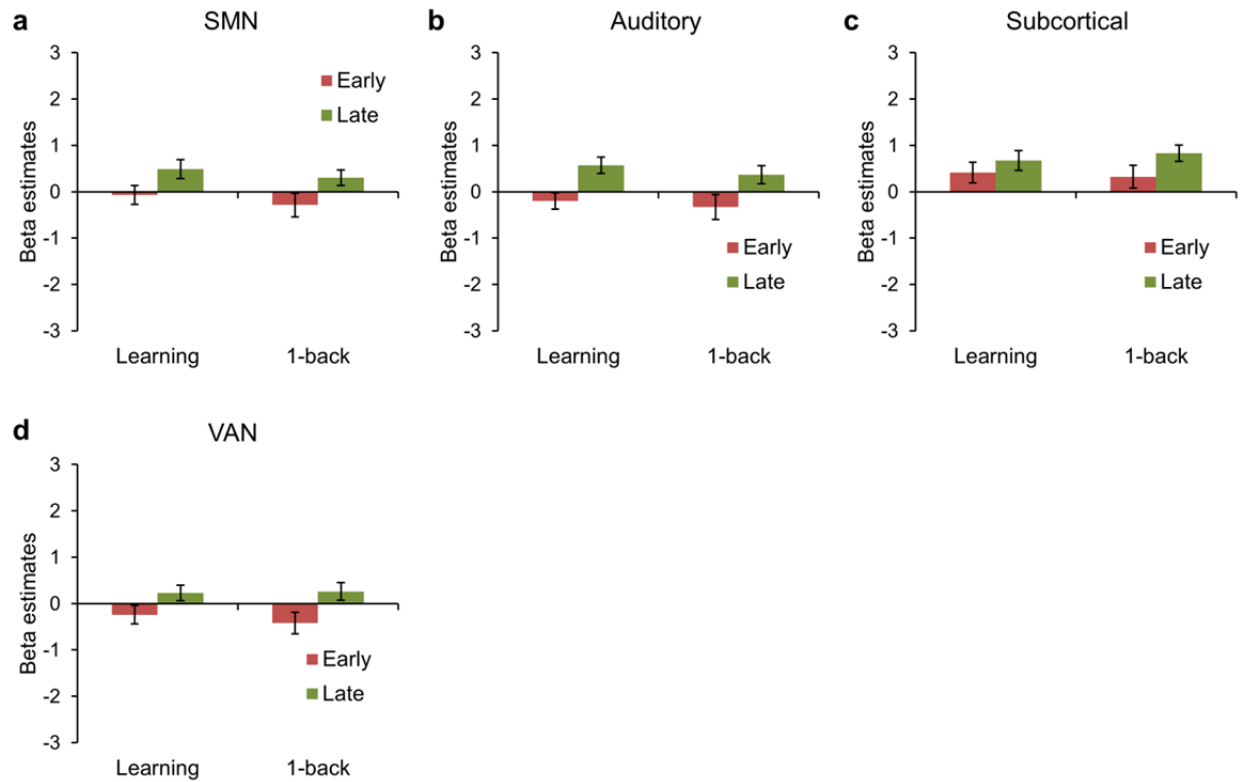


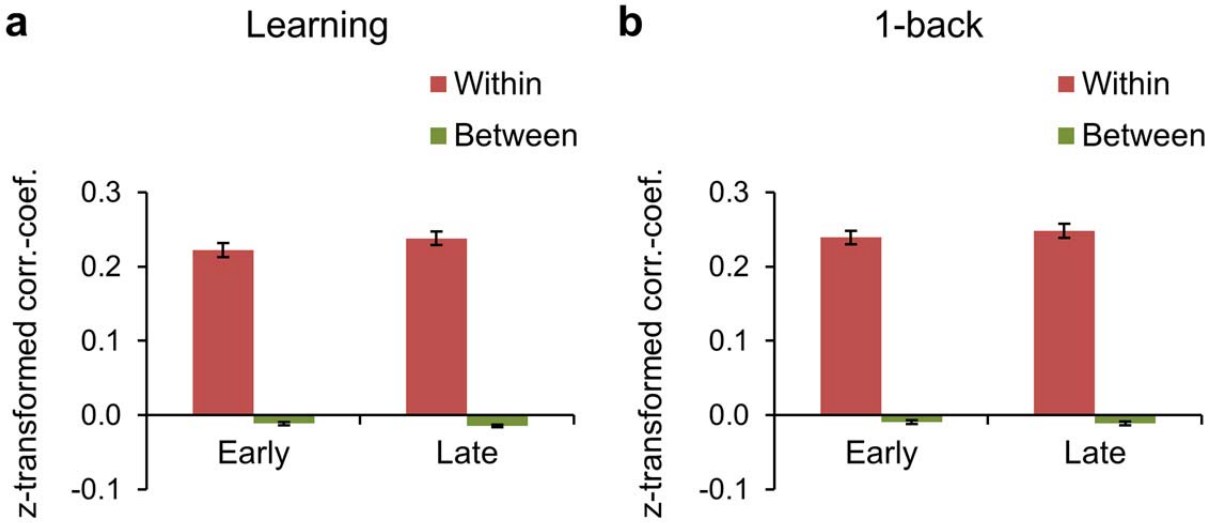
1
2 **Supplementary Figure 1.** Behavioral data for the learning task (N = 70) and the control task (N= 67). (a)
3 Response time (RT) decreases from early to late practice. While subjects in the control task also
4 accelerated responses during 1-back trials, the effect was larger for practice trials in the learning task. The
5 y-axis represents the percentage of decrease of response times from early practice to late practice,
6 computed as $100 \cdot (1 - RT_{\text{late}}/RT_{\text{early}})$. Using a two-sample t-test, the difference was found significant with p
7 $= 4 \cdot 10^{-5}$. Black lines represent 95% confidence intervals. (b) Error rates difference between early and late
8 (i.e. $\text{percentage errors}_{\text{late}} - \text{percentage errors}_{\text{early}}$). Errors rates in the learning task were decreasing
9 (median -0.9%, $p = 3 \cdot 10^{-5}$, Wilcoxon signed rank test), whereas in the control task errors rates increased
10 across 1-back trials (median 2.9%, $p = 4 \cdot 10^{-10}$, Wilcoxon signed rank test; difference between the samples
11 $p = 8 \cdot 10^{-15}$, Wilcoxon rank sum test). Vertical black lines indicate minimum and maximum values. Bars
12 cover $\pm 25\%$ quantiles, and the horizontal black lines inside the bars indicate median values of the
13 samples.
14
15



16
 17 **Supplementary Figure 2.** Mean activations for 4 of the 10 networks for early and late practice and for the
 18 learning and control sample, respectively. (a-d) No significant differences of activation changes from early
 19 to late practice between the learning sample (N = 70) and the control sample (N = 67) were found in these
 20 4 networks. Black lines represent 95% confidence intervals. P-values of two-sample and one-sample t-test
 21 can be found in Supplementary Table 1. Network abbr.: SMN: sensorimotor network, VAN: ventral
 22 attention network.

23

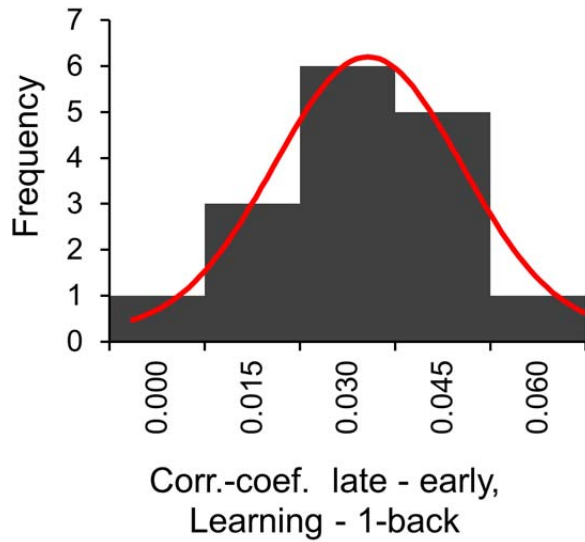
24



25
 26 **Supplementary Figure 3.** Comparison of connectivity between edges that connect nodes within the same
 27 network and edges that connect nodes in different networks. The graph replicates the finding of Power et
 28 al.¹ that nodes within a network are more strongly connected than nodes of different networks. Black lines
 29 represent 95% confidence intervals. (a) Data of the learning sample (N = 70), (b) Data of the control
 30 sample (N = 67).

31

Histogram across submodules
of CON & DAN

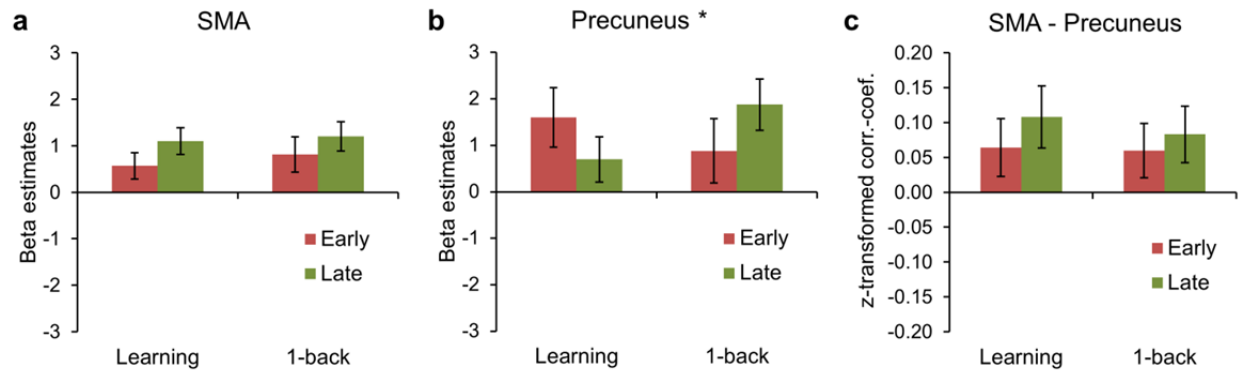


32

33

34 **Supplementary Figure 4.** Distribution of connectivity changes between subclusters of the CON and the
35 DAN for the learning task (N = 70) minus the control task (N = 67). The increase from early practice to late
36 practice followed a normal distribution across several spatially defined subclusters. Gray bars: histogram
37 of the change of connectivity between early and late practice, learning minus control sample. Red line:
38 fitted normal distribution.

39



40

41 **Supplementary Figure 5.** Activation and connectivity for the two nodes where connectivity increase

42 correlated with RT decrease in the learning task. **(a)** Activation profiles for the CON-based SMA node.

43 This node showed increasing activation in the learning sample ($p = 3 \cdot 10^{-6}$, $t = 5.1$, $df = 69$) and in the

44 control sample ($p = 0.0003$, $t = 3.8$, $df = 66$), with no difference between the samples ($p = 0.36$, $t = 0.9$, df

45 $= 135$). **(b)** Activation for the precuneus node (part of the DAN). In this node, activation dropped for the

46 learning task ($p = 0.001$, $t = -3.4$, $df = 69$) and increased for the control task ($p = 2 \cdot 10^{-5}$, $t = 4.6$, $df = 66$;

47 difference between samples $p = 2 \cdot 10^{-7}$, $t = -5.5$, $df = 135$). **(c)** Connectivity between the two nodes.

48 Connectivity change from early to late practice did not differ significantly between the learning and control

49 sample ($p = 0.26$, $t = 1.1$, $df = 135$). Testing early against late practice revealed a significant connectivity

50 increase in both samples (learning sample: $p = 0.003$, $t = 3.0$, $df = 69$; control sample: $p = 0.042$, $t = 2.1$,

51 $df = 66$). Black lines represent 95% confidence intervals.

52

53 **Supplementary Table 1.** Activation differences from early to late practice for the learning sample and the
 54 control sample. All p-values are uncorrected; corrected p-values can be found in the results section of the
 55 main text. Cells marked in yellow indicate significant group differences after Bonferroni-correction.
 56 Abbreviations: DMN: Default Mode Network, FPN: Fronto-Parietal Network, SMN: Sensori-Motor Network,
 57 Subc.: Subcortical, CON: Cingulo-Opercular Network, SAN: Salience Network, VAN: Ventral Attention
 58 Network, DAN: Dorsal Attention Network.

59

| | Learning vs. control, late - early | | Learning sample, late - early | | Control sample, late - early | |
|----------|---------------------------------------|----------|----------------------------------|----------|---------------------------------|----------|
| | P-values | T-values | P-values | T-values | P-values | T-values |
| DMN | 0.0013 | 3.3 | 9.0E-21 | 13.3 | 5.1E-10 | 7.3 |
| FPN | 5.3E-10 | -6.7 | 1.2E-15 | -10.3 | 0.2653 | -1.1 |
| SMN | 0.8260 | -0.2 | 5.5E-10 | 7.2 | 1.2E-08 | 6.5 |
| Visual | 0.6182 | 0.5 | 2.6E-15 | 10.1 | 8.8E-13 | 8.8 |
| Subc. | 0.1157 | -1.6 | 0.0184 | 2.4 | 1.4E-05 | 4.7 |
| CON | 0.3015 | -1.0 | 1.8E-07 | 5.8 | 1.1E-09 | 7.1 |
| SAN | 0.0001 | -4.1 | 0.2975 | -1.0 | 2.9E-05 | 4.5 |
| VAN | 0.1084 | -1.6 | 3.4E-06 | 5.1 | 2.9E-10 | 7.4 |
| DAN | 6.4E-06 | -4.7 | 3.5E-05 | -4.4 | 0.0293 | 2.2 |
| Auditory | 0.5175 | 0.6 | 1.2E-14 | 9.8 | 8.3E-12 | 8.3 |

60

61

62 **Supplementary Table 2.** Connectivity differences from early to late practice for the learning sample and
 63 the control sample. All p-values are uncorrected; corrected p-values can be found in the results section of
 64 the main text. Cells marked in yellow indicate significant group differences after Bonferroni-correction.
 65 Cells marked in orange indicate significant group differences after FDR-correction. Abbreviations: DMN:
 66 Default Mode Network, FPN: Fronto-Parietal Network, SMN: Sensori-Motor Network, Subc.: Subcortical,
 67 CON: Cingulo-Opercular Network, SAN: Salience Network, VAN: Ventral Attention Network, DAN: Dorsal
 68 Attention Network.

69

70 Learning sample vs. control sample, late – early, P-values

| DMN | FPN | SMN | Visual | Subc. | CON | SAN | VAN | DAN | Auditory | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|----------|
| 0.1157 | 0.0268 | 0.2666 | 0.0089 | 0.3536 | 3.6E-8 | 0.0002 | 0.0090 | 0.5007 | 0.0003 | DMN |
| | 0.1388 | 0.8011 | 0.0516 | 0.5845 | 0.0414 | 0.6524 | 0.9575 | 0.0005 | 0.0143 | FPN |
| | | 0.9574 | 0.0295 | 0.7336 | 0.8792 | 0.9930 | 0.3143 | 0.0149 | 0.6279 | SMN |
| | | | 0.2527 | 0.4861 | 0.0034 | 0.0396 | 0.6671 | 0.9541 | 0.0532 | Visual |
| | | | | 0.3805 | 0.8875 | 0.5560 | 0.5177 | 0.8543 | 0.4761 | Subc. |
| | | | | | 0.0041 | 0.0034 | 0.1771 | 4.2E-8 | 0.3747 | CON |
| | | | | | | 0.0052 | 0.4984 | 0.3157 | 0.5227 | SAN |
| | | | | | | | 0.2280 | 0.2728 | 0.2372 | VAN |
| | | | | | | | | 0.2834 | 0.0003 | DAN |
| | | | | | | | | | 0.4024 | Auditory |

71

72 Learning sample vs. control sample, late – early, T-values

| DMN | FPN | SMN | Visual | Subc. | CON | SAN | VAN | DAN | Auditory | |
|-----|------|------|--------|-------|------|------|------|------|----------|----------|
| 1.6 | 2.2 | -1.1 | -2.7 | 0.9 | -5.8 | -3.9 | -2.6 | -0.7 | -3.7 | DMN |
| | -1.5 | 0.3 | -2.0 | -0.5 | 2.1 | 0.5 | -0.1 | -3.6 | 2.5 | FPN |
| | | -0.1 | 2.2 | 0.3 | -0.2 | 0.0 | 1.0 | 2.5 | -0.5 | SMN |
| | | | 1.1 | 0.7 | 3.0 | 2.1 | 0.4 | 0.1 | 2.0 | Visual |
| | | | | 0.9 | 0.1 | -0.6 | 0.6 | 0.2 | -0.7 | Subc. |
| | | | | | 2.9 | 3.0 | 1.4 | 5.8 | 0.9 | CON |
| | | | | | | 2.8 | 0.7 | 1.0 | 0.6 | SAN |
| | | | | | | | 1.2 | 1.1 | 1.2 | VAN |
| | | | | | | | | 1.1 | 3.7 | DAN |
| | | | | | | | | | 0.8 | Auditory |

73

74

75 Learning sample, late – early, P-values

| DMN | FPN | SMN | Visual | Subc. | CON | SAN | VAN | DAN | Auditory | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|----------|
| 4.0E-5 | 0.0001 | 6.2E-6 | 3.9E-5 | 0.1860 | 4E-19 | 2E-11 | 8.8E-9 | 0.1972 | 4.4E-18 | DMN |
| | 0.0005 | 0.0210 | 9.3E-6 | 0.0750 | 3.7E-5 | 0.9438 | 0.0764 | 1.8E-8 | 1.7E-9 | FPN |
| | | 0.0500 | 0.0001 | 0.2205 | 0.0900 | 0.3345 | 0.2869 | 6.0E-7 | 0.5263 | SMN |
| | | | 2.2E-6 | 0.2044 | 0.0012 | 0.0297 | 0.3538 | 0.0447 | 0.0005 | Visual |
| | | | | 0.0024 | 0.4707 | 0.5956 | 0.4285 | 0.0276 | 0.7879 | Subc. |
| | | | | | 8E-10 | 4E-10 | 0.8316 | 1E-14 | 0.0019 | CON |
| | | | | | | 3E-11 | 0.8396 | 0.0349 | 0.0078 | SAN |
| | | | | | | | 0.2340 | 0.0001 | 0.8053 | VAN |
| | | | | | | | | 0.0653 | 2.7E-11 | DAN |
| | | | | | | | | | 0.0384 | Auditory |

76

77 Learning sample, late – early, T-values

| DMN | FPN | SMN | Visual | Subc. | CON | SAN | VAN | DAN | Auditory | |
|-----|------|------|--------|-------|-------|------|------|------|----------|----------|
| 4.4 | 4.1 | -4.9 | -4.4 | 1.3 | -12.3 | -8.0 | -6.5 | -1.3 | -11.7 | DMN |
| | -3.7 | 2.4 | -4.8 | -1.8 | 4.4 | 0.1 | 1.8 | -6.4 | 6.9 | FPN |
| | | 2.0 | 4.2 | -1.2 | 1.7 | 1.0 | 1.1 | 5.5 | 0.6 | SMN |
| | | | 5.2 | -1.3 | 3.4 | 2.2 | 0.9 | 2.0 | 3.7 | Visual |
| | | | | 3.1 | 0.7 | -0.5 | 0.8 | -2.3 | -0.3 | Subc. |
| | | | | | 7.1 | 7.3 | 0.2 | 9.8 | 3.2 | CON |
| | | | | | | 7.9 | -0.2 | 2.2 | 2.7 | SAN |
| | | | | | | | 1.2 | 4.1 | -0.2 | VAN |
| | | | | | | | | 1.9 | 7.9 | DAN |
| | | | | | | | | | 2.1 | Auditory |

78

79

80 Control sample, late – early, P-values

| DMN | FPN | SMN | Visual | Subc. | CON | SAN | VAN | DAN | Auditory | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|----------|
| 0.0041 | 0.1966 | 0.0020 | 0.1590 | 0.9553 | 0.0001 | 0.0024 | 0.0092 | 0.5940 | 1.2E-06 | DMN |
| | 0.0688 | 0.0725 | 0.0412 | 0.2532 | 0.1217 | 0.5487 | 0.0046 | 0.0022 | 0.0004 | FPN |
| | | 0.0692 | 0.3011 | 0.1305 | 0.0643 | 0.3073 | 0.6942 | 0.1071 | 0.2008 | SMN |
| | | | 0.0023 | 0.0138 | 0.3790 | 0.4544 | 0.7887 | 0.0536 | 0.3222 | Visual |
| | | | | 0.1146 | 0.6321 | 0.7630 | 0.8699 | 0.0245 | 0.4750 | Subc. |
| | | | | | 0.0512 | 0.0133 | 0.0938 | 0.3085 | 0.2320 | CON |
| | | | | | | 0.0034 | 0.2377 | 0.3981 | 0.1034 | SAN |
| | | | | | | | 0.6252 | 0.0063 | 0.0689 | VAN |
| | | | | | | | | 0.6042 | 0.0004 | DAN |
| | | | | | | | | | 0.5168 | Auditory |

81

82 Control sample, late – early, T-values

| DMN | FPN | SMN | Visual | Subc. | CON | SAN | VAN | DAN | Auditory | |
|-----|------|------|--------|-------|------|------|------|------|----------|----------|
| 3.0 | 1.3 | -3.2 | -1.4 | 0.1 | -4.0 | -3.2 | -2.7 | -0.5 | -5.3 | DMN |
| | -1.8 | 1.8 | -2.1 | -1.2 | 1.6 | -0.6 | 2.9 | -3.2 | 3.7 | FPN |
| | | 1.8 | 1.0 | -1.5 | 1.9 | 1.0 | -0.4 | 1.6 | 1.3 | SMN |
| | | | 3.2 | -2.5 | -0.9 | -0.8 | 0.3 | 2.0 | 1.0 | Visual |
| | | | | 1.6 | 0.5 | 0.3 | -0.2 | -2.3 | 0.7 | Subc. |
| | | | | | 2.0 | 2.5 | -1.7 | 1.0 | 1.2 | CON |
| | | | | | | 3.0 | -1.2 | 0.9 | 1.7 | SAN |
| | | | | | | | -0.5 | 2.8 | -1.8 | VAN |
| | | | | | | | | 0.5 | 3.7 | DAN |
| | | | | | | | | | 0.7 | Auditory |

83

84

85

86 **Supplementary Table 3.** Network nodes included in the network analyses. Coordinates and network
 87 assignments were taken from Power et al.¹ and Cole et al.². Rows marked in gray were excluded from the
 88 analyses.

| Network name | Network-No. |
|---------------------------|-------------|
| Default Mode Network | 1 |
| Fronto-Parietal Network | 2 |
| Sensori-Motor Network | 3 |
| Visual Cortex | 4 |
| Subcortical Areas | 5 |
| Cingulo-Opercular Network | 6 |
| Saliency Network | 7 |
| Ventral Attention Network | 8 |
| Dorsal Attention Network | 9 |
| Auditory Network | 10 |
| Not assigned | NaN |

89

| Node-No. | MNI x | MNI y | MNI z | Network-No. | % Data Learning Sample | % Data 1-back Sample | Node-No. in Figure 3 |
|----------|-------|-------|-------|-------------|------------------------|----------------------|----------------------|
| 1 | -24 | -99 | -12 | NaN | | | |
| 2 | 27 | -96 | -12 | NaN | | | |
| 3 | 24 | 33 | -18 | NaN | | | |
| 4 | -57 | -45 | -24 | NaN | | | |
| 5 | 9 | 42 | -24 | NaN | | | |
| 6 | -21 | -21 | -21 | NaN | | | |
| 7 | 18 | -27 | -18 | NaN | | | |
| 8 | -36 | -30 | -27 | NaN | | | |
| 9 | 66 | -24 | -18 | NaN | | | |
| 10 | 51 | -33 | -27 | NaN | | | |
| 11 | 54 | -30 | -18 | NaN | | | |
| 12 | 33 | 39 | -12 | NaN | | | |
| 13 | -6 | -51 | 60 | 3 | 100.0 | 100.0 | 80 |
| 14 | -15 | -18 | 39 | 3 | 100.0 | 100.0 | 81 |
| 15 | 0 | -15 | 48 | 3 | 100.0 | 100.0 | 82 |
| 16 | 9 | -3 | 45 | 3 | 100.0 | 100.0 | 83 |
| 17 | -6 | -21 | 66 | 3 | 100.0 | 100.0 | 84 |
| 18 | -6 | -33 | 72 | 3 | 100.0 | 100.0 | 85 |
| 19 | 12 | -33 | 75 | 3 | 100.0 | 100.0 | 86 |
| 20 | -54 | -24 | 42 | 3 | 100.0 | 100.0 | 87 |
| 21 | 30 | -18 | 72 | 3 | 100.0 | 100.0 | 88 |
| 22 | 9 | -45 | 72 | 3 | 100.0 | 100.0 | 89 |
| 23 | -24 | -30 | 72 | 3 | 100.0 | 100.0 | 90 |
| 24 | -39 | -18 | 54 | 3 | 100.0 | 100.0 | 91 |
| 25 | 30 | -39 | 60 | 3 | 100.0 | 100.0 | 92 |

90

| Node-No. | MNI x | MNI y | MNI z | Network-No. | % Data Learning Sample | % Data 1-back Sample | Node-No. in Figure 3 |
|----------|-------|-------|-------|-------------|------------------------|----------------------|----------------------|
| 26 | 51 | -21 | 42 | 3 | 100.0 | 100.0 | 93 |
| 27 | -39 | -27 | 69 | 3 | 97.1 | 100.0 | 94 |
| 28 | 21 | -30 | 60 | 3 | 100.0 | 100.0 | 95 |
| 29 | 45 | -9 | 57 | 3 | 100.0 | 100.0 | 96 |
| 30 | -30 | -42 | 60 | 3 | 100.0 | 100.0 | 97 |
| 31 | 9 | -18 | 75 | 3 | 100.0 | 100.0 | 98 |
| 32 | 21 | -42 | 69 | 3 | 100.0 | 100.0 | 99 |
| 33 | -45 | -33 | 48 | 3 | 100.0 | 100.0 | 100 |
| 34 | -21 | -30 | 60 | 3 | 100.0 | 100.0 | 101 |
| 35 | -12 | -18 | 75 | 3 | 100.0 | 100.0 | 102 |
| 36 | 42 | -21 | 54 | 3 | 100.0 | 100.0 | 103 |
| 37 | -39 | -15 | 69 | 3 | 5.7 | 6.0 | |
| 38 | -15 | -45 | 72 | 3 | 100.0 | 100.0 | 104 |
| 39 | 3 | -27 | 60 | 3 | 100.0 | 100.0 | 105 |
| 40 | 3 | -18 | 57 | 3 | 100.0 | 100.0 | 106 |
| 41 | 39 | -18 | 45 | 3 | 100.0 | 100.0 | 107 |
| 42 | -48 | -12 | 36 | 3 | 100.0 | 100.0 | 108 |
| 43 | 36 | -9 | 15 | 3 | 100.0 | 100.0 | 109 |
| 44 | 51 | -6 | 33 | 3 | 100.0 | 100.0 | 110 |
| 45 | -54 | -9 | 24 | 3 | 100.0 | 100.0 | 111 |
| 46 | 66 | -9 | 24 | 3 | 100.0 | 100.0 | 112 |
| 47 | -3 | 3 | 54 | 6 | 100.0 | 100.0 | 158 |
| 48 | 54 | -27 | 33 | 6 | 100.0 | 100.0 | 159 |
| 49 | 18 | -9 | 63 | 6 | 100.0 | 100.0 | 160 |
| 50 | -15 | -6 | 72 | 6 | 100.0 | 100.0 | 161 |
| 51 | -9 | -3 | 42 | 6 | 100.0 | 100.0 | 162 |
| 52 | 36 | 0 | -3 | 6 | 100.0 | 100.0 | 163 |
| 53 | 12 | 0 | 69 | 6 | 100.0 | 100.0 | 164 |
| 54 | 6 | 9 | 51 | 6 | 100.0 | 100.0 | 165 |
| 55 | -45 | 0 | 9 | 6 | 100.0 | 100.0 | 166 |
| 56 | 48 | 9 | 0 | 6 | 100.0 | 100.0 | 167 |
| 57 | -33 | 3 | 3 | 6 | 100.0 | 100.0 | 168 |
| 58 | -51 | 9 | -3 | 6 | 100.0 | 100.0 | 169 |
| 59 | -6 | 18 | 33 | 6 | 100.0 | 100.0 | 170 |
| 60 | 36 | 9 | 0 | 6 | 100.0 | 100.0 | 171 |
| 61 | 33 | -27 | 12 | 10 | 100.0 | 100.0 | 210 |
| 62 | 66 | -33 | 21 | 10 | 100.0 | 100.0 | 211 |
| 63 | 57 | -15 | 6 | 10 | 100.0 | 100.0 | 212 |
| 64 | -39 | -33 | 18 | 10 | 100.0 | 100.0 | 213 |
| 65 | -60 | -24 | 15 | 10 | 100.0 | 100.0 | 214 |
| 66 | -48 | -27 | 6 | 10 | 100.0 | 100.0 | 215 |
| 67 | 42 | -24 | 21 | 10 | 100.0 | 100.0 | 216 |
| 68 | -51 | -33 | 27 | 10 | 100.0 | 100.0 | 217 |
| 69 | -54 | -21 | 24 | 10 | 100.0 | 100.0 | 218 |
| 70 | -54 | -9 | 12 | 10 | 100.0 | 100.0 | 219 |
| 71 | 57 | -6 | 12 | 10 | 100.0 | 100.0 | 220 |
| 72 | 60 | -18 | 30 | 10 | 100.0 | 100.0 | 221 |
| 73 | -30 | -27 | 12 | 10 | 100.0 | 100.0 | 222 |
| 74 | -42 | -75 | 27 | 1 | 100.0 | 100.0 | 1 |
| 75 | 6 | 66 | -3 | 1 | 10.0 | 9.0 | |

| Node-No. | MNI x | MNI y | MNI z | Network-No. | % Data Learning Sample | % Data 1-back Sample | Node-No. in Figure 3 |
|----------|-------|-------|-------|-------------|------------------------|----------------------|----------------------|
| 76 | 9 | 48 | -15 | 1 | 95.7 | 94.0 | 2 |
| 77 | -12 | -39 | 0 | 1 | 100.0 | 100.0 | 3 |
| 78 | -18 | 63 | -9 | 1 | 1.4 | 4.5 | |
| 79 | -45 | -60 | 21 | 1 | 100.0 | 100.0 | 4 |
| 80 | 42 | -72 | 27 | 1 | 100.0 | 100.0 | 5 |
| 81 | -45 | 12 | -33 | 1 | 98.6 | 97.0 | 6 |
| 82 | 45 | 15 | -30 | 1 | 100.0 | 100.0 | 7 |
| 83 | -69 | -24 | -15 | 1 | 2.9 | 4.5 | |
| 84 | -57 | -27 | -15 | NaN | | | |
| 85 | 27 | 15 | -18 | NaN | | | |
| 86 | -45 | -66 | 36 | 1 | 100.0 | 100.0 | 8 |
| 87 | -39 | -75 | 45 | 1 | 100.0 | 100.0 | 9 |
| 88 | -6 | -54 | 27 | 1 | 100.0 | 100.0 | 10 |
| 89 | 6 | -60 | 36 | 1 | 100.0 | 100.0 | 11 |
| 90 | -12 | -57 | 15 | 1 | 100.0 | 100.0 | 12 |
| 91 | -3 | -48 | 12 | 1 | 100.0 | 100.0 | 13 |
| 92 | 9 | -48 | 30 | 1 | 100.0 | 100.0 | 14 |
| 93 | 15 | -63 | 27 | 1 | 100.0 | 100.0 | 15 |
| 94 | -3 | -36 | 45 | 1 | 100.0 | 100.0 | 16 |
| 95 | 12 | -54 | 18 | 1 | 100.0 | 100.0 | 17 |
| 96 | 51 | -60 | 36 | 1 | 100.0 | 100.0 | 18 |
| 97 | 24 | 33 | 48 | 1 | 100.0 | 100.0 | 19 |
| 98 | -9 | 39 | 51 | 1 | 100.0 | 100.0 | 20 |
| 99 | -15 | 30 | 54 | 1 | 100.0 | 100.0 | 21 |
| 100 | -36 | 21 | 51 | 1 | 100.0 | 100.0 | 22 |
| 101 | 21 | 39 | 39 | 1 | 100.0 | 100.0 | 23 |
| 102 | 12 | 54 | 39 | 1 | 100.0 | 100.0 | 24 |
| 103 | -9 | 54 | 39 | 1 | 100.0 | 100.0 | 25 |
| 104 | -21 | 45 | 39 | 1 | 100.0 | 100.0 | 26 |
| 105 | 6 | 54 | 15 | 1 | 100.0 | 100.0 | 27 |
| 106 | 6 | 63 | 21 | 1 | 100.0 | 100.0 | 28 |
| 107 | -6 | 51 | 0 | 1 | 100.0 | 100.0 | 29 |
| 108 | 9 | 54 | 3 | 1 | 100.0 | 100.0 | 30 |
| 109 | -3 | 45 | -9 | 1 | 100.0 | 100.0 | 31 |
| 110 | 9 | 42 | -6 | 1 | 100.0 | 100.0 | 32 |
| 111 | -12 | 45 | 9 | 1 | 100.0 | 100.0 | 33 |
| 112 | -3 | 39 | 36 | 1 | 100.0 | 100.0 | 34 |
| 113 | -3 | 42 | 15 | 1 | 100.0 | 100.0 | 35 |
| 114 | -21 | 63 | 18 | 1 | 100.0 | 100.0 | 36 |
| 115 | -9 | 48 | 24 | 1 | 100.0 | 100.0 | 37 |
| 116 | 66 | -12 | -18 | 1 | 92.9 | 85.1 | 38 |
| 117 | -57 | -12 | -9 | 1 | 100.0 | 100.0 | 39 |
| 118 | -57 | -30 | -3 | 1 | 100.0 | 100.0 | 40 |
| 119 | 66 | -30 | -9 | 1 | 100.0 | 100.0 | 41 |
| 120 | -69 | -42 | -6 | 1 | 21.4 | 26.9 | |
| 121 | 12 | 30 | 60 | 1 | 100.0 | 100.0 | 42 |
| 122 | 12 | 36 | 21 | 1 | 100.0 | 100.0 | 43 |
| 123 | 51 | -3 | -15 | 1 | 98.6 | 100.0 | 44 |
| 124 | -27 | -39 | -9 | 1 | 100.0 | 100.0 | 45 |
| 125 | 27 | -36 | -12 | 1 | 100.0 | 100.0 | 46 |

| Node-No. | MNI x | MNI y | MNI z | Network-No. | % Data Learning Sample | % Data 1-back Sample | Node-No. in Figure 3 |
|----------|-------|-------|-------|-------------|------------------------|----------------------|----------------------|
| 126 | -33 | -39 | -15 | 1 | 100.0 | 100.0 | 47 |
| 127 | 27 | -78 | -33 | 1 | 91.4 | 100.0 | 48 |
| 128 | 51 | 6 | -30 | 1 | 100.0 | 100.0 | 49 |
| 129 | -54 | 3 | -27 | 1 | 98.6 | 98.5 | 50 |
| 130 | 48 | -51 | 30 | 1 | 100.0 | 100.0 | 51 |
| 131 | -48 | -42 | 0 | 1 | 100.0 | 100.0 | 52 |
| 132 | -30 | 18 | -18 | NaN | | | |
| 133 | -3 | -36 | 30 | NaN | | | |
| 134 | -6 | -72 | 42 | NaN | | | |
| 135 | 12 | -66 | 42 | NaN | | | |
| 136 | 3 | -48 | 51 | NaN | | | |
| 137 | -45 | 30 | -12 | 1 | 100.0 | 100.0 | 53 |
| 138 | -9 | 12 | 66 | 8 | 100.0 | 100.0 | 190 |
| 139 | 48 | 36 | -12 | 1 | 98.6 | 95.5 | 54 |
| 140 | 9 | -90 | -6 | NaN | | | |
| 141 | 18 | -90 | -15 | NaN | | | |
| 142 | -12 | -96 | -12 | NaN | | | |
| 143 | 18 | -48 | -9 | 4 | 100.0 | 100.0 | 114 |
| 144 | 39 | -72 | 15 | 4 | 100.0 | 100.0 | 115 |
| 145 | 9 | -72 | 12 | 4 | 100.0 | 100.0 | 116 |
| 146 | -9 | -81 | 6 | 4 | 100.0 | 100.0 | 117 |
| 147 | -27 | -78 | 18 | 4 | 100.0 | 100.0 | 118 |
| 148 | 21 | -66 | 3 | 4 | 100.0 | 100.0 | 119 |
| 149 | -24 | -90 | 18 | 4 | 100.0 | 100.0 | 120 |
| 150 | 27 | -60 | -9 | 4 | 100.0 | 100.0 | 121 |
| 151 | -15 | -72 | -9 | 4 | 100.0 | 100.0 | 122 |
| 152 | -18 | -69 | 6 | 4 | 100.0 | 100.0 | 123 |
| 153 | 42 | -78 | -12 | 4 | 100.0 | 100.0 | 124 |
| 154 | -48 | -75 | -9 | 4 | 98.6 | 100.0 | 125 |
| 155 | -15 | -90 | 30 | 4 | 100.0 | 100.0 | 126 |
| 156 | 15 | -87 | 36 | 4 | 100.0 | 100.0 | 127 |
| 157 | 30 | -78 | 24 | 4 | 100.0 | 100.0 | 128 |
| 158 | 21 | -87 | -3 | 4 | 100.0 | 100.0 | 129 |
| 159 | 15 | -78 | 30 | 4 | 100.0 | 100.0 | 130 |
| 160 | -15 | -51 | 0 | 4 | 100.0 | 100.0 | 131 |
| 161 | 42 | -66 | -9 | 4 | 100.0 | 100.0 | 132 |
| 162 | 24 | -87 | 24 | 4 | 100.0 | 100.0 | 133 |
| 163 | 6 | -72 | 24 | 4 | 100.0 | 100.0 | 134 |
| 164 | -42 | -75 | 0 | 4 | 100.0 | 100.0 | 135 |
| 165 | 27 | -78 | -15 | 4 | 100.0 | 100.0 | 136 |
| 166 | -15 | -78 | 33 | 4 | 100.0 | 100.0 | 137 |
| 167 | -3 | -81 | 21 | 4 | 100.0 | 100.0 | 138 |
| 168 | -39 | -87 | -6 | 4 | 100.0 | 100.0 | 139 |
| 169 | 36 | -84 | 12 | 4 | 100.0 | 100.0 | 140 |
| 170 | 6 | -81 | 6 | 4 | 100.0 | 100.0 | 141 |
| 171 | -27 | -90 | 3 | 4 | 100.0 | 100.0 | 142 |
| 172 | -33 | -78 | -12 | 4 | 100.0 | 100.0 | 143 |
| 173 | 36 | -81 | 0 | 4 | 100.0 | 100.0 | 144 |
| 174 | -45 | 3 | 45 | 2 | 100.0 | 100.0 | 55 |
| 175 | 48 | 24 | 27 | 2 | 100.0 | 100.0 | 56 |

| Node-No. | MNI x | MNI y | MNI z | Network-No. | % Data Learning Sample | % Data 1-back Sample | Node-No. in Figure 3 |
|----------|-------|-------|-------|-------------|------------------------|----------------------|----------------------|
| 176 | -48 | 12 | 24 | 2 | 100.0 | 100.0 | 57 |
| 177 | -54 | -48 | 42 | 2 | 100.0 | 100.0 | 58 |
| 178 | -24 | 12 | 63 | 2 | 100.0 | 100.0 | 59 |
| 179 | 57 | -54 | -15 | 2 | 100.0 | 98.5 | 60 |
| 180 | 24 | 45 | -15 | 2 | 98.6 | 97.0 | 61 |
| 181 | 33 | 54 | -12 | 2 | 97.1 | 94.0 | 62 |
| 182 | -21 | 42 | -21 | NaN | | | |
| 183 | -18 | -75 | -24 | NaN | | | |
| 184 | 18 | -81 | -33 | NaN | | | |
| 185 | 36 | -66 | -33 | NaN | | | |
| 186 | 48 | 9 | 33 | 2 | 100.0 | 100.0 | 63 |
| 187 | -42 | 6 | 33 | 2 | 100.0 | 100.0 | 64 |
| 188 | -42 | 39 | 21 | 2 | 100.0 | 100.0 | 65 |
| 189 | 39 | 42 | 15 | 2 | 100.0 | 100.0 | 66 |
| 190 | 48 | -42 | 45 | 2 | 100.0 | 100.0 | 67 |
| 191 | -27 | -57 | 48 | 2 | 100.0 | 100.0 | 68 |
| 192 | 45 | -54 | 48 | 2 | 100.0 | 100.0 | 69 |
| 193 | 33 | 15 | 57 | 2 | 100.0 | 100.0 | 70 |
| 194 | 36 | -66 | 39 | 2 | 100.0 | 100.0 | 71 |
| 195 | -42 | -54 | 45 | 2 | 100.0 | 100.0 | 72 |
| 196 | 39 | 18 | 39 | 2 | 100.0 | 100.0 | 73 |
| 197 | -33 | 54 | 3 | 2 | 100.0 | 100.0 | 74 |
| 198 | -42 | 45 | -3 | 2 | 100.0 | 100.0 | 75 |
| 199 | 33 | -54 | 45 | 2 | 100.0 | 100.0 | 76 |
| 200 | 42 | 48 | -3 | 2 | 100.0 | 100.0 | 77 |
| 201 | -42 | 24 | 30 | 2 | 100.0 | 100.0 | 78 |
| 202 | -3 | 27 | 45 | 2 | 100.0 | 100.0 | 79 |
| 203 | 12 | -39 | 51 | 7 | 100.0 | 100.0 | 172 |
| 204 | 54 | -45 | 36 | 7 | 100.0 | 100.0 | 173 |
| 205 | 42 | 0 | 48 | 7 | 100.0 | 100.0 | 174 |
| 206 | 30 | 33 | 27 | 7 | 100.0 | 100.0 | 175 |
| 207 | 48 | 21 | 9 | 7 | 100.0 | 100.0 | 176 |
| 208 | -36 | 21 | 0 | 7 | 100.0 | 100.0 | 177 |
| 209 | 36 | 21 | 3 | 7 | 100.0 | 100.0 | 178 |
| 210 | 36 | 33 | -3 | 7 | 100.0 | 100.0 | 179 |
| 211 | 33 | 15 | -9 | 7 | 100.0 | 100.0 | 180 |
| 212 | -12 | 27 | 24 | 7 | 100.0 | 100.0 | 181 |
| 213 | 0 | 15 | 45 | 7 | 100.0 | 100.0 | 182 |
| 214 | -27 | 51 | 21 | 7 | 100.0 | 100.0 | 183 |
| 215 | 0 | 30 | 27 | 7 | 100.0 | 100.0 | 184 |
| 216 | 6 | 24 | 36 | 7 | 100.0 | 100.0 | 185 |
| 217 | 9 | 21 | 27 | 7 | 100.0 | 100.0 | 186 |
| 218 | 30 | 57 | 15 | 7 | 100.0 | 100.0 | 187 |
| 219 | 27 | 51 | 27 | 7 | 100.0 | 100.0 | 188 |
| 220 | -39 | 51 | 18 | 7 | 100.0 | 100.0 | 189 |
| 221 | 3 | -24 | 30 | NaN | | | |
| 222 | 6 | -24 | 0 | 5 | 100.0 | 100.0 | 145 |
| 223 | -3 | -12 | 12 | 5 | 100.0 | 100.0 | 146 |
| 224 | -9 | -18 | 6 | 5 | 100.0 | 100.0 | 147 |
| 225 | 12 | -18 | 9 | 5 | 100.0 | 100.0 | 148 |

| Node-No. | MNI x | MNI y | MNI z | Network-No. | % Data Learning Sample | % Data 1-back Sample | Node-No. in Figure 3 |
|----------|-------|-------|-------|-------------|------------------------|----------------------|----------------------|
| 226 | -6 | -27 | -3 | 5 | 100.0 | 100.0 | 149 |
| 227 | -21 | 6 | -6 | 5 | 100.0 | 100.0 | 150 |
| 228 | -15 | 3 | 9 | 5 | 100.0 | 100.0 | 151 |
| 229 | 30 | -15 | 3 | 5 | 100.0 | 100.0 | 152 |
| 230 | 24 | 9 | 0 | 5 | 100.0 | 100.0 | 153 |
| 231 | 30 | 0 | 3 | 5 | 100.0 | 100.0 | 154 |
| 232 | -30 | -12 | 0 | 5 | 100.0 | 100.0 | 155 |
| 233 | 15 | 6 | 6 | 5 | 100.0 | 100.0 | 156 |
| 234 | 9 | -3 | 6 | 5 | 100.0 | 100.0 | 157 |
| 235 | 54 | -42 | 21 | 8 | 100.0 | 100.0 | 191 |
| 236 | -57 | -51 | 9 | 8 | 100.0 | 100.0 | 192 |
| 237 | -54 | -39 | 15 | 8 | 100.0 | 100.0 | 193 |
| 238 | 51 | -33 | 9 | 8 | 100.0 | 100.0 | 194 |
| 239 | 51 | -30 | -3 | 8 | 100.0 | 100.0 | 195 |
| 240 | 57 | -45 | 12 | 8 | 100.0 | 100.0 | 196 |
| 241 | 54 | 33 | 0 | 8 | 100.0 | 98.5 | 197 |
| 242 | -48 | 24 | 0 | 8 | 100.0 | 100.0 | 198 |
| 243 | -15 | -66 | -21 | NaN | | | |
| 244 | -33 | -54 | -24 | NaN | | | |
| 245 | 21 | -57 | -24 | NaN | | | |
| 246 | 0 | -63 | -18 | NaN | | | |
| 247 | 33 | -12 | -33 | NaN | | | |
| 248 | -30 | -9 | -36 | NaN | | | |
| 249 | 48 | -3 | -39 | NaN | | | |
| 250 | -51 | -6 | -39 | NaN | | | |
| 251 | 9 | -63 | 60 | 9 | 100.0 | 100.0 | 199 |
| 252 | -51 | -63 | 6 | 9 | 100.0 | 100.0 | 200 |
| 253 | -48 | -51 | -21 | NaN | | | |
| 254 | 45 | -48 | -18 | NaN | | | |
| 255 | 48 | -30 | 48 | 3 | 100.0 | 100.0 | 113 |
| 256 | 21 | -66 | 48 | 9 | 100.0 | 100.0 | 201 |
| 257 | 45 | -60 | 3 | 9 | 100.0 | 100.0 | 202 |
| 258 | 24 | -57 | 60 | 9 | 100.0 | 100.0 | 203 |
| 259 | -33 | -45 | 48 | 9 | 100.0 | 100.0 | 204 |
| 260 | -27 | -72 | 36 | 9 | 100.0 | 100.0 | 205 |
| 261 | -33 | 0 | 54 | 9 | 100.0 | 100.0 | 206 |
| 262 | -42 | -60 | -9 | 9 | 100.0 | 100.0 | 207 |
| 263 | -18 | -60 | 63 | 9 | 100.0 | 100.0 | 208 |
| 264 | 30 | -6 | 54 | 9 | 100.0 | 100.0 | 209 |

101 **Supplementary Table 4.** Subclusters of the CON and the DAN. Abbreviations: SMA/dACC:
 102 Supplementary Motor Area / dorsal Anterior Cingulate Cortex, SMG: Supramarginal Gyrus, MCC:
 103 Midcingulate Cortex, IC/fO: Insular Cortex / frontal Operculum, Prec./PC: Precuneus / Parietal Cortex, TL:
 104 Temporal Lobe, OCC: Occipital Cortex, FEF: Frontal Eye Fields

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106 Cingulo-opercular network (CON):

| MNI x | MNI y | MNI z | Region |
|-------|-------|-------|----------|
| -3 | 2 | 53 | SMA/dACC |
| 54 | -28 | 34 | SMG |
| 19 | -8 | 64 | SMA/dACC |
| -16 | -5 | 71 | SMA/dACC |
| -10 | -2 | 42 | MCC |
| 37 | 1 | -4 | IC/fO |
| 13 | -1 | 70 | SMA/dACC |
| 7 | 8 | 51 | SMA/dACC |
| -45 | 0 | 9 | IC/fO |
| 49 | 8 | -1 | IC/fO |
| -34 | 3 | 4 | IC/fO |
| -51 | 8 | -2 | IC/fO |
| -5 | 18 | 34 | MCC |
| 36 | 10 | 1 | IC/fO |

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109 Dorsal attention network (DAN):

| MNI x | MNI y | MNI z | Region |
|-------|-------|-------|----------|
| 10 | -62 | 61 | Prec./PC |
| -52 | -63 | 5 | TL |
| 22 | -65 | 48 | Prec./PC |
| 46 | -59 | 4 | TL |
| 25 | -58 | 60 | Prec./PC |
| -33 | -46 | 47 | Prec./PC |
| -27 | -71 | 37 | OCC |
| -32 | -1 | 54 | FEF |
| -42 | -60 | -9 | TL |
| -17 | -59 | 64 | Prec./PC |
| 29 | -5 | 54 | FEF |

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