PREDICTORS OF DRIVING IN INDIVIDUALS WITH RELAPSING-REMITTING MULTIPLE SCLEROSIS (MS)

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Introduction
- Current practices to evaluate fitness-to-drive of individuals with MS involve the use of as many as 15 - 22 tests, last 3 to 4 hours, cost approximately $600, and involves a lot of human resources.

Objective
- To identify the most important of the commonly used tests and determine the accuracy with which the tests will together predict participants' driving performance.

Hypothesis
- A combination of five tests at most will predict participants' driving performance with > 80% accuracy.

Methods

Study design
- A predictive correlational study

Participants
- 44 individuals with relapsing-remitting MS; legal active drivers;
  age = 46 ± 11 years; 37 females 7 males; EDSS between 1 and 7

Protocol
- Motor, visual, cognitive, and on-road evaluation

Variables
- 4 visual and 16 cognitive tests and on-road evaluation

Data analysis
- Correlation; Univariate, and Multivariate Regression Analyses; Discriminant analysis

Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>PE</th>
<th>SE</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroop color</td>
<td>-0.22</td>
<td>0.08</td>
<td>-2.61</td>
<td>0.01</td>
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<tr>
<td>Direction</td>
<td>0.10</td>
<td>0.08</td>
<td>1.23</td>
<td>0.23</td>
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<tr>
<td>Compass</td>
<td>0.05</td>
<td>0.06</td>
<td>0.89</td>
<td>0.38</td>
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<tr>
<td>Road Sign Recog.</td>
<td>0.33</td>
<td>0.16</td>
<td>1.98</td>
<td>0.05</td>
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<tr>
<td>UFOV- speed</td>
<td>-0.01</td>
<td>0.01</td>
<td>-1.42</td>
<td>0.17</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>On-road performance</th>
<th></th>
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<tbody>
<tr>
<td>Predicted</td>
<td>Fail</td>
<td>Pass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fail</td>
<td>7</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pass</td>
<td>3</td>
<td>33</td>
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R² = 0.59; 91% accurate; 70% sensitive; 97% specific

Discussion
The five tests contained in the best model identified in this study can together be administered in less than 45 minutes, should cost no more than $150, and is 91% accurate in detecting if an individual with relapsing–remitting MS is fit to drive or not.

Conclusion
A short battery of five cognitive test predicted fitness-to-drive of individuals with relapsing-remitting MS with 91% accuracy. Future studies are needed to confirm and validate the findings in this study.

Acknowledgement
This study was supported by a pilot study grant from the Consortium of Multiple Sclerosis Centers.