Executive Function Predicts MacArthur Competency Assessment Test (MacCAT-T) Scores

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OBJECTIVE

The EXIT25 is reported to contribute to the variance of the CCTI, the Hopkins Competency Assessment Test, and a neuropsychiatric interview. The objective of this study was to determine associations between executive function and decision-making capacity in subjects consenting to a non-invasive research protocol.

MATERIALS AND METHODS

Subjects, Setting and Data Collection:
Twenty-one subjects 50 years or older expected to undergo urologic surgery were recruited from a preoperative urology clinic at the South Texas Veterans Healthcare System, Audie Murphy Division.

Neurocognitive Assessment:
Subjects consenting to a non-invasive research protocol examining preoperative cognitive risk factors for delirium were administered the following instruments:

1) The MacArthur Competency Assessment Tool – Treatment (MacCAT-T)¹
2) The Executive Interview (EXIT25)²
3) The Executive Clock Drawing Task (CLOX)³
4) The Mini Mental State Exam (MMSE)⁴

Analysis:
Subjects were classified into those passing versus failing the MacCAT-T. Mean age, education and neurocognitive test scores were compared between these two groups. Correlations between each neurocognitive test and MacCAT-T and subdomain performance were determined. Each cognitive measure was then entered into a multivariate stepwise regression model to search for independent contributions to decision making capacity.

RESULTS

Table 1. Demographic and cognitive test means in subjects passing and failing the MacCAT-T.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Pass MacCAT-T (n=11)</th>
<th>Fail MacCAT-T (n=10)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>61.3 (5.7)</td>
<td>68.6 (10.7)</td>
<td>p = 0.03</td>
</tr>
<tr>
<td>Education</td>
<td>13.9 (2.5)</td>
<td>11.7 (2.2)</td>
<td>p = 0.02</td>
</tr>
<tr>
<td>EXIT25</td>
<td>11.5 (4.1)</td>
<td>15.5 (6.0)</td>
<td>p = 0.03</td>
</tr>
<tr>
<td>CLOX1</td>
<td>11.5 (2.3)</td>
<td>10.4 (2.6)</td>
<td>p = 0.15</td>
</tr>
<tr>
<td>CLOX2</td>
<td>13.1 (1.3)</td>
<td>13.4 (0.7)</td>
<td>p = 0.26</td>
</tr>
<tr>
<td>MMSE</td>
<td>28.8 (1.5)</td>
<td>27.9 (1.6)</td>
<td>p = 0.10</td>
</tr>
</tbody>
</table>

Figure 1. Cognitive test score distribution in patients passing versus failing the MacCAT-T.

Figure 2. Correlation matrix of MacCAT-T scores versus EXIT25 scores (Pearson’s R = -0.66, p = 0.001).

RESULTS (cont.)

Table 2. Neuropsychological predictors of MacCAT-T performance.

<table>
<thead>
<tr>
<th>Tests</th>
<th>Correlations</th>
<th>Stepwise Regression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tests</td>
<td>r</td>
<td>p</td>
</tr>
<tr>
<td>Total MacCAT-T</td>
<td>-0.66</td>
<td>0.001</td>
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<tr>
<td>EXIT25</td>
<td>-0.60</td>
<td>0.004</td>
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<tr>
<td>MMSE</td>
<td>0.46</td>
<td>0.038</td>
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<td>CLOX1</td>
<td>0.38</td>
<td>0.114</td>
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<td>CLOX2</td>
<td>0.12</td>
<td>0.391</td>
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<tr>
<td>Understanding</td>
<td>-0.66</td>
<td>0.004</td>
</tr>
<tr>
<td>MMSE</td>
<td>0.53</td>
<td>0.014</td>
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<tr>
<td>CLOX1</td>
<td>0.45</td>
<td>0.042</td>
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<tr>
<td>CLOX2</td>
<td>0.05</td>
<td>0.828</td>
</tr>
</tbody>
</table>

CONCLUSIONS

- Large numbers of elders may be at risk for impaired decision making capacity and executive impairment.
- EXIT25 performance contributes large amounts of the variance to MacCAT-T performance.
- The EXIT25 is now reported to explain significant amounts of variance in three different standardized capacity assessment instruments.
- Executive measures may be more relevant to decision making capacity than other cognitive instruments.

REFERENCES


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