

Validation of a brief assessment tool for apathy in neurocognitive disorders

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Background

- Apathy is defined as reduced goal-directed behaviour as shown by diminished initiative, interest, and emotional expression.
- The Neuropsychiatric Inventory-Clinician (NPI-C) apathy subscale maps strongly onto each of the three dimensions (Initiative, Interest, Emotion) of the Diagnostic Criteria for Apathy in Neurocognitive Disorders (DCA-NCD).
- A six-item checklist for use in NCD, called the Apathy Screening Questionnaire (ASQ), was developed by selecting two NPI-C apathy items with the highest expert consensus for each dimension of the DCA-NCD.

Aim

To examine the psychometric properties of the ASQ in individuals with mild or major NCDs in Geriatric Medicine and Psychiatry outpatient clinics in a Canadian university hospital setting.

Methods

Assessments:

- For participants with mild or major NCD, the presence of apathy was determined by a clinician using the DCA-NCD
- The NPI-C apathy subscale was administered separately by trained research staff
- Cognitive assessments (Mini-Mental State Examination, [MMSE] and/or Montreal Cognitive Assessment [MoCA] were completed for a subset of participants based on physician judgement

ASQ scoring:

- A dimension was considered present if ≥ 1 of the 2 ASQ symptoms within that dimension were endorsed
- A positive ASQ screen was defined as endorsement of ≥ 2 of the 3 dimensions, consistent with the DCA-NCD criteria

Psychometric evaluation:

- Internal consistency: Cronbach's alpha ($\alpha = 0.70-0.90$, indicates acceptable performance)
- Convergent validity: Spearman's correlation between the ASQ and the NPI-C apathy subscale ($p > 0.70$)
- Discriminant validity: Spearman's correlation between the ASQ and MoCA/MMSE scores ($p < 0.85$)
- Concurrent validity: Wilcoxon rank-sum test comparing the ASQ and DCA-NCD classifications
- Diagnostic accuracy: Receiver operating characteristic (ROC) analysis of the ASQ relative to the DCA-NCD (Area under the curve [AUC] > 0.90 indicates excellent) accuracy)

Results

- 60 participants [mean (SD) age=81(8.5) years; 53% female] were included
- Patients were referred through geriatric medicine clinicians (n=44 [73%]) and geriatric psychiatry clinicians (n=16 [27%]).
- Three dimensions of apathy were assessed using ASQ items derived from the NPI-C apathy domain:
 - Diminished Initiative:** Reduced spontaneity and activity (NPI-C apathy item 1) and initiation of conversations (NPI-C apathy item 2).
 - Diminished Interest:** Reduced enthusiasm for usual interests (NPI-C apathy item 7) and decreased curiosity about routine or new events (NPI-C apathy item 10).
 - Diminished Emotion:** Reduced emotional expression (NPI-C apathy item 3) and responsiveness to positive or negative events (NPI-C apathy item 11).

Table 1. Demographics and clinical characteristics of study sample. Values reported as n (%) or mean (SD)

Characteristics	Overall (n=60)	DCA+ (n=45)	DCA- (n=15)
Age, mean (SD)	81.3 (8.5)	81.0 (8.8)	82.1 (7.7)
Female, n (%)	32 (53.3%)	23 (51.1%)	9 (60.0%)
Diagnosis of NCD			
Major	50 (83.3%)	42 (93.3%)	8 (53.3%)
Mild	10 (16.7%)	3 (6.7%)	7 (46.7%)
Type of NCDs			
AD	28 (46.7%)	23 (51.1%)	5 (33.3%)
VaD	8 (13.3%)	7 (15.6%)	1 (6.7%)
Mixed non-AD/Other	5 (8.3%)	4 (8.9%)	1 (6.7%)
Dementia syndrome (unspecified)	9 (15.0%)	8 (17.8%)	1 (6.7%)
MCI	10 (16.7%)	3 (6.7%)	7 (46.7%)
Cognition, mean (SD)			
MoCA, mean (SD)	17.3 (5.3), n=20	15.6 (5.4), n=13	20.3 (3.6), n=7
MMSE, mean (SD)	18.7 (7.0), n=42	18.2 (7.2), n=33	20.8 (6.1), n=9
AD Medications			
Cholinesterase inhibitors	22 (36.7%)	15 (33.3%)	7 (46.7%)
Memantine	10 (16.7%)	8 (17.8%)	2 (13.3%)
Medical conditions			
Hypertension	32 (53.3%)	24 (53.3%)	8 (53.3%)
Hyperlipidemia	30 (50.0%)	23 (51.1%)	7 (46.7%)
Diabetes	13 (21.7%)	11 (24.4%)	2 (13.3%)
NPI-C apathy total	13.1 (8.7)	16.5 (7.1)	2.80 (2.6)
Diminished Initiative	46 (76.7%)	45 (100.0%)	1 (6.7%)
Diminished Interest	44 (73.3%)	44 (97.8%)	0 (0.0%)
Diminished Emotion	34 (56.7%)	34 (75.6%)	0 (0.0%)

Abbreviations: NCD, neurocognitive disorder; AD, Alzheimer's disease; VaD, Vascular dementia; MCI, mild cognitive impairment; MMSE, Mini Mental State Examination; MOCA, Montreal Cognitive Assessment. Missing values: Highest level of education (n=4). ASQ-diminished interest (n=1). Cognitive assessments: Some participants completed both MMSE and MoCA, while others did not complete any; therefore, sample sizes differ across measures.

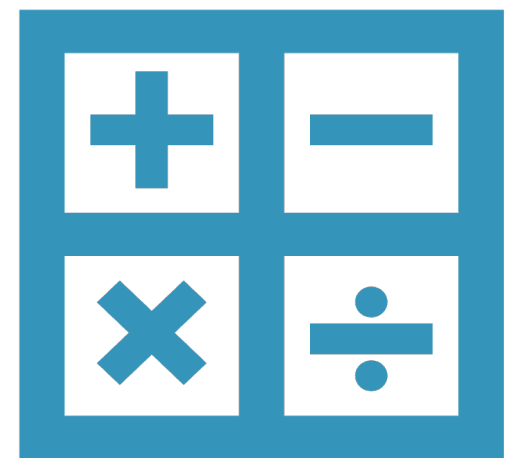
Results (Cont'd)



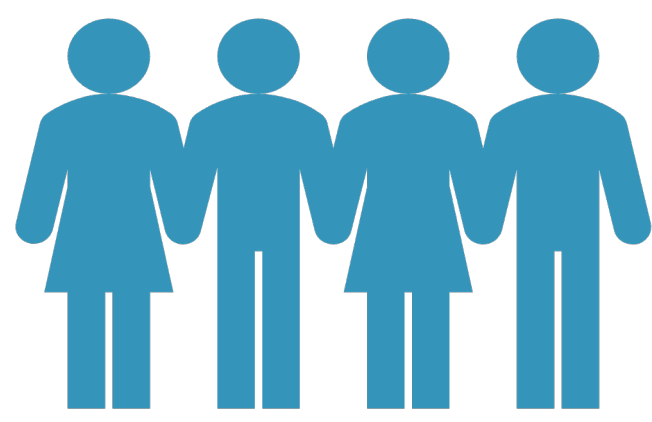
Reliability: The ASQ demonstrated good internal consistency (**Cronbach's $\alpha = 0.80$**).



Convergent validity: There was a positive association between the number of endorsed ASQ dimensions and NPI-C apathy total scores (**$p=0.82$, $p<.001$**).



Discriminant validity: The ASQ demonstrated strong discriminant validity showing no significant associations with MoCA (**$p = -0.35$, $p = 0.13$**) or MMSE (**$p = -0.05$, $p = 0.76$**).



Concurrent validity: Participants who met DCA-NCD criteria for apathy (DCA+) endorsed more ASQ dimensions than DCA- participants (**median [IQR]: 3 [3–3] vs 1 [0–1.5]; Wilcoxon rank-sum test, $p<.001$**).



Diagnostic accuracy: The AUC was **0.93 [SE = 0.04, 95% CI (0.85-1), $p = <.001$]**, indicating excellent diagnostic accuracy.

Conclusions

Overall, the ASQ demonstrated good psychometric properties in this sample, with strong construct validity, good alignment with the DCA-NCD and excellent ability to distinguish individuals with clinician-defined apathy

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