# Supplementary materials

## Supplementary Information

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STable 2. Weighted adjacency matrix.

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SFigure 1. Centrality measures of all symptoms within the network.

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**STable 1.** Mean, standard deviation, minimum, maximum, skewness, kurtosis, and frequency of depressive symptoms as measured by the PHQ-9 (n = 3,946).

| Depressive symptoms | PHQ-9 item | M | SD | Min | Max | Skewness | Kurtosis | % (Absence) | % (Presence) |
|---|---|---|---|---|---|---|---|---|---|
| Anhedonia | 1 | 0.61 | 0.49 | 0 | 1 | -0.46 | -1.79 | 38.8 | 61.2 |
| Sad Mood | 2 | 0.56 | 0.50 | 0 | 1 | -0.25 | -1.94 | 43.9 | 56.1 |
| Sleep | 3 | 0.62 | 0.49 | 0 | 1 | -0.48 | -1.77 | 38.4 | 61.6 |
| Lack of Energy | 4 | 0.61 | 0.49 | 0 | 1 | -0.43 | -1.81 | 39.4 | 60.6 |
| Appetite | 5 | 0.51 | 0.50 | 0 | 1 | -0.03 | -2.00 | 49.2 | 50.8 |
| Guilt | 6 | 0.33 | 0.47 | 0 | 1 | 0.74 | -1.45 | 67.4 | 32.6 |
| Concentration | 7 | 0.44 | 0.50 | 0 | 1 | 0.25 | -1.94 | 56.1 | 43.9 |
| Motor | 8 | 0.28 | 0.45 | 0 | 1 | 0.99 | -1.01 | 72.3 | 27.7 |
| Suicide | 9 | 0.08 | 0.28 | 0 | 1 | 2.98 | 6.90 | 91.5 | 8.5 |

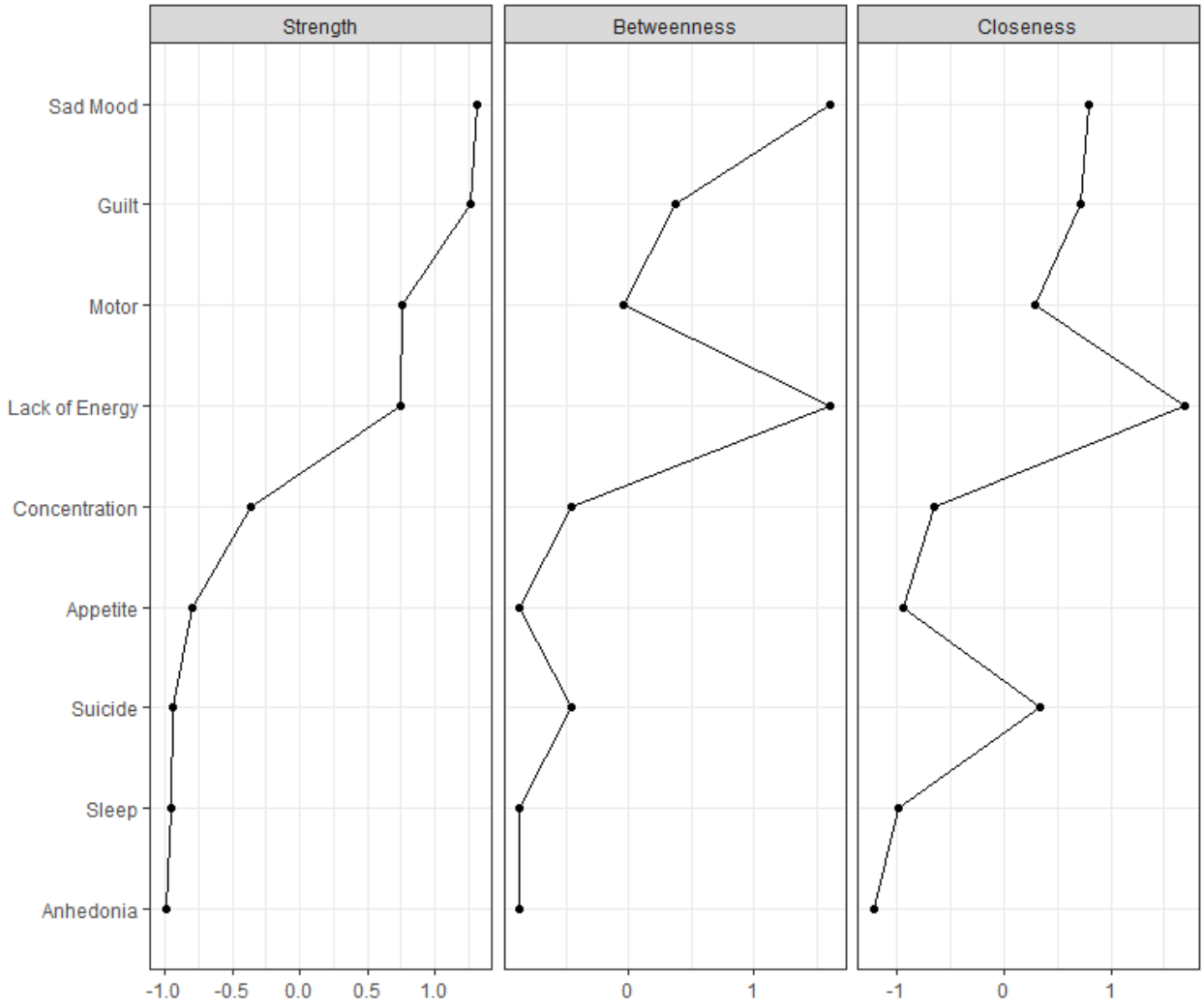
Note: M: Mean; Min: Minimum; Max: Maximum; PHQ-9: The Patient Health Questionnaire-9; SD: Standard Deviation.

**STable 2. Weighted adjacency matrix**

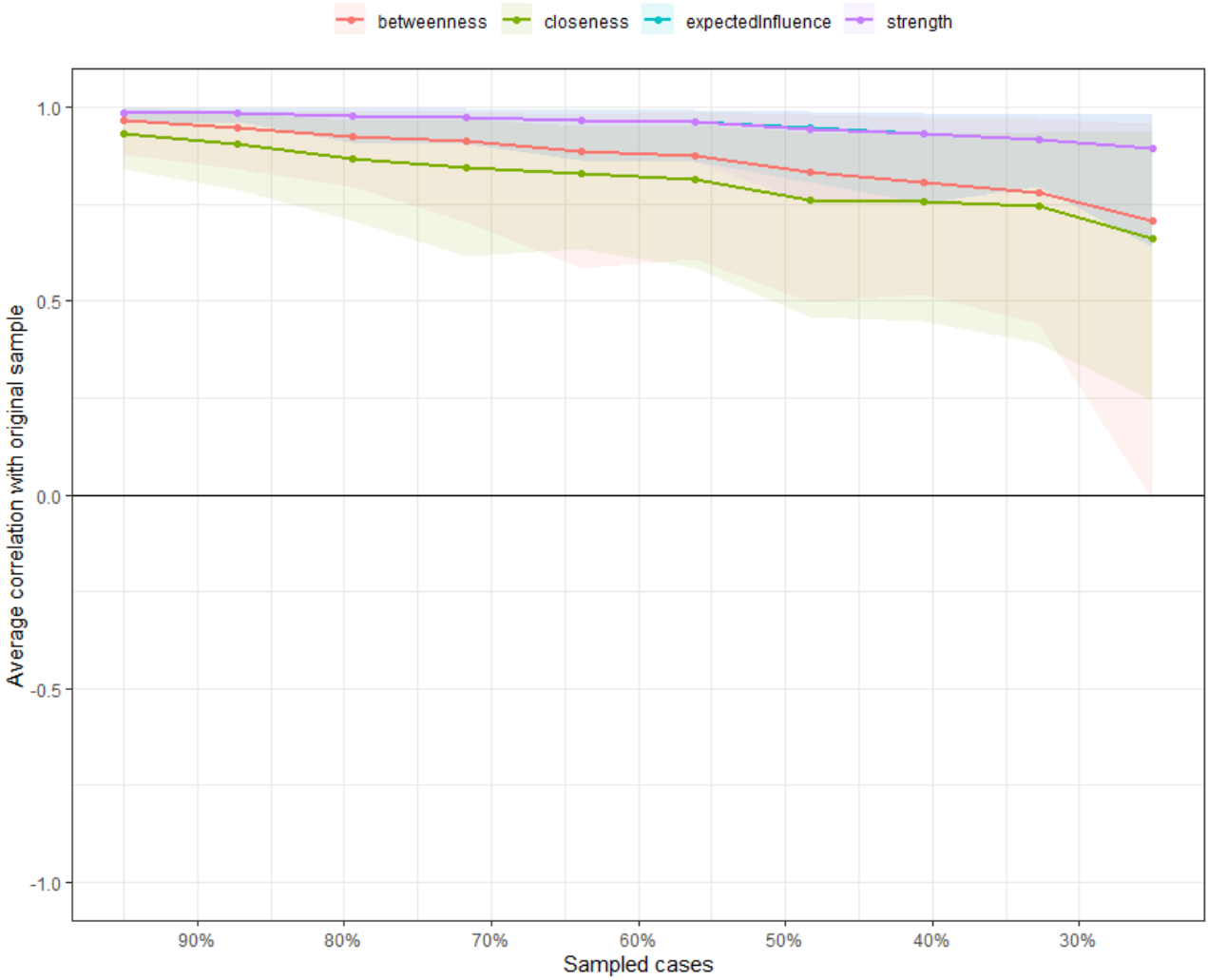
| Depressive symptoms | Anhedonia | Sad Mood | Sleep | Lack of Energy | Appetite | Guilt | Concentration | Motor | Suicide |
|---|---|---|---|---|---|---|---|---|---|
| Anhedonia | 0.00 | 1.90 | 0.14 | 1.21 | 0.43 | 0.45 | 0.29 | 0.20 | 0.00 |
| Sad Mood | **1.90** | 0.00 | 1.02 | 0.95 | 0.24 | 0.95 | 0.52 | 0.48 | 0.95 |
| Sleep | 0.14 | 1.02 | 0.00 | 1.21 | 0.84 | 0.48 | 0.29 | 0.38 | 0.30 |
| Lack of Energy | 1.21 | 0.95 | 1.21 | 0.00 | 1.16 | 0.44 | 0.67 | 0.77 | 0.00 |
| Appetite | 0.43 | 0.24 | 0.84 | 1.16 | 0.00 | 0.71 | 0.39 | 0.76 | 0.28 |
| Guilt | 0.45 | 0.95 | 0.48 | 0.44 | 0.71 | 0.00 | 1.35 | 0.76 | 1.82 |
| Concentration | 0.29 | 0.52 | 0.29 | 0.67 | 0.39 | **1.35** | 0.00 | 1.76 | 0.00 |
| Motor | 0.20 | 0.48 | 0.38 | 0.77 | 0.76 | 0.76 | **1.76** | 0.00 | 1.32 |
| Suicide | 0.00 | 0.95 | 0.30 | 0.00 | 0.28 | **1.82** | 0.00 | **1.32** | 0.00 |

Weighted adjacency matrix based on factors to represent the weight of direct edges between nodes.

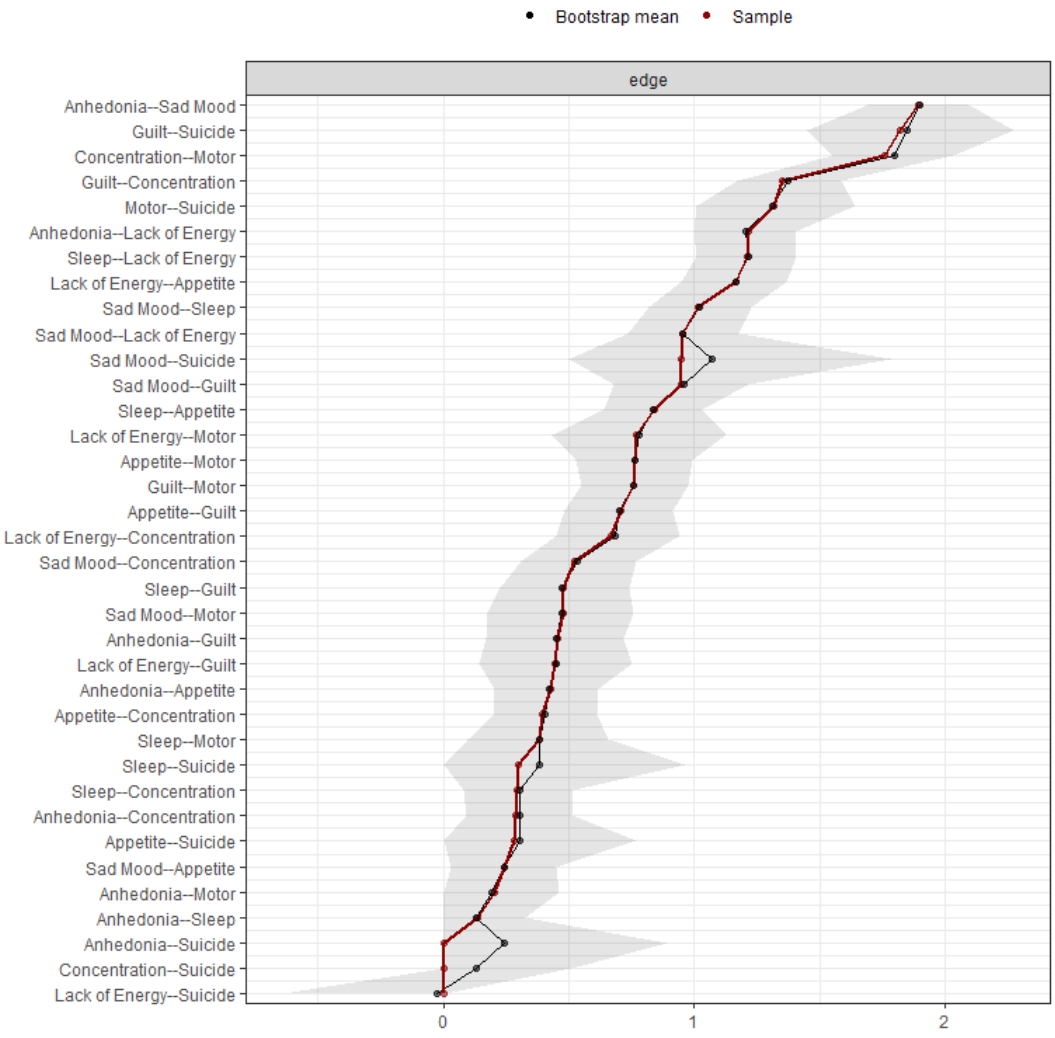
**SFigure 1. Centrality measures of all symptoms within the network.** The figure shows centrality measure (i.e., strength, betweenness, and closeness) of all symptoms within the network (z-scores).



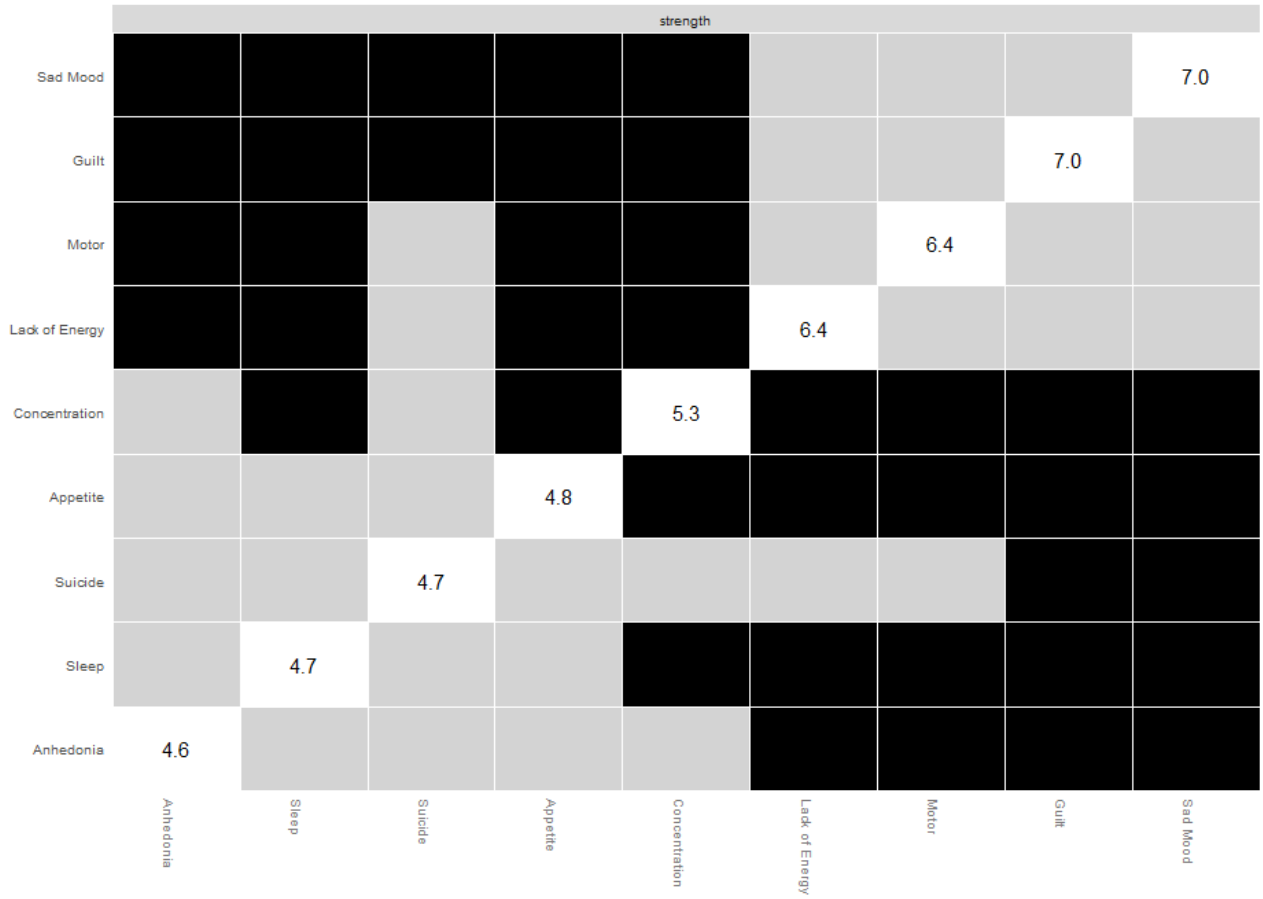
**SFigure 2. Stability of centrality indices by case dropping subset bootstrap.** The x-axis represents the percentage of cases of the original sample used at each step. The y-axis represents the average of correlations between the centrality indices in the original network and the centrality indices from the re-estimated networks after excluding increasing percentages of cases. Each line indicates the correlations of betweenness, closeness, EI (expected influence) and strength.



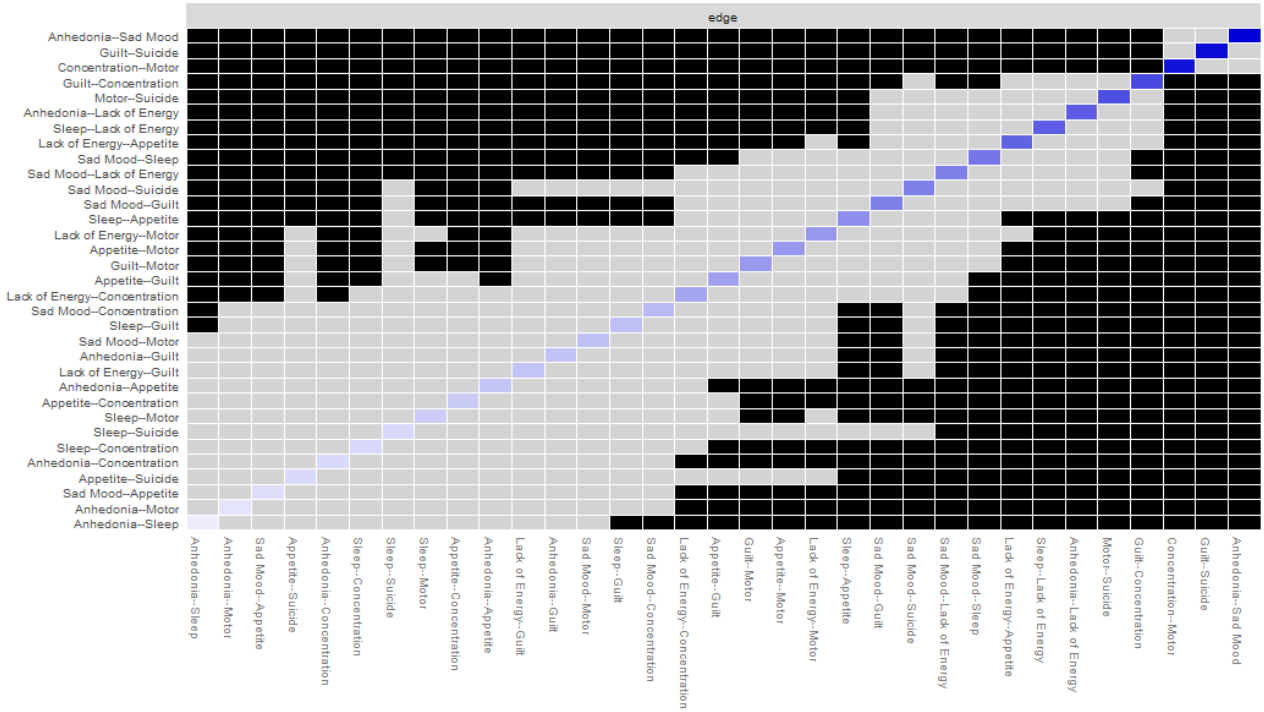
**SFigure 3. Bootstrapped confidence intervals of edge weights.** The black dots indicate the values of each edge weight, ordered from the highest to the lowest value. The gray area represents the 95% Confidence Intervals of edge weights, estimated with the non-parametric bootstrap procedure (Bootnet package). Wide intervals indicate lower stability and narrow intervals indicate higher stability.



**SFigure 4. Estimation of node strength difference by bootstrapped difference test.** Bootstrapped difference tests between node strength of individual symptoms. Gray boxes indicate nodes that do not significantly differ from one-another. Black boxes represent nodes that differ significantly from one another ($\alpha = 0.05$). White boxes show the values of node strength.



**SFigure 5. Estimation of edge weight difference by bootstrapped difference test.** Bootstrapped difference tests between edge weights in the network. Gray boxes indicate edges that do not significantly differ from one-another. Black boxes represent edges with significant difference from one another (α = 0.05). Blue boxes in the edge-weight plot indicate positive correlations.



**STable 3.** Mean, Standard Deviation, Skewness, Kurtosis, and Frequency of depressive symptoms as measured using the PHQ-9 by gender.

| | Male (N=923) | | | | | | Female (N=3,023) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depressive symptoms | M | SD | Skewness | Kurtosis | % Absence | % Presence | M | SD | Skewness | Kurtosis | % Absence | % Presence | t-test | P |
| Anhedonia | 0.56 | 0.50 | -0.25 | -1.94 | 43.9 | 56.1 | 0.63 | 0.48 | -0.53 | -1.72 | 37.2 | 62.8 | 3.64 | **<0.01** |
| Sad Mood | 0.49 | 0.50 | 0.04 | -2.00 | 50.9 | 49.1 | 0.58 | 0.49 | -0.33 | -1.89 | 41.8 | 58.2 | 4.91 | **<0.01** |
| Sleep | 0.51 | 0.50 | -0.04 | -2.00 | 49.1 | 50.9 | 0.65 | 0.48 | -0.62 | -1.61 | 35.2 | 64.8 | 7.67 | **<0.01** |
| Lack of Energy | 0.50 | 0.50 | -0.02 | -2.00 | 49.6 | 50.4 | 0.64 | 0.48 | -0.57 | -1.68 | 36.3 | 63.7 | 7.30 | **<0.01** |
| Appetite | 0.40 | 0.49 | 0.41 | -1.83 | 60.1 | 39.9 | 0.54 | 0.50 | -0.17 | -1.97 | 45.8 | 54.2 | 7.67 | **<0.01** |
| Guilt | 0.32 | 0.47 | 0.75 | -1.44 | 67.6 | 32.4 | 0.33 | 0.47 | 0.74 | -1.45 | 67.4 | 32.6 | 0.14 | 0.88 |
| Concentration | 0.38 | 0.49 | 0.50 | -1.75 | 62.2 | 37.8 | 0.46 | 0.50 | 0.17 | -1.97 | 54.3 | 45.7 | 4.24 | **<0.01** |
| Motor | 0.25 | 0.43 | 1.17 | -0.63 | 75.3 | 24.7 | 0.29 | 0.45 | 0.94 | -1.11 | 71.3 | 28.7 | 2.36 | 0.02 |
| Suicide | 0.09 | 0.29 | 2.86 | 6.20 | 91.0 | 9.0 | 0.08 | 0.28 | 3.02 | 7.13 | 91.7 | 8.3 | 0.66 | 0.51 |

**SFigure 6.** Comparisons of network centrality indices between male and female participants.