

Factorial Validation of the Mild Behavioural Impairment Checklist in Clinic and Community-Dwelling Samples

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Introduction

- **Mild behavioural impairment (MBI):** Later-life, persistent neuropsychiatric symptoms (NPS) that may indicate dementia risk in dementia-free older adults.¹
- **MBI checklist (MBI-C):** 34-item case ascertainment tool developed to capture MBI symptoms.²
 - **Five domains:** decreased motivation (apathy), affective dysregulation (mood and anxiety symptoms), impulse dyscontrol (agitation, impulsivity, abnormal reward salience), social inappropriateness (disinhibition) and abnormal perception/thought content (delusions, hallucinations).²
- **Aim:** Evaluate the factor structure of the MBI-C in a memory clinic sample and validate in an independent community-based cohort.

Methods

- **Exploratory factor analysis:** Conducted in the PROMPT cohort, a Calgary-based cognitive neurology clinic sample.³
- **PROMPT sample:** Participants with completed MBI-C² (n=178) or Neuropsychiatric Inventory Questionnaire (NPI-Q)⁴ (n=427) were included to compare domain mapping across scales.
- Factors with eigenvalues >1 were retained.
- **Confirmatory factor analysis:** Conducted in the UCSF Brain Health Registry (BHR)⁵, a US-based online cohort of mostly cognitively healthy community-dwelling older adults (n=8296).
- Aim: Evaluate the reproducibility of the factor structure identified in PROMPT.

Results

In both memory clinic and community-dwelling samples, the MBI-C demonstrated a consistent and robust five-factor structure with strong internal consistency and good model fit.

PROMPT participants (n=483)
Mean age: 66.9±10.2 years
47.0% female
35.8% with a dementia diagnosis

BHR participants (n=8296)
Mean age: 67.3 ±11.6 years
67.3% female
2.4% with dementia diagnosis

EFA supported a five-factor structure for the MBI-C, with 29/34 items loading on the five factors.

- Items with factor loadings ≥ 0.4 were retained, resulting in a 26-item MBI-C
- Unloaded items included: sexual disinhibition, reckless driving, hoarding objects, repetitive behaviours, and talking to strangers
- All five factors demonstrated high internal consistency ($\alpha > 0.80$).
- **Did any items load onto other factors?**
 - Anhedonia, change in eating behaviour, and loss of food enjoyment loaded onto the apathy domain.
 - Trouble regulating behaviours such as smoking, alcohol, drug intake, gambling or shoplifting loaded onto abnormal perception/thought content.

CFA supported the five-factor structure of the 26-item MBI-C, demonstrating good model fit (RMSEA=0.048, 90% confidence interval=0.047-0.050, CFI=0.95).

What about the NPI-Q?

- The NPI-Q had a one-factor structure with 9/10 items loading (hallucinations did not load)
- MBI-C and NPI-Q total scores were positively correlated using linear regression plots.

These findings provide evidence for the MBI-C as a comprehensive instrument for assessing early behavioural symptoms, with applicability across clinical and community-based populations.

For more information



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