McSCI-S Manuscript Supplementary Tables and Figures

The McCusker Subjective Cognitive Impairment Inventory (McSCI): A novel measure of perceived cognitive decline*

Appendices Content:

*The McSCI-S has not been translated to any other language. While such efforts are welcomed, they should be in consultation with the corresponding authors and after appropriate permissions are granted. Other forms of translation (e.g., computerised, web-based apps and online, paper and pencil, or audio) require permission from the corresponding authors to maintain the consistency and psychometric properties of the measure.

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Table Supp-1. The McSCI-S cognitive domains and their allocated items*.			
Cognitive domains		**Items**	**Description**
1	Language Skills (LS)	1, 8, 18, 25, 33, 36	Expressive and receptive, word finding, and reading skills
2	Memory Abilities (MA)	2, 5, 9, 13, 15, 17, 21, 23, 26, 30, 35, 42, 45	Prospective, retrospective, episodic and semantic memory
3	Attention and Concentration (AC)	3, 11, 19, 27, 37, 41	Basic attention, concentration, and divided attention
4	Executive Functions (EF)	4, 10, 16, 20, 24, 28, 32, 39, 44	Judgment, problem solving, organizing, planning and initiating, decision-making, multi-tasking, handling emergencies, motor programming, and impulsivity
5	Orientation (O)	6, 7, 14, 22, 29, 40	Time, place, person
6	Visuoconstruction abilities (VC)	12, 31, 34, 38, 43, 46	Visuoperception, route finding, and directions
*The cognitive domains are presented based on the order of appearance of their first item in the questionnaire. The orders and arrangements of the items and domains are randomly assigned to prevent systematic response and potential biases.			

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Table Supp-2. Latent trait z-scores most likely to correspond to observed McSCI scores.

Recoded McSCI Score*	IRT z-score	Percentile Rank
0	< -3.29	< 0.1%
1	-3.29	0.1%
2	-2.73	0.3%
3	-2.40	0.8%
4	-2.15	1.6%
5	-1.96	2.5%
6	-1.80	3.6%
7	-1.66	4.8%
8	-1.54	6.2%
9	-1.43	7.6%
10	-1.33	9.2%
11	-1.24	10.7%
12	-1.16	12.3%
13	-1.08	14.0%
14	-1.00	15.9%
15	-0.93	17.6%
16	-0.86	19.5%
17	-0.80	21.2%
18	-0.74	23.0%
19	-0.68	24.8%
20	-0.62	26.8%
21	-0.57	28.4%
22	-0.51	30.5%
23	-0.46	32.3%
24	-0.41	34.1%
25	-0.36	35.9%
26	-0.31	37.8%
27	-0.27	39.4%
28	-0.22	41.3%
29	-0.17	43.3%
30	-0.13	44.8%
31	-0.09	46.4%
32	-0.04	48.4%
33	0.00	50.0%
34	0.04	51.6%
35	0.08	53.2%
36	0.12	54.8%
37	0.16	56.4%
38	0.20	57.9%
39	0.24	59.5%
40	0.28	61.0%
41	0.32	62.6%
42	0.36	64.1%
43	0.40	65.5%
44	0.44	67.0%
45	0.47	68.1%
46	0.51	69.5%

47	0.55	70.9%
48	0.58	71.9%
49	0.62	73.2%
50	0.66	74.5%
51	0.69	75.5%
52	0.73	76.7%
53	0.76	77.6%
54	0.80	78.8%
55	0.84	80.0%
56	0.87	80.8%
57	0.91	81.9%
58	0.94	82.6%
59	0.98	83.6%
60	1.01	84.4%
61	1.04	85.1%
62	1.08	86.0%
63	1.11	86.7%
64	1.15	87.5%
65	1.18	88.1%
66	1.22	88.9%
67	1.25	89.4%
68	1.28	90.0%
69	1.32	90.7%
70	1.35	91.1%
71	1.38	91.6%
72	1.42	92.2%
73	1.45	92.6%
74	1.49	93.2%
75	1.52	93.6%
76	1.55	93.9%
77	1.59	94.4%
78	1.62	94.7%
79	1.65	95.1%
80	1.69	95.4%
81	1.72	95.7%
82	1.75	96.0%
83	1.79	96.3%
84	1.82	96.6%
85	1.85	96.8%
86	1.89	97.1%
87	1.92	97.3%
88	1.95	97.4%
89	1.99	97.7%
90	2.02	97.8%
91	2.05	98.0%
92	2.09	98.2%
93	2.12	98.3%
94	2.15	98.4%
95	2.19	98.6%
96	2.22	98.7%

97	2.26	98.8%
98	2.29	98.9%
99	2.33	99.0%
100	2.36	99.1%
101	2.39	99.2%
102	2.43	99.2%
103	2.47	99.3%
104	2.50	99.4%
105	2.54	99.4%
106	2.57	99.5%
107	2.61	99.5%
108	2.65	99.6%
109	2.68	99.6%
110	2.72	99.7%
111	2.76	99.7%
112	2.80	99.7%
113	2.84	99.8%
114	2.88	99.8%
115	2.92	99.8%
116	2.96	99.8%
117	3.00	99.9%
118	3.04	99.9%
119	3.08	99.9%
120	3.13	99.9%
121	3.17	99.9%
122	3.22	99.9%
123	3.26	99.9%
124	3.31	100.0%
125	3.36	100.0%
126	3.41	100.0%
127	3.46	100.0%
128	3.52	100.0%
129	3.57	100.0%
130	3.63	100.0%
131	3.69	100.0%
132	3.75	100.0%
133	3.82	100.0%
134	3.89	100.0%
135	3.96	100.0%
136	4.04	100.0%
137	4.12	100.0%
138	4.22	100.0%
139	4.32	100.0%
140	4.42	100.0%
141	4.55	100.0%
142	4.69	100.0%
143	4.85	100.0%
144	5.04	100.0%
145	5.29	100.0%
146	5.64	100.0%

147	6.22	100.0%

Note. The IRT-z score represents the level of the latent trait that is expected to produce the observed McSCI score.

* The Recoded McSCI score is generated after collapsing the item response categories into a smaller number of bins for items 4, 11, 13, 14, 16, 18, 19, 20, 21, 22, 24, 25, 27, 29, 31, 32, 33, 35, 37, 38, 39, 40, 41, 42, and 46 (see Table Supp-4).

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Table Supp-3. Demographic information for the preliminary study.

	Age	Education years	MAC-Q	MOCA	McSCI_Total	McSCI_Factor Score
N	385	384	383	340	382	227
Mean	71.61	12.97	26.18	26.04	36.23	-.0119
Std. Deviation	7.62	3.02	3.60	2.54	23.78	.954
Minimum	39.00	7.00	13.00	17.00	.00	-2.74
Maximum	97.00	21.00	35.00	30.00	115.00	2.86

MoCA=The Montreal Cognitive Assessment; MAC-Q= The Memory Complaint Questionnaire; McSCI-S= The McCusker Subjective Cognitive Impairment Inventory- Self Report

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Figure Supp-1. The reliability of a latent subjective cognitive decline factor continuum.

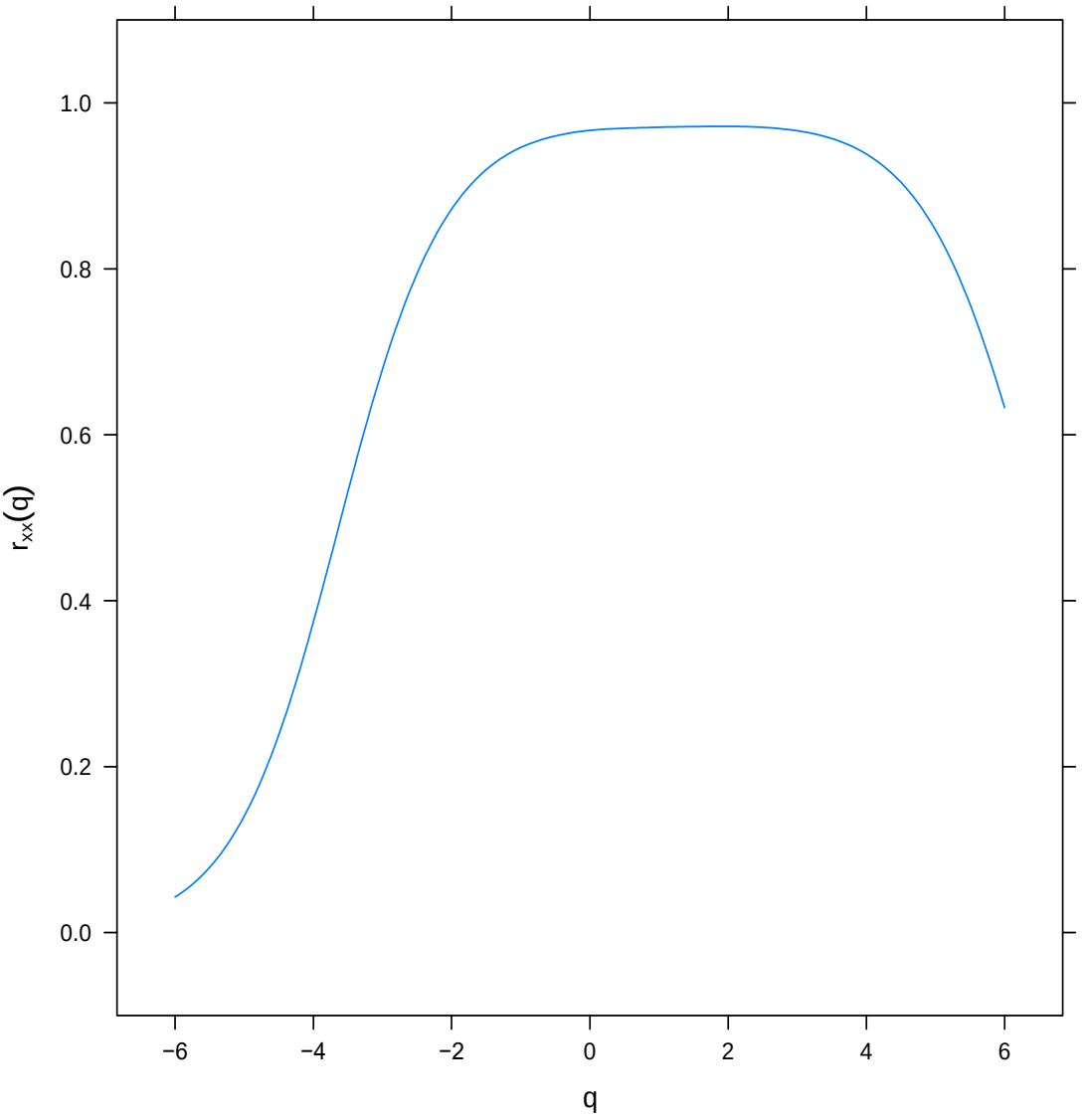

Figure Supp-1. Legend:

The McSCI-S Factor Reliability as a Function of Underlying Theta (Latent SCD). The x-axis represents the level of the latent trait (SCD), with higher scores representing more complaints. The y-axis represents the internal consistency reliability of the McSCI-S IRT score, with the plotted line representing how the reliability of the McSCI-S IRT score changes as a function of the underlying trait.

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Fig. Supp-1-A: The McSCI-S information and standard error in relation to the range of the underlying SCD[1] trait.

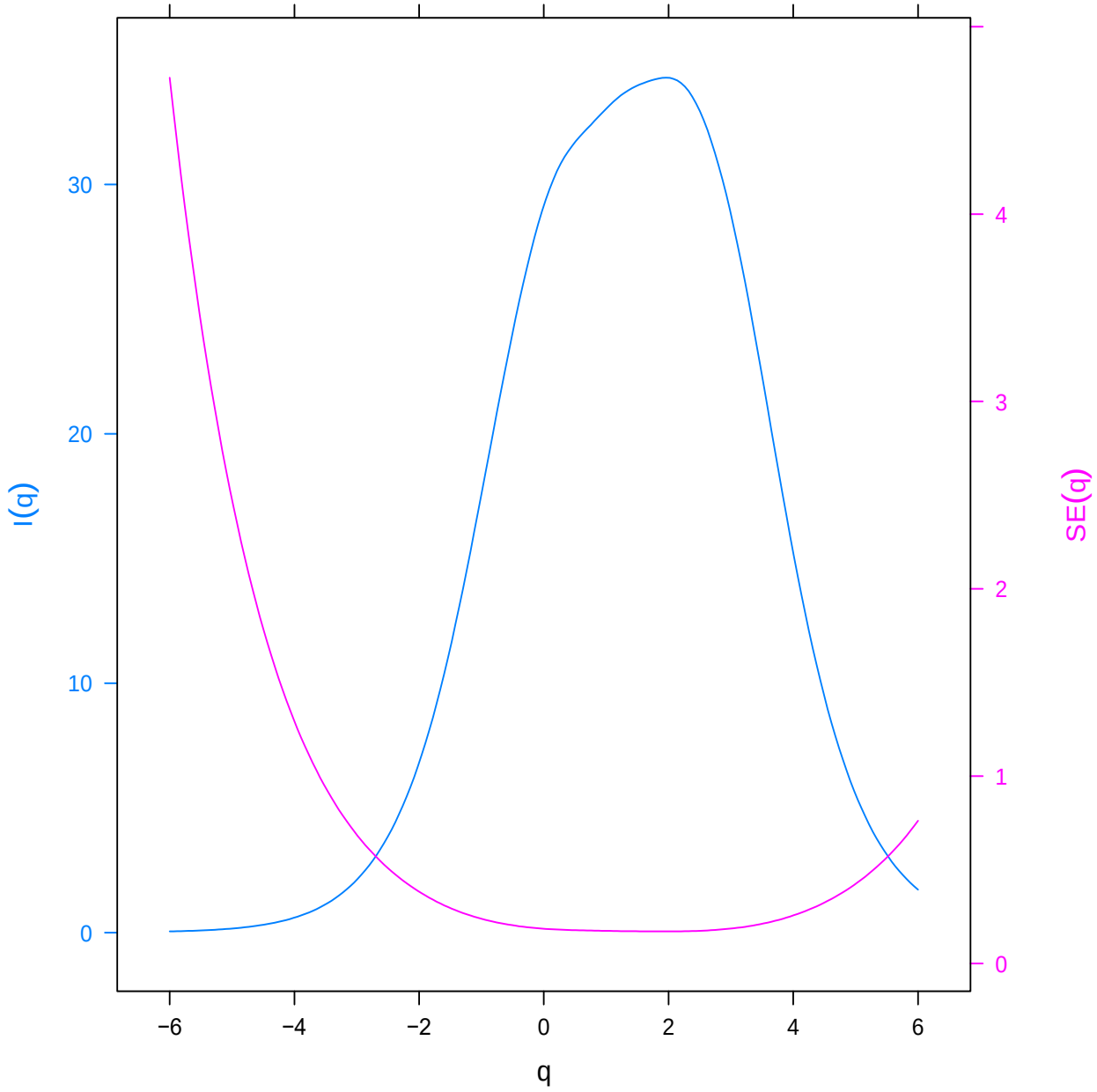

Figure Supp-1-A. Legend:

Test Information and Standard Error as a Function of Theta (Latent SCD). The x-axis represents the level of the latent trait (SCD), with higher scores representing more complaints. The right vertical axis, which corresponds to the blue curve, represents the total test information from IRT analysis of the McSCI-S. The left vertical axis, which corresponds to the pink curve, represents the standard error of the IRT score at a given trait level. 1. SCD: Subjective cognitive decline.

Fig. Supp-2. The item response category characteristic curves for McSCI-S items.

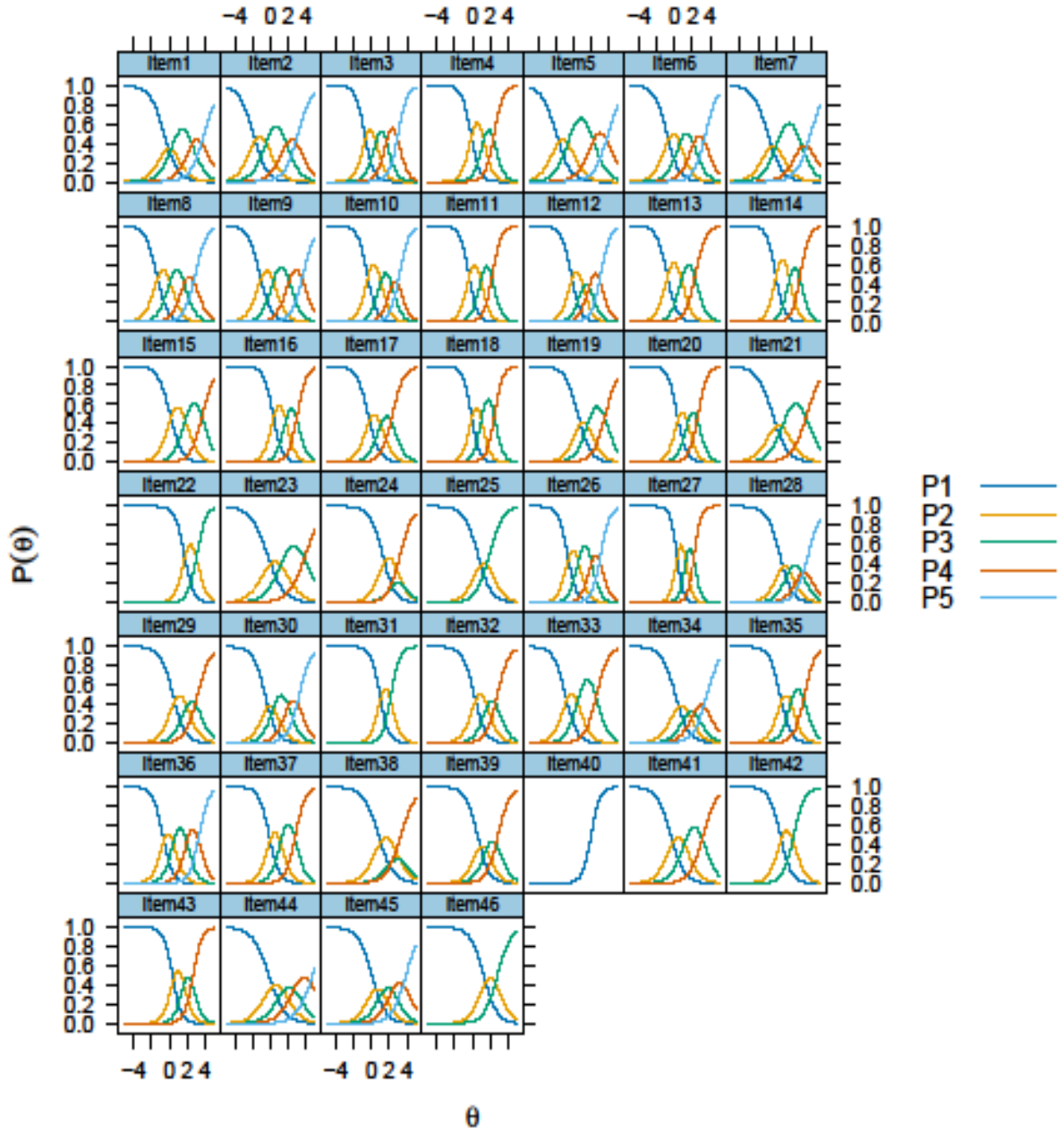

Figure Supp-2. Legend:

Figure Supp-2 shows item response category characteristic curves for each of the 46 McSCI items, providing a visual depiction of how each of the items' response options operate as a function of the underlying trait being measured.

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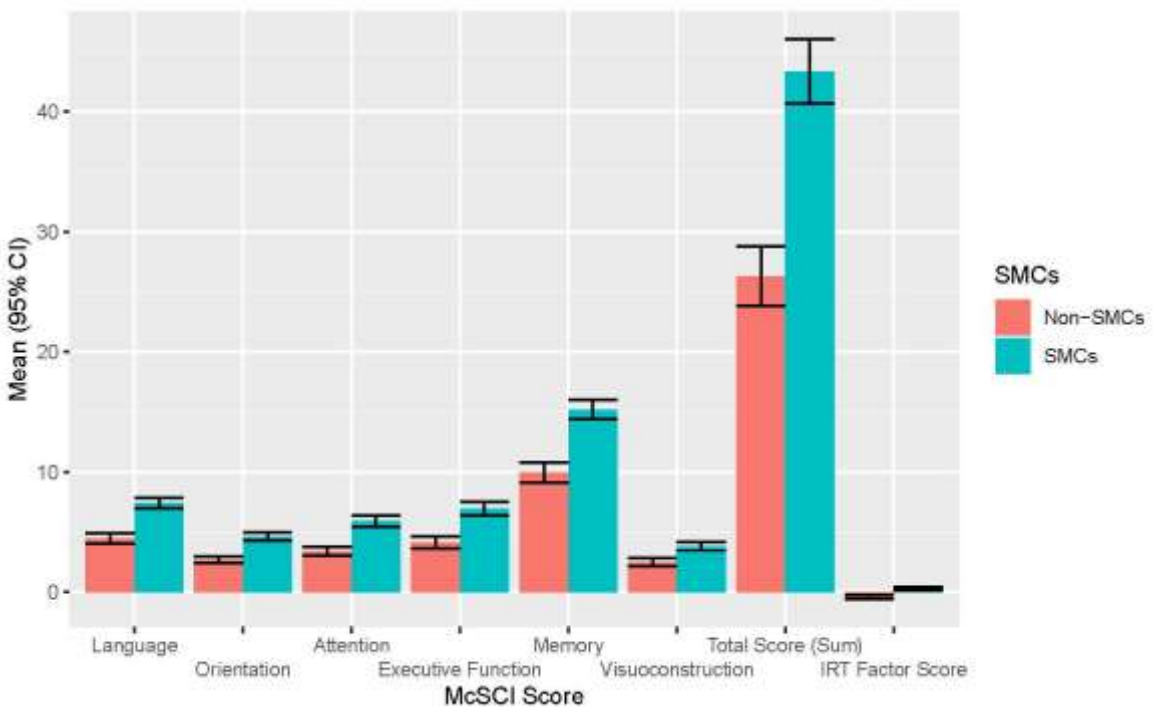
Fig. Supp-3. The performance of subjective memory complainers (SMC) and non-complainers (NMCs) on the McSCI-S various subscales, McSCI-s total and Factor Scores.



McSCI: The McCusker Subjective Cognitive Impairment Inventory (McSCI)- Self Report.

Figure Supp-3. Legend:

Based on the MAC-Q cut-off score >25 participants were divided into non- memory complainers (Non-SMCs, left hand column in each comparison) and subjective memory complainers (SMCs; right-hand column in each comparison).

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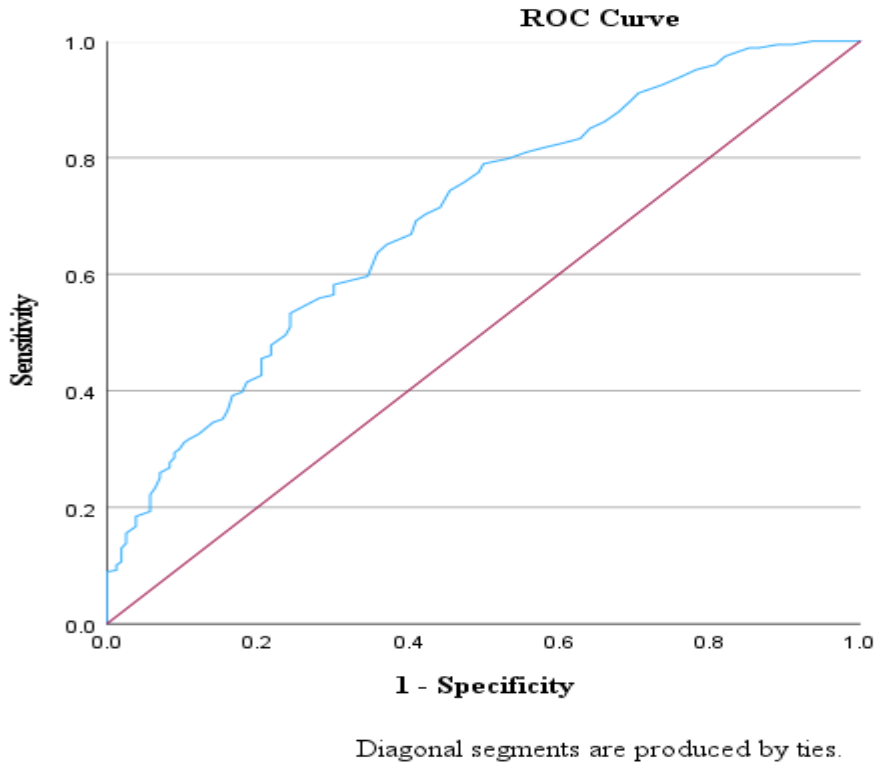
Fig. Supp-4: The receiver operating characteristic (ROC) curve for the McSCI-S.

To identify the optimal cut-off score for the McSCI-S, the ROC analysis was conducted. The participants were classified into two groups based on the absence or presence of SMCs using the MAC_Q cut-off point of 25 and above. This ROC analysis resulted in an area under the curve (AUC) = .700 (95% CI: .651 to .749).



McSCI-S	N (503)
Positive [a]	347
Negative [b]	156
Missing	64

Larger values of the test result variable(s) indicate stronger evidence for a positive actual state.

a. The positive actual state is MAC-Q score of 25 and above.
b. The Negative actual state is MAC-Q score of 24 and below.

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Table Supp-4. Coordinates of the ROC Curve (n=503).

Coordinates of the Curve

Test Result Variable(s): Total for the McSCI

Positive if Greater Than or Equal To[a]	Sensitivity	1 - Specificity	Youden index J= (specificity + sensitivity) − 1
-1.00	1.000	1.000	0
.50	1.000	.968	0.032
1.50	1.000	.955	0.045
2.50	1.000	.942	0.058
3.50	1.000	.936	0.064
4.50	.994	.910	0.084
5.50	.994	.891	0.103
6.50	.988	.865	0.123
7.50	.988	.853	0.135
8.50	.974	.821	0.153
9.50	.960	.808	0.152
10.50	.951	.782	0.169
11.50	.939	.763	0.176
12.50	.925	.737	0.188
13.50	.911	.705	0.206
14.50	.902	.699	0.203
15.50	.879	.679	0.2
16.50	.862	.660	0.202
17.50	.850	.641	0.209
18.50	.833	.628	0.205
19.50	.824	.603	0.221
20.50	.818	.583	0.235
21.50	.810	.558	0.252
22.50	.798	.532	0.266
23.50*	**.790**	**.500**	**0.29**
24.50	.775	.494	0.281
25.50	.758	.474	0.284
26.50	.744	.455	0.289
27.50	.715	.442	0.273
28.50	.703	.423	0.28
29.50	.692	.410	0.282
30.50	.669	.404	0.265
31.50	.651	.372	0.279
32.50	.637	.359	0.278

33.50	.597	.346	0.251
34.50	.582	.301	0.281
35.50	.565	.301	0.264
36.50	.559	.282	0.277
37.50	.533	.244	0.289
38.50	.510	.244	0.266

a. The smallest cut-off value is the minimum observed test value minus 1, and the largest cut-off value is the maximum observed test value plus 1. All the other cut-off values are the averages of two consecutive ordered observed test values.

*proposed McSCI-S cut-off score that provides a reasonable sensitivity and spcificity.

Scores above 39.50 had sensitivity of <.50 and 1-specificity of <.24 and therefore are not presented here.