Annex 1 Glasgow coma scale

Test item	Display	Score
Eye movement	Spontaneous reaction	4
	Responds to shout	3
	Responds to pain stimulus	2
	No response	1
Motor response	Moves on command	6
	Localizes to painful stimuli	5
	Flexion/Withdrawal to painful stimuli	4
	Abnormal flexion to painful stimuli (decorticate response)	3
	Extension to painful stimuli (decerebrate response)	2
	Makes no movements	1
Verbal response	Oriented	5
	Verbal confusion	4
	Inaccurate expression	3
	Difficult to understand	2
	No response	1

The lowest possible score is 3, while the highest is 15. < 12 is classified as severe hepatic encephalopathy

Annex 2 Psychometric hepatic encephalopathy score

1. Number connection test (NCT), divided into two types, A and B.

NCT-A: Randomly distribute the numbers 1 to 25 on paper, and ask subjects to connect 1 to 25 in sequence with a pen. Abnormal (healthy person mean + 2 × standard deviation): age < 35 years old, time > 34.3 s; 35 to 44 years old, time > 45.7 s; 45 to 54 years old, time > 52.8 s; 55 to 64 years old, time > 61.9 s.
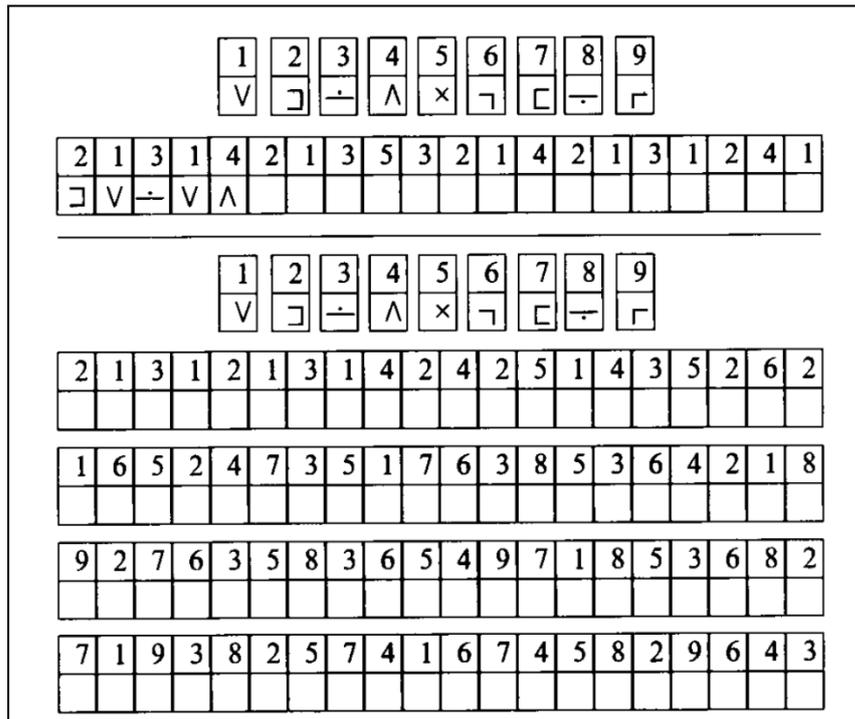

b
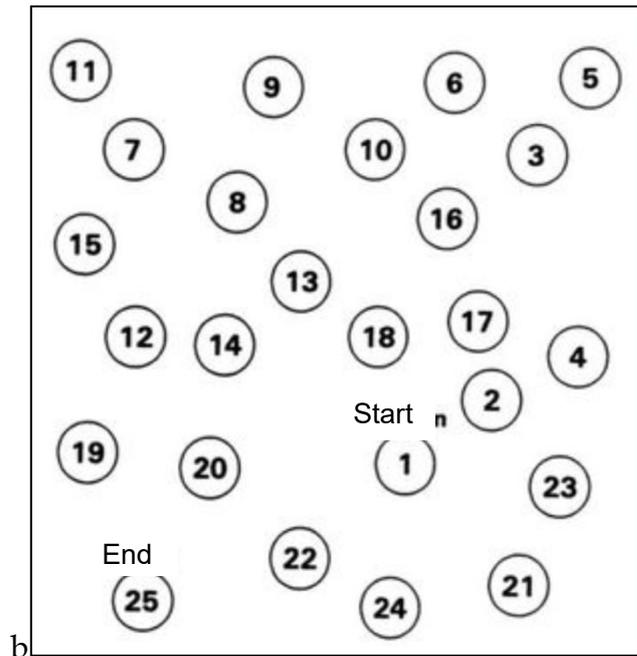
NCT-B: Connect numbers 1 to 13 to letters A to L for example 1-A, 2-B, *etc*. If an error is made while connecting, correct it immediately and then continue to the next connection. Record the time required, including the time it takes to correct the error.
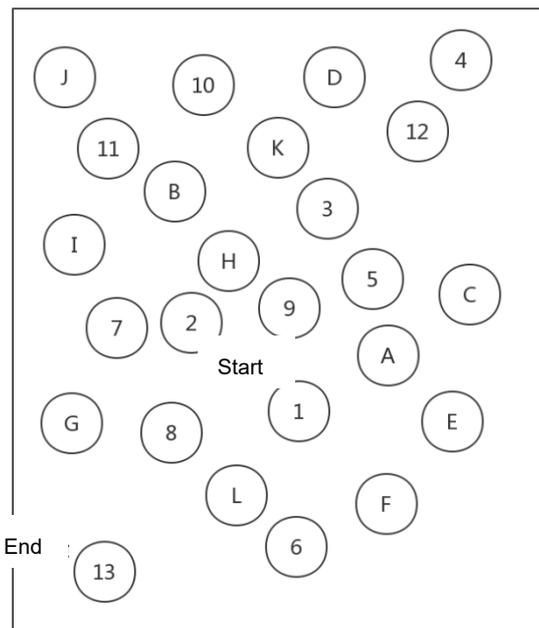
Modified NCT‑B: Much research in China uses the modified NCT‑B, which replaces the English letters "A through L" with Chinese numbers "one through twelve", making it suitable for China's national conditions. Therefore, the modified NCT-B connects Arabic numbers 1 to 13 and Chinese numbers one to twelve, for example 1-one, 2-two, *etc*. After the subject clearly understands how to do the test, start timing and tell the subject to complete the test as quickly and correctly as possible. The tester needs to pay close attention and check for errors, if an error is found, immediately point out the correct answer and continue to the next connection. The score is the time to complete given in seconds (including time to correct errors).
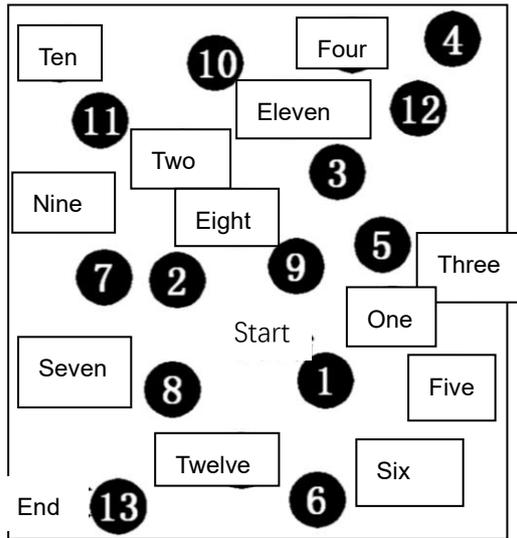
2. Digit-symbol test: Carry out the test in accordance with the Wechsler Adult Intelligence Scale (WAIS-RC). The numbers 1 to 9 are paired with nine simple symbols. The subject has 90 seconds to sequentially fill in the symbol under the corresponding number. Let subjects familiarize themselves with the numbers and symbols and complete the practice test to ensure they understand. After the test is completed, the administrator will score the test: Each correct answer is 1 point, a reversed symbol is 0.5 points, and an error is 0 points. The DST primarily tests perceptual movement speed, visual scanning, and comprehensive visual motor ability. Calculate the total score within 90 s. Abnormal (x-2s): Age < 35 years old, score < 40.5 points; 35-44 years old, score < 35 points; 45-54 years old, score < 28.5 points; 55-64 years old, score < 26 points.

1	2	3	4	5	6	7	8	9
V	⅃	÷	∧	×	¬	⊏	÷	Γ

2	1	3	1	4	2	1	3	5	3	2	1	4	2	1	3	1	2	4	1
⅃	V	÷	V	∧															

1	2	3	4	5	6	7	8	9
V	⅃	÷	∧	×	¬	⊏	÷	Γ

2	1	3	1	2	1	3	1	4	2	4	2	5	1	4	3	5	2	6	2

1	6	5	2	4	7	3	5	1	7	6	3	8	5	3	6	4	2	1	8

9	2	7	6	3	5	8	3	6	5	4	9	7	1	8	5	3	6	8	2

7	1	9	3	8	2	5	7	4	1	6	7	4	5	8	2	9	6	4	3

3. Line-tracing test: There is a continuous, wide path on the paper. There are straight segments, turns and curves. Use a pen to trace the path from the bottom of the page to the top without crossing or touching the borderlines of the path. The paper cannot be moved and the pen cannot be lifted from the paper. Minimize errors. Record time from start to finish, including wasted time. Also calculate points for errors (touched the border but did not cross it, 1 point; crossed the border but not the page edge, 2 points; off the edge of the paper, 3 points; calculate the total). This test primarily measures general perceptual discrimination ability. Final total score = time spent × (1 + number of errors/100).
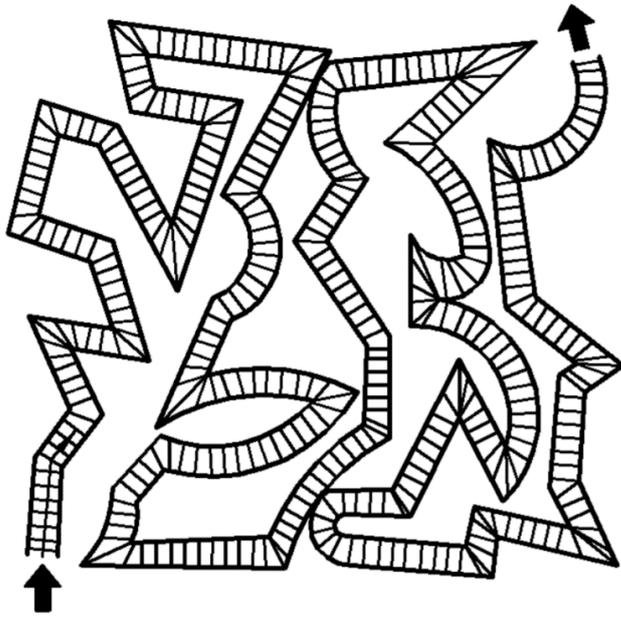
4. Serial dotting test subjects serially dot in 10 rows of circles as quickly as possible, hitting the centers of the circles as much as possible. First dot in the first two lines as practice, then start dotting in the rest and calculate the time spent. The score is the time to complete given in seconds (including time to correct errors). This test primarily measures flexibility and perceptual discrimination.
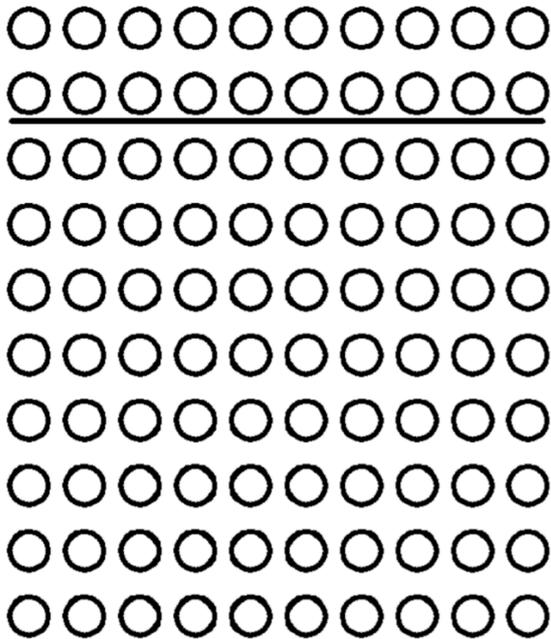
Annex 3 Stroop Smartphone app test method

1. Download the APP from the Apple App store.

2. The test is divided into two parts: the off phase and the on phase. Two simulation exercises are done before starting. (1) Off phase test: One neutral stimulus symbol (#) appears in one of the colors red, green, or blue, and you react as soon as possible. Press the corresponding color button at the bottom of the screen. The color buttons at the bottom of the screen are arranged randomly. In each round you choose 10 times, and the time required and your performance on the completed test will be recorded. Once you make a mistake by pressing the wrong color, the round ends, it automatically stops and a new round starts. You must complete five rounds correctly. The number of errors made before completing the test will be recorded. (2) On stage test: Nine out of 10 stimuli are inconsistent. In this part you must press the color of the font, even though the word's meaning is inconsistent with the font color; for example, the word red may appear in blue font, and the correct button is the blue button, not the red one. Five rounds must be completed correctly after the official start.

3. After the test, the test software will automatically record all the data: (1) Total off phase time: the time required to complete five rounds; (2) The number of rounds required to complete five rounds of the off phase correctly; (3) Total on phase time: The time required to complete five rounds; (4) The number of rounds required to complete five rounds of the on phase correctly; (5) The total on phase time + the total off phase time.