

## Supplementary material

Table S1. Clinical information for Case A at baseline, post-treatment and the two follow-ups

	Case A										
	Baseline raw score	Baseline mean	Post- treatment raw score	Post- treatment mean	3 months raw score	3 months mean	1 year raw score	1 year mean	Baseline – post- treatment RCI	Baseline – 3 months RCI	Baseline – 1 year RCI
GAF	42	-	<b>59</b>	-	42	-	42	-	<b>2.58*</b>	.00	.00
PANSS <sup>a</sup>											
Total	63		<b>36</b>	-	57	-	60	-	<b>3.77*</b>	.84	.42
Positive	17	2.8/7	<b>7</b>	1.2/7	18	3/7	18	3/7	<b>3.77*</b>	-.38	-.38
Negative	17	2.4/7	<b>8</b>	1.1/7	<b>12</b>	1.7/7	14	2/7	<b>2.90*</b>	1.61	.97
Cognitive/Disorganization	14	2.8/7	13	2.6/7	13	2.6/7	14	2.8/7	.36	.36	.00
Depression/Anxiety	10	2.5/7	<b>4</b>	1/7	8	2/7	8	2/7	<b>2.96*</b>	.99	.99
Excitability/Hostility	5	1.3/7	4	1/7	6	1.5/7	6	1.5/7	.47	-.47	-.47

\* RCI  $\geq 1.64$

GAF = Global Assessment of Functioning; PANSS = Positive and Negative Syndrome Scale

<sup>a</sup> PANSS RCIs are multiplied by -1. Therefore, a significant RCI indicates a decrease in the severity of the clinical symptoms.

Scores in bold for the PANSS indicate a clinical change after the treatment (a change of at least 25% compared to baseline). For the GAF, a score in bold indicates that the patient reached the remission criteria (59)

Table S2. ToM, cognition and metacognition raw scores, percentile ranks and RCIs for Case A at baseline, post-treatment and the two follow-ups

	Baseline raw score	Post- treatment raw score	3 months raw score	1 year raw score	Baseline percentile	Post- treatment percentile	3 months percentile	1 year percentile	Baseline – post- treatment RCI	Baseline – 3 months RCI	Baseline – 1 year RCI
<i>A. Social cognition</i>											
<i>ToM - Combined Stories Task (/52)</i>	25	30	38	35	<1	.10	13	3	1.26	<b>3.28*</b>	<b>2.52*</b>
<i>B. Cognition</i>											
<i>Working memory – Digit span</i>	16	18	11	13	25	50	5	9	.81	-2.03	-1.22
<i>Working memory – Spatial span</i>	14	14	15	10	25	25	25	2	.00	.53	-2.14
<i>Episodic memory – CVLT delayed recall</i>	7	9	6	7	7	16	2	2	1.06	-.53	.00
<i>Episodic memory – RCFT delayed recall</i>	6.5	6	5.5	7	1	1	1	1	-.10	-.21	.10
<i>Selective attention – CPT omission</i>	0	5	13	10	79	24	1	1	-.83	-2.16	-1.66
<i>Selective attention – CPT commission</i>	19	16	26	22	27	41	6	13	.57	-1.33	-.57
<i>Sustained attention – Hit reaction time</i>	.01	.03	.03	.03	59	21	14	12	-1.05	-1.05	-1.05
<i>Sustained attention – Hit standard error</i>	.04	.12	.10	.14	44	6	10	3	-1.51	-1.13	-1.88
<i>Reasoning – Matrix<sup>a</sup></i>	9	10	11	8	37	50	63	25	.61	1.22	-.61
<i>Cognitive flexibility – WCST – Total</i>	3	2	1	1	2	1	1	1	-.73	-1.46	-1.46
<i>Categories</i>											
<i>Inhibition – Stroop 3</i>	44.6	47.75	54.6	51	63	63	37	50	-.26	-.84	-.54
<i>Planning / Organization – TOL – Total</i>	2	1	2	1	19	8	19	8	-.63	.00	-.63
<i>Correct</i>											
<i>Metacognition regulation – BRIEF self GEC<sup>b</sup></i>	56	51	47	43	27	47	63	75	.51	.91	1.32
<i>Metacognition regulation – BRIEF informant GEC<sup>b</sup></i>	89	64	63	65	<.01	8	9	6	<b>3.27*</b>	<b>3.41*</b>	<b>3.14*</b>
<i>Metacognition knowledge – SSTICS</i>	21	18	16	14	62	73	79	83	.77	1.28	<b>1.79*</b>

ToM = Theory of mind score of the Combined Stories Task; CVLT = California Verbal Learning Test –II; RCFT = Rey Complex Figure Test; CPT = Continuous Performance Test – II; WCST = Wisconsin Card Sorting Test -128 card; TOL = Tower Of London ; BRIEF – self GEC = Executive Global Index – self-report; BRIEF – informant GEC = Executive Global Index – informant report; SSTICS = Subjective Scale to Investigate Cognition in Schizophrenia

<sup>a</sup> Scaled scores with a mean of 10 and a standard deviation of 3.

<sup>b</sup> T scores with a mean of 50 and a standard deviation of 10.

Percentiles in bold indicate a clinical change after the treatment for the cognitive and metacognitive measures (a percentile that surpasses the 16<sup>th</sup> percentile compared to baseline)

\* RCI  $\geq 1.64$

Table S3. Clinical information for Case B at baseline, post-treatment and the two follow-ups

	Case B										
	Baseline raw score	Baseline mean	Post- treatment raw score	Post- treatment mean	3 months raw score	3 months mean	1 year raw score	1 year mean	Baseline – post- treatment RCI	Baseline – 3 months RCI	Baseline – 1 year RCI
GAF	38	-	40	-	43	-	43	-	.30	.76	.76
PANSS <sup>a</sup>											
Total	87	3.29/7	66	-	68	-	68	-	<b>2.94*</b>	<b>2.66*</b>	<b>2.66*</b>
Positive	32	5.3/7	<b>24</b>	4/7	27	4.5/7	27	4.5/7	<b>3.01*</b>	<b>1.88*</b>	<b>1.88*</b>
Negative	19	2.7/7	18	2.6/7	18	2.6/7	18	2.6/7	.32	.32	.32
Cognitive/Disorganization	20	4/7	<b>12</b>	2.4/7	<b>12</b>	2.4/7	<b>12</b>	2.4/7	<b>2.88*</b>	<b>2.88*</b>	<b>2.88*</b>
Depression/Anxiety	8	2/7	7	1.8/7	7	1.8/7	7	1.8/7	.49	.49	.49
Excitability/Hostility	8	2/7	<b>5</b>	1.3/7	<b>4</b>	1/7	<b>4</b>	1/7	1.40	<b>1.86*</b>	<b>1.86*</b>

\* RCI  $\geq$  1.64

GAF = Global Assessment of Functioning; PANSS = Positive and Negative Syndrome Scale

<sup>a</sup> PANSS RCIs are multiplied by -1. Therefore, a significant RCI indicates a decrease in the severity of the clinical symptoms.

Scores in bold for the PANSS indicate a clinical change after the treatment (a change of at least 25% compared to baseline). For the GAF, a score in bold indicates that the patient reached the remission criteria (59)

Table S4. ToM, cognition and metacognition raw scores, percentile ranks and RCIs for Case B at baseline, post-treatment and the two follow-ups

	Baseline raw score	Post- treatment raw score	3 months raw score	1 year raw score	Baseline Percentile	Post – treatment percentile	3 months percentile	1 year Percentile	Baseline – post- treatment RCI	Baseline – 3 months RCI	Baseline – 1 year RCI
<i>A. Social cognition</i>											
<i>ToM</i> - Combined Stories Task (/52)	23	30	32	31	<.10	.10	1	.20	<b>1.77*</b>	<b>2.27*</b>	<b>2.02*</b>
<i>B. Cognition</i>											
<i>Working memory</i> – Digit span	12	11	12	11	5	5	9	5	-.41	.00	-.41
<i>Working memory</i> – Spatial span	13	13	10	15	16	16	2	<b>25</b>	.00	-1.60	1.07
<i>Episodic memory</i> – CVLT delayed recall	6	9	7	5	2	16	7	1	1.60	.53	-.53
<i>Episodic memory</i> – RCFT delayed recall	7	16.5	14	19.5	1	4	1	14	<b>1.97*</b>	1.45	<b>2.59*</b>
<i>Selective attention</i> – CPT omission	1	1	3	NA	70	70	46	NA	.00	-.33	NA
<i>Selective attention</i> – CPT commission	27	17	23	NA	5	<b>36</b>	13	NA	<b>1.90*</b>	.76	NA
<i>Sustained attention</i> – Hit reaction time	.02	.01	.01	NA	23	32	43	NA	.53	.53	NA
Block change											
<i>Sustained attention</i> – Hit standard error	.13	.06	.04	NA	5	<b>19</b>	<b>29</b>	NA	1.32	<b>1.69*</b>	NA
Block change											
<i>Reasoning</i> – Matrix <sup>a</sup>	9	7	10	11	37	16	50	63	-1.22	.61	1.22
<i>Cognitive flexibility</i> – WCST – Total	2	.00	.00	1	1	1	1	1	-1.46	-1.46	-.73
Categories											
<i>Inhibition</i> – Stroop 3	48	40	46	48	63	84	63	63	.67	.17	.00
<i>Planning / Organization</i> – TOL – Total	2	5	5	3	19	60	60	33	<b>1.89*</b>	<b>1.89*</b>	.63
Correct											
<i>Metacognition regulation</i> – BRIEF self GEC <sup>b</sup>	54	44	46	53	33	72	66	37	1.01	.81	.10
<i>Metacognition regulation</i> – BRIEF informant GEC <sup>b</sup>	65	64	60	64	6	8	16	8	.13	.66	.13
<i>Metacognition knowledge</i> – SSTICS	15	25	20	34	81	52	66	27	-2.55	-1.28	-4.85

ToM = Theory of mind score of the Combined Stories Task; CVLT = California Verbal Learning Test –II; RCFT = Rey Complex Figure Test; CPT = Continuous Performance Test – II; WCST = Wisconsin Card Sorting Test -128 card; TOL = Tower Of London ; BRIEF – self GEC = Executive Global Index – self-report; BRIEF – informant GEC = Executive Global Index – informant report; SSTICS = Subjective Scale to Investigate Cognition in Schizophrenia

<sup>a</sup> Scaled scores with a mean of 10 and a standard deviation of 3.

<sup>b</sup> T scores with a mean of 50 and a standard deviation of 10.

Percentiles in bold indicate a clinical change after the treatment for the cognitive and metacognitive measures (a percentile that surpasses the 16<sup>th</sup> percentile compared to baseline)

\* RCI ≥ 1.64

Table S5. Clinical information for Case C at baseline, post-treatment and the two follow-ups

	Case C										
	Baseline raw score	Baseline mean	Post- treatment raw score	Post- treatment mean	3 months raw score	3 months mean	1 year raw score	1 year mean	Baseline – post- treatment RCI	Baseline – 3 months RCI	Baseline – 1 year RCI
GAF	45	-	45	-	45	-	NA	-	.00	.00	NA
PANSS <sup>a</sup>											
Total	52	1.9/7	49	-	49	-	NA	-	.42	.42	NA
Positive	8	1.3/7	8	1.3/7	8	1.3/7	NA	NA	.00	.00	NA
Negative	22	3.1/7	20	2.9/7	20	2.9/7	NA	NA	.65	.65	NA
Cognitive/Disorganization	11	2.2/7	10	2/7	10	2/7	NA	NA	.36	.36	NA
Depression/Anxiety	7	1.8/7	7	1.8/7	7	1.8/7	NA	NA	.00	.00	NA
Excitability/Hostility	4	1/7	4	1/7	4	1/7	NA	NA	.00	.00	NA

\* RCI  $\geq$  1.64

GAF = Global Assessment of Functioning; PANSS = Positive and Negative Syndrome Scale

<sup>a</sup> PANSS RCIs are multiplied by -1. Therefore, a significant RCI indicates a decrease in the severity of the clinical symptoms.

Scores in bold for the PANSS indicate a clinical change after the treatment (a change of at least 25% compared to baseline). For the GAF, a score in bold indicates that the patient reached the remission criteria (59)

Table S6. ToM, cognition and metacognition raw scores, percentile ranks and RCIs for Case C at baseline, post-treatment and the two follow-ups

	Baseline raw score	Post- treatment raw score	3 months raw score	1 year raw score	Baseline percentile	Post- treatment percentile	3 months percentile	1 year percentile	Baseline – post- treatment RCI	Baseline – 3 months RCI	Baseline – 1 year RCI
<i>A. Social cognition</i>											
<i>ToM - Combined Stories Task (/52)</i>	37	44	46	NA	8	51	51	NA	<b>1.77*</b>	<b>2.27*</b>	NA
<i>B. Cognition</i>											
<i>Working memory – Digit span</i>	28	15	17	NA	25	25	37	NA	-5.27	-4.46	NA
<i>Working memory – Spatial span</i>	15	13	11	NA	25	16	5	NA	-1.07	-2.14	NA
<i>Episodic memory – CVLT delayed recall</i>	11	10	11	NA	32	7	50	NA	-.53	.00	NA
<i>Episodic memory – RCFT delayed recall</i>	8	3	3.5	NA	1	1	1	NA	-1.04	-.93	NA
<i>Selective attention – CPT omission</i>	17	5	5	NA	1	<b>24</b>	<b>24</b>	NA	<b>1.99*</b>	<b>1.99*</b>	NA
<i>Selective attention – CPT commission</i>	27	23	20	NA	5	13	<b>23</b>	NA	.76	1.33	NA
<i>Sustained attention – Hit reaction time</i>	-.02	.00	.01	NA	77	51	38	NA	-1.05	-1.58	NA
Block change											
<i>Sustained attention – Hit standard error</i>	.02	.06	.07	NA	44	22	19	NA	-.75	-.94	NA
Block change											
<i>Reasoning – Matrix<sup>a</sup></i>	4	3	10	NA	2	1	<b>50</b>	NA	-.61	<b>3.65*</b>	NA
<i>Cognitive flexibility – WCST – Total</i>	4	6	6	NA	11	<b>16</b>	<b>16</b>	NA	1.46	1.46	NA
Categories											
<i>Inhibition – Stroop 3</i>	50	47	53	NA	50	63	37	NA	.25	-.25	NA
<i>Planning / Organization – TOL – Total</i>	4	3	1	NA	47	33	8	NA	-.63	-1.89	NA
Correct											
<i>Metacognition regulation – BRIEF self GEC<sup>b</sup></i>	50	61	68	NA	50	14	3	NA	-1.11	-1.82	NA
<i>Metacognition regulation – BRIEF informant GEC<sup>b</sup></i>	51	68	66	NA	47	3	5	NA	-2.23	-1.96	NA
<i>Metacognition knowledge – SSTICS</i>	2	11	8	NA	97	86	90	NA	-2.30	-1.53	NA

ToM = Theory of mind score of the Combined Stories Task; CVLT = California Verbal Learning Test –II; RCFT = Rey Complex Figure Test; CPT = Continuous Performance Test – II; WCST = Wisconsin Card Sorting Test -128 card; TOL = Tower Of London ; BRIEF – self GEC = Executive Global Index – self-report; BRIEF – informant GEC = Executive Global Index – informant report; SSTICS = Subjective Scale to Investigate Cognition in Schizophrenia

<sup>a</sup> Scaled scores with a mean of 10 and a standard deviation of 3.

<sup>b</sup> T scores with a mean of 50 and a standard deviation of 10.

Percentiles in bold indicate a clinical change after the treatment for the cognitive and metacognitive measures (a percentile that surpasses the 16<sup>th</sup> percentile compared to baseline)

\* RCI  $\geq 1.64$

Table S7. Clinical information for Case D at baseline, post-treatment and the two follow-ups

	Case D										
	Baseline raw score	Baseline mean	Post-treatment raw score	Post-treatment mean	3 months raw score	3 months mean	1 year raw score	1 year mean	Baseline – post-treatment RCI	Baseline – 3 months RCI	Baseline – 1 year RCI
GAF	48	-	48	-	NA	NA	NA	NA	.00	NA	NA
PANSS <sup>a</sup>											
Total	71	2.7/7	62	-	NA	NA	NA	NA	1.26	NA	NA
Positive	13	2.2/7	14	2.3/7	NA	NA	NA	NA	-.38	NA	NA
Negative	24	3.4/7	22	3.1/7	NA	NA	NA	NA	.65	NA	NA
Cognitive/Disorganization	16	3.2/7	<b>12</b>	2.4/7	NA	NA	NA	NA	1.44	NA	NA
Depression/Anxiety	14	3.5/7	<b>10</b>	2.5/7	NA	NA	NA	NA	<b>1.98*</b>	NA	NA
Excitability/Hostility	4	1/7	4	1/7	NA	NA	NA	NA	.00	NA	NA

\* RCI  $\geq$  1.64

GAF = Global Assessment of Functioning; PANSS = Positive and Negative Syndrome Scale

<sup>a</sup> PANSS RCIs are multiplied by -1. Therefore, a significant RCI indicates a decrease in the severity of the clinical symptoms.

Scores in bold for the PANSS indicate a clinical change after the treatment (a change of at least 25% compared to baseline). For the GAF, a score in bold indicates that the patient reached the remission criteria (59)

Table S8. ToM, cognition and metacognition raw scores, percentile ranks and RCIs for Case D at baseline, post-treatment and the two follow-ups

	Baseline raw score	Post- treatment raw score	3 months raw score	1 year raw Score	Baseline percentile	Post- treatment percentile	3 months percentile	1 year percentile	Baseline – post- treatment RCI	Baseline – 3 months RCI	Baseline – 1 year RCI
<i>A. Social cognition</i>	39	44	47	50	16	51	75	91	1.26	<b>2.02*</b>	<b>2.78*</b>
<i>ToM - Combined Stories Task (/52)</i>											
<i>B. Cognition</i>											
<i>Working memory – Digit span</i>	16	18	20	20	37	50	75	75	.81	1.62	1.62
<i>Working memory – Spatial span</i>	20	18	18	16	84	63	63	50	-1.07	-1.07	-2.14
<i>Episodic memory – CVLT delayed recall</i>	14	14	16	16	70	70	94	93	.00	1.06	1.06
<i>Episodic memory – RCFT delayed recall</i>	11	20	22	17.5	1	<b>24</b>	<b>38</b>	10	<b>1.86*</b>	<b>2.28*</b>	1.35
<i>Selective attention – CPT omission</i>	0	1	1	.00	79	70	70	79	-.17	-.17	.00
<i>Selective attention – CPT commission</i>	11	14	10	16	63	48	71	35	-.57	.19	-.95
<i>Sustained attention – Hit reaction time</i>	.05	.02	-.01	.04	3	<b>25</b>	<b>62</b>	9	1.58	<b>3.16*</b>	.53
Block change											
<i>Sustained attention – Hit standard error</i>	.03	.00	-.03	.04	38	53	62	33	.56	1.13	-.19
Block change											
<i>Reasoning – Matrix<sup>a</sup></i>	9	13	10	13	37	84	50	84	<b>2.43*</b>	.61	<b>2.43*</b>
<i>Cognitive flexibility – WCST – Total</i>	6	6	6	6	16	16	16	16	.00	.00	.00
Categories											
<i>Inhibition – Stroop 3</i>	66	64	54	56	16	16	<b>50</b>	<b>37</b>	.17	1.00	.84
<i>Planning / Organization – TOL – Total</i>	4	1	.00	5	40	9	1	51	-1.89	-2.52	.63
Correct											
<i>Metacognition regulation – BRIEF self GEC<sup>b</sup></i>	60	59	59	NA	16	<b>18</b>	<b>18</b>	NA	.10	.10	NA
<i>Metacognition regulation – BRIEF informant GEC<sup>b</sup></i>	56	52	52	NA	27	45	45	NA	.52	.52	NA
<i>Metacognition knowledge – SSTICS</i>	41	36	37	NA	14	<b>19</b>	<b>18</b>	NA	1.28	1.02	NA

ToM = Theory of mind score of the Combined Stories Task; CVLT = California Verbal Learning Test –II; RCFT = Rey Complex Figure Test; CPT = Continuous Performance Test – II; WCST = Wisconsin Card Sorting Test -128 card; TOL = Tower Of London ; BRIEF – self GEC = Executive Global Index – self-report; BRIEF – informant GEC = Executive Global Index – informant report; SSTICS = Subjective Scale to Investigate Cognition in Schizophrenia

<sup>a</sup> Scaled scores with a mean of 10 and a standard deviation of 3.

<sup>b</sup> T scores with a mean of 50 and a standard deviation of 10.

Percentiles in bold indicate a clinical change after the treatment for the cognitive and metacognitive measures (a percentile that surpasses the 16<sup>th</sup> percentile compared to baseline)

\* RCI ≥ 1.64