# Supplementary Material

**Items of the pantomime test**

Example items: hat, watering can

Test items: comb, hammer, pen, key, cigarette, knife, needle, salt shaker, piano, telephone, bottle, flat iron, glass, toothbrush

**Image acquisition parameters**

Structural imaging data were obtained on a 1.5 T Avanto scanner (n = 17) or a 3 T Trio scanner (n = 73) (Siemens, Healthcare, Erlangen Germany) with an eight-channel head coil.

Diffusion weighted image (DWI): 23 slices, matrix = 128 x 128 pixel, voxel size = 1.8 x 1.8 x 5 mm, repetition time = 3.1 s, echo time = 79 ms, flip angle = 90, six diffusion-encoding gradient directions with a b-factor of 1000 s/mm2

FLAIR (fluid attenuated inversion recovery) image: 23 slices, matrix = 256 x 256 pixel, voxel size = 0.94 x 0.94 x 5.00 mm, repetition time = 9000 ms, echo time = 93.0 ms, flip angle = 140°

T1 anatomical image: 176 slices, matrix = 256 x 256 pixel, voxel size = 1 x 1 x 1 mm, repetition time = 2200 ms, echo time = 2.15 ms, flip angle = 12°

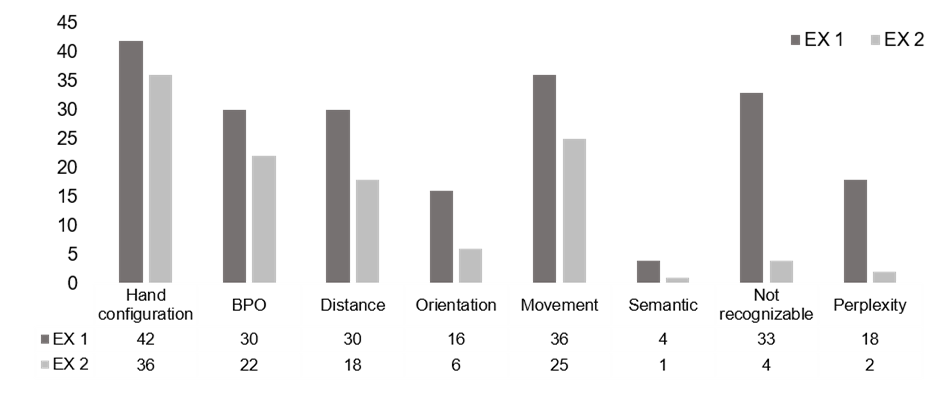
**Supplementary Table 1**: Correlations between age, lesion size, clinical scores and apraxia test scores in the acute and chronic stage (Spearman-Rho)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | Acute Examination (Ex 1)  (Spearman-Rho) | | | | Chronic Examination (Ex 2)  (Spearman-Rho) | | |
|  | Meaningless Imitation | | Pantomime Production | Pantomime  Concept | Meaningless Imitation | | Pantomime Production | Pantomime  Concept |
| Age (y)  acute examination (Ex1) | -0.356\*\* | | -0.300\*\* | -0.178 | -0.464\*\* | | -0.291\*\* | -0.202 |
| Lesion volume (ml) | -0.392\*\* | | -0.128 | -0.550\*\* | -0.318\*\* | | -0.278\*\* | -0.292\*\* |
| NIH stroke scale on admission | -0.305\*\* | | -0.192 | -0.312\*\* | -0.248\* | | -0.134 | -0.184 |
| NIH stroke scale on discharge | -0.404\*\* | | -0.236\* | -0.398\*\* | -0.180 | | -0.317\*\* | -0.169 |
| NIH stroke scale on chronic examination (Ex2) | 0.001 | | -0.172 | -0.204 | 0.016 | | -0.241 | -0.272 |
| modified Ranking Scale on discharge | -0.333\*\* | | -0.243\* | -0.515\*\* | -0.247\* | | -0.330\*\* | -0.272\*\* |
| modified Ranking Scale on chronic examination (Ex2) | -0.035 | | -0.189 | -0.147 | 0.030 | | -0.170 | -0.258 |
| Meaningless Imitation (EX 1) | 1.000 | | 0.360\*\* | 0.561\*\* | 0.579\*\* | | 0.222\* | 0.259\* |
| Pantomime Production (EX 1) | 0.360\*\* | | 1.000 | 0.321\*\* | 0.277\*\* | | 0.341\*\* | 0.213\* |
| Pantomime Concept  (EX 1) | 0.561\*\* | | 0.321\*\* | 1.000 | 0.372\*\* | | 0.382\*\* | 0.337\*\* |
| Meaningless Imitation (EX 2) | 0.579\*\* | | 0.277\*\* | 0.372\*\* | 1.000 | | 0.321\*\* | 0.282\*\* |
| Pantomime Production (EX 2) | 0.222\* | | 0.341\*\* | 0.382\*\* | 0.321\*\* | | 1.000 | 0.131 |
| Pantomime Concept  (EX 2) | 0.259\* | | 0.213\* | 0.337\*\* | 0.282\*\* | | 0.131 | 1.000 |
| \* *p < 0.05;* \*\* *p < 0.01* | | | | | | | | |

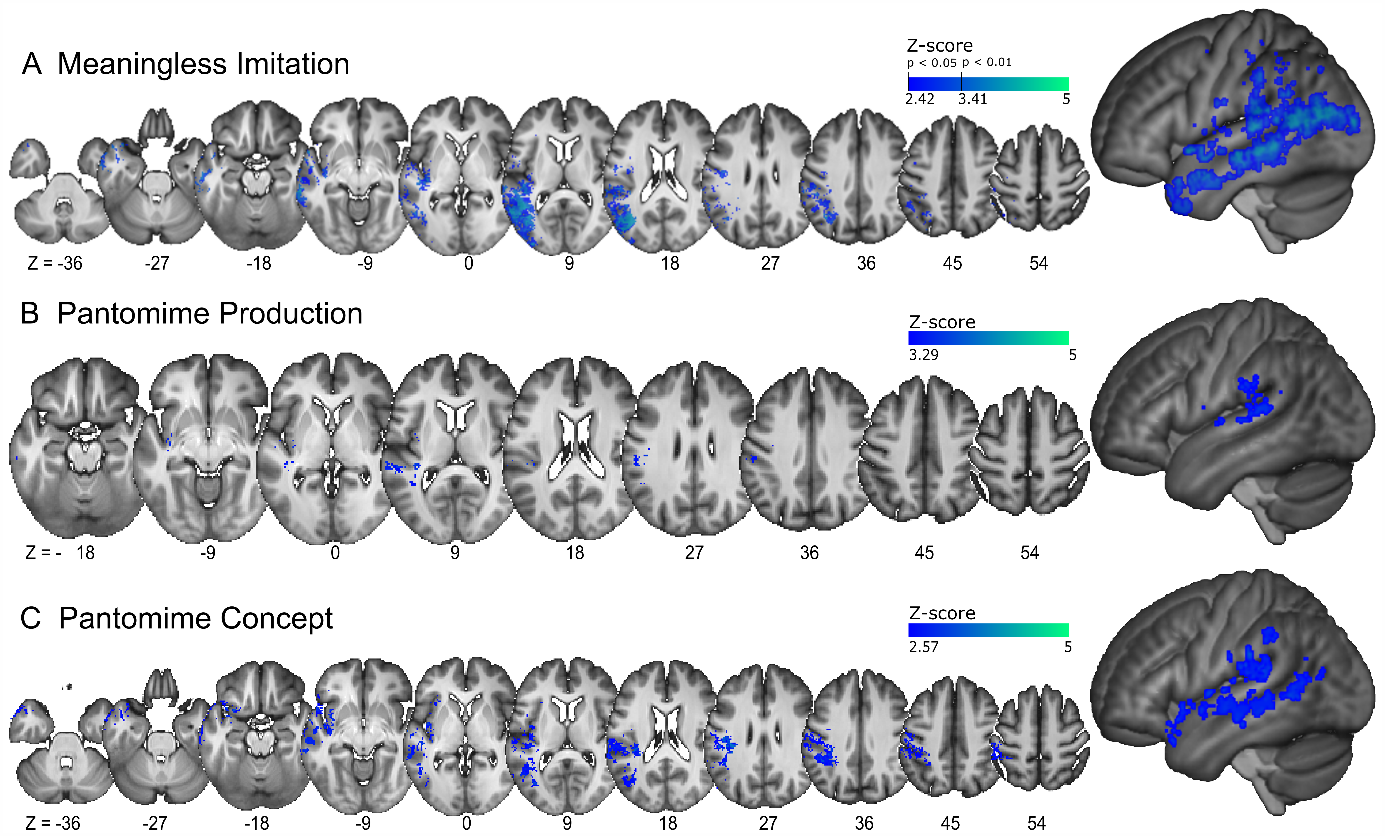
**Supplementary Table 2**: Comparison of age, lesion size and clinical scores between patient groups (unimpaired - recovered – impaired) at the chronic Examination (Ex 2)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Kruskal-Wallis-Test | | | | |
|  | Meaningless Imitation | Pantomime Production | | Pantomime Concept | |
| Age (y), acute examination (Ex1) | H(2) = 13.402,  *p* = 0.001\*\* | H(2) = 8.832,  *p* = 0.012\* | | H(2) = 4.990,  *p* = 0.082\* | |
| Lesion volume (ml) | H(2) = 7.736,  *p* = 0.021\* | H(2) = 3.219,  *p* = 0.200 | | H(2) = 22.674,  *p* < 0.001\*\*\* | |
| NIH stroke scale on admission | H(2) = 4.598,  *p* = 0.100 | H(2) = 3.838,  *p* = 0.147 | | H(2) = 6.087,  *p* = 0.048\*\* | |
| NIH stroke scale on discharge | H(2) = 6.698,  *p* = 0.035\* | H(2) = 7.691,  *p* = 0.021\* | | H(2) = 12.009,  *p* = 0.002\*\* | |
| NIH stroke scale on chronic examination (Ex2) | H(2) = 0.911,  *p* = 0.634 | H(2) = 1.563,  *p* = 0.458 | | H(2) = 1.563,  *p* = 0.458 | |
| modified Ranking Scale on discharge | H(2) = 3.463,  *p* = 0.177 | H(2) = 6.851,  *p* = 0.033\* | | H(2) = 20.052,  *p* < 0.001\*\*\* | |
| modified Ranking Scale on chronic examination (Ex2) | H(2) = 0.216,  *p* = 0.898 | | H(2) = 2.457,  *p* = 0.293 | | H(2) = 2.648,  *p* = 0.266 | |
| \**p* < 0.05; \*\* *p* < 0.01, \*\*\**p* < 0.001 | | | | | |

**Supplementary Figure 1**

**Supplement Figure 1:** Bar diagrams show the number of patients with a single error type in the acute (Examination 1, EX 1, dark grey) and chronic (Examination 2, EX 2, light grey) examination. BPO: Body part as object

**Supplementary Figure 2**

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**Supplement Figure 2**: Results of the mass-univariate voxel-based lesion-symptom mapping (VLSM) analysis for Meaningless Imitation (A), Pantomime Production errors (B), and Pantomime Concept errors (C) in the chronic stage (Examination 2). Results are presented at a threshold of *p* < 0.05 FDR corrected for multiple comparisons. The threshold of *p* < 0.01 is additionally indicated if reached.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Supplementary Table 3**  Standard mass-univariate VLSM analysis | | Mean center of cluster (XYZ) | | | | |
| Meaningless Imitation | | |  |  | |  |
|  | Left inferior parietal lobe | -46.0 | -38.0 | | 36.0 | |
|  | Left inferior temporal gyrus | -63.0 | -26.0 | | -17.0 | |
|  | Left middle occipital gyrus | -35.0 | -93.0 | | 7.0 | |
|  | Left middle temporal gyrus | -65.0 | -24.0 | | -15.0 | |
|  | Left postcentral gyrus | -62.0 | -14.0 | | 21.0 | |
|  | Left superior temporal gyrus | -50.0 | -8.0 | | -9.0 | |
| Pantomime Production | | |  |  | |  |
|  | Left superior temporal gyrus | -48.0 | -12.0 | | 3.0 | |
|  | Left supramarginal gyrus | -50.0 | -27.0 | | 22.0 | |
| Pantomime Concept | | |  |  | |  |
|  | Left middle temporal gyrus | -48.0 | -56.0 | | 0.0 | |
|  | Left superior temporal gyrus | -65.0 | -38.0 | | 16.0 | |
|  | Left supramarginal gyrus | -44.0 | -47.0 | | 27.0 | |