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| **Supplementary Table 1** Brain Activation Peaks of Significant Group Differences BN versus HCBN corrected for Depression and SSRI |
|  |  |  |  |  |  |  |
| **Anatomical Region** | **H** | **k** | **x** | **y** | **z** | **t** |
| **BN > HCBN depression corrected** |  |  |  |  |  |  |
|  White matter | L | 1 | -36 | -32 | -6 | 5.08 |
|  Middle Temporal Gyrus/temporal pole | L | 3 | -52 | 2 | -26 | 5.04 |
|  Medial PFC/frontal pole | R | 6 | 14 | 58 | 26 | 5.02 |
|  Hippocampus | L | 1 | -34 | -34 | -10 | 4.90 |
| **BN > HCBN SSRI corrected** |  |  |  |  |  |  |
|  Middle Temporal Gyrus | R | 9 | 58 | -36 | 0 | 5.33 |
|  Medial PFC/frontal pole | R | 11 | 14 | 56 | 26 | 5.05 |

Note: Threshold p < .05 corrected for multiple comparisons at the cluster level (voxel level: p < .005, t > 2.60). H = hemisphere; k = cluster size; L = left; R = right.

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| **Supplementary Table 2** Brain Activation Peaks of Significant Group Differences BN versus AN corrected for age |
|  |  |  |  |  |  |  |
| **Anatomical Region** | **H** | **k** | **x** | **y** | **z** | **t** |
| **Interactions BN-HCBN > ANT1-HCAN age corrected** |  |  |  |  |  |  |
|  Middle Temporal Gyrus | R | 262 | 48 | -22 | -8 | 6.14 |
|  Medial PFC | R | 76 | 46 | 36 | -10 | 5.82 |
|  Posterior PFC | R | 19 | 8 | 18 | 64 | 5.54 |
|  Medial PFC/frontal pole | R | 36 | 14 | 58 | 26 | 5.53 |
|  Medial Temporal Gyrus/temporal pole | R | 30 | 50 | 12 | -26 | 5.34 |
|  Medial Temporal Gyrus/temporal pole | L | 5 | -56 | 2 | -14 | 5.22 |
|  Superior Temporal Gyrus | R | 11 | 48 | -40 | 24 | 5.12 |
|  Medial PFC | R | 5 | 42 | 26 | -16 | 4.93 |
| **Interactions BN-HCBN > ANT1-HCAN age corrected** |  |  |  |  |  |  |
|  Medial PFC/frontal pole | R | 18 | 14 | 58 | 26 | 5.61 |
|  Medial Temporal Gyrus/temporal pole | R | 12 | 52 | 12 | -22 | 5.58 |
|  Middle Temporal Gyrus | L | 18 | 56 | -36 | 0 | 5.54 |
|  Middle Temporal Gyrus/temporal pole | R | 12 | -52 | 2 | -24 | 5.31 |
|  Middle Temporal Gyrus | L | 9 | -56 | 0 | -12 | 5.26 |
|  Middle Temporal Gyrus | R | 12 | 60 | -12 | -10 | 5.12 |
|  Middle Temporal Gyrus | R | 8 | 50 | -22 | -8 | 4.93 |
|  Superior Medial Gyrus | L | 6 | -8 | 58 | 14 | 4.87 |

Note: Threshold p < .05 corrected for multiple comparisons at the cluster level (voxel level: p < .005, t > 2.60). H = hemisphere; k = cluster size; L = left; R = right.

**FIGURE LEGENDS**

**Fig 1**: ToM-Network: ToM vs non-ToM in BN and HCBN combined. Whole brain analysis, FWE corrected p<0.05

**Fig 2** Hyperactivity in patients with BN: BN vs HCBN (ToM vs non-ToM). Significant clusters of the whole brain analysis, FWE corrected p<0.05, are depicted here p<0.001 uncorrected for display purposes only. Beta-plots of significant clusters include separate mean beta scores for both groups and s (social), b (bumper) and p (physical) respectively. Greater activation for social compared to bumper and physical (ToM vs non-ToM) supports regions being part of the ToM-network depicted in figure 1.

**Fig 3** Close proximity of hyperactivity in patients with BN and hypoactivity in patients with AN at admission.

1st row: Hyperactivity in patients with BN: BN - HCBN

2nd row: Hypoactivity in patients with AN: ANT1-HCAN

3rd row: Direct comparison of BN with ANT1 (and their respective HC) BN>HCBN vs ANT1 >HCAN

4th row: Overlay demonstrating close proximity of hyper- and hypoactive regions. BN>HCBN in yellow, HCAN>ANT1 in blue, both BN>HCBN and HCAN>ANT1 in red, BN>ANT1 (including respective HC) not overlapping with the first two in green.

All group comparisons used ToM vs non-ToM of significant clusters of the whole brain analysis, FWE corrected p<0.05. Here, p<0.001 uncorrected is used for display purposes.

**Sup Fig 1** Hypoactivity in acutely ill patients with AN: ANT1 vs HCAN (ToM vs non-ToM) of significant clusters of the whole brain analysis, FWE corrected p<0.05. Here, p<0.001 uncorrected is used for display purposes. Beta-plots of all significant clusters include separate mean beta scores for both groups and s (social), b (bumper) and p (physical) respectively. Greater activation for social compared to bumper and physical (ToM vs non-ToM) supports regions being part of the ToM-network depicted in figure 1.

**Sup Fig 2** Hypoactivity in short term weight restored patients with AN: ANT2 vs HCAN (ToM vs non-ToM) of significant clusters of the whole brain analysis, FWE corrected p<0.05. Here, p<0.001 uncorrected is used for display purposes. Beta-plots of all significant clusters include separate mean beta scores for both groups and s (social), b (bumper) and p (physical) respectively. Greater activation for social compared to bumper and physical (ToM vs non-ToM) supports regions being part of the ToM-network depicted in figure 1.

**Sup Fig 3** Direct comparison of BN and acutely ill AN (including their respective controls): Positive Contrast BN>HCBN vs ANT1 >HCAN (ToM vs non-ToM) of significant clusters of the whole brain analysis, FWE corrected p<0.05. Here, p<0.001 uncorrected is used for display purposes. Beta-plots of all significant clusters include separate mean beta scores for both groups and s (social), b (bumper) and p (physical) respectively. Greater activation for social compared to bumper and physical (ToM vs non-ToM) supports regions being part of the ToM-network depicted in figure 1.

**Sup Fig 4** Direct comparison of BN and short time weight restored AN (including their respective controls): Positive Contrast BN>HCBN vs ANT2 >HCAN (ToM vs non-ToM) of significant clusters of the whole brain analysis, FWE corrected p<0.05. Here, p<0.001 uncorrected is used for display purposes. Beta-plots of all significant clusters include separate mean beta scores for both groups and s (social), b (bumper) and p (physical) respectively. Greater activation for social compared to bumper and physical (ToM vs non-ToM) supports regions being part of the ToM-network depicted in figure 1.

**Sup Fig 5** Overlay demonstrating close proximity of hyper- and hypoactive regions. BN>HCBN in yellow, HCAN>ANT1 in blue, both BN>HCBN and HCAN>ANT1 in red, BN>ANT1 (including respective HC) not overlapping with the first two in green. Significant clusters of the whole brain analysis, FWE corrected p<0.05. Here, p<0.001 uncorrected is used for display purposes only.

**Sup Fig 6** Overlay demonstrating close proximity of hyper- and hypoactive regions. BN>HCBN in yellow, HCAN>ANT2 in blue, both BN>HCBN and HCAN>ANT2 in red, BN>ANT2 (including respective HC) not overlapping with the first two in green. Significant clusters of the whole brain analysis, FWE corrected p<0.05. Here p<0.001 uncorrected is used for display purposes only.

**Sup Fig 7** Direct comparison of BN and short time weight restored AN (including their respective controls): Positive Contrast BN>HCBN vs ANT2 >HCAN (ToM vs non-ToM) of significant clusters of the whole brain analysis, FWE corrected p<0.05. Here, p<0.001 uncorrected is used for display purposes. Beta-plots of all significant clusters include separate mean beta scores for both groups and s (social), b (bumper) and p (physical) respectively. Greater activation for social compared to bumper and physical (ToM vs non-ToM) supports regions being part of the ToM-network depicted in figure 1.

**Sup Fig 8** Direct comparison of BN and short time weight restored AN (including their respective controls): Positive Contrast BN>HCBN vs ANT2 >HCAN (ToM vs non-ToM) of significant clusters of the whole brain analysis, FWE corrected p<0.05. Here, p<0.001 uncorrected is used for display purposes. Beta-plots of all significant clusters include separate mean beta scores for both groups and s (social), b (bumper) and p (physical) respectively. Greater activation for social compared to bumper and physical (ToM vs non-ToM) supports regions being part of the ToM-network depicted in figure 1.

**Sup Fig 9** Direct comparison of BN and acutely ill AN (including their respective controls): Positive Contrast BN>HCBN vs ANT1 >HCAN (ToM vs non-ToM) of significant clusters of the whole brain analysis, FWE corrected p<0.05. Here, p<0.001 uncorrected is used for display purposes. Beta-plots of all significant clusters include separate mean beta scores for both groups and s (social), b (bumper) and p (physical) respectively. Greater activation for social compared to bumper and physical (ToM vs non-ToM) supports regions being part of the ToM-network depicted in figure 1.

**Sup Fig 10** Direct comparison of BN and short time weight restored AN (including their respective controls): Positive Contrast BN>HCBN vs ANT2 >HCAN (ToM vs non-ToM) of significant clusters of the whole brain analysis, FWE corrected p<0.05. Here, p<0.001 uncorrected is used for display purposes. Beta-plots of all significant clusters include separate mean beta scores for both groups and s (social), b (bumper) and p (physical) respectively. Greater activation for social compared to bumper and physical (ToM vs non-ToM) supports regions being part of the ToM-network depicted in figure 1.