

PD CogniCare

Trail-Making Test

TMT

		
Copyright Status	Domain Assessed	Administration Time
Unlicensed	Executive function	10 minutes

Description

The Trail-Making Test (TMT) is a common measure of executive function and attention.^{62, 63} Clients have a maximum of five (5) minutes to draw lines between ascending numbers, or between alternating numbers and letters, without lifting the pen or pencil from the page (see Figure 6). It is recommended by the MDS to assess cognitive abilities in both PD-MCI and PDD.^{3, 4}

Training and Administration

Part A (TMT-A) presents 25 numbered circles in random locations on a page. Clients need to connect the circles in order as quickly as possible, starting from 1. Part B (TMT-B) presents 25 circles with numbers from 1 – 13, and letters from A to L. These circles are located randomly on the page. Clients need to connect the circles as quickly as possible, alternating between numbers and letters (1 – A – 2 – B – 3 – C). The TMT is a timed test, although the test is terminated after four minutes if the client has not yet completed the task. If the client makes a mistake, the administrator can point out the error for the client to correct.

Scoring

The test is scored by the time taken to complete the sequence with the number of errors recorded. PD-MCI is indicated by taking longer than 33 seconds on Part A, and longer than 162 seconds on Part B to complete the sequence.³⁵



Validated in PD



Moderate reliability for
telehealth



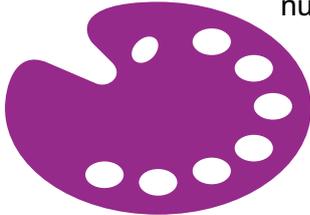
Alternative versions
available

Alternative Versions

Oral TMT: In the oral version, clients count from 1 – 25 (Part A), or counting between alternating letters and numbers from 1-A to 13 (Part B). Clients can be re-directed if they lose their place. These tasks are timed. The Oral TMT has not yet been validated in PD populations.



Colour Trails Test: This is a language-free version of the TMT. In Part A, clients connect numbered circles in order. In Part B, there are two sets of circles with numbers 2 – 25, coloured either pink or yellow. Clients need to connect the numbered circles alternating between colours (e.g., 1-pink, 2-yellow, 3-pink...). These tasks are timed. The Colour Trails.



PD Considerations

As the TMT requires drawing and is therefore reliant on motor abilities, test administrators may calculate the time difference between Part A and Part B to account for speeded motor demands by isolating the executive component.⁶⁴ While the oral TMT may be administered to minimise effects of motor impairment on test scores, only oral administration of Part B has been validated in PD populations.⁶⁵

Telehealth

TMT Part A and Part B have demonstrated good and moderate reliability, respectively, for direct-to-home videoconference administration in people living with PD.³³ Oral TMT performance, compared to traditional TMT, has demonstrated poor reliability for both phone call and videoconferencing modalities in a cohort of older adults with varying cognitive status.⁶⁶

Psychometric and Normative Data

Psychometric and normative data for the TMT are shown in Table 12 and Table 13 respectively.

Table 12 Psychometric Data for the TMT in PD-MCI

	Cutoff	Sens.	Spec.	PPV	NPV	AUC (95%CI)	ICC (95%CI)
Part A	33/32 secs	74	69	51	86	0.7 (0.61-0.81)	0.75 (0.55-0.87) ³³
Part B	162/161 secs	68	93	85	82	0.8 (0.70-0.87)	0.68 (0.34-0.87) ³³

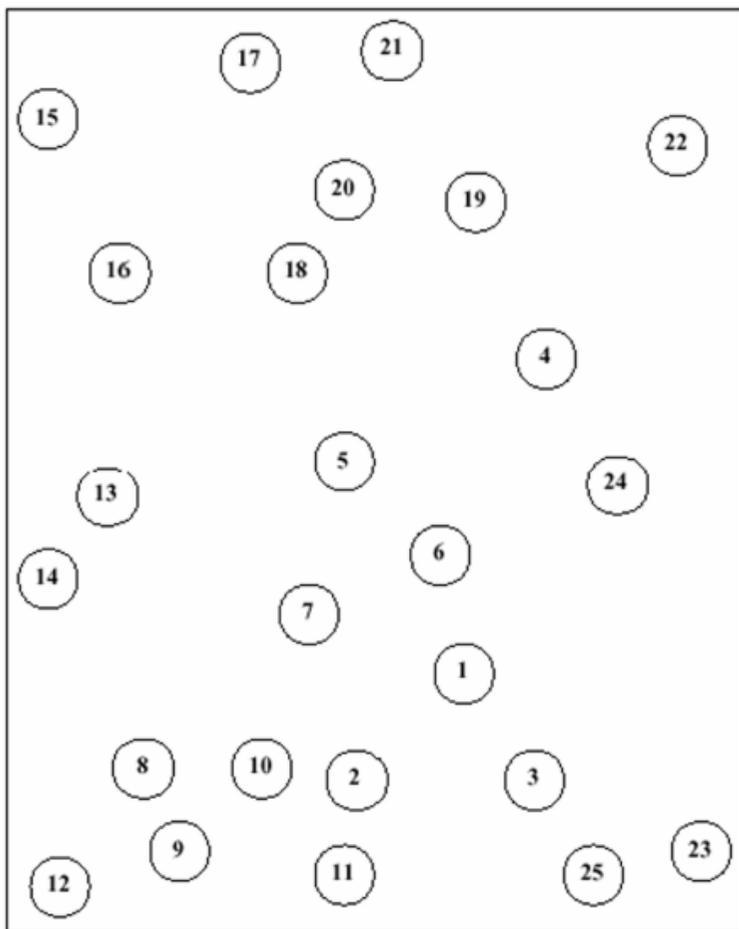
Table 13 Normative data for the TMT (New Zealand).⁶⁷

Age Group	N	Part A; Mean (SD)	Part B; Mean (SD)
60 – 69	77	37.69 (13.18)	89.03 (34.40)
70 – 74	83	38.61 (11.62)	93.00 (33.72)
75 - 79	68	48.21 (17.95)	113.66 (56.54)
80 +	44	61.81 (33.11)	154.48 (72.70)

Figure 6 Part A and B of the Trail-Making Test

Trail Making Test Part A

Patient's Name: _____ Date: _____



Trail Making Test Part B

Patient's Name: _____ Date: _____

