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**Supplementary Table 1** Demographic and diagnosis information among adolescents with idiopathic scoliosis

Characteristics	Total (n=765)	Male (n=175)	Female (n=590)	<i>P</i>	Lower age (n=476)	Higher age (n=289)	<i>P</i>
Age (years), <i>M (SD)</i>	13.86(1.78)	14.03(1.73)	13.81(1.80)	0.145	12.74(1.19)	15.70(0.77)	< 0.001
Sex, <i>n (%)</i>							
Male	175(22.9)	-	-	-	101(21.2)	74(25.6)	0.095
Female	590(77.1)	-	-	-	375(78.8)	215(74.4)	
Grade, <i>n (%)</i>							
Elementary School	110(14.4)	19(10.9)	91(15.4)	0.301	110(23.1)	0(0.0)	< 0.001
Middle School	404(52.8)	98(56.0)	306(51.9)		357(75.0)	47(16.3)	
High School	251(32.8)	58(33.1)	193(32.7)		9(1.9)	242(83.7)	
Cobb (°), <i>M (SD)</i>	17.39(6.57)	15.66(5.48)	17.91(6.77)	< 0.001	16.92(6.09)	18.17(7.23)	0.01
Duration of diagnosis, <i>n (%)</i>							
Less than 1 year	555(72.5)	138(78.9)	417(70.7)	0.095	373(78.4)	182(63.0)	< 0.001
1-2 years	86(11.2)	14(8.00)	72(12.2)		56(11.8)	30(10.4)	
More than 2 years	124(16.2)	23(13.1)	101(17.1)		47(9.9)	77(26.6)	
Types of Scoliosis, <i>n (%)</i>							
Thoracic	328(42.9)	75(42.9)	253(42.9)	0.97	200(42.1)	128(44.3)	0.098
Thoracolumbar	240(31.4)	56(32.0)	184(31.2)		162(34.0)	78(27.0)	
Lumbar	197(25.8)	56(32.0)	141(23.9)		114(23.9)	83(28.7)	
Family History of Scoliosis, <i>n (%)</i>							
Yes	414(54.1)	101(57.7)	313(53.1)	0.251	261(54.8)	153(52.9)	0.712
No	44(5.8)	6(3.4)	38(6.4)		25(5.3)	19(6.6)	
Unclear	307(40.1)	68(38.9)	239(40.5)		190(39.9)	117(40.5)	
Depression Score, <i>M (SD)</i>	7.91(4.60)	7.69(4.30)	7.98 (4.69)	0.47	8.05(4.86)	7.69(4.16)	0.303
Anxiety Score, <i>M (SD)</i>	7.18(4.27)	7.15 (4.10)	7.19 (4.32)	0.97	7.23 (4.39)	7.10 (4.07)	0.695

**Supplementary Table 2** Edge weights matrix of PHQ-9 and GAD-7 items among males with AIS

	PHQ1	PHQ2	PHQ3	PHQ4	PHQ5	PHQ6	PHQ7	PHQ8	PHQ9	GAD1	GAD2	GAD3	GAD4	GAD5	GAD6	GAD7
PHQ1	0.000															
PHQ2	0.097	0.000														
PHQ3	0.000	0.065	0.000													
PHQ4	0.158	0.146	0.052	0.000												
PHQ5	0.000	0.000	0.000	0.112	0.000											
PHQ6	0.050	0.252	0.000	0.000	0.072	0.000										
PHQ7	0.000	0.000	0.000	0.125	0.000	0.000	0.000									
PHQ8	0.000	0.000	0.000	0.000	0.021	0.000	0.046	0.000								
PHQ9	0.000	0.025	0.000	0.000	0.000	0.093	0.000	0.000	0.000							
GAD1	0.000	0.000	0.000	0.000	0.000	0.023	0.000	0.000	0.000	0.000						
GAD2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.209	0.000					
GAD3	0.000	0.044	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.272	0.223	0.000				
GAD4	0.000	0.079	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.220	0.000			
GAD5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.101	0.000	0.006	0.078	0.060	0.120	0.000		
GAD6	0.000	0.072	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.032	0.005	0.098	0.242	0.040	0.000	
GAD7	0.000	0.020	0.000	0.000	0.000	0.068	0.000	0.000	0.000	0.102	0.000	0.057	0.000	0.157	0.092	0.000

**Supplementary Table 3** Edge weights matrix of PHQ-9 and GAD-7 items among females with AIS

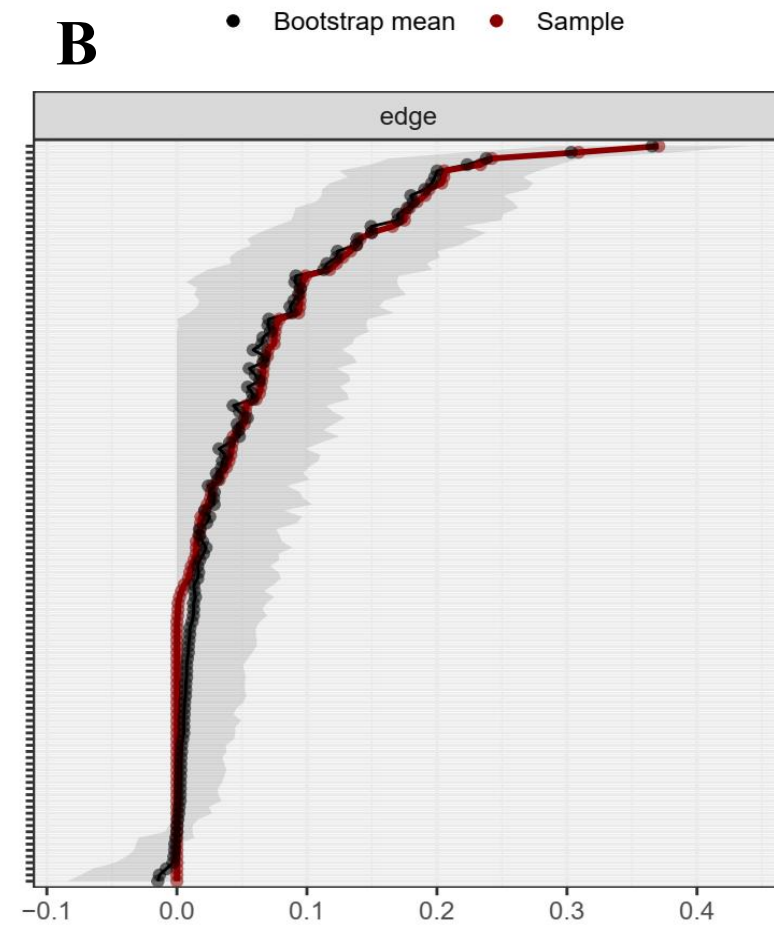
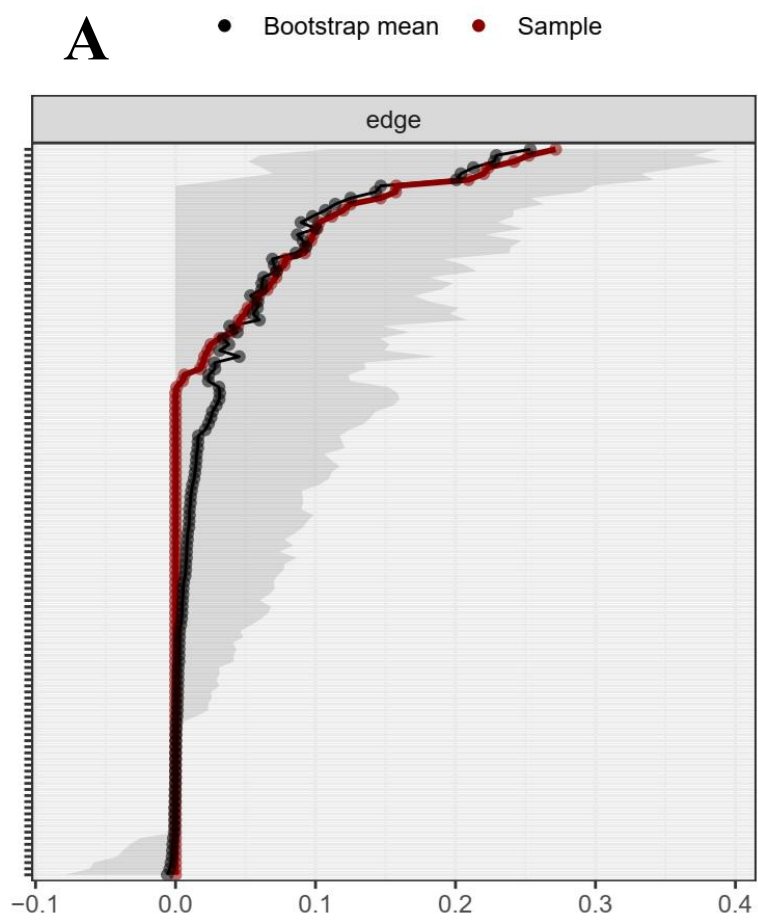
	PHQ1	PHQ2	PHQ3	PHQ4	PHQ5	PHQ6	PHQ7	PHQ8	PHQ9	GAD1	GAD2	GAD3	GAD4	GAD5	GAD6	GAD7
PHQ1	0.000															
PHQ2	0.166	0.000														
PHQ3	0.023	0.026	0.000													
PHQ4	0.309	0.065	0.204	0.000												
PHQ5	0.097	0.009	0.175	0.128	0.000											
PHQ6	0.002	0.206	0.043	0.026	0.053	0.000										
PHQ7	0.099	0.000	0.033	0.000	0.015	0.066	0.000									
PHQ8	0.038	0.000	0.053	0.001	0.079	0.063	0.242	0.000								
PHQ9	0.000	0.205	0.040	0.000	0.013	0.185	0.000	0.041	0.000							
GAD1	0.000	0.052	0.000	0.064	0.000	0.000	0.018	0.006	0.000	0.000						
GAD2	0.000	0.052	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.179	0.000					
GAD3	0.000	0.067	0.000	0.000	0.000	0.094	0.000	0.000	0.000	0.141	0.371	0.000				
GAD4	0.001	0.075	0.042	0.021	0.000	0.000	0.027	0.011	0.000	0.175	0.150	0.117	0.000			
GAD5	0.070	0.015	0.004	0.000	0.017	0.000	0.076	0.123	0.035	0.001	0.066	0.000	0.233	0.000		
GAD6	0.018	0.138	0.000	0.076	0.000	0.070	0.000	0.075	0.047	0.194	0.095	0.095	0.043	0.095	0.000	
GAD7	0.000	0.000	0.000	0.000	0.010	0.094	0.000	0.000	0.061	0.000	0.015	0.191	0.019	0.134	0.000	0.000

**Supplementary Table 4** Edge weights matrix of PHQ-9 and GAD-7 items among the lower age patients with AIS

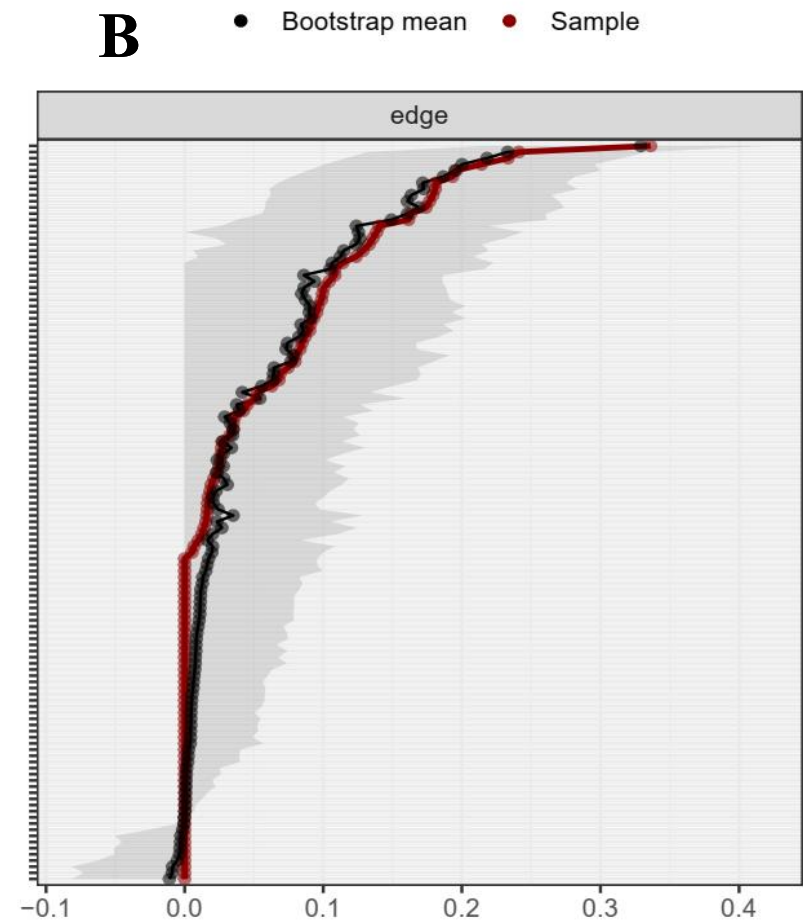
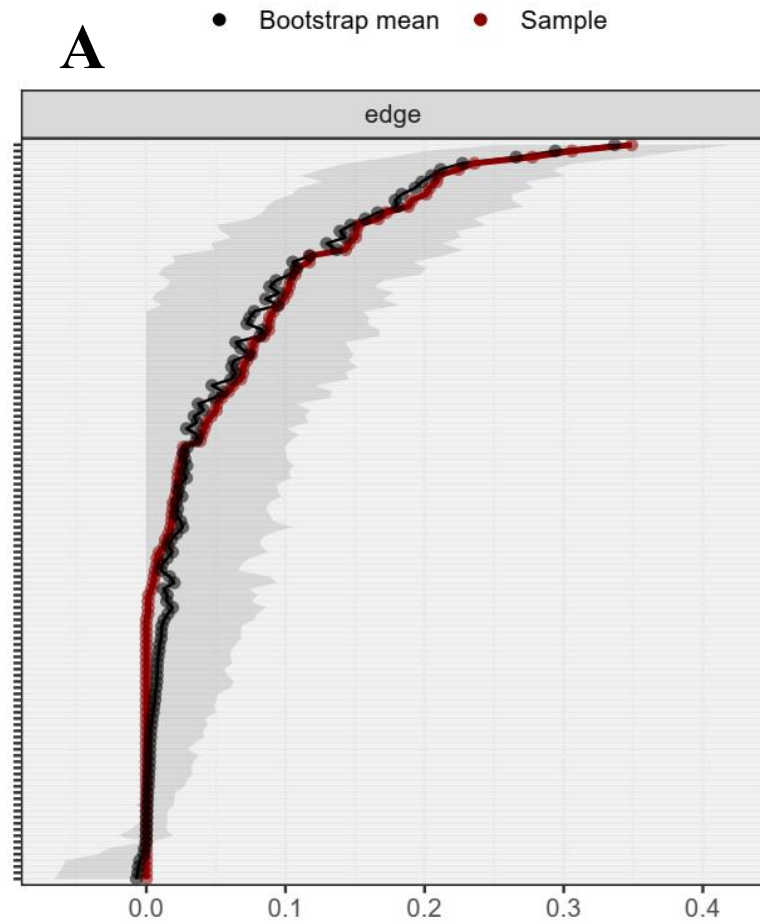
	PHQ1	PHQ2	PHQ3	PHQ4	PHQ5	PHQ6	PHQ7	PHQ8	PHQ9	GAD1	GAD2	GAD3	GAD4	GAD5	GAD6	GAD7
PHQ1	0.000															
PHQ2	0.151	0.000														
PHQ3	0.018	0.022	0.000													
PHQ4	0.306	0.076	0.204	0.000												
PHQ5	0.070	0.000	0.191	0.150	0.000											
PHQ6	0.054	0.236	0.001	0.023	0.062	0.000										
PHQ7	0.077	0.000	0.018	0.000	0.000	0.069	0.000									
PHQ8	0.002	0.001	0.076	0.022	0.089	0.040	0.278	0.000								
PHQ9	0.000	0.209	0.088	0.000	0.006	0.172	0.000	0.072	0.000							
GAD1	0.004	0.025	0.000	0.047	0.006	0.000	0.000	0.000	0.000	0.000						
GAD2	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.210	0.000					
GAD3	0.000	0.027	0.000	0.000	0.008	0.103	0.000	0.000	0.000	0.152	0.349	0.000				
GAD4	0.013	0.104	0.042	0.009	0.000	0.000	0.039	0.000	0.000	0.107	0.108	0.143	0.000			
GAD5	0.051	0.018	0.014	0.019	0.000	0.000	0.088	0.117	0.019	0.021	0.091	0.001	0.224	0.000		
GAD6	0.000	0.167	0.000	0.099	0.000	0.016	0.000	0.050	0.000	0.188	0.095	0.084	0.117	0.059	0.000	
GAD7	0.000	0.024	0.000	0.000	0.043	0.101	0.000	0.000	0.068	0.023	0.000	0.201	0.005	0.146	0.000	0

**Supplementary Table 5** Edge weights matrix of PHQ-9 and GAD-7 items among the higher age patients with AIS

	PHQ1	PHQ2	PHQ3	PHQ4	PHQ5	PHQ6	PHQ7	PHQ8	PHQ9	GAD1	GAD2	GAD3	GAD4	GAD5	GAD6	GAD7
PHQ1	0.000															
PHQ2	0.177	0.000														
PHQ3	0.014	0.108	0.000													
PHQ4	0.241	0.090	0.139	0.000												
PHQ5	0.114	0.016	0.069	0.095	0.000											
PHQ6	0.000	0.233	0.000	0.000	0.100	0.000										
PHQ7	0.080	0.085	0.000	0.124	0.080	0.007	0.000									
PHQ8	0.045	0.000	0.027	0.000	0.068	0.026	0.129	0.000								
PHQ9	0.000	0.091	0.000	0.100	0.000	0.181	0.021	0.000	0.000							
GAD1	0.012	0.099	0.000	0.000	0.000	0.018	0.052	0.010	0.000	0.000						
GAD2	0.000	0.016	0.000	0.000	0.000	0.000	0.000	0.017	0.000	0.193	0.000					
GAD3	0.000	0.136	0.000	0.000	0.000	0.035	0.000	0.000	0.000	0.196	0.336	0.000				
GAD4	0.000	0.015	0.000	0.036	0.000	0.000	0.000	0.000	0.000	0.181	0.108	0.174	0.000			
GAD5	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.179	0.017	0.005	0.042	0.000	0.214	0.000		
GAD6	0.026	0.093	0.024	0.000	0.000	0.104	0.000	0.063	0.083	0.087	0.051	0.163	0.096	0.133	0.000	
GAD7	0.000	0.000	0.000	0.000	0.000	0.075	0.000	0.033	0.000	0.025	0.027	0.140	0.000	0.161	0.019	0.000

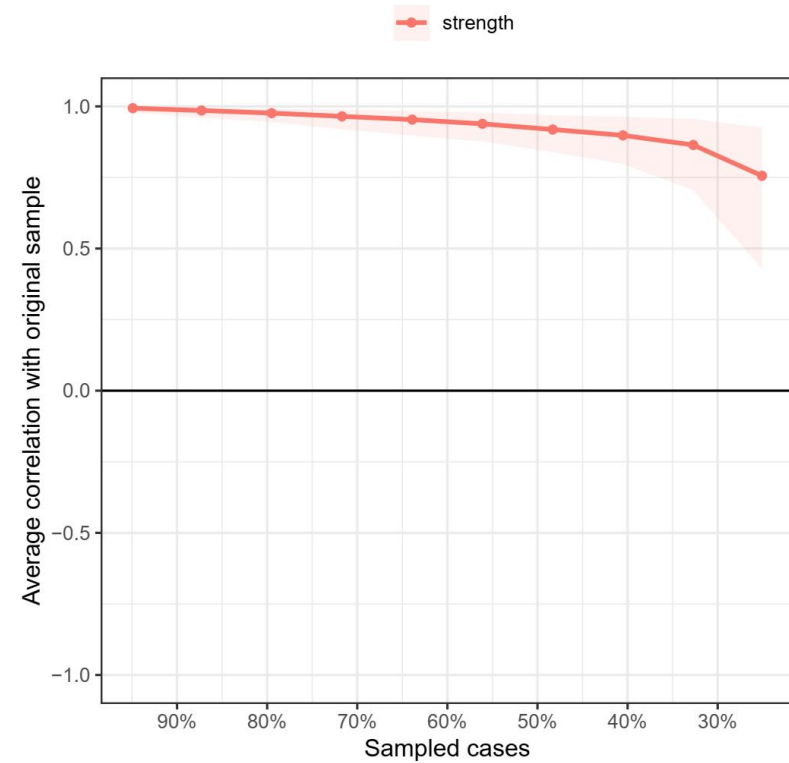
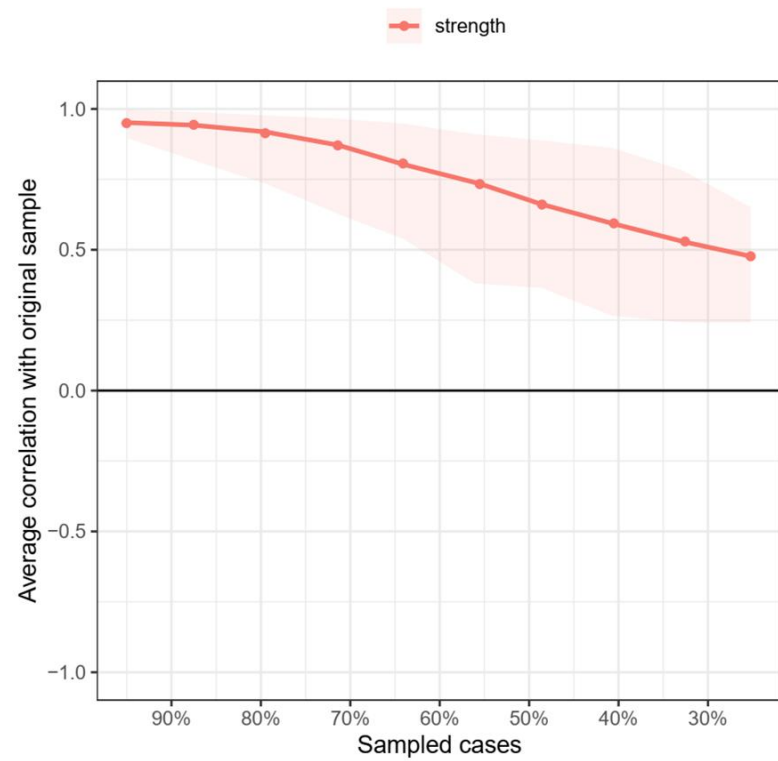


**Supplementary Figure 1** Bootstrapped confidence intervals of edge weights of depression and anxiety symptoms among gender-related subgroups (A) the male group (B) the female group.

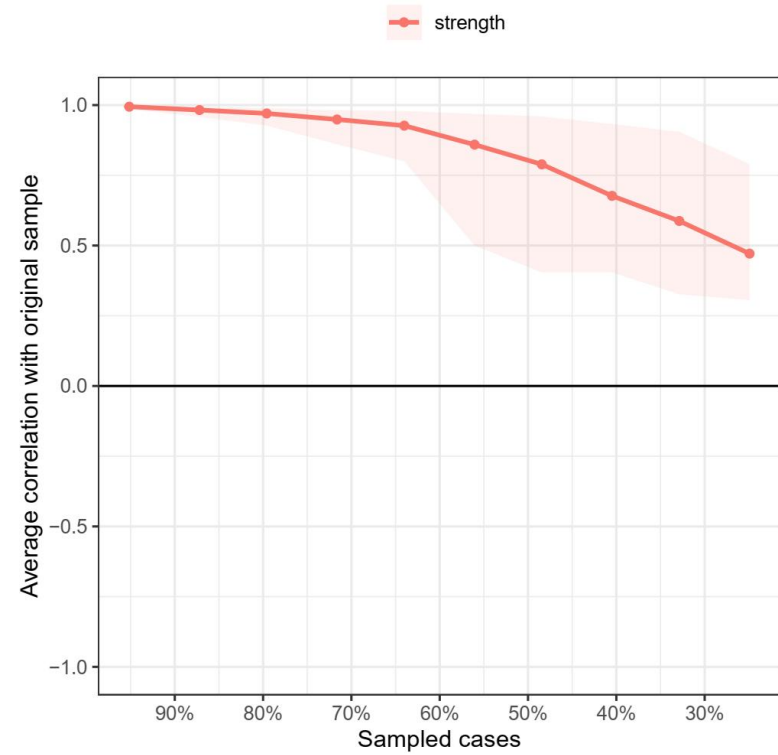
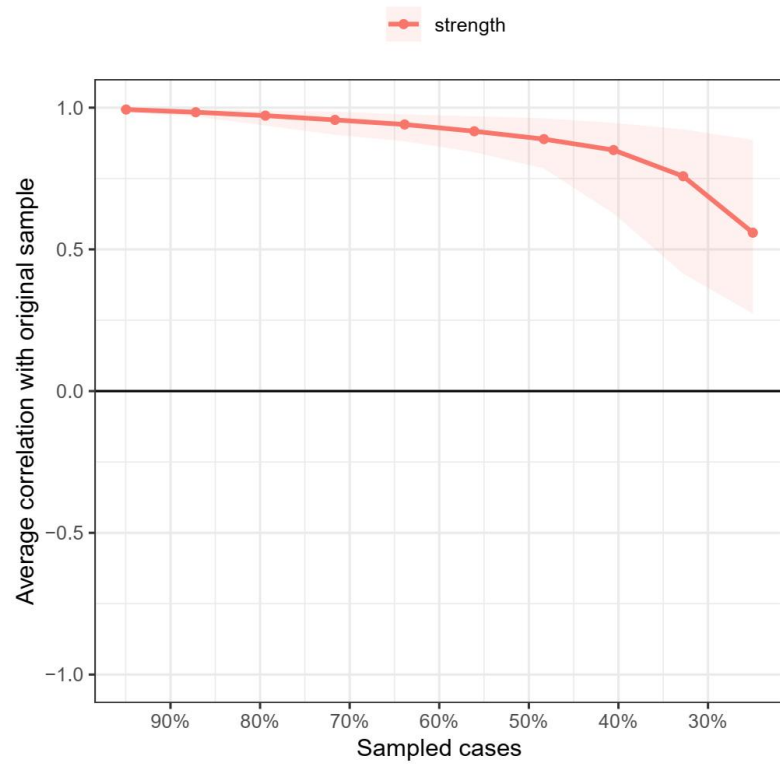


**Supplementary Figure 2** Bootstrapped confidence intervals of edge weights of depression and anxiety symptoms among age-related subgroups (A) the lower age group (B) the higher age group.

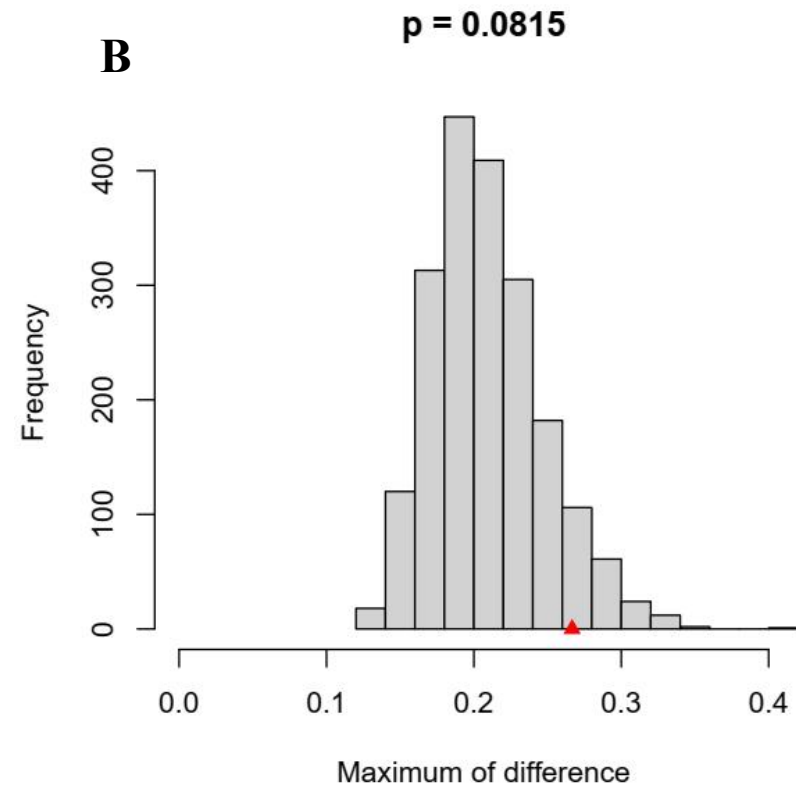
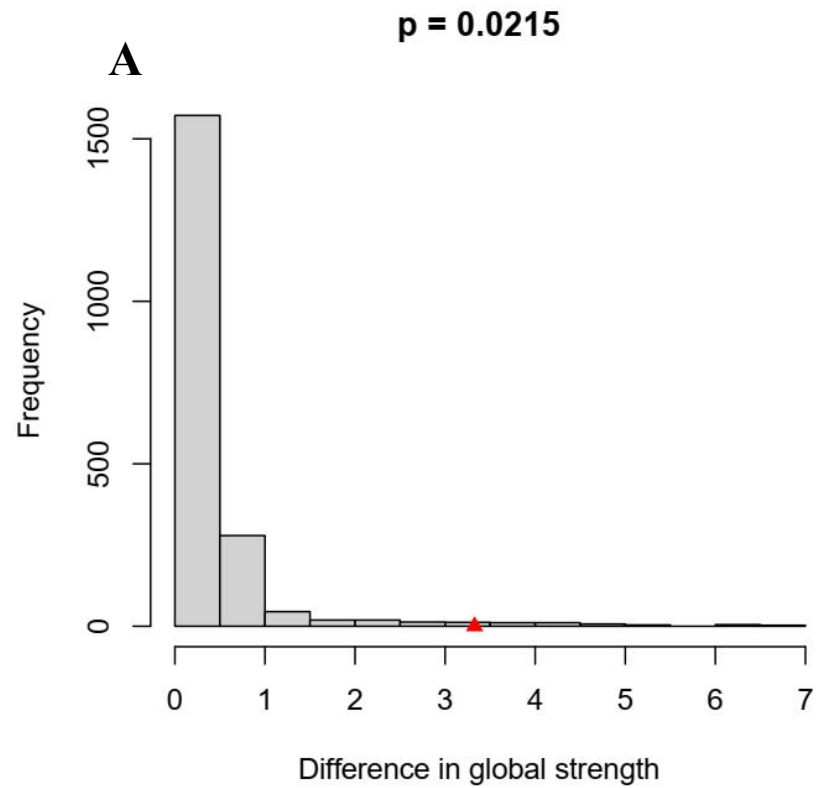




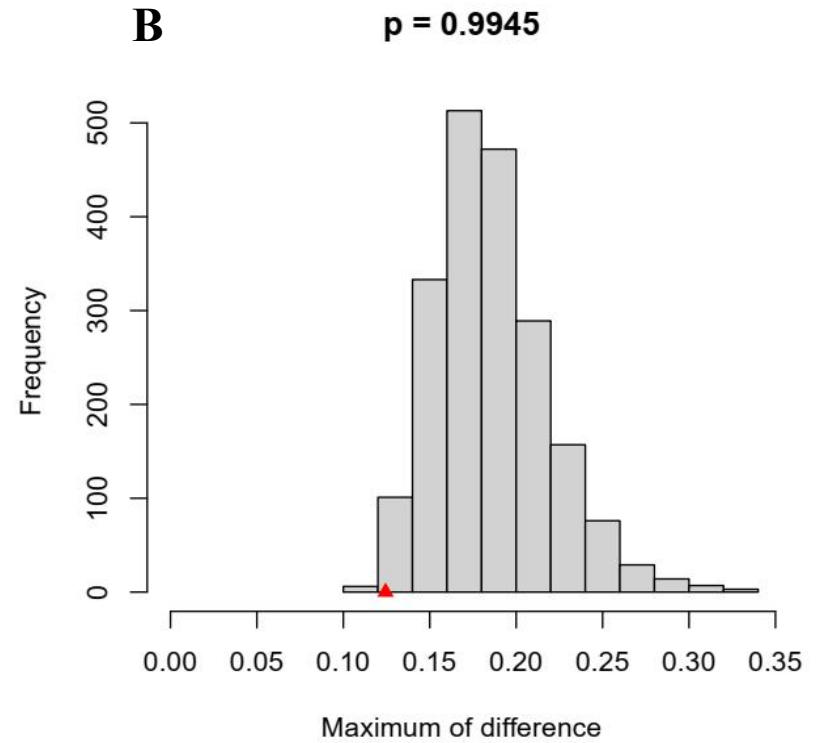
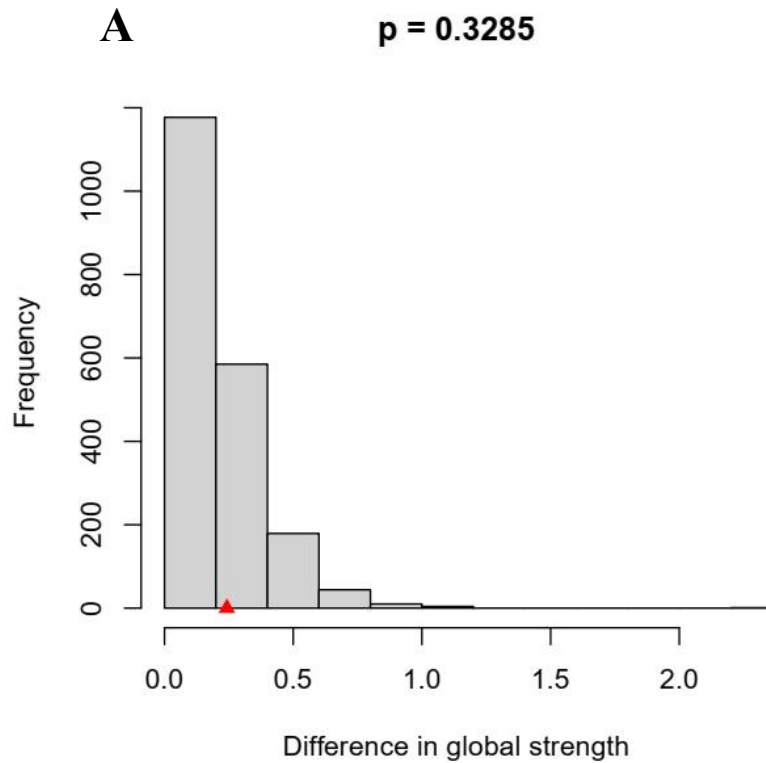
**Supplementary Figure 3** Bootstrapped confidence intervals of edge weights of depression and anxiety symptoms among age-related subgroups (A) the male group (B) the female group



**Supplementary Figure 4** The CS-coefficients of strength in depression and anxiety symptoms network among patients with AIS by case-dropping bootstrap. (A) the lower age group (B) the higher age group



**Supplementary Figure 5** Network comparison of global strength and network structure among patients with AIS within gender-related subgroups (A) the global strength within gender-related subgroups (B) the network structure within gender-related subgroups.



**Supplementary Figure 6** Network comparison of global strength and network structure among patients with AIS within age-related subgroups (A) the global strength within age-related subgroups (B) the network structure within age-related subgroups.