Supplementary Table S1. Overview of neurodegenerative disease characteristics.

Disease	Neuropsychological presentation	Main neuropathology	Protein aggregate(s)	Main anatomical vulnerability
Alzheimer's disease	Episodic memory[1] Language skills[1] Behaviour change[1] Orientational difficulties[2] Social behaviour change[2] Emotion perception [3] ToM[2]	Amyloid angiopathy[4] Neuritic and amyloid plaques[4] Neuropil threads[4] Neurofibrillary tangles[4]	Aβ[4] 3R + 4R tau[4]	Frontal and temporal lobes[4] Limbic structures[4] Basal forebrain[4]
Behavioural variant frontal temporal dementia	Executive dysfunction[5] Personality change[6] Social comportment disorder[5] Reduced social competencies[6] ToM[7]	Asymmetric white and grey matter degeneration[5] Neuronal cytoplasmic inclusions[4]	Tau[8] Straight filaments PHF[8] TDP-43[4]	Right hemisphere[5] Ventral frontal regions[5] Fronto-polar cortex[9]

Dementia with lewy bodies	Attention difficulties[10] Executive dysfunction[10] Episodic verbal memory[10] Apathy ToM	Lewy bodies[4] Lew neurites[4]	α-synuclein [11]	Cerebral cortex[4] Amygdala[4] Hippocampus[4] Substantia nigra[4]
Huntington's disease	Motor decline[12] Executive function[13] Working memory[14] Processing speed[14] Emotion recognition[14]	CAG expansion in the huntingtin gene[12]	Huntingdon nuclear inclusions[8]	Caudate and putamen gray matter change[15] Striatum[15] Corpus callosum[15]
Mild cognitive impairment	Isolated cognitive deficit in the absence of dementia[16] Isolated deficit of memory = aMCI[16] Executive dysfunction[16] ToM[16]	Precursor to AD development[16]	Tau[17]	Prefrontal lobe[16] Medial temporal lobe[16] Hippocampus[17] Amygdala[17]
Motor neuron disease –	Executive dysfunction[13] Behaviour change[13]	Upper and lower motor neuron loss[4]	TDP-43[4]	Motor cortex[4] Spinal cord and brainstem motor neurons[4]

Amyotrophic lateral sclerosis	Apathy[13]	Neuronal inclusions[4] Astrocytic hyaline inclusion[4]		Orbitofrontal cortex[13] Prefrontal cortex[13] Anterior cingulate[13]
Motor neuron disease – Spinal bulbar muscular atrophy	Weakening of bulbar, facial, and limb muscles[18] Attention difficulties[19] Executive dysfunction[19] Verbal memory[20] Communication[18]	Trinucleotide (CAG) repeat expansion in the first exon of the androgen receptor gene[21]	AR[18]	Primary motor cortex[18] Frontal lobe[18] Cerebellum[18] Brainstem[18]
Multiple Sclerosis	Motor decline[22] Executive dysfunction[23] ToM[24] Emotion perception[25]	Demyelination[26] Axonal damage and loss[26] Reactive gliosis[26] Inflammation[27]	Myelin basic protein[28]	CNS[26]
Parkinson's Disease	Motor disturbance[29] (i.e., rigidity, postural instability) Verbal learning memory[29]	Neuronal degeneration[30] Dopaminergic denervation[30]	α-synuclein[8]	Substantia nigra[30] Basal ganglia[29] Limbic system[29]

	Visuospatial processing[29]
	Emotional dysfunction[29]

Note. ToM = Theory of mind; CNS = Central nervous system; [1]Agrawal & Biswas, 2015, [2]Kessels *et al*. 2021, [3]Torres Mendonça De Melo Fádel *et al*. 2019, [4]Dugger & Dickson, 2017, [5]Irwin *et al*. 2018, [6]Rascovsky *et al*. 2011, [7]Adenzato *et al*. 2010, [8]Relja, 2004, [9]Torralva *et al*. 2009, [10]Hansen *et al*. 2021, [11]Schumacker *et al*. 2021, [12]Scahill *et al.* 2020, [13]Burke *et al*. 2017, [14]Labuschagne *et al.* 2016, [15]McColgan *et al*. 2018, [16]Poletti & Bonuccelli, 2013, [17]Moreau *et al*. 2015, [18]Di Rosa *et al*. 2015, [19]Soukup *et al*. 2009, [20]Guidetti *et al*. 1996, [21]Spada *et al*. 1991, [22]Lin *et al*. 2020, [23]Giazkoulidou *et al*. 2019, [24]Mike *et al*. 2013, [25]Radlak *et al*. 2021, [26]Reynolds *et al.* 2011, [27]Sobel & Moore, 2008, [28]Krugmann *et al*. 2020, [29] Parkash *et al.* 2016, [30] Dickson, 2018