Assessing the Effects of Cognitive Decline on Planning Performance and Task Execution
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Introduction
Planning is an essential, yet complex skill needed for everyday life. It requires prioritization and organization, and if done well, can lead to efficient completion of everyday activities.

In contrast to concurrent planning (defined as the planning action that takes place during problem solving), initial planning (planning action that takes place before problem solving) has been rarely assessed and codified.

As people age, changes in planning abilities emerge.

The objective of this study was to investigate how older and younger adults differ in creation of an initial plan that was used to execute a naturalistic task, called the Day Out Task (DOT).

Method
Participants
- Participants included: 62 cognitively healthy older adults (HOA) and 30 young adults (YA).
- Participants were recruited from within the local community and Washington State University.

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Healthy Older Adults (HOA)</th>
<th>Young Adults (YA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=62</td>
<td>N=31</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>Mean=67.21, SD=8.84</td>
<td>Mean=16.76, SD=2.44</td>
</tr>
<tr>
<td>Education (years)</td>
<td>95.16% Caucasian</td>
<td>71.43% Caucasian</td>
</tr>
<tr>
<td>Gender</td>
<td>M=14, F=48</td>
<td>M=10, F=21</td>
</tr>
</tbody>
</table>

Table 1. Demographic Data for participant groups HOA and YA.

Procedures
- In the Day Out Task (DOT), participants prioritized, organized, and executed a series of eight subtasks to prepare for a day out to meet a friend (Table 2).

<table>
<thead>
<tr>
<th>Eight Main Goal Items (MGIs)</th>
<th>Plan bus fare</th>
<th>Microwave heating pad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose magazine</td>
<td>Plan bus fare</td>
<td></td>
</tr>
<tr>
<td>Pretend to take Dramamine</td>
<td>Bring picnic basket</td>
<td></td>
</tr>
<tr>
<td>Gather ingredients for recipe</td>
<td>Exit</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. DOT Tasks.

Prior to completing the DOT, participants were given 5 minutes to develop a written plan that would lead to accurate and efficient completion of the task.

Participants were provided with a written list of the eight Main Goal Items (MGIs) to assist with development of their plan (Table 2). Participants were encouraged to multi-task and interweave to complete the tasks in an efficient and natural way.

Measures
- DOT task accuracy and time on task scores were coded by examiners watching participant perform the DOT in a campus smart apartment via live recorded video feed.

The developed plans (Figure 1) were coded using a comprehensive coding scheme that measured different components of the plan (Table 3).

Table 3. Variables of DOT plans and Coding Measures.

Conclusions
- Understanding what aspects of plans lead to efficient task completion could give insight into effective planning strategies that can be used to help those with cognitive difficulties function with greater independence day-to-day.

- Healthy older adults required a longer time to complete the DOT than the younger adults, and also had a lower total DOT accuracy than the younger adults.

- We found that the younger adults tended to fully write out units of information, as compared to older adults who used more abbreviations.

Future Work
- Alternately, it may be that younger adults can more easily adjust their plans online during task completion than older adults.

- More sensitive planning measures are needed to meaningfully explain the differences in DOT performance between the age groups. Currently, a coding scheme that measures the number of occurrences, order, and relationships between the specific MGIs are being analyzed.

Acknowledgments
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