

Supplementary materials

Supplementary Table 1. The Weight of each edge in the HSOPSC network (N=24529)

	U1	U2	U3	U4	U5	U6	U7	H1	H2	H3	O1	O2	E	G
U1	0.0000000	0.0065455	0.071727	0.192381	0.0384849	0.1264559	0.096627	0.1345067	0.060907	0.1220418	0.175075	-0.0154598	0.000000	0.012659
U2	0.0065455	0.0000000	0.411760	0.000000	0.2003359	0.0000000	-0.054836	0.1061976	0.017332	-0.0727802	0.093850	0.0254463	0.048646	0.012971
U3	0.0717272	0.4117600	0.000000	0.073058	0.1130854	0.0233650	0.012793	0.0177143	0.106479	-0.0569306	0.032302	0.0000000	0.130359	0.000000
U4	0.1923806	0.0000000	0.073058	0.000000	0.3441346	0.0783356	0.014627	0.0338396	0.064490	0.0387051	0.000000	0.0354206	0.070633	0.013785
U5	0.0384849	0.2003359	0.113085	0.344135	0.0000000	-0.0831941	-0.018445	0.1009171	0.000000	-0.0058828	0.010440	0.2695019	0.117843	0.000000
U6	0.1264559	0.0000000	0.023365	0.078336	-0.0831941	0.0000000	0.330058	0.0014454	0.042461	0.0250509	0.162781	-0.0084502	-0.054834	0.027017
U7	0.0966274	-0.0548362	0.012793	0.014627	-0.0184449	0.3300577	0.000000	0.0304580	0.031248	0.0616597	0.142908	-0.0256675	0.000000	-0.041469
H1	0.1345067	0.1061976	0.017714	0.033840	0.1009171	0.0014454	0.030458	0.0000000	0.324468	0.1796550	0.114201	0.0319398	0.148122	0.000000
H2	0.0609067	0.0173323	0.106479	0.064486	0.0000000	0.0424608	0.031247	0.3244678	0.000000	0.4279892	0.066197	-0.0382308	0.022636	0.000000
H3	0.1220418	-0.0727802	-0.056931	0.038705	-0.0058828	0.0250509	0.061660	0.1796550	0.427990	0.0000000	0.046394	0.0000000	0.025071	0.000000
O1	0.1750750	0.0938496	0.032302	0.000000	0.0104400	0.1627813	0.142908	0.1142013	0.066197	0.0463939	0.000000	-0.0132061	0.116374	-0.055047
O2	-0.0154598	0.0254463	0.000000	0.035421	0.2695019	-0.0084502	-0.025668	0.0319398	-0.038231	0.0000000	-0.013206	0.0000000	0.096839	0.126861
E	0.0000000	0.0486456	0.130359	0.070633	0.1178435	-0.0548345	0.000000	0.1481219	0.022636	0.0250715	0.116374	0.0968390	0.000000	-0.061190
G	0.0126593	0.0129706	0.000000	0.013786	0.0000000	0.0270168	-0.041469	0.0000000	0.000000	0.0000000	-0.055047	0.1268615	-0.061190	0.000000

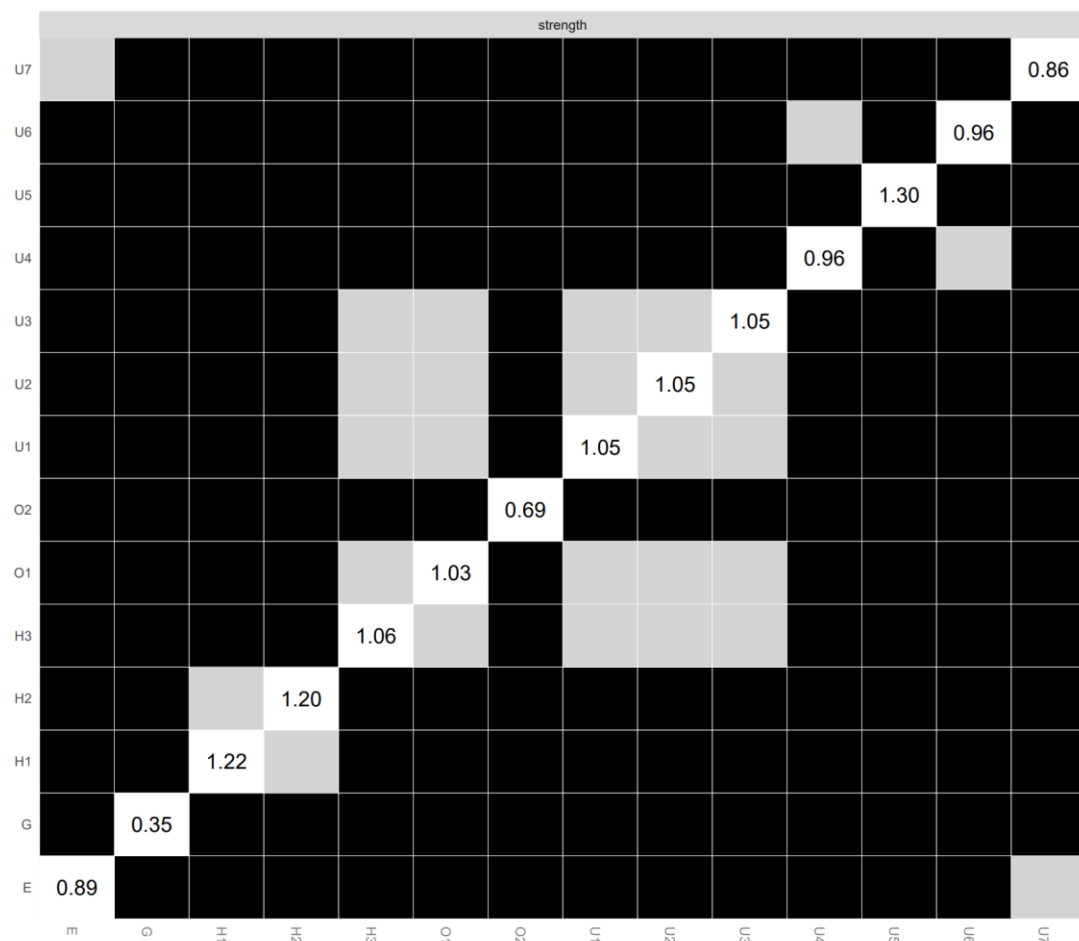
Supplementary Table 2. The node centrality indicators in network structure for HSOPSC (N=24529)

	Betweenness	Closeness	Strength
U1	8	0.007344834	1.0528707
U2	8	0.006950084	1.0506998
U3	2	0.006357722	1.0495728
U4	6	0.007163900	0.9594060
U5	22	0.007916118	1.3022652
U6	2	0.005526222	0.9634482
U7	0	0.005058181	0.8607958
H1	12	0.007091121	1.2234648
H2	6	0.006055513	1.2024325
H3	1	0.005730965	1.0621607
O1	9	0.006844464	1.0287752
O2	9	0.006189648	0.6870236
E	0	0.006841032	0.8925480
G	0	0.004089749	0.3509995



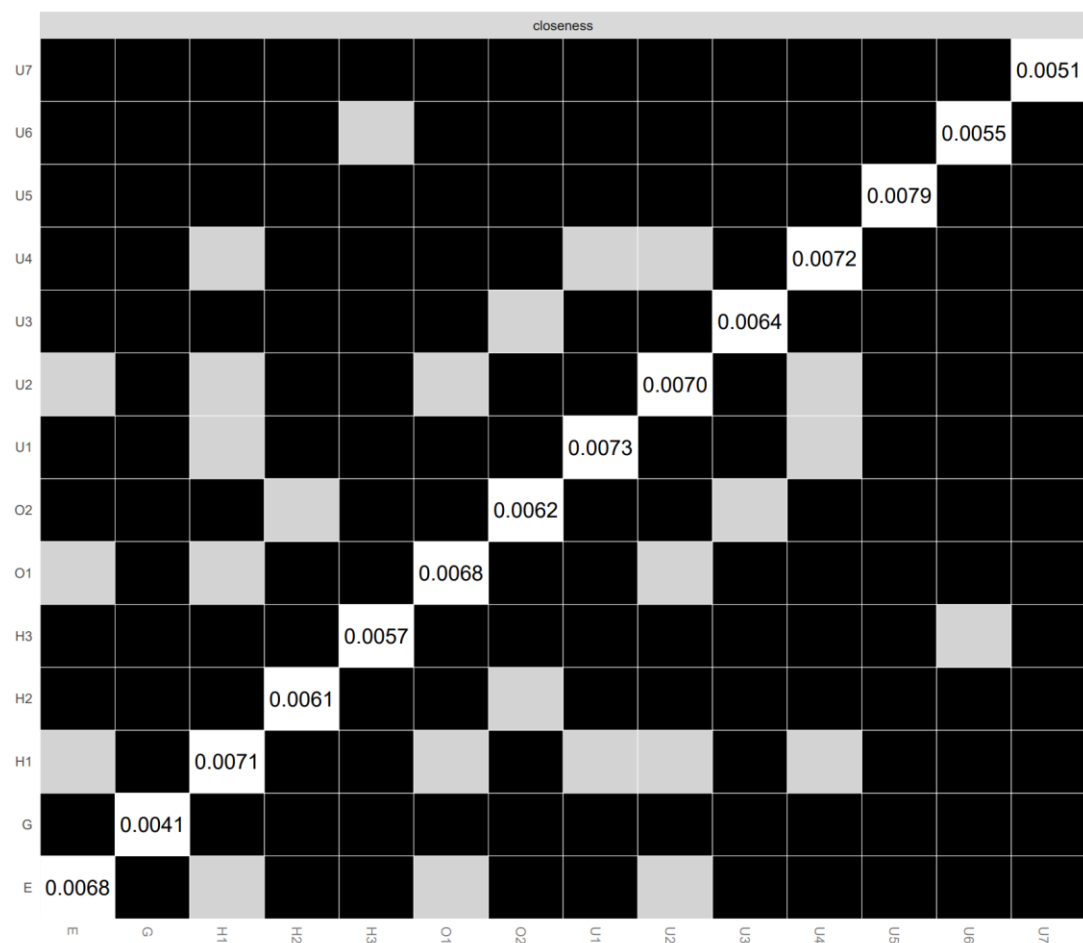
Supplementary Figure 1. Heatmap of the correlation coefficient matrix for each dimension of the HSOPSC

Figure legend: The values in the square lattices in the top-right corner represent the magnitude of the r value. The asterisks in the square lattices in the lower-left corner represent the level of statistical significance, among which one represents $P < 0.05$, 2 represents $P < 0.01$, and 3 represents $P < 0.001$. The colors denote positive (red) and negative (blue) correlation values, respectively.



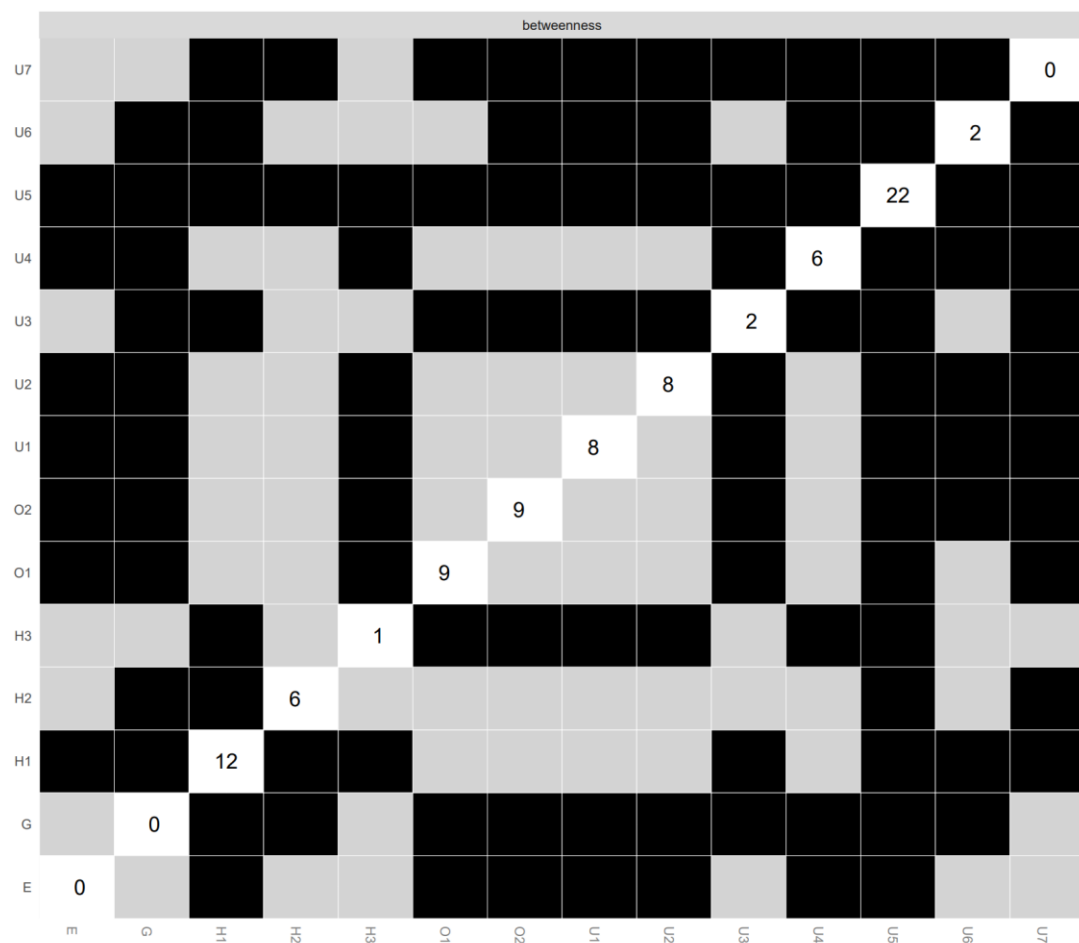
Supplementary Figures 2. Estimation of node strength differences by bootstrapped difference test in the network model of the HSOPSC

Figure legend: Gray boxes indicate nodes that do not differ from one-another significantly. Black boxes represent nodes that differ significantly from one another (significance level = 0.05). White boxes show the values of node strength.



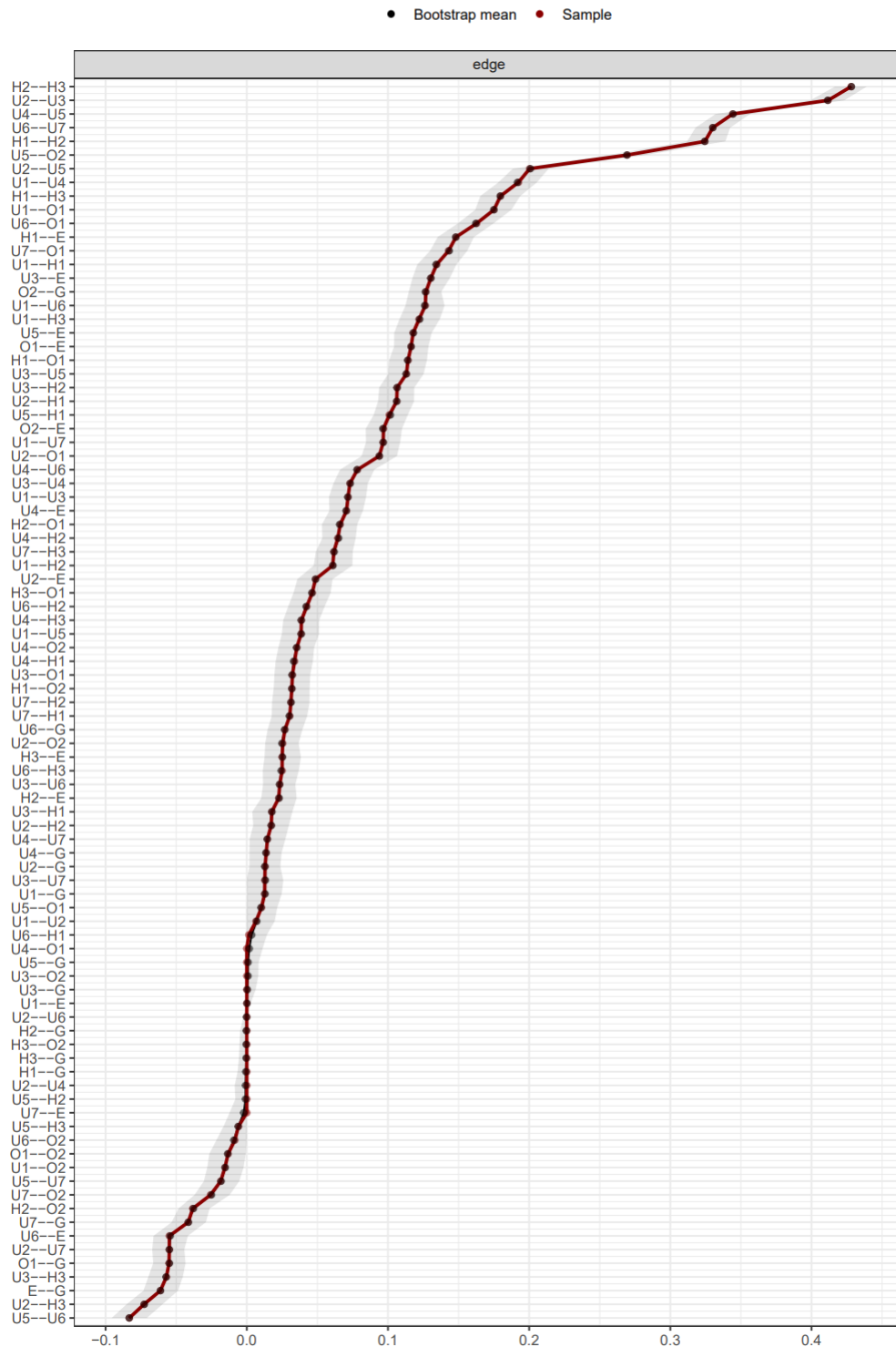
Supplementary Figures 3. Estimation of node closeness differences by bootstrapped difference test in the network model of the HSOPSC

Figure legend: Gray boxes indicate nodes that do not differ from one-another significantly. Black boxes represent nodes that differ significantly from one another (significance level = 0.05). White boxes show the values of node closeness.



Supplementary Figures 4. Estimation of node betweenness differences by bootstrapped difference test in the network model of the HSOPSC

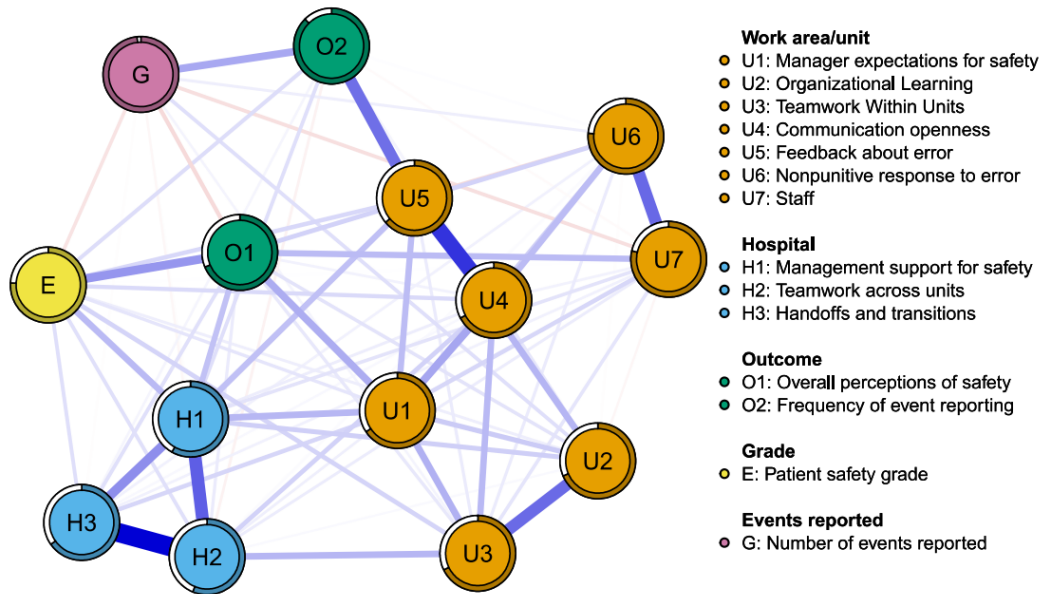
Figure legend: Gray boxes indicate nodes that do not differ from one-another significantly. Black boxes represent nodes that differ significantly from one another (significance level = 0.05). White boxes show the values of node betweenness.



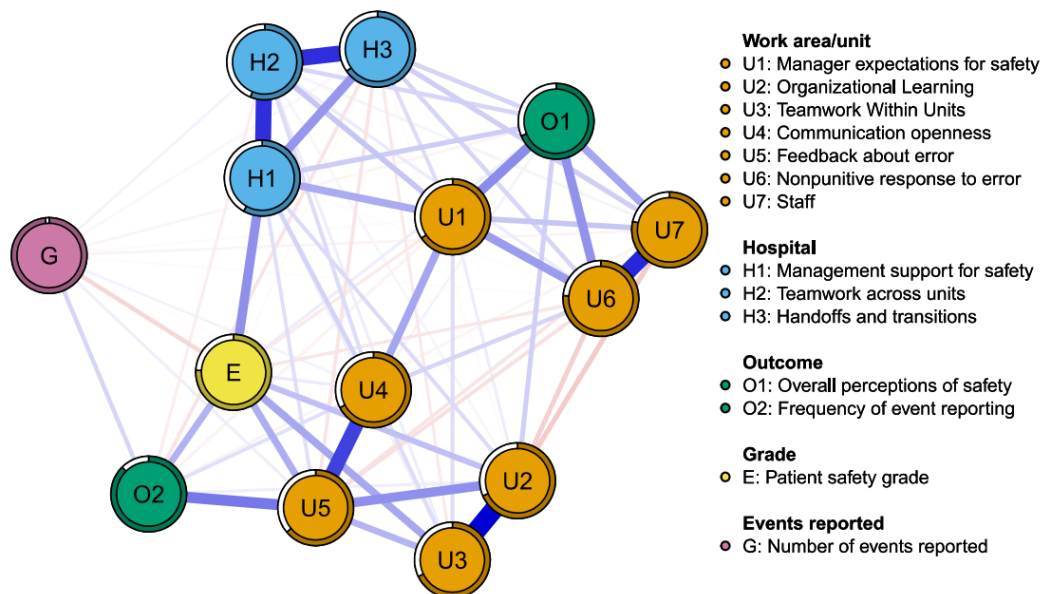
Supplementary Figures 6. Bootstrapped confidence intervals of edge weights in the network model of the HSOPSC

Figure legend: The red dots indicate the estimated values of each edge weight, ordered from the highest to the lowest value. The black dots indicate the observed value of each edge weight. The gray area represents the 95% Confidence Intervals of edge weights, estimated with the non-parametric bootstrap procedure. Wide intervals indicate lower accuracy and narrow intervals indicate higher accuracy.

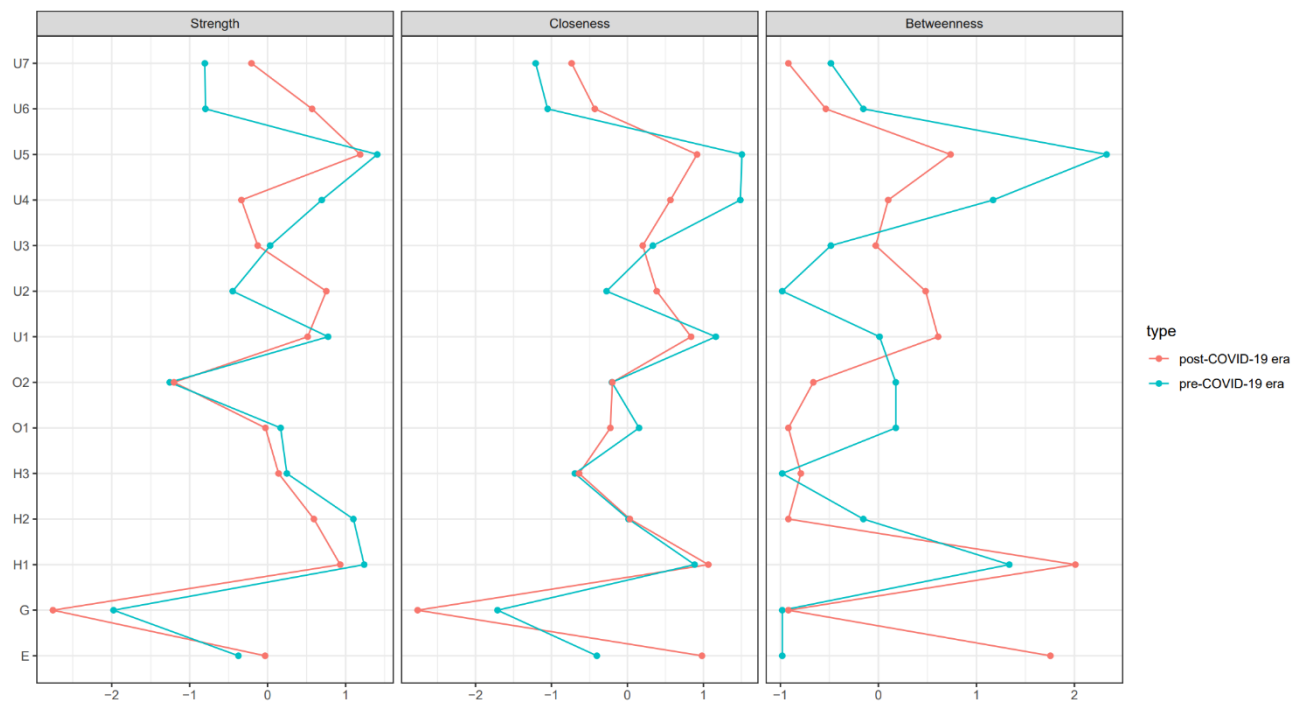
Pre-COVID-19 era



Post-COVID-19 era

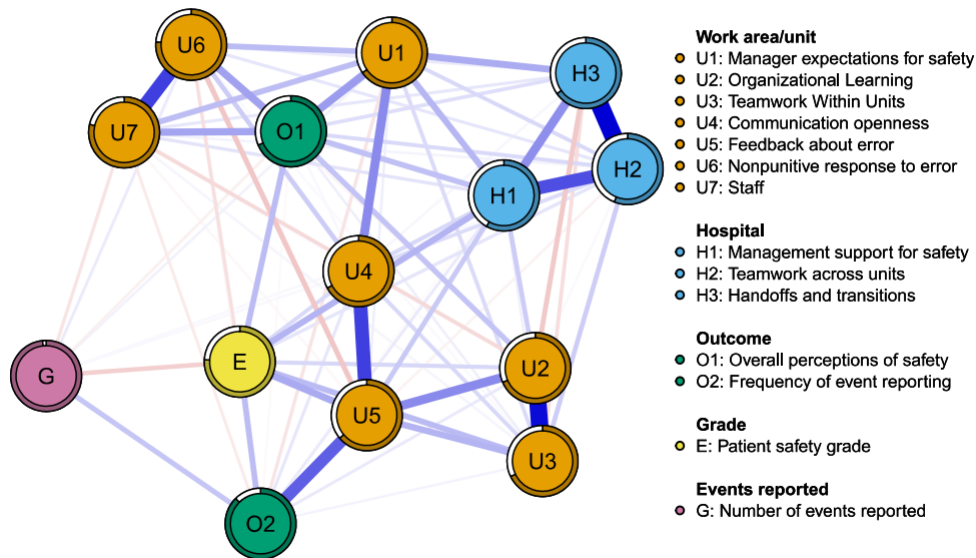


Supplementary Figures 7. Network comparison of the HSOPSC between different time
Figure legend: The different dimensions of HSOPSC are represented by nodes of different colors, with blue edges indicating positive associations, while red edges indicate negative associations between the connected nodes. The thickness of the lines indicates the strength of the edges.

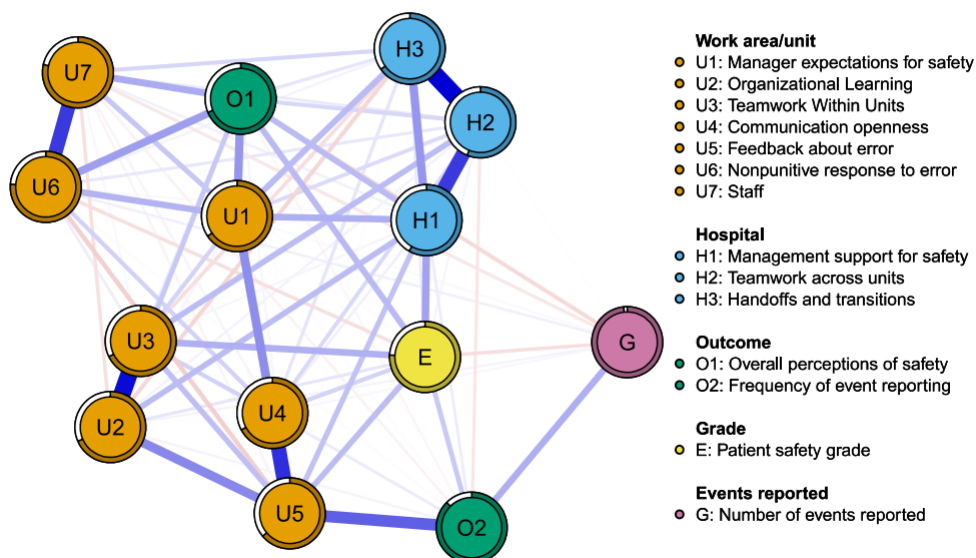


Supplementary Figures 8. Comparison of node centrality indicators in the HSOPSC network between different time

Male

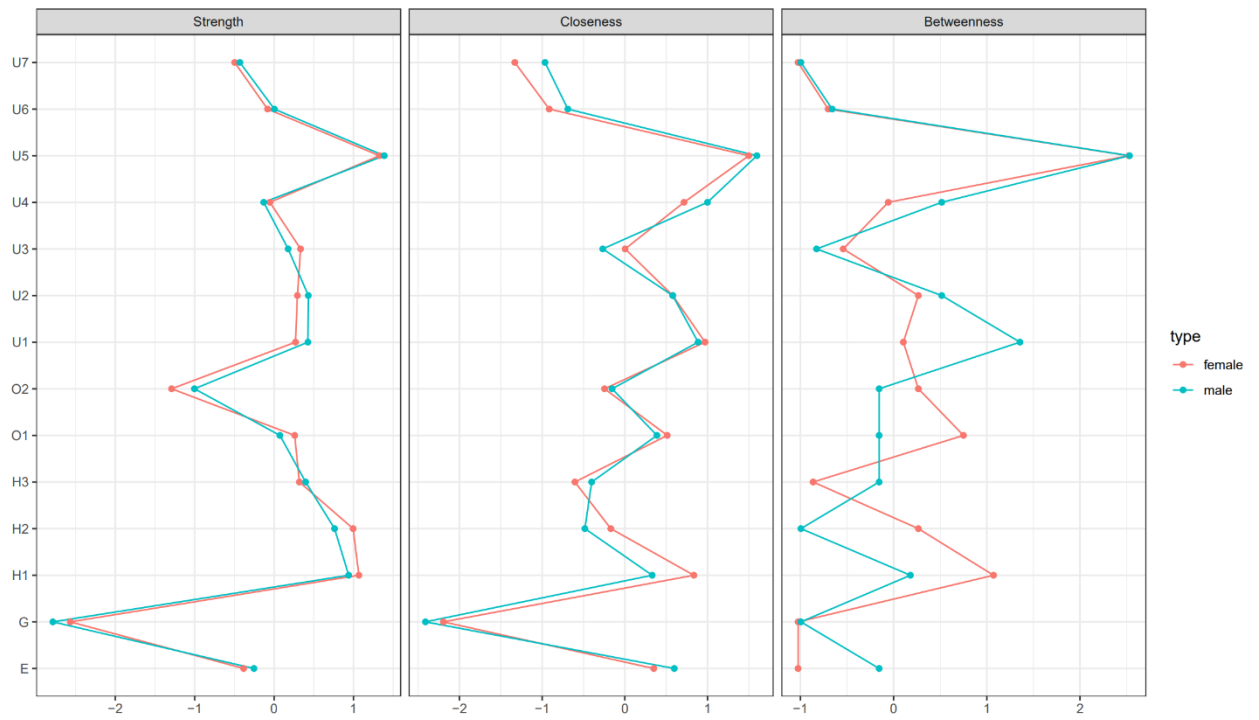


Female



Supplementary Figures 9. Network comparison of the HSOPSC between different gender

Figure legend: The different dimensions of HSOPSC are represented by nodes of different colors, with blue edges indicating positive associations, while red edges indicate negative associations between the connected nodes. The thickness of the lines indicates the strength of the edges.



Supplementary Figures 10. Comparison of node centrality indicators in the HSOPSC network between different gender