LSS [F(1, 130)= 1.5, p=0.22] or SLS-WRC [F(1, 132)=0.55, p=0.46].
**Conclusions:** The SLS is a promising cognitive task with little research investigating its psychometric properties. Overall, minimal correlations were observed with tasks quantifying executive functioning, verbal abilities, and processing speed. Lack of strong correlations indicate that more research should be conducted to fully understand what this task is measuring. Moreover, the SLS-WRC score did not appear to have significant correlations across domains, indicating that the SLS-LSS may be more strongly related to working memory and general intelligence. Encouragingly, emotional functioning did not appear to impact performance on this task. While the SLS appears to have some relation to IQ, more research should be conducted to determine what this task measures and what variables may affect task performance.

**Categories:**
Assessment/Psychometrics/Methods (Adult)
**Keyword 1:** neuropsychological assessment
**Keyword 2:** cognitive functioning
**Keyword 3:** emotional processes
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## 42 Cognitive Impairment Stage and Dementia Syndromes Explain Latent Structure Variability on the Neuropsychiatric Inventory Questionnaire (NPI-Q)

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**Objective:** Neuropsychiatric/behavioral-psychological symptoms of dementia (BPSD) frequently contribute to worse prognosis of patients with neurodegenerative conditions. BPSD are commonly measured via a brief, informant-rated version of the Neuropsychiatric Inventory (NPI), the NPI-Q. Previously (see our other submission to this conference), we established optimal latent structures by comparing different factor models in the literature using confirmatory factor analyses (CFAs). However, questions remain as to why so many different models were found in the literature. One possibility is sampling differences, including different proportions of individuals across cognitive stages (e.g., mild cognitive impairment, moderate dementia) or syndromes (e.g., Alzheimer's amnestic syndrome, Dementia with Lewy Bodies). We tested this hypothesis by subjecting candidate models to measurement invariance (MI) analyses stratified by cognitive stage and syndrome.
**Participants and Methods:** Individuals were included if they had completed an NPI-Q during their first visit at an Alzheimer Disease Research Center reporting to the National Alzheimer Coordinating Center (NACC). This resulted in 20,500 individuals (57% female; 80% White, 13% Black, 8% Hispanic), with a mean age of 71 (*SD* = 10.41) and 15 average years of education (*SD* = 3.43). Regarding staging, 75.9% of individuals did not meet criteria for all-cause dementia, whereas 24.1% individuals had all-cause dementia. Regarding syndromes, 35.6% had an Alzheimer's presentation ("AD-type") and 5.6% had either a behavioral variant frontotemporal dementia or Lewy-Body dementia presentation ("behavioral-type"). A 3-factor and 4-factor model were subject to MI across these groupings. We conducted MI analyses for equal forms, equal loadings, and equal intercepts using the *lavaan* R package with a diagonally weighted least squares (DWLS) estimator.
**Results:** The 3-factor model demonstrated good fit among individuals experiencing (*CFI* = 0.965, *TLI* = 0.955) and not experiencing (*CFI* = 0.984, *TLI* = 0.979) dementia, as well as among AD-type (*CFI* = 0.983, *TLI* = 0.978) presentations, but had borderline poor fit for behavioral-type (*CFI* = 0.932, *TLI* = 0.912) presentations. The 4-factor model had better fit among those experiencing (*CFI* = 0.985, *TLI* = 0.977) and not experiencing (*CFI* = 0.995, *TLI* = 0.992) dementia. Additionally, the 4-factor model demonstrated good of fit for AD-type (*CFI* = 0.993, *TLI* = 0.989) and poorer fit for behavioral-type (*CFI* = 0.949, *TLI* = 0.922) syndromes. Chi-square differences suggested that equal loading and equal intercept hypotheses should be rejected for both 3- and 4-factor models, for both staging and syndromal groupings. However, relative fit indices suggested that the equal form,

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equal loading, and equal intercept hypotheses could be adequate for only the 4-factor model. **Conclusions:** The variability of factor structures in the BPSD literature appears, at least partially, explained by sampling variability among cognitive stages and dementia syndromes. The best models in the literature appear to have good fit in non-demented individuals and, among those who have dementia, in those with an AD syndrome. Only Sayegh & Knight's 4-factor model had adequate (albeit, not optimal) fit among those with all-cause dementia and, more specifically, among those with a behavioral-type dementia syndrome. These findings inform BPSD theory and practical implementation of NPI-Q subscales.

**Categories:**
Assessment/Psychometrics/Methods (Adult)
**Keyword 1:** demographic effects on test performance
**Keyword 2:** dementia - Alzheimer's disease
**Keyword 3:** psychometrics
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## 43 Comparison of Latent Structures for the Neuropsychiatric Inventory Questionnaire (NPI-Q)

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**Objective:** Existing research has demonstrated that neuropsychiatric/behavioral-psychological symptoms of dementia (BPSD) frequently contribute to worse prognosis in patients with neurodegenerative conditions (e.g., increased functional dependence, worse quality of life, greater caregiver burden, faster disease progression). BPSD are most commonly measured via the Neuropsychiatric Inventory (NPI), or its briefer, informant-rated questionnaire (NPI-Q). Despite the NPI-Q's common use in research and practice, there is disarray in the literature concerning the NPI-Q's latent structure and reliability, possibly related to differences in methods between studies. Also, hierarchical factor models have not been considered, even though such models are gaining favor in the psychopathology literature. Therefore, we aimed to compare different factor structures from the current literature using confirmatory factor analyses (CFAs) to help determine the best latent model of the NPI-Q. **Participants and Methods:** This sample included 20,500 individuals (57% female; 80% White, 12% Black, 8% Hispanic), with a mean age of 71 (*SD* = 10.41) and 15 average years of education (*SD* = 3.43). Individuals were included if they had completed an NPI-Q during their first visit at one of 33 Alzheimer Disease Research Centers reporting to the National Alzheimer Coordinating Center (NACC). All CFA and reliability analyses were performed with *lavaan* and *semTools* R packages, using a diagonally weighted least squares (DWLS) estimator. Eight single-level models using full or modified versions of the NPI-Q were compared, and the top three were later tested in bifactor form. **Results:** CFAs revealed all factor models of the full NPI-Q demonstrated goodness of fit across multiple indices (*SRMR* = 0.039-0.052, *RMSEA* = 0.025-0.029, *CFI* = 0.973-0.983, *TLI* = 0.967-0.977). Modified forms of the NPI-Q also demonstrated goodness of fit across multiple indices (*SRMR* = 0.025-0.052, *RMSEA* = 0.018-0.031, *CFI* = 0.976-0.993, *TLI* = 0.968-0.989). Top factor models later tested in bifactor form all demonstrated consistently stronger goodness of fit regardless of whether they were a full form (*SRMR* = 0.023-0.035, *RMSEA* = 0.015-0.02, *CFI* = 0.992-0.995, *TLI* = 0.985-0.991) or a modified form (*SRMR* = 0.023-0.042, *RMSEA* = 0.015-0.024, *CFI* = 0.985-0.995, *TLI* = 0.977-0.992). Siafarikas and colleagues' (2018) 3-factor model demonstrated the best fit among the full-form models, whereas Sayegh and Knight's (2014) 4-factor model had the best fit among all single-level models, as well as among the bifactor models. **Conclusions:** Although all factor models had adequate goodness of fit, the Sayegh & Knight 4-factor model had the strongest fit among both single-level and bifactor models. Furthermore, all bifactor models had consistently stronger fit than single-level models, suggesting that BPSD are best theoretically explained by a hierarchical, non-nested framework of general and specific contributors to symptoms. These findings also inform consistent use of NPI-Q subscales.

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