Specific Cognitive/Behavioral Domains Predict Neuropsychiatric Symptoms in Severe Dementia

William Rozum  
Utah State University, wjrozum@gmail.com

Bryce Cooley  
Utah State University

Alexandria Richens  
Utah State University

Joshua Matyi  
Utah State University

Elizabeth Vernon  
Utah State University

JoAnn Tschanz  
Utah State University

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SPECIFIC COGNITIVE/BEHAVIORAL DOMAINS PREDICT NEUROPSYCHIATRIC SYMPTOMS IN SEVERE DEMENTIA

William Rozum, Bryce Cooley, Elizabeth Vernon, Alexandria Richens, Joshua Matyi, & JoAnn Tschanz

Background
• Neuropsychiatric symptoms (NPS) occur frequently over the course of Alzheimer’s disease and related disorders (ADRD).
• Occurrence of NPS is highly variable and fluctuates in severity, but generally increases over time.
• Risk factors for NPS in ADRD have been studied; however, greater understanding of triggers is needed to inform care management strategies.
• Few studies have examined NPS in severe dementia.

Present Study
• We investigated the cognitive correlates of NPS in patients with severe dementia in a community-based sample.
• We determined whether impairments in specific cognitive or behavioral domains were more predictive of specific NPS.
• We hypothesized that poorer cognitive abilities would be associated with more severe NPS (e.g., agitation) and higher cognitive scores with affective symptoms in severe dementia.

Methods
Participants:
• Eighty-nine participants from the Cache County Dementia Progression Study met the criteria for severe dementia with a Mini-Mental State Exam score of ≤10 or Clinical Dementia Rating of 3 (severe).
• Forty-eight (54%) of these individuals completed the Severe Cognitive Impairment Profile (SCIP).

Procedure:
• SCIP assesses Comportment, Attention, Language, Memory, Motor, Conceptualization, Arithmetic, and Visuospatial abilities.
• Neuropsychiatric Inventory (NPI) assesses delusions, hallucinations, depression, anxiety, irritability, apathy, aggression, judgment, aberrant motor behaviors, euphoria, sleep, and appetite.
• NPI severity scores were summed across domains for a total NPI-12 score. Cluster scores were defined below.
• Demographic information, overall health, place of residence (private, assisted living and nursing home), and dementia duration were also assessed.

Results
• SCIP sub scores of comportment (r = -0.36, p = 0.017) and memory (r = -0.31, p = 0.047) were associated with total NPI-12.
• Comportment was correlated with Apathy (r = -0.38, p = 0.010) while conceptualization (r = -0.41, p = 0.007), language (r = -0.36, p = 0.017), memory (r = -0.48, p = 0.001), and visuospatial ability (r = -0.31, p = 0.046) were each correlated with agitation/aggression.
• In multiple regression models (with inclusion of significant covariates), SCIP sub scores of comportment (r = -0.36, p = 0.017) and memory (r = -0.31, p = 0.046) were each correlated with agitation/aggression.

Conclusion
• Several cognitive or behavioral domains were associated with Neuropsychiatric symptoms in severe dementia.
• Associations may suggest vulnerability to display specific NPS, for example:
  - Poorer abilities in conceptualization, language, memory, and visuospatial abilities were predictive of agitation/aggression.
  - Poorer comportment was predictive of worse apathy.
• Environmental manipulations to reduce cognitive demands for persons with poor abilities in the above domains may reduce occurrence of some neuropsychiatric symptoms.

References & Acknowledgement

Table 1. Demographics (N=48)

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in years</td>
<td>86.23 (6.12)</td>
</tr>
<tr>
<td>Female n (%)</td>
<td>30 (62.5)</td>
</tr>
<tr>
<td>Education Mean (SD)</td>
<td>13.13 (3.13)</td>
</tr>
<tr>
<td>Age of onset in years Mean (SD)</td>
<td>80.18 (9.11)</td>
</tr>
<tr>
<td>Dementia Duration in years Mean (SD)</td>
<td>6.05 (1.97)</td>
</tr>
<tr>
<td>Living at home n (%)</td>
<td>18 (37)</td>
</tr>
<tr>
<td>Residential/Assisted Living n (%)</td>
<td>10 (20.8)</td>
</tr>
<tr>
<td>Residential/Assisted Living (locked unit) n (%)</td>
<td>5 (10.4)</td>
</tr>
<tr>
<td>Skilled Nursing Facility n (%)</td>
<td>15 (31.3)</td>
</tr>
</tbody>
</table>

Table 2. Multiple Regression

<table>
<thead>
<tr>
<th>Domain</th>
<th>Beta</th>
<th>Standard Error</th>
<th>Standard Beta</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPI Total and Comportment: Apathy</td>
<td>-1.32</td>
<td>0.56</td>
<td>-0.34</td>
<td>p=0.02</td>
</tr>
<tr>
<td>NPI Total and Comportment: Agitation/Agression</td>
<td>-0.08</td>
<td>0.02</td>
<td>-0.01</td>
<td>p=0.003</td>
</tr>
<tr>
<td>Apathy Cluster and Comportment: Apathy</td>
<td>-0.43</td>
<td>0.12</td>
<td>-0.48</td>
<td>p=0.001</td>
</tr>
<tr>
<td>Apathy Cluster and Comportment: Agitation/Agression</td>
<td>-0.43</td>
<td>0.12</td>
<td>-0.48</td>
<td>p=0.001</td>
</tr>
</tbody>
</table>

Figure 1. Bivariate Correlations of NPI and SCIP Domains