Supplementary Table 3: Apathy Scales and interviews

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| --- | --- | --- | --- |
|  | Scale for: | Apathy dimensions\*Apathy specific \*\* | Original study population  |
| Brief Psychiatric Rating Scale (BPRS)[1] [Overall and Gorham (1962)](http://www.cmhconline.com/images/userfiles/File/Article_BriefPsychiatricRating_Scale%281%29.pdf) | Clinician | EmotionNo | Paranoia SchizophreniaDepression |
| Positive and Negative Syndrome Scale (PANSS)[2] [Kay et al. (1987)](https://www.ncbi.nlm.nih.gov/pubmed/3616518) | Clinician | Emotion, Social InteractionNo | Schizophrenia |
| Scale for the Assessment of Negative Symptoms (SANS)[3] [Andreasen (1989)](http://psycnet.apa.org/record/1990-13687-001) | Clinician | Emotion, Social interactionNo | Schizophrenia |
| Apathy Evaluation Scale (AES-S/I/C)[4] [Marin et al. (1991)](https://www.sciencedirect.com/science/article/pii/016517819190040V) | Self-reportCaregiverClinician | Cognition, Behavior, EmotionYes | AD (Alzheimer’s disease),Brain injury,Major depression |
| Apathy Scale (AS)[5] [Starkstein et al. (1992)](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.461.658&rep=rep1&type=pdf) | Clinician | Cognition, Behavior, EmotionYes | PD (Parkinson’s disease) |
| Neuropsychiatric Inventory NPI[6] [Cummings et al. (1994)](https://www.ncbi.nlm.nih.gov/pubmed/7991117) | Caregiver | Cognition, Behavior, EmotionNo | Dementia |
| Unified Parkinson’s Disease Rating Scale (UPDRS) 1 item[7] [Martinez-Sarriez et al. (1994)](https://www.ncbi.nlm.nih.gov/pubmed/12815652/10.1002/mds.10473) | Clinician | Cognition, BehaviorNo | PD |
| The Behavioural Assessment of Dysexecutive Syndrome- DEX[8] [Wilson et al. (1996)](http://www.sxf.uevora.pt/wp-content/uploads/2013/03/Munir_2003.pdf#page=38) | ClinicianSelf-report | Cognition, Behavior, EmotionNo | Brain injury |
| Irritability-Apathy Scale (IAS) [9] [Burns et al. (1997)](https://www.ncbi.nlm.nih.gov/pubmed/2136908/) | CaregiverClinician | Cognition, BehaviorNo | ADHD (Huntington disease) |
| Frontal Lobe Personality Scale (FLOPS) now known as the Frontal Systems Behavior Scale (FrSBe)[10] [Grace et al. (1999)](http://journals.sagepub.com/doi/abs/10.1177/107319119900600307) | Self-reportCaregiverClinician | Cognition, BehaviorNo | Brain injury (frontal lobe) |
| NPIa-Q[11] [Kaufer et al. (2000)](https://www.ncbi.nlm.nih.gov/pubmed/11001602) | Caregiver | Cognition, Behavior, EmotionNo | AD  |
| L’échelle d’appréciation de la démotivation (EDA)[12] [Chantoin et al. (2001)](http://www.em-consulte.com/en/article/83079) | Self-report | Cognition, Behavior, EmotionYes | Dementia (especially memory disorders) |
| Apathy Inventory (AI)[13] [Robert et al. (2002)](https://www.sciencedirect.com/science/article/pii/S0165178114004910#bib44) | CaregiverClinician | Cognition, Behavior, EmotionYes | Dementia |
| Dementia Apathy Interview and Rating (DAIR)[14] [Strauss & Sperry (2002](https://www.ncbi.nlm.nih.gov/pubmed/12218710)) | CaregiverClinician | BehaviorNo | Dementia |
| Key Behavior Change Inventory (KBCI)[15] [Belanger et al. (2002)](https://www.ncbi.nlm.nih.gov/pubmed/12607138) | Caregiver | Cognition, Behavior, EmotionNo | Elderly memory disorder |
| Lille Apathy Rating Scale (LARS)[16] [Sockeel et al. (2006)](http://jnnp.bmj.com/content/77/5/579?utm_source=TrendMD&utm_medium=cpc&utm_campaign=J_Neurol_Neurosurg_Psychiatry_TrendMD_1)Lille Apathy Rating Scale short form (sfLARS)[17] [Dujardin et al. (2013)](https://www.ncbi.nlm.nih.gov/pubmed/23836341) | Clinician | Cognition, Behavior, Emotion, Social InteractionYes | PD |
| [18] Informant based Lille apathy rating scale (LARS-i)Dujardin et al. (2008) | Caregiver | Cognition, Behavior, Emotion, Social InteractionYes | PD |
| Neuropsychiatric Inventory NPI-C[19] de [Medeiros et al (2010)](https://www.ncbi.nlm.nih.gov/pubmed/20594384) | Clinician | Behavior, Cognition, EmotionNo | Dementia |
| Abbreviated apathy evaluationscale (AES-10)[20] [Leontjevas et al. (2012)](https://www.ncbi.nlm.nih.gov/pubmed/21764646) | Caregiver | Cognition, Behavior, EmotionYes | Dementia |
| Apathy in institutionalized persons with dementia APADEM-NH[21] [Aguera-Ortiz & al (2015)](https://www.sciencedirect.com/science/article/pii/S1064748113001371?via%253Dihub) | Caregiver | Cognition, Behavior, EmotionYes | Dementia |
| Dimensional Apathy Scale (DAS)[22] [Radakovic et Abrahams (2017)](https://www.sciencedirect.com/science/article/pii/S0165178114004910#bib44f) | Self-report | Cognition, Behavior, Emotion,Yes | Neurodegenerative diseases |
| Apathy motivation index[23] [Ang et al. (2017](http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0169938)) | Self-report | Cognition, Behavior, Emotion, Social InteractionYes | Healthy adults |

\* Based on the following classification coming from the Apathy diagnostic criteria 2018: Behavior & Cognition; Emotion; Social interaction.

\*\* Yes = the scale is apathy specific. No = the scale assesses apathy as a subdomain.

**References**

[1] J. Overall and D. Gorham, The Brief Psychiatric Rating ScalePsychological Reports.brief psychiatric rating scale, Psychol Rep 10 (3), 1962, 799–812.

[2] S. Kay, A. Fiszbein and L. Opler, The Positive and Negative Syndrome Scale (PANSS) for Spositive and negative syndrome scale (PANSS) for schizophrenia, Schizophrenia Bulletin. Bull 13 (2), 1987, 261–276.

[3] N.C. Andreasen, The Scale for the Assessment of Negative Symptoms (SANS): conceptual and theoretical foundations, Br J Psychiatry Suppl (.November (7)), 1989, 49–58.

[4] R. Marin, R. Biedrzycki and S. Firinciogullari, Reliability and validity of the apathy evaluation scale, Psychiatry Res earch.38 (2), 1991, 143–162.

[5] S. Starksein, H. Mayberg, T. Preziosi, P. Andrezejewski, R. Leiguarda and R. Robinson, Reliability, validity, and clinical correlates of apathy in Parkinson’s disease, The Journal of Neuropsychiatry and Clinical Neurosciences.J Neuropsychiatry Clin Neurosci 4 (2), 1992, 134–139.

[6] J. Cummings, M. Mega, K. Gray, S. Rosenberg-Thompson, D. Carusi and J. Gornbein, The Neuropsychiatric Inventory: Ccomprehensive assessment of psychopathology in dementia, Neurology .44 (12), 1994, 2308-2308.

[7] P. Martínez-Martín, A. Gil-Nagel, L.M. Gracia, J.B. Gómez, J. Martínez-Sarriés, et al., F.BermejoUnified Parkinson’s Disease Rating SUnified parkinson’s disease rating scale characteristics and structure, The CooperativeCoop Multicentric Group. Mov Disord. 9 (Januray (1)), 1994, 76–83.

[8] B. Wilson, J. Evans, N. Alderman, P. Burgess and H. Emilie, Behavioural assessment of the dysexecutive syndrome, In: P. Rabbitt, (Ed), Methodology of frontal and executive function, 1997, 239–250.

[9] A. Burns, S. Folstein, J. Brandt and M. Folstein, Clinical Assessment of Irritability, Aggression, and Aassessment of irritability, aggression, and apathy in Huntington and Alzheimer DiseaseThe Journal of Nervous and Mental Disease.alzheimer disease, J Nerv Ment Dis 178 (1), 1990, 20–26.

[10] J. Grace, J. Stout and P. Malloy, Assessing Frontal Lobe Behavioral Syndromes with the Frontal Lobe Personality Sfrontal lobe behavioral syndromes with the frontal lobe personality scale, Assessment .6 (3), 1999, 269–284.

[11] D. Kaufer, J. Cummings, P. Ketchel, V. Smith, A. MacMillan, T. Shelley, et al., Validation of the NPI-Q, a Brief Clinical Form of the Neuropsychiatric InventoryThe Journal of Neuropsychiatry and Clinical Neurosciences.brief clinical form of the neuropsychiatric inventory, J Neuropsychiatry Clin Neurosci 12 (2), 2000, 233–239.

[12] S. Chantoin, C. Hazif-Thomas, R. Billon and P. Thomas, Construction d’une échelle d’appréciation de la démotivation chez la personne âgée, L’Encéphale 27 (7), 2001, 450–458.

[13] P. Robert, S. Clairet, M. Benoit, J. Koutaich, C. Bertogliati, O. Tible, et al., The Apathy Inventory: assessment of apathy and awareness in Alzheimer’s disease, Parkinson’s disease and mild cognitive impairment, International Journal of Geriatric J Geriatr Psychiatry 17 (12), 2002, 1099–1105.

[14] M.E. Strauss and S.D. Sperry, An informant-based assessment of apathy in Alzheimer disease, Neuropsychiatryneuropsychology, and behavioral neurology Neuropsychol Behav Neurol 15 (September (3)), 2002, 176–183.

[15] H. Belanger, L. Brown, T. Crowell, R. Vanderploeg and G. Curtiss, The Key Behaviors Change Inventory and Executive Functioning in an Elderly Clinic SampleThe Clinical Neuropsychologist (Neuropsychology, Development and Cognition: Section D)key behaviors change inventory and executive functioning in an elderly clinic sample, Clin Neuropsychol 16 (3), 2002, 251–257.

[16] P. Sockeel, K. Dujardin, D. Devos, C. Deneve, A. Destée and L. Defebvre, The Lille apathy rating scale (LARS), a new instrument for detecting and quantifying apathy: validation in Parkinson’s disease, Journal of Neurology, Neurosurgery & Psychiatry Neurol Neurosurg Psychiatr 77 (5), 2006, 579–584.

[17] K. Dujardin, P. Sockeel, A. Carette, M. Delliaux and L. Defebvre, Assessing apathy in everyday clinical practice with the short-form Lille Apathy Rating Scale, Movement Disorders. Disord 28 (14), 2013, 2014–2019.

[18] K. Dujardin, P. Sockeel, M. Delliaux, A. Destée and L. Defebvre, The Lille Apathy Rating Scale: Vlille apathy rating scale: validation of a caregiver-based version, Movement Disorders. Disord 23 (6), 2008, 845–849.

[19] K. De Medeiros, P. Robert, S. Gauthier, F. Stella, A. Politis, J. Leoutsakos, et al., The Neuropsychiatric Inventory-Clinician rating scale (NPI-C): reliability and validity of a revised assessment of neuropsychiatric symptoms in dementia, International Psychogeriatrics. Psychogeriatr 22 (06), 2010, 984–994.

[20] R. Leontjevas, A. Evers-Stephan, M. Smalbrugge, A. Pot, V. Thewissen, D. Gerritsen, et al., A comparative validation of the abbreviated apathy evaluation scale (AES-10) with the neuropsychiatric inventory apathy subscale against diagnostic criteria of apathy, J Am Med Dir Assoc 13 (3), 2012, 308.e1-308.e6.

[21] L. Agüera-Ortiz, N. Gil-Ruiz, I. Cruz-Orduña, et al., A novel rating scale for the measurement of apathy in institutionalized persons with dementia: The APADEM-NH, . The American Journal of Geriatric Psychiatry.Am J Geriatr Psychiatry 23 (2), 2015, 149–159.

[22] R. Radakovic and S. Abrahams, Developing a new apathy measurement scale: Ddimensional Apathy Scale, Psychiatry Res earch.219 (3), 2014, 658–663.

[23] Y. Ang, P. Lockwood, M. Apps, K. Muhammed and M. Husain, Distinct Subtypes of Apathy Revealed by the Apathy Motivation IndexPLOS ONE.subtypes of apathy revealed by the apathy motivation index, PLoS One 12 (1), 2017, e0169938.