

Assessment Tool	Behavioral Domains ¹	Who Administers and How	Number of Items	Response Categories	Estimated Time to Administer	Setting and Target Population	Reliability and Validity
Part III: Specific Behavior Scales-Apathy Scales							
22. Dementia Apathy Interview and Rating Scale (DAIR)	Apathy	Structured interview with caregiver	16 items Follow-up question determines behavioral changes from prior to AD diagnosis	Based on past month Rated 0 = no or almost never to 3 = Yes, almost always Only items representing a change in behavior are included in the final apathy score. Higher scores represent greater apathy.	Not specified	Patients in clinic with probable AD	Internal consistency: Overall: $\alpha=.89$ In-person: $\alpha=.91$ Telephone: $\alpha=.94$ Test-retest reliability: Assessed using 20 randomly selected caregivers with assessments on average 56 days apart: $r=.85, p<.001$ Interrater reliability determined by a second rater's rating of 10 audiotaped interviews: $r=1.00, p<.01$ Convergent validity: Correlation between apathy score and an independent clinician's blind assessment of apathy: $r=.31, p<.05$ to $.46, p<.01$ Criterion validity: Optimal cut-points and associated sensitivity and specificity not determined. Discriminant validity: Very poor correlation between apathy score and depression: $r=.08$.

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23. Apathy Evaluation Scale (AES) 3 versions: self: AES-S, informant: AES-I, clinician: AES-C	Apathy	Oral interview between trained interviewer and patient	18 core items Semi-structured open ended interview also included	Based on current functioning or for patients hospitalized within 3-4 days rate based on past 4 weeks Rated 1 = not at all true/characteristic to 4 = very true/characteristic (3 items are negatively worded and would need to be reversed scored for a total score) Range 18-72 Lower scores indicate more apathy	10-20 minutes	Adults, 18+ years in various settings	Internal consistency 0.86-.094 In dementia patients: AES-C: α =.90 AES-I: α =.90 Test-retest α =.76-.94 Convergent validity: Assessed by examining the correlation between the three versions of the AES (i.e., self, clinician, and informant): r =.43, p <.01 to .72, p <.01. Discriminant validity: Assessed by examining the correlation between apathy and depression [for self-rated (r =.43) and informant-rated (r =.27, p <.01)] and anxiety [for the clinician (r =.35, p <.01) and self-ratings (r =.42)]. In dementia patients the AES-I provided the greatest sensitivity at 92.9% AES-C 85.7% AES-S 61.5%

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24. Lille Apathy Rating Scale (LARS)	Apathy	Clinician administered interview	33 items (9 domains)	<p>Based on past 4 weeks</p> <p>Items 1-3 rated (2 to -2) based on time to reply and number of activities named</p> <p>Remaining 30 items are rated -1 to 1.</p> <p>Range -36 to +36</p> <p>Higher and more positive score indicating greater severity of apathy.</p>	Not specified	Parkinson's disease patients in the community	<p>Internal consistency: $\alpha = .80$.</p> <p>Test-retest reliability at 4 months: $r = .95$</p> <p>Interrater reliability: (intraclass correlation coefficient = 0.98).</p> <p>The validity of the LARS for assessing the presence and severity of apathy has been demonstrated in patients with PD. Cut-off scores of -15 to -17 showed good sensitivities (0.87-0.94) and specificities (0.87-0.94).</p>

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25. Irritability-Apathy Scale (IAS)	Irritability Apathy	Clinician-administered to informant	10 items (2 subscales)	<p>Rated compared to before onset of illness</p> <p>Irritability Question 1 Rated 1= not at all irritable to 5 = extremely irritable Questions 2 - 5 rated 1 = never to 3 = always</p> <p>Total possible = 17 Higher scores indicate greater irritability</p> <p>Apathy Rated 1 to 5 with each question having different responses Total possible = 25 Higher scores indicate greater apathy</p>	Not specified	Patients with AD or Huntington's disease in community	<p>Internal consistency: Irritability: $\alpha = .82$ apathy: $\alpha = .78$</p> <p>Test-retest reliability: Irritability: $r = .81$ apathy: $r = .76$</p> <p>Interrater reliability: irritability $r = 1.00$ apathy: $r = .85$</p> <p>Discriminant validity: No Significant correlation between apathy and premorbid traits (i.e., being "good tempered," "bad tempered," "happy" or a "worrier.")</p> <p>Construct validity: IAS apathy subscale differentiated between controls and AD, and controls and HD ($p < .05$)</p> <p>Convergent validity: Irritability score highly associated with Psychogeriatric Dependency Rating Scale ($r = .87$, $p < .001$).</p>

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26. Frontal System Behavior Scale (FrSBe) (formerly the Frontal Lobe Personality Scale)	Apathy (14 items) Disinhibition (15 items) Executive Dysfunction (17 items)	Self-rated or by caregiver	46 items (3 domains)	Rating based on pre-illness and current, or just current Frequency Rated 1 = Almost never to 5 = Almost always, reversed for positive items Sub-scores and total score (range 46-230) Higher score equals more behavioral abnormality	10 minutes to administer; 10-15 minutes to score.	Outpatients with damage to the frontal lobe, TBI, AD, and PD	Cronbach's alpha ranged from .93 to .95 Construct validity: Family ratings of patient pre-morbid behavior and post-illness/injury frontal were not highly correlated ($r=.30$, $p=.16$) and pre and post scores were significantly different ($t=-6.21$, $p<-.001$).

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27. Apathy Inventory (AI)	Apathy	Oral interview: caregiver (AI-caregiver) and patient (AI-patient) based versions	3 items rated on frequency, severity and intensity	<p>Based on change since onset of the illness also can be used over a specified time period</p> <p>Items are present or absent</p> <p>If present, frequency rated 1 = occasionally, to 4 = very frequently)</p> <p>Severity rated 1 = mild to 3 = marked)</p> <p>The AI-caregiver score range 0-36 Higher score indicating greater apathy</p> <p>In the AI-patient interview, patients report presence or absence of 3 AI items</p> <p>If present, patient rates intensity 1 = mild to 12 = severe Range 0-36 Higher scores = more severe apathy</p>	Not specified	MCI, Parkinsons and dementia outpatients	<p>Internal consistency: $\alpha = .84$ Test-retest reliability ($k = 0.99, 0.97, \text{ and } 0.99$ for emotional blunting, lack of initiative, and lack of interest respectively, and 0.96 overall)</p> <p>Interrater reliability ($k = 0.99$)</p> <p>Construct validity: Correlation between the lack of initiative ($r = .23, p < .01$) and lack of interest ($r = .63, p < .001$) items and the NPI apathy subscale score.</p> <p>Discriminant validity: AI caregiver distinguish AD patients and controls, with AD patients having significantly higher score on lack of initiative and global score than control</p>

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Table 1. Notes

¹ The Behavioral Domain column lists area using the labeling of behaviors as reported within the cited article.

α = Cronbach's alpha

ABID = Agitated Behavior in Dementia Scale

ABS = Aggressive Behavior Scale

ADL = Activities of Daily Living

AES - C = Apathy Evaluation Scale - Clinician

AES - I = Apathy Evaluation Scale - Informant

AES - S = Apathy Evaluation Scale - Self

AES = Apathy Evaluation Scale

AI = Activity Inventory

AWS = Algase Wandering Scale

V2 = version 2

BAI = Beck Anxiety Inventory

BARS = Brief Agitation Rating Scale

BDI = Beck Depression Inventory

BEHAVE-AD = Behavioral Pathology in Alzheimer's Disease

BRSD = CERAD Behavior Rating Scale for Dementia

BSSD = Behavioral Syndromes Scale for Dementia

CABOS = Computer Assisted Behavioral Observation Systems

CCL - A = Cognition Checklist for Anxiety

CCL - D = Cognition Checklist for Depression

CDR = Clinical Dementia Rating Scale

CES-D = Center for Epidemiologic Studies Depression Scale

CMAI = Cohen Mansfield Agitation Inventory

CMAI = Cohen-Mansfield Agitation Inventory

CSDD = Cornell Scale for Depression in Dementia

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<p>DAIR = Dementia Apathy Interview and Rating Scale</p> <p>DASS = Depression Anxiety Stress Scale</p> <p>DBD = Dementia Behavior Disturbance Scale</p> <p>DBRS = Disruptive Behavior Rating Scales</p> <p>DMAS = The Dementia Mood Assessment Scale</p> <p>DSM-IV = Diagnostic and Statistical Manual of Mental Disorders IV</p> <p>DSS = Dementia Signs and Symptoms Scale</p> <p>ESS = Epworth Sleepiness Scale</p> <p>FrSBe = Frontal System Behavioral Scale</p> <p>GAI = Geriatric Anxiety Inventory</p> <p>GDS = Geriatric Depression Scale</p> <p>HADS = Hospital Anxiety and Depression Scale</p> <p>HAM-A = Hamilton Rating Scale for Anxiety</p> <p>HAM-D = Hamilton Rating Scale for Depression</p> <p>HD = Huntington's Disease</p> <p>IADL = Instrumental Activities of Daily Living</p> <p>IAS = Irritability Apathy Scale</p> <p>KBCI = Key Behavior Change Inventory</p> <p>LARS = Lille Apathy Rating Scale</p> <p>MCI = Mild Cognitive Impairment</p> <p>MDS = Minimum Data Set</p> <p>mMMSE = Modified Mini-Mental Status Exam</p> <p>MOAS = Modified Overt Aggression Scale</p> <p>NHBPS = The Nursing Home Behavior Problem Scale</p> <p>NOISE = Nurse Oriented Scale for Inpatient Evaluation</p> <p>NOSGER = Nurses' Observation Scale for Geriatric Patients</p> <p>NPI = Neuropsychiatric Inventory</p> <p>NPI-C = Neuropsychiatric Inventory - Clinician</p> <p>NPI-Q = Neuropsychiatric Inventory - Questionnaire</p> <p>NRS = The Neuro-behavioral Rating Scale</p> <p>OAS = Overt Aggression Scale</p> <p>OASS = Overt Agitation Severity Scale</p> <p>PANSS = Positive and Negative Symptom Scale</p>							

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<p>PAS = Pittsburgh Agitation Scale PD = Parkinson's Disease PHQ-9 = Patient Health Questionnaire - 9 PLUT = Plutchik Scale PSQI = Pittsburgh Sleep Quality Index RAGE = Rating Scale for Aggressive Behavior in the Elderly RAID = Rating Anxiety in Dementia RAS = Ryden Aggression Scale RMBPC = Revised Memory and Behavior Problem Checklist SANS = Scale for the Assessment of Negative Symptoms SDI = The Sleep Disorders Inventory SF - 20 = 20-item Short Form Survey TBI = Traumatic Brain Injury</p> <p>Brief Psychiatric Rating Scale not included since generally used to assess psychosis in patients with schizophrenia.</p> <p>Scale for the Assessment of Negative Symptoms (SANS) and Positive and Negative Symptom Scale (PANSS) are not included since primarily used in patients with schizophrenia.</p> <p>Unified Parkinson's Disease rating scale not included as it is a single item for apathy that does not have any reliability measure.</p> <p>Hamilton Depression Rating Scale not included because it was first published in 1960 and is no longer considered the gold standard. While it has adequate internal reliability, many of the items do not contribute to depression severity, response options are not optimal, and the retest reliability is poor. Content validity has also been found to be poor (Bagby, Ryder, Schuller & Marshall, 2004).</p> <p>The Mini Nutritional Assessment was not included because it does not address behavior. The Nutritional Risk Index and DETERMINE Your Nutritional Health Checklist were not included because they do not address behavior and because validity has not been established.</p> <p>GDS was not included as at least two studies have found it not to be as reliable and valid in a dementia population as in the general geriatric population (Burke, 1989; Korner, 2006).</p> <p>CES-D was not included as there was no evidence of reliability and validity in a dementia population.</p> <p>State/Trait anxiety scale: originally published prior to 1980.</p>							

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<p>Geriatric Evaluation by Relative's Rating Instrument (GERRI) Schwartz, G. (1983). Development and validation of the Geriatric Evaluation by Relative's Rating Instrument (GERRI). Psychological Reports. 53: 479-88-not included because there is no subscale for neuropsychiatric symptoms.</p> <p>Clinical Assessment of Psychopathology among Elderly Residents (CAPER): Reichenfeld (1992) not included because it does not address specific behaviors of dementia-it is for diagnosis of psychotic disorders. It is also based on psychiatrist interview.</p>							