

Supplementary Material 4. Study characteristics.

Author, year	Ex. Criteria	N	QS	Female (%)	Age	Education	Age at onset	Disease Duration	HY	UPDRS-III	LEDD	SSCs (%)	Instruments
AIDakheel et al., 2019	X	139	18	51.80	71.53 (6.00)	14.91 (3.00)	X	9.50 (7.00)	X	28.75 (14.25) ^e	694.16 (469.16)	32	MDS-UPDRS Question 1.1
Barbosa et al., 2019	CI	76	18	47.40	71.29 (9.45)	X	X	6.61 (5.16)	2.13 (0.68)	24.62 (12.07) ^e	524.35 (410.46)	83	NMSQ Domain-5
Baschi et al., 2018	CI	82	16	32.93	65.75 (8.70)	8.50 (2.00)	63.90 (8.90)	1.25 (0.75)	1.62 (0.25)	17.00 (3.00)	253.12 (59.37)	49	MAC-Q
Castro et al., 2016	CI; DEP	77	18	36.37	60.68 (7.73)	8.93 (5.35)	X	10.23 (5.52)	2.36 (0.55)	27.12 (10.09)	697.50 (314.67)	27	Self-reported memory and/or attention complaints
Chua et al., 2021	CI	79	18	40.50	65.92 (3.42)	12.50 (1.50)	61.50 (3.25)	1.26 (0.24)	2.00 (0.00)	16.25 (2.25) ^e	159.37 (59.37)	43	NMSQ Domain-5
Dujardin et al., 2010 ^a	DEP	50	17	48.00	61.00 (8.00)	14.50 (13.50)	X	11.75 (6.00)	X	17.09 (6.77)	X	25 ^a	CCI
Dupoy et al., 2017	X	70	17	40.00	63.80 (6.80)	12.00 (3.40)	X	2.88 (1.39)	X	10.70 (7.30)	533.80 (303.30)	X	VAS
Erro et al., 2014	X	76	16	38.16	60.50 (8.30)	X	58.60 (8.20)	1.24 (0.50)	X	14.60 (6.90)	X	30	NMSQ item 12
Galtier et al., 2018	CI; DEP	21	16	33.34	56.43 (9.83)	8.86 (2.49)	48.01 (8.35)	X	2.04 (0.76)	27.7 (14.27)	X	62	Semistructured Clinical Interview
Han et al., 2021	CI; DEP	248	16	35.09	55.23 (10.67)	12.15 (3.11)	49.35 (11.53)	5.86 (4.29)	2.06 (0.06)	25.41 (9.53)	369.81 (233.33)	24	Single question ^c
Hogue et al., 2019	CI	313	16	34.50	60.62 (9.88)	16.43 (2.72)	X	X	X	X	X	22	MDS-UPDRS Question 1.1
Hong et al., 2012	CI	35	14	51.43	64.55 (6.95)	11.9 (4.40)	X	X	X	16.50 (7.95)	330.00 (214.00)	57	Single question ^c
Hong et al., 2014	CI	46	18	67.40	66.15 (7.00)	9.25 (5.70)	X	2.90 (1.40)	X	10.20 (8.40)	X	54	Single question ^b
Hong et al., 2018	X	250	14	40.00	70.60 (7.93)	12.80 (3.06)	65.66 (9.50)	4.93 (4.43)	X	27.50 (10.90)	559.20 (392.06)	X	CCI
Jeong et al., 2016	CI; DEP	53	17	54.80	65.10 (10.65)	X	X	2.65 (2.15)	1.75 (0.25)	X	X	57	Self-reported memory complaints
Ko et al., 2021	X	73	18	53.43	75.56 (6.43)	6.50 (5.00)	71.20 (7.66)	4.33 (2.80)	X	29.76 (11.06)	620.06 (396.73)	X	SCCQ-PD
Koster et al., 2015	X	40	14	30.00	60.68 (12.35)	14.80 (2.90)	X	11.53 (7.02)	X	11.04 (6.48)	X	X	Ad hoc questionnaire assessment
Kudlicka et al., 2013	DEP	65	17	53.80	70.11 (8.92)	12.97 (2.98)	X	5.99 (4.20)	1.34 (0.54)	X	579.19 (556.35)	X	BRIEF-A
Leherner et al., 2014	DEP	104	16	31.70	68.3 (7.50)	11.80 (4.30)	57.75 (9.75)	18.81 (4.68)	X	27.10 (12.40)	X	16	FAI
Marino et al., 2009	DEP	58	14	32.75	68.3 (8.50)	X	X	6.88 (5.04)	X	X	X	X	PDQ-39
Mills et al., 2016	X	759	17	X	65.40 (9.16)	X	X	6.09 (5.17)	X	49.50 (25.60) ^e	X	X	MDS-UPDRS Question 1.1
Mills et al., 2020	X	324	17	31.00	61.80 (9.11)	X	X	X	1.70 (0.49)	17.20 (6.84)	X	69	Neuro-QoL
Pan et al., 2021	CI	46	18	39.14	56.26 (6.69)	10.08 (2.45)	X	1.79 (1.18)	1.56 (0.41)	18.20 (8.22)	X	26	CCI
Purri et al., 2020	CI	153	18	21.65	68.25 (8.10)	16.55 (2.15)	X	6.40 (4.50)	X	21.35 (11.15)	X	53	Single question ^d
Siciliano et al., 2020	DEP	100	16	42.00	66.33 (9.15)	9.61 (4.16)	60.80 (9.66)	5.53 (3.04)	2.00 (0.40)	27.20 (10.08) ^e	545.04 (265.65)	15	MMQ
Sitek et al., 2011	X	45	16	42.23	64.98 (8.86)	11.86 (3.75)	56.58 (9.50)	10.50 (5.50)	2.50 (1.00)	20.33 (9.91)	801.11 (430.58)	X	SRSMF
Song et al., 2014	CI; DEP	54	16	66.66	65.06 (10.56)	11.54 (4.70)	X	2.69 (2.16)	1.70 (0.59)	X	313.00 (199.42)	56	Self-reported memory complaints
Woods et al., 2016	X	165	16	32.73	62.63 (8.80)	11.48 (1.60)	52.19 (9.50)	10.88 (7.00)	X	15.80 (5.30)	X	X	MAC-S
Xiao et al., 2021	CI	332	18	46.39	56.20 (4.70)	12.25 (1.75)	54.46 (4.76)	1.51 (0.41)	1.87 (0.12)	21.25 (3.75) ^e	X	23	MDS-UPDRS Question 1.1
Yang et al., 2022	CI	66	15	40.91	55.00 (8.15)	11.20 (3.55)	53.15 (8.30)	2.10 (1.60)	1.55 (0.45)	17.40 (8.90)	X	41	NMSQ Domain-5
Yoo et al., 2020	CI; DEP	215	18	X	X	X	X	X	X	X	X	38	CCI

Note: Data are reported as mean (standard deviation) or percentage; a, prevalence computed on the overall study sample free of objective cognitive impairment (n= 121); b, ‘Do you feel that you have a declining memory?’; c, ‘Over the past week have you had problems remembering things, following conversations, paying attention, thinking clearly, or finding your way around the house or in town?’; d, ‘Do you feel that your memory and thinking have gotten worse?’; e, motor symptoms assessed by MDS-UPDRS.

Abbreviations: Ex. Criteria, exclusion criteria; CI = Cognitive Impairment; DP = Depression; N, sample size; QS, Quality Score; HY = Hoehn and Yahr; UPDRS-III, Unified Parkinson’s Disease Rating Scale part III; LEDD, levodopa equivalent daily dose; SSCs, Subjective Cognitive Complaints; MAC-Q, Memory Assessment Clinics Questionnaire; CCI, Cognitive Complaint Interview; BRIEF-A, Behavior Rating Inventory of Executive Function—Adult Version; FAI, Forgetfulness Assessment Inventory; NMSQ, Non-Motor Symptoms Questionnaire; VAS, Visual Analogue Scale; MDS-UPDRS, Movement Disorder Society-Sponsored Revision of the Unified Parkinson’s Disease Rating Scale; MMQ, Multifactorial Memory Questionnaire; SCCQ-PD, Subjective Cognitive Complaints Questionnaire for Parkinson’s Disease; Neuro-QoL, Neuro-Quality of Life; PDQ-39, 39-item Parkinson’s disease Questionnaire.

Supplementary Material 4. Continued.

Author, year	Global cognition		Memory		Attention and WM		Language		Visuospatial abilities		Executive functions		GC Cognitive Score		Depression		Anxiety		Apathy		GC Neuropsychiatric Score	
	k	r	k	r	k	r	k	r	k	r	k	r	k	r	k	r	k	r	k	r	k	r
AIDakheel et al., 2019	3	0.12	1	0.22	1	0.16	2	0.16	X	X	1	0.19	9	0.17	X	X	X	X	X	X	X	X
Barbosa et al., 2019	1	0.22	X	X	X	X	X	X	X	X	X	X	1	0.22	1	0.29	1	0.12	1	0.29	3	0.23
Baschi et al., 2018	2	0.27	3	0.16	2	0.10	2	0.05	2	0.31	2	0.10	13	0.15	1	0.64	1	0.54	X	X	2	0.59
Castro et al., 2016	1	-0.15	X	X	X	X	1	-0.12	X	X	1	-0.07	3	-0.11	1	0.31	1	0.02	X	X	2	0.17
Chua et al., 2021	2	-0.16	2	0.15	2	-0.13	2	0.13	2	-0.14	2	0.2	12	-0.03	1	0.31	1	0.25	1	0.28	3	0.28
Dujardin et al., 2010	2	0.10	2	-0.09	2	-0.13	X	X	X	X	5	0.19	11	0.06	1	0.58	X	X	X	X	1	0.58
Dupoy et al., 2017	X	X	1	0.12	1	0.33	1	0.17	1	0.15	1	0.20	5	0.19	1	0.43	X	X	X	X	1	0.43
Erro et al., 2014	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1	0.08	1	-0.07	X	X	2	0.00
Galtier et al., 2018	1	0.32	9	0.19	5	0.43	1	0.32	2	0.09	3	0.36	21	0.27	1	0.04	X	X	X	X	1	0.04
Han et al., 2021	1	0.16	3	0.16	2	0.08	2	0.03	2	0.04	3	0.10	13	0.09	1	0.25	X	X	X	X	1	0.25
Hogue et al., 2019	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hong et al., 2012	1	-0.04	8	-0.04	2	0.09	3	0.02	1	0.05	5	0.22	20	0.05	1	0.04	X	X	X	X	1	0.04
Hong et al., 2014	1	0.09	2	0.07	2	0.10	1	0.00	1	-0.10	2	0.03	9	0.04	1	0.01	X	X	X	X	1	0.01
Hong et al., 2018	2	0.35	2	0.35	2	0.24	2	0.25	2	0.30	2	0.27	12	0.29	1	0.53	X	X	X	X	1	0.53
Jeong et al., 2016	3	0.17	X	X	X	X	X	X	X	X	X	X	3	0.17	X	X	X	X	X	X	X	X
Ko et al., 2021	2	0.48	2	0.35	2	0.34	2	0.32	2	0.32	2	0.28	12	0.35	1	0.47	X	X	X	X	1	0.47
Koster et al., 2015	X	X	2	0.42	2	0.20	X	X	X	X	5	0.17	9	0.23	1	0.15	1	0.71	X	X	2	0.43
Kudlicka et al., 2013	X	X	X	X	X	X	X	X	X	X	3	-0.06	3	-0.06	X	X	X	X	X	X	X	X
Leherner et al., 2014	1	0.15	4	0.29	6	0.16	5	0.04	X	X	15	0.05	31	0.15	1	0.32	X	X	X	X	1	0.32
Marino et al., 2009	1	0.36	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mills et al., 2016	11	0.07	2	0.15	X	X	X	X	X	X	X	X	11	0.07	X	X	X	X	X	X	X	X
Mills et al., 2020	X	X	2	0.13	X	X	X	X	X	X	X	X	2	0.13	8	0.80	X	X	X	X	1	0.80
Pan et al., 2021	2	0.04	3	0.02	10	0.18	2	0.11	2	-0.08	3	0.18	22	0.11	1	0.28	1	0.24	X	X	2	0.26
Purri et al., 2020	2	0.07	3	0.06	2	0.15	1	0.08	1	-0.03	5	0.08	14	0.08	1	0.22	X	X	X	X	1	0.22
Siciliano et al., 2020	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sitek et al., 2011	X	X	5	0.25	X	X	X	X	X	X	X	X	5	0.25	X	X	X	X	X	X	X	X
Song et al., 2014	3	0.31	X	X	X	X	X	X	X	X	X	X	3	0.31	X	X	X	X	X	X	X	X
Woods et al., 2016	16	0.16	X	X	X	X	X	X	X	X	X	X	16	0.16	X	X	X	X	X	X	X	X
Xiao et al., 2021	1	0.71	X	X	X	X	X	X	X	X	X	X	1	0.71	1	0.69	1	0.73	1	0.59	3	0.67
Yang et al., 2022	2	0.00	3	-0.02	8	0.09	2	0.00	2	0.11	3	0.13	20	0.06	1	0.32	1	0.33	X	X	2	0.32
Yoo et al., 2020	X	X	4	0.09	3	0.01	1	0.05	1	-0.03	2	0.03	11	0.04	1	0.34	X	X	X	X	1	0.34

Abbreviations: K, number of effect sizes; r, Pearson's product moment correlation coefficient; GC Cognitive Score, global composite cognitive score was computed by averaging the r-scores of each cognitive component; Global Composite Neuropsychiatric Score, global composite neuropsychiatric score was computed by averaging the r-scores of each mood component.