Persons with Moderate Dementia Improving Gameplay

BACKGROUND

Computer games:
- Are gaining popularity for health assessment.
- Cause less stress than paper tests.¹
- Provide daily/weekly monitoring versus bi-annual/annual clinical assessments.²

OBJECTIVES

- Enhance game to monitor people with moderate dementia.
- Collect data and monitor how game play changes over time.
- Correlation between pre-cognitive testing and game play.

METHODS

WHO
- 10-12 participants from WOCRC dementia day program in Kanata.
- Exclusions: vision/hearing problems, attention deficits, arthritis.

WHAT
- Whack-a-mole game to assess processing speed and inhibition.
- Pre-Game testing: MMSE, Trails A and Ramparts.
- 12-month period; weekly for 15 minutes.

WHEN
- June 2016-Present.

HOW
- University of Alberta designed; Ottawa adapted.
- Carleton developed algorithms to analyze data.
- Game play results compared to cognitive scores.

RESULTS

Preliminary results are based on the first 7 (2 female) participants’ data over the first 10 game sessions.

First 10 sessions
- Avg. 11.2 (10-13 weeks).

<table>
<thead>
<tr>
<th></th>
<th>Low MMSE Score (12-19)</th>
<th>High MMSE Score (22-24)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (St. Dev.)</td>
<td>Mean (St. Dev.)</td>
</tr>
<tr>
<td># of People</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1st Session</td>
<td>10th Session</td>
<td>1st Session</td>
</tr>
<tr>
<td>Avg. Max Level</td>
<td>4.2</td>
<td>7.3</td>
</tr>
<tr>
<td>Avg. Reaction Time</td>
<td>0.74</td>
<td>0.61</td>
</tr>
<tr>
<td>Avg. # Moles Hit</td>
<td>55.4</td>
<td>71.0</td>
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</tbody>
</table>

First 10 Weeks

<table>
<thead>
<tr>
<th></th>
<th>Mean (Low-High)</th>
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<tbody>
<tr>
<td>Age</td>
<td>74.00 (69-80)</td>
</tr>
<tr>
<td>Education</td>
<td>11.57 (7-15)</td>
</tr>
<tr>
<td>Years since DX.</td>
<td>4.17 (0-10)</td>
</tr>
<tr>
<td>MMSE Score</td>
<td>20.00 (12-24)</td>
</tr>
</tbody>
</table>

Figure 1. Ex. of mole and bunny during game play.

ACKNOWLEDGEMENTS

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DISCUSSION

- Game play may be an alternative to formal cognitive testing.
- PWD improved over 10 weeks : learning?
  Next step:
  - Analyze year of data.
  - Determine if game scores are proportional to cognitive test scores.

REFERENCES