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### OBJECTIVES

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### PARTICIPANTS & METHODS

- **23 participants diagnosed with mild AD** (mean age=74.9 years ± SD=7.4, mean driving experience=43.6 years ± SD=10.1)
- **32 healthy individuals** (mean age=64.3 years ± SD=6.9, mean driving experience=38.2 years ± SD=5.9)

Inclusion criteria: a Clinical Dementia Rating (CDR) score <2, the presence of a valid driving license, driving experience more than three years, regular driving.

**Phase 1:** The participants underwent a detailed neurological and neuropsychological examination:
- Neuropsychiatric examination: Neuropsychiatric Inventory (NPI), Frontal Behavioral Inventory (FBI), Patient Health Questionnaire (PHQ-9) & Geriatric Depression Scale (GDS).

**Phase 2:** Driving experiment (after a 10 min practice session) included two conditions: a) rural road with low traffic volume and b) rural road with high traffic volume. Unexpected incidents occurred in each driving condition (e.g. sudden appearance of an animal on the road).

- Driving was assessed with a Foerst FPF driving simulator
- Driving indexes: Average speed (km/h), Headway distance (m), Reaction time (sec), Accident probability (%).

According to linear regression model: a) **apathy & depression** predicted increased reaction time to unexpected events, b) **lack of initiative, apathy & irritability** predicted increased accident probability, c) **anxiety & lack of initiative** predicted increased headway distance.

Mann Whitney test was conducted, in order to compare driving behavior between AD patients with neuropsychiatric symptoms and patients without symptoms and showed that:

- **Patients with apathy presented decreased average speed [U=13.00, p<0.05]** & increased reaction time [U=8.00, p<0.01]
- **Patients with lack of initiative presented increased reaction time [U=11.00, p<0.05]**
- **Patients with depressive symptoms had increased reaction time [U=4.00, p<0.01]** in LowTraffic condition & [U=12.00, p<0.05] in HighTraffic condition & **increased accident probability in HighTraffic condition [U=14.50, p<0.05]**

### RESULTS

**Table 1.** T test results for comparison between AD and healthy participants' performance in driving parameters

<table>
<thead>
<tr>
<th>LowTraffic</th>
<th>AD</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Speed</td>
<td>32.90</td>
<td>8.12</td>
</tr>
<tr>
<td>Headway</td>
<td>604.92</td>
<td>190.98</td>
</tr>
<tr>
<td>Distance</td>
<td>2733.50</td>
<td>953.30</td>
</tr>
<tr>
<td>Reaction Time</td>
<td>2742.19</td>
<td>555.57</td>
</tr>
</tbody>
</table>

### DISCUSSION/CONCLUSIONS

- Our research indicates the presence and severity of neuropsychiatric symptoms affect driving performance of patients with mild AD.
- Especially, apathy and depression are associated with slower reactions and increased accident probability.
- Neuropsychiatric symptoms may constitute important risk factors for impaired driving behavior.
- To our knowledge, this is the first study that associates driving ability with these symptoms. Thus, further investigation should be conducted on their predictive value on impaired driving behavior.

### REFERENCES


### ACKNOWLEDGEMENTS

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