

Supplementary Material S2. Assessment of cognitive measures.

The presence of PD-MCI single domain (i.e., at least 1.5 standard deviations below the norms on two tests within a single cognitive domain) and PD-MCI multiple domains (i.e., at least 1.5 standard deviations below the norms on at least one test in two or more cognitive domains)¹ was ascertained by a comprehensive (PD-MCI Level II) neuropsychological battery including two tests for each of the following five cognitive domains: *attention and working memory* (Trail Making Test or TMT part A^{2,3} and digit span backward^{4,5}), *executive functions* (Modified Card Sorting Test - number of achieved categories^{6,7} and letter fluency task^{8,9}), *visuospatial abilities* (copying drawings¹⁰ and Judgment of Line Orientation test^{11,12}), *language* (nouns denomination task and verbs denomination task¹³), and *memory* (Prose Recall Test^{14,15} and Rey's Auditory Verbal Learning Test - Delayed Free Recall^{9,16}). For each raw score on the cognitive tests, we generated a Z-score by subtracting this raw score from the normative mean and dividing it by the normative standard deviation. After that, a composite score for each of the five cognitive domains (i.e., Attention and Working Memory, Executive functions, Language, Memory, and Visuospatial abilities) was computed by averaging the Z-scores of tests assessing the same domain. PD-MCI participants were classified as nonamnestic (naMCI) or amnestic (aMCI), with the subtypes of aMCI single domain (i.e., abnormalities on two tests within memory domain, with other domains unimpaired) and aMCI multiple domains (i.e., abnormalities on at least one test in two or more cognitive domains, at least one of which investigated memory).^{17,18} As the cut-off of Standard Deviations (SD) was not fully delineated in the PD-MCI criteria and different cut-off's have been proposed (e.g., 1.5 SD by some and 2 SD by others),¹⁹ several reasons oriented us to use 1.5 SD. Firstly, the Italian normative data available for neuropsychological tests define an abnormal score as one which falls below approximately 5% of the normative population (i.e., $z = -1.65$); the Litvan et al.'s cut-off¹ closer to this percentage threshold is $z = -1.5$ SD ($\Delta = 0.15$) more than $z = -2$ SD ($\Delta = 0.35$). Therefore, the cut-off of $z = -1.5$ SD ensures the highest consistency with the Italian standard neuropsychological procedures. Secondly, a recent meta-analysis on the prevalence of PD-MCI in PD²⁰ showed that 1.5 SD is the most used cut-off (only

7 out of 41 studies considered in this meta-analysis used a cut-off of 2 SD), and our findings resulting from a cut-off of -1.5 SD might be better compared with previous evidence in this field.

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