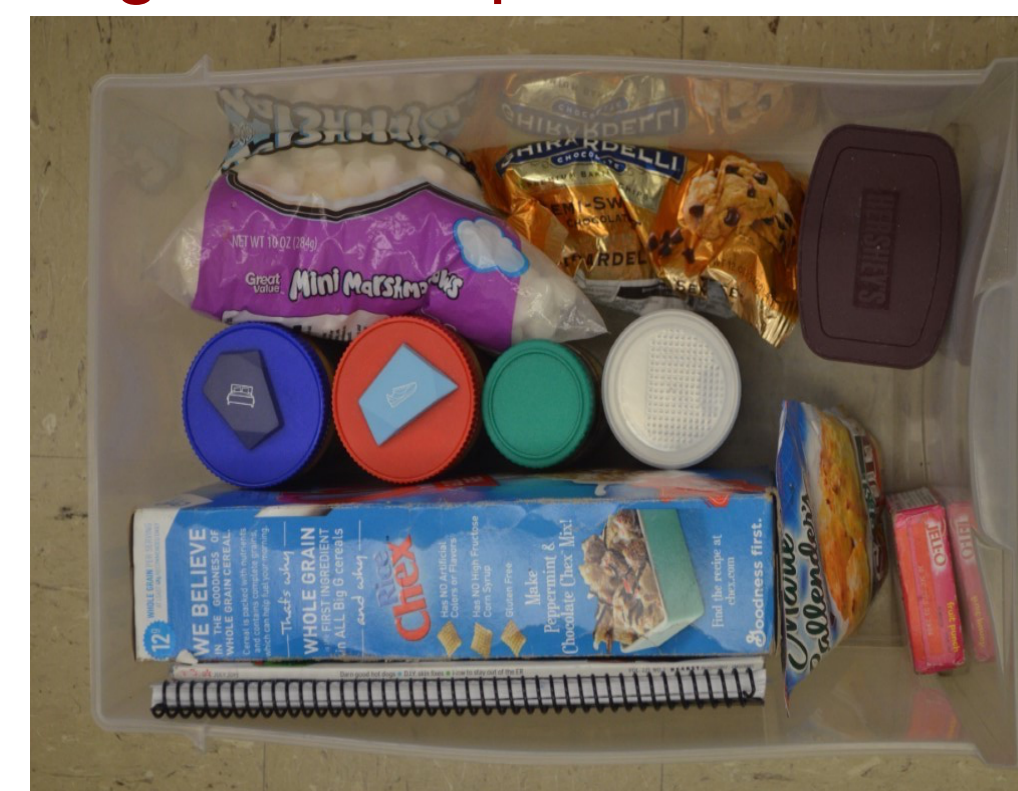


Figure 4. Organizer



Figure 5. NOT Tablet Coding Application

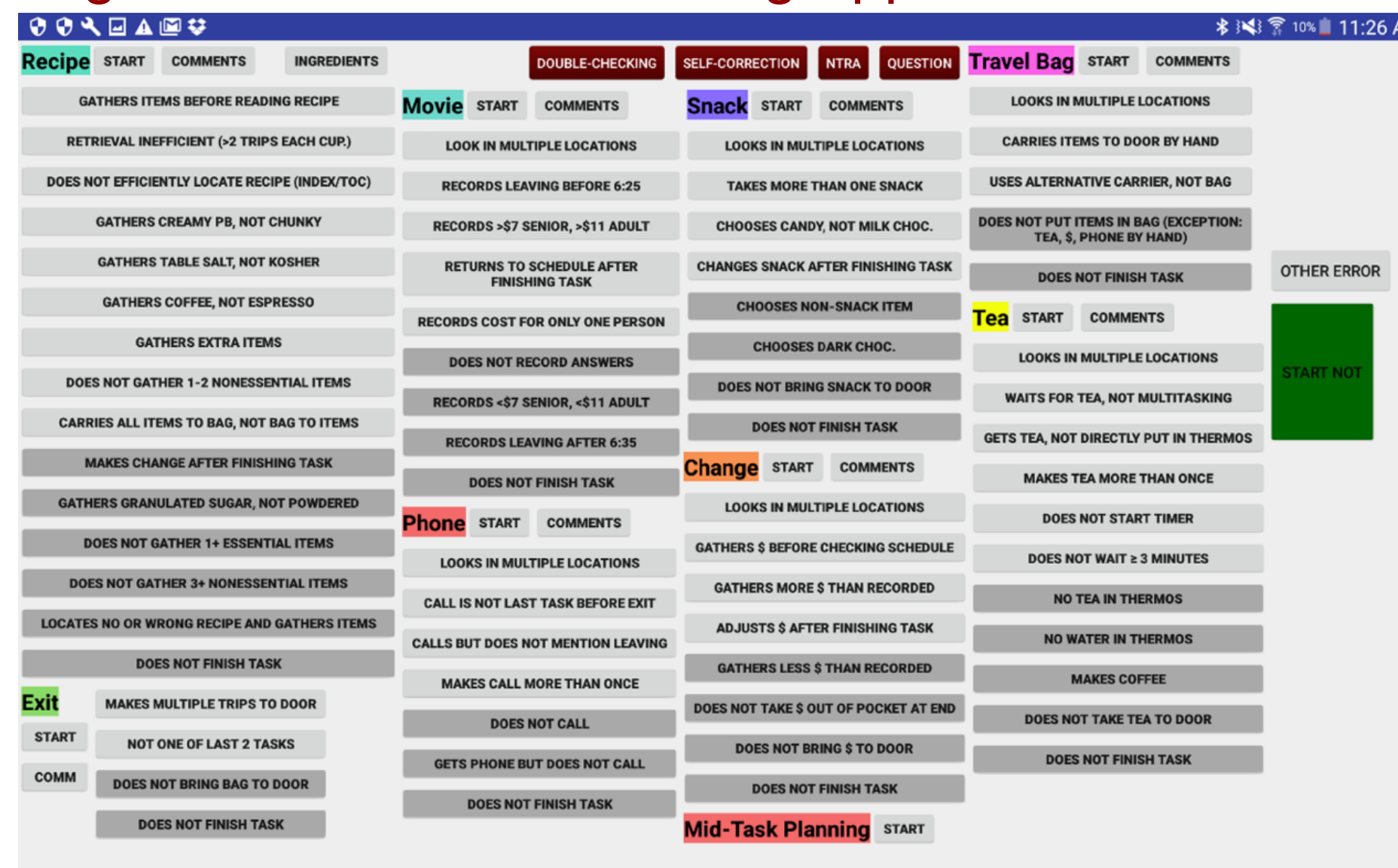


Table 4. NOT Variables T-Test Summary

	MCI		HOA		T-Score	Effect Size
	$\mu$	SD	$\mu$	SD		
<b>Main Variables</b>						
Total Time	740.56	309.72	627.72	256.86	1.01	0.40
Total Errors	6.33	5.61	3.28	1.87	<b>2.12*</b>	0.73
Task Accuracy	14.56	4.95	10.39	1.24	<b>3.42*</b>	1.16
Sequencing	4.00	1.32	5.22	0.88	<b>-2.88**</b>	1.09
<b>Process Approach Variables</b>						
Pre-planning	29.67	17.90	14.33	15.93	<b>2.26*</b>	0.91
Mid-task Planning	131.00	89.22	63.05	74.35	<b>2.10*</b>	0.83
Multi-tasking	16.11	2.67	19.78	4.12	<b>-2.41*</b>	1.06
Self-corrections	0.78	.67	0.83	0.99	-0.15	0.06
Double-checking	0.33	0.71	1.39	1.10	<b>-3.02*</b>	1.14

MCI=Mild cognitive impairment group; HOA=Healthy older adults  
\*p value less than .05; \*\*p value less than .01

## CONCLUSIONS

- Our results support our hypothesis that the MCI group would perform more poorly on the NOT.
- Individuals with MCI were less accurate and efficient in completing the NOT despite engaging in compensatory behaviors (e.g., increased pre- and online planning and reduced multi-tasking).
- This may indicate that these compensatory behaviors are less effective for individuals with MCI.
- In comparison to the HOAs, the MCI group engaged in less self-monitoring (i.e. double-checking), a strategy that may lead to improved performance but require a heavier cognitive load.
- Future directions could include using the NOT to help understand when use of internal compensatory strategies may no longer work well in helping to compensate for cognitive changes in everyday life.

## REFERENCES

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