Using the Naturalistic Action Test (NAT) to Assess the Everyday Activities of Healthy Older Adults and Patients with Mild Alzheimer’s Disease

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BACKGROUND

A decline in activities of daily living (ADLs; e.g. food preparation, medication management, driving) is a major hallmark of dementia. Numerous research studies have employed various subjective self-report and caregiver report assessments of ADLs (e.g. Lawton & Brody, 1969; Katz, 1983). This newly published NAT (Schwartz et al., 2002), however, is a unique assessment of everyday functioning; it is a standardized, performance-based measure based on neuropsychological principles that evaluates ADLs across several tasks. The NAT was initially a standardized, performance-based measure based on neuropsychological principles that evaluates ADLs across several tasks. The NAT was initially developed for the assessment and treatment planning of head-injured (Schwartz et al., 1998) and stroke patients (Schwartz et al., 1999), though the instrument has also been piloted on a heterogeneous group of dementia patients (Giovannetti et al., 2002). Nonetheless, there is limited data regarding the expected performance of older adults and how mild AD patients perform in relation to same aged controls.

GOALS

1. To provide normative data on a group of adults over age sixty.

2. To evaluate the effect, if any, of age on NAT performance in a normal sample of older adults.

3. To determine the clinical utility of the NAT in differentiating mild AD patients from a group of healthy older adults.

Participants

Thirty-five patients with mild Alzheimer’s disease (McKunn et al., 1984) and 23 healthy older adults participated in the study. Table 1 shows the demographic variables for the groups.

Table 1

Demographic Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>AD patients (n=35)</th>
<th>Normal Controls (n=23)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Mean: 78.7</td>
<td>Mean: 78.9</td>
<td>SD: 5.6</td>
</tr>
<tr>
<td></td>
<td>1.8</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>11.5</td>
<td>13.7</td>
<td>SD: 2.7</td>
</tr>
<tr>
<td></td>
<td>2.3</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>MMSE</td>
<td>210.5</td>
<td>282.5</td>
<td>SD: 12.3</td>
</tr>
<tr>
<td></td>
<td>15.1**</td>
<td>15.1**</td>
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</tbody>
</table>

Note: AD = Alzheimer’s Disease; * p <.01; **p <.001

RESULTS

Normative data are shown in Table 2. In contrast to the younger control sample described in the NAT manual (Schwartz et al., 2002) where 71% received a perfect score, only 48% of our older controls received a perfect score.

Among healthy older adults, age alone accounted for 51% of the variance on the NAT Total Accomplishment score. As shown in Figure 1, our healthy older adults outperformed the mild AD patients across all three NAT difficulty levels (p < .001). The age-matched controls obtained significantly different scores across all three difficulty levels, receiving higher scores on easier tasks. Dementia patients performed worse on level 3, but scores did not differ between levels 1 and 2. Furthermore, it is notable that 82% of the dementia patients exhibited floor effects on level 3.

A discriminant functional analysis was run to assess the diagnostic utility of the measure. When a Total NAT Score of 14 was used as a cutoff for ‘not impaired,’ a minimum number of misclassifications occurred: 85.7% (sensitivity) of dementia patients and 93.1% (specificity) of controls were correctly classified. Overall, the NAT had a high correct classification rate (86.2%) in this sample.

CONCLUSIONS

1. The normative data for adults over age sixty differ from the younger normals reported in the NAT manual. Therefore, we recommend using the norm in Table 2 when evaluating geriatric populations.

2. Consistent with our initial conclusion, we identified a significant effect of age in our normative group.

3. A significant difference in the NAT Total Score was identified between the mild AD group and our normative group. Likewise, the high sensitivity and specificity of the NAT in our sample suggests fairly robust diagnostic validity. Nonetheless, the results across the three NAT difficulty levels were less stable.

REFERENCES


