How do substance use and mental health work for me?

Towards personalized communication in the treatment of addiction and common mental health problems with ecological momentary assessment and network models

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Appendix C: Supplementary Materials Chapter 4

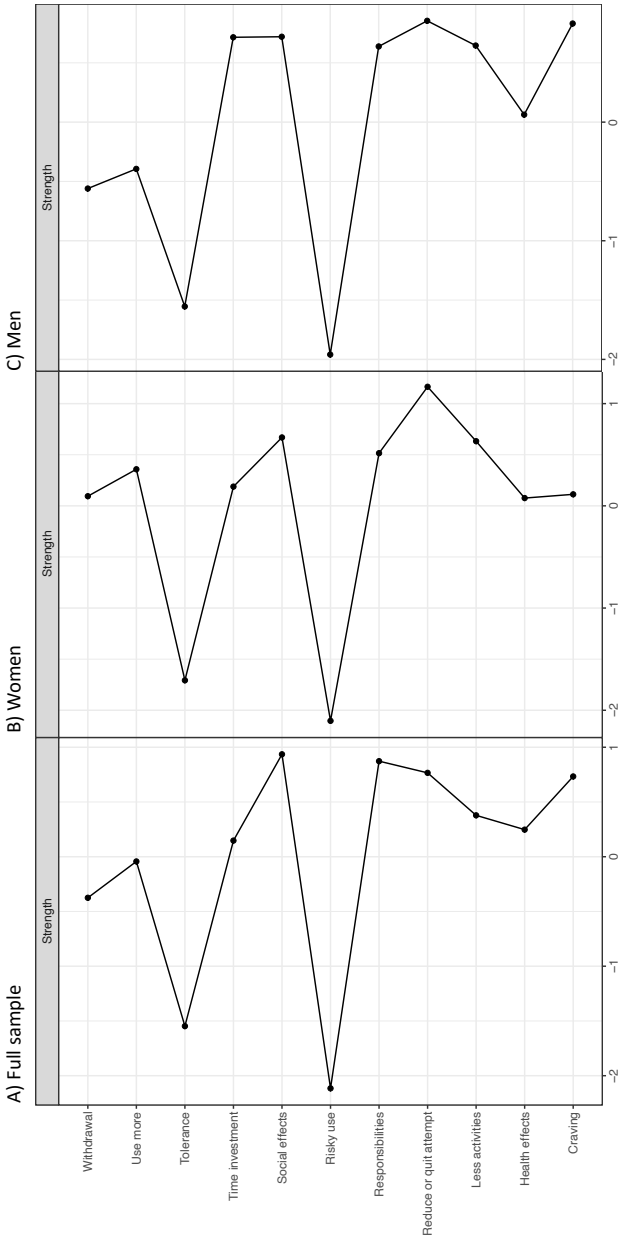

Figure S1 Strength Centrality of the 11 MINI CUD Symptoms in the CUD Symptom Network
Note: A) Full sample. B) Women. C) Men. *Z*-scores are shown on the x-axis.

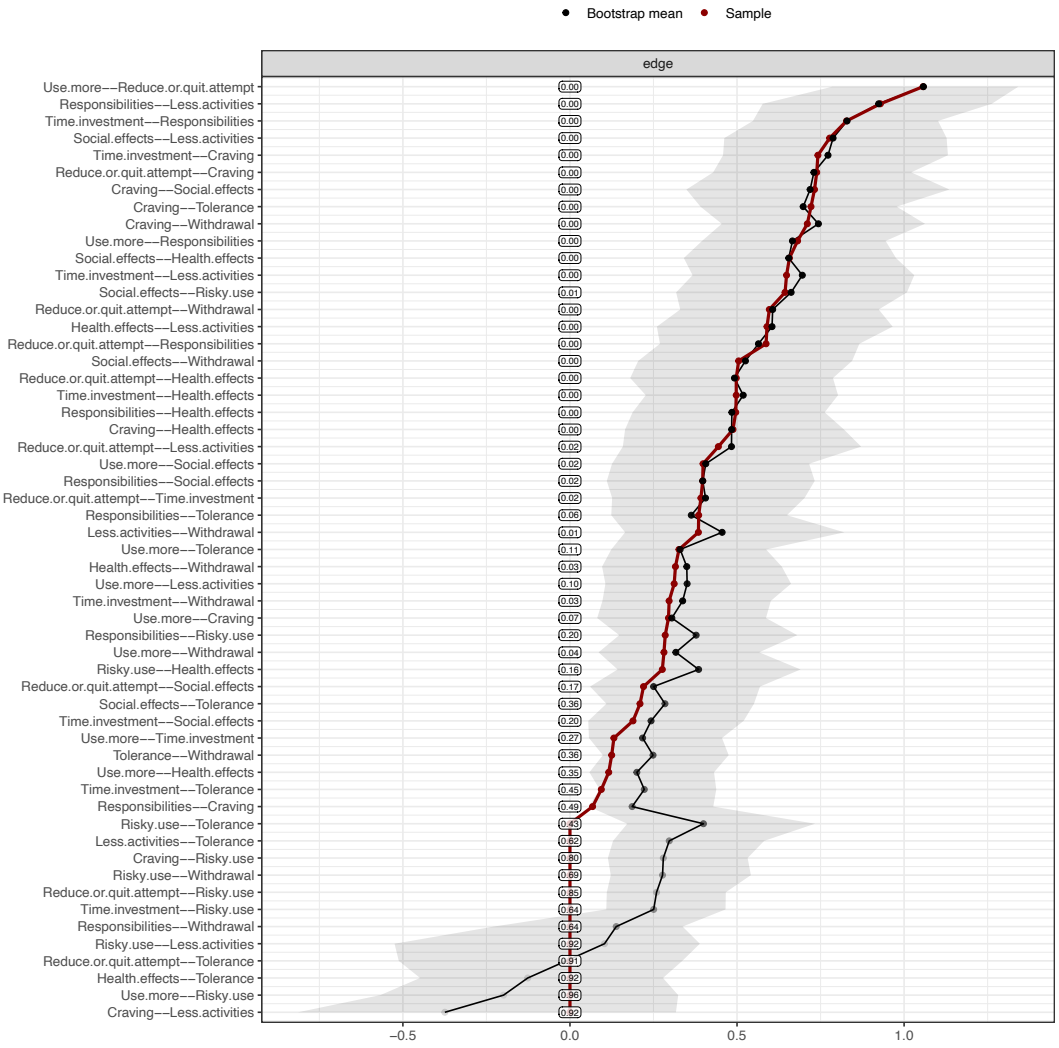

Figure S2 Edge Bootstraps of the CUD Symptom Network in the Full Sample

Note: Bootstrapped confidence region derived from occasions when edges were not estimated to be zero (1000 bootstrapped samples). The boxes show the number of times when that edge was estimated to be zero.

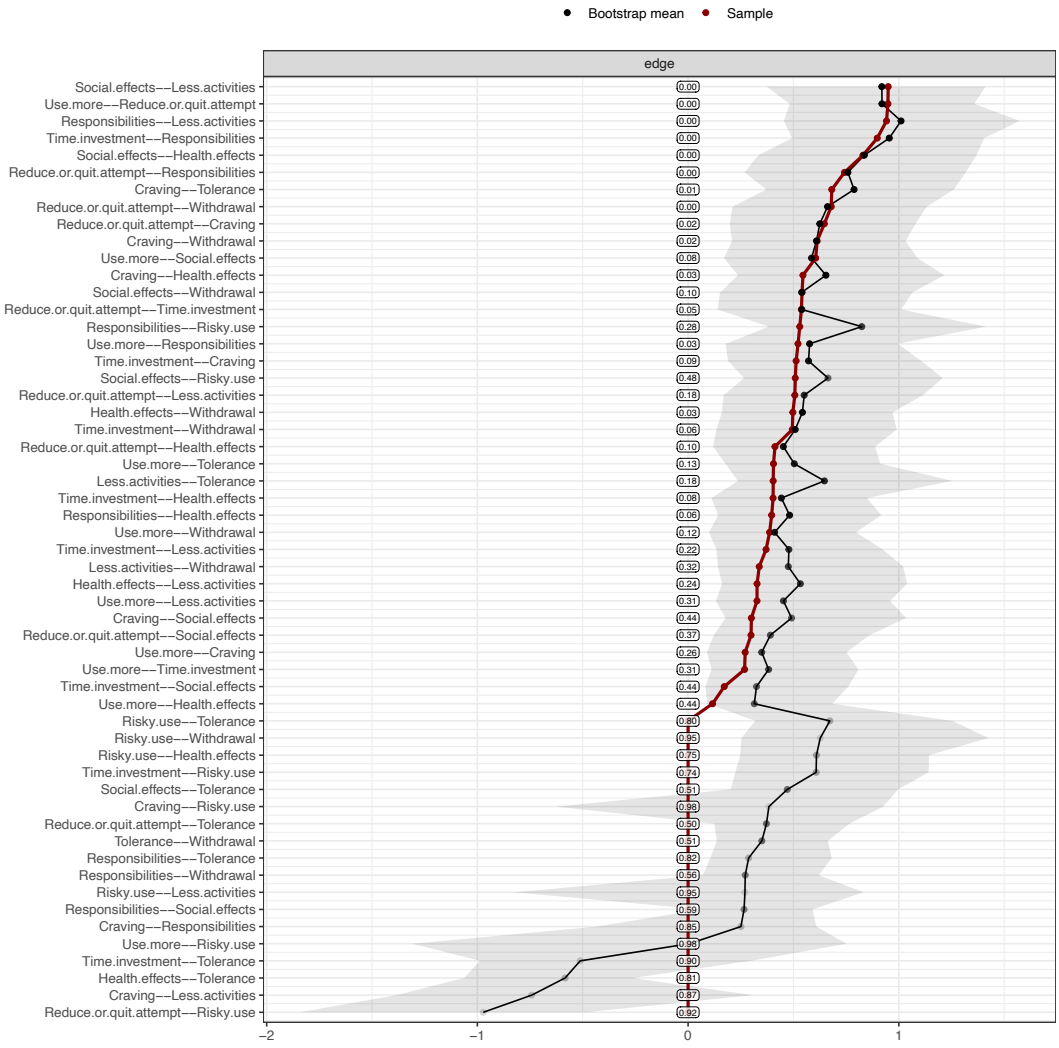

Figure S3 Edge *Bootstraps of the CUD Symptom Network in Women*

Note: Bootstrapped confidence region derived from occasions when edges were not estimated to be zero (1000 bootstrapped samples). The boxes show the number of times when that edge was estimated to be zero.

A

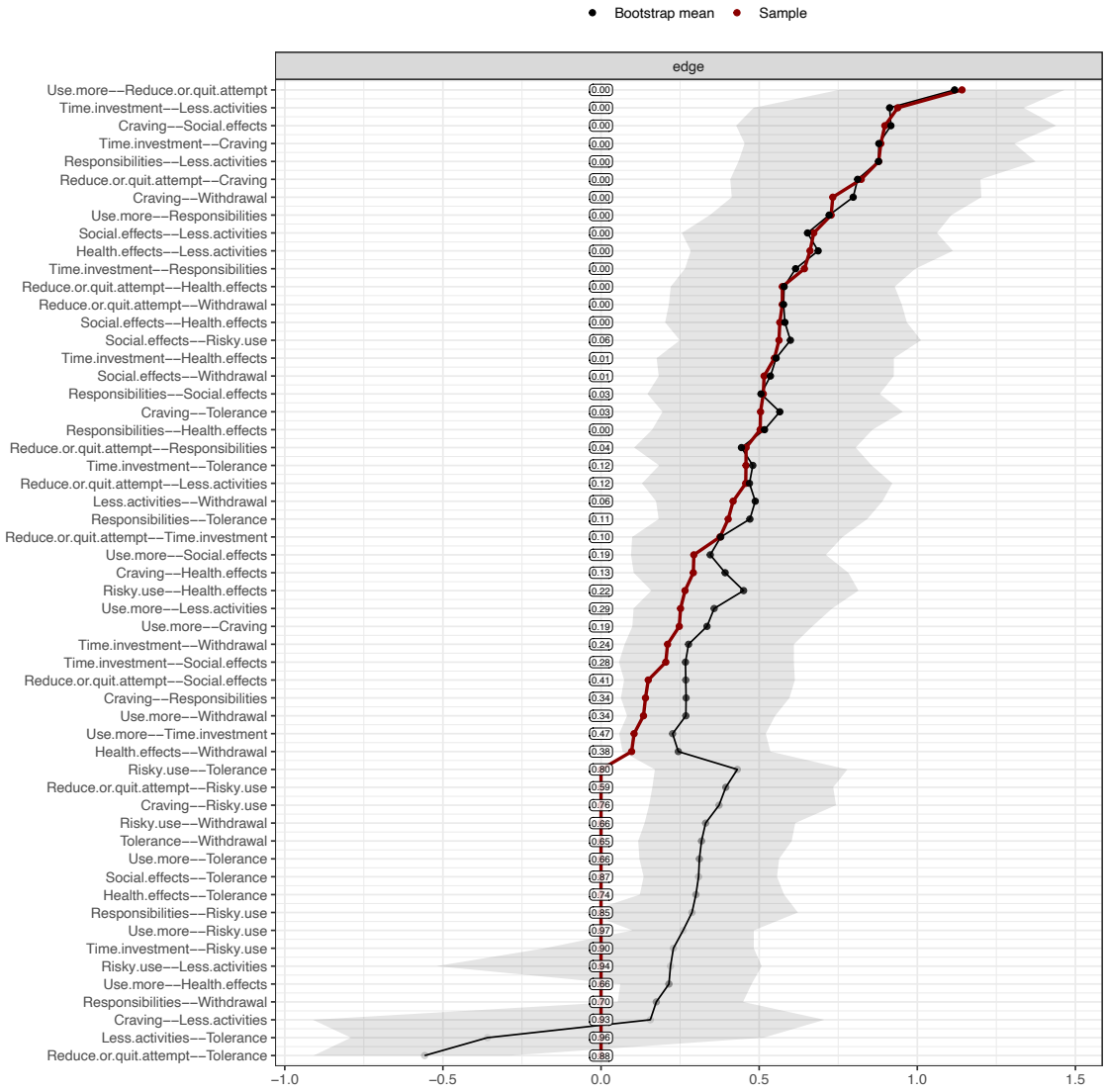

Figure S4 Edge Bootstraps *of the CUD Symptom Network in Men*

Note: Bootstrapped confidence region derived from occasions when edges were not estimated to be zero (1000 bootstrapped samples). The boxes show the number of times when that edge was estimated to be zero.

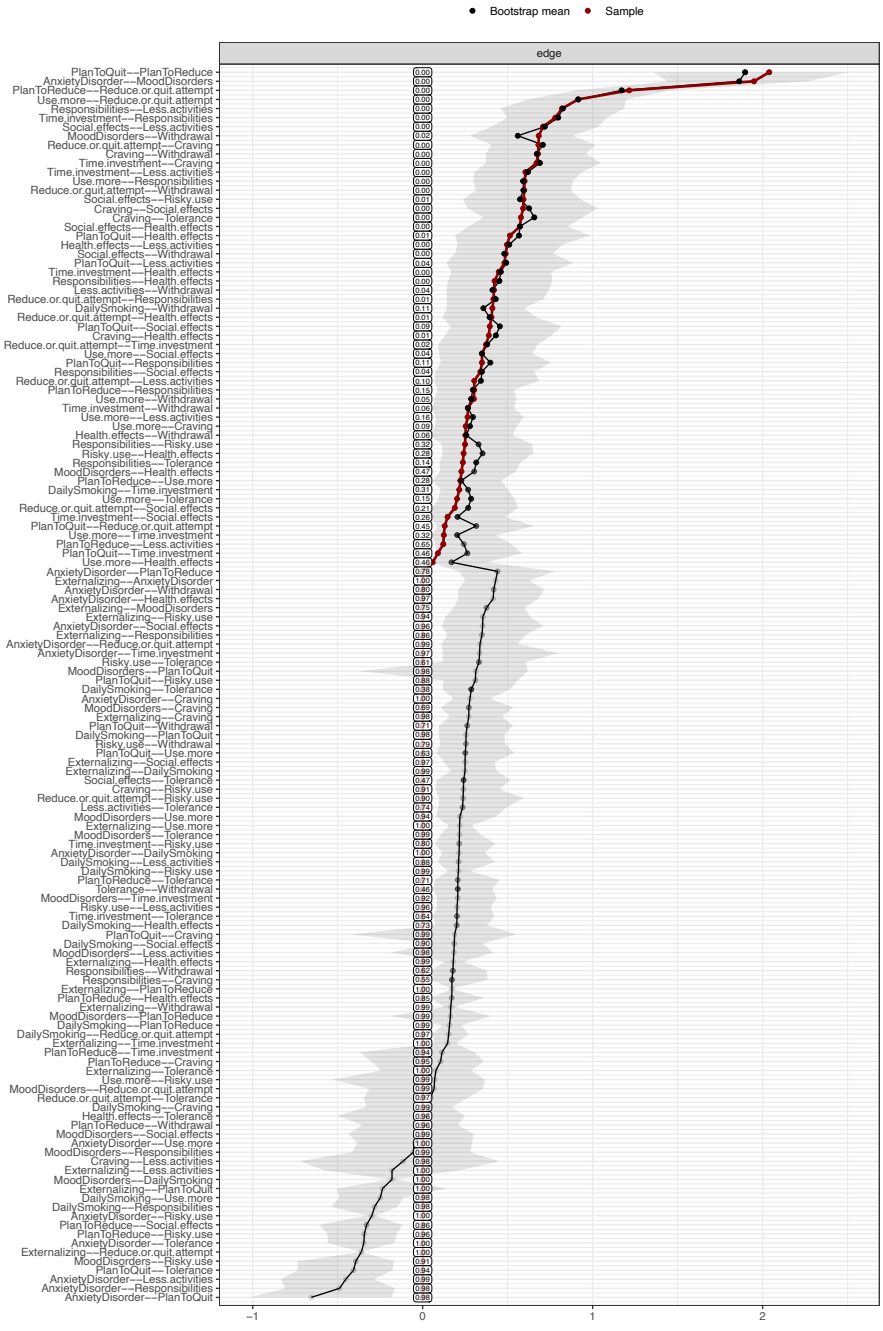

Figure S5 Edge Bootstraps of the CUD Symptoms Plus Exploratory Variables Network in the Full Sample

Note: Bootstrapped confidence region derived from occasions when edges were not estimated to be zero (1000 bootstrapped samples). The boxes show the number of times when that edge was estimated to be zero.

A

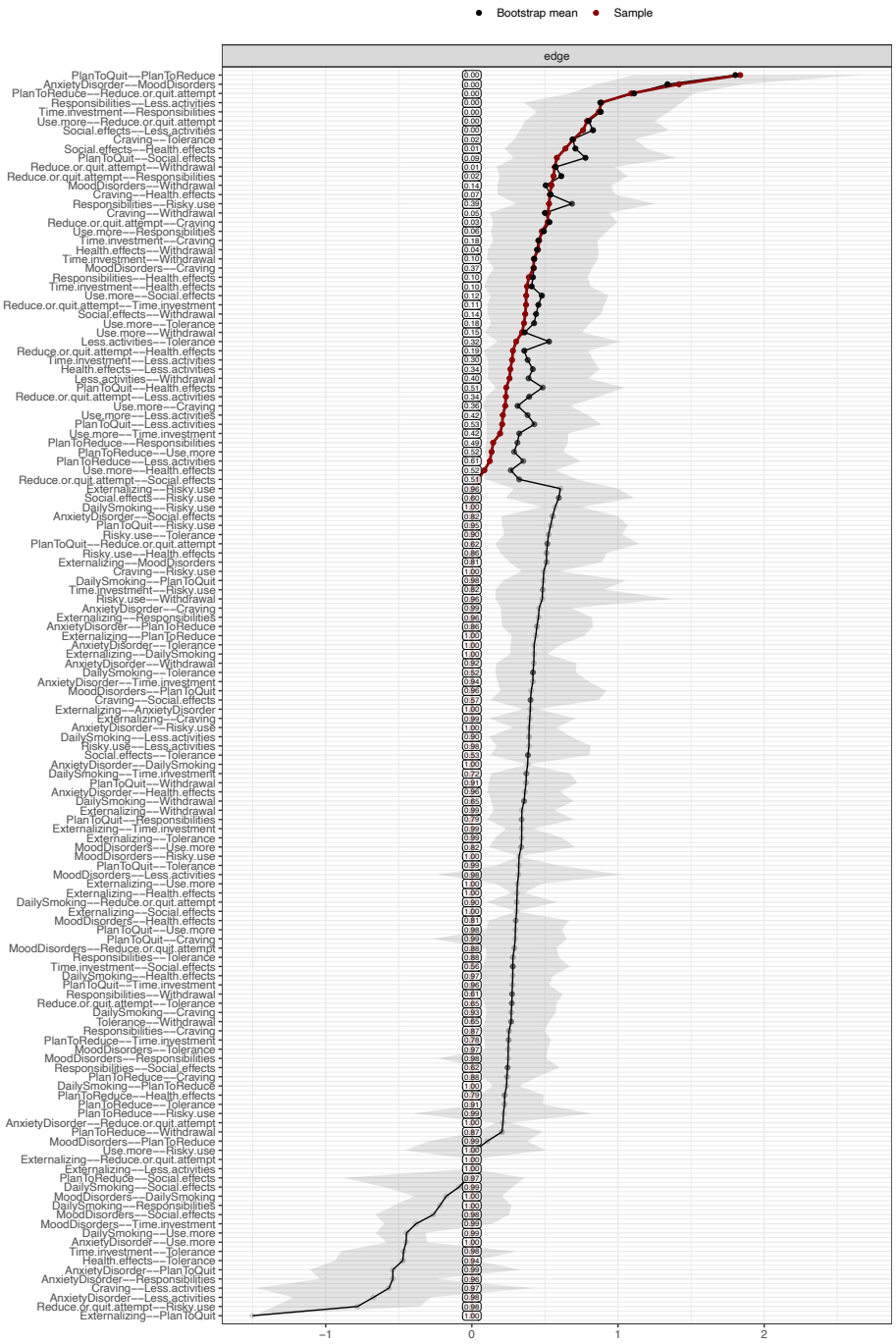

Figure S6 Edge Boot*straps of the CUD Symptoms Plus Exploratory Variables Network in Women*

Note: Bootstrapped confidence region derived from occasions when edges were not estimated to be zero (1000 bootstrapped samples). The boxes show the number of times when that edge was estimated to be zero.

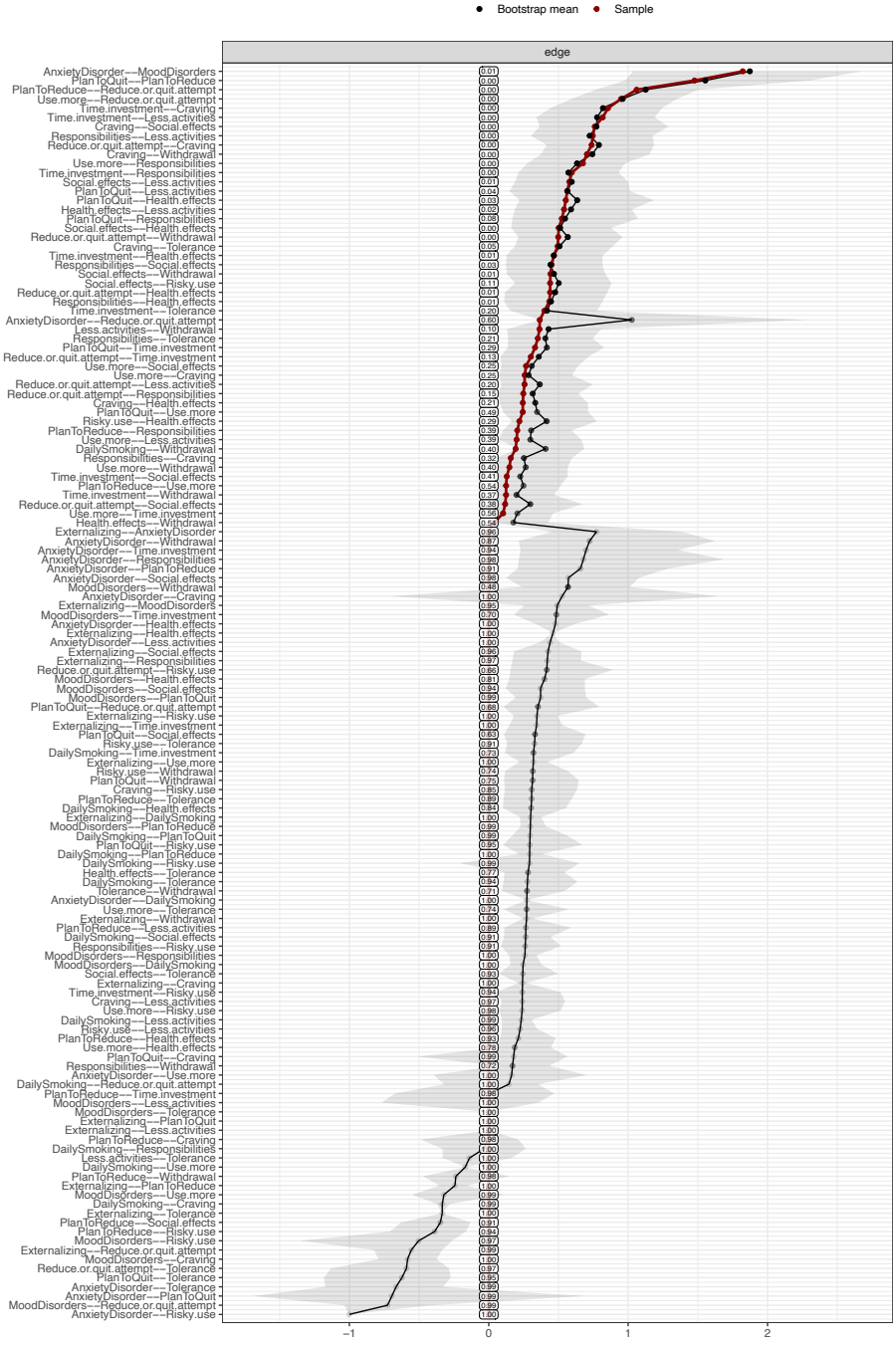

Figure S7 Edge Bootstraps *of the CUD Symptoms Plus Exploratory Variables Network in Men*

Note: Bootstrapped confidence region derived from occasions when edges were not estimated to be zero (1000 bootstrapped samples). The boxes show the number of times when that edge was estimated to be zero.

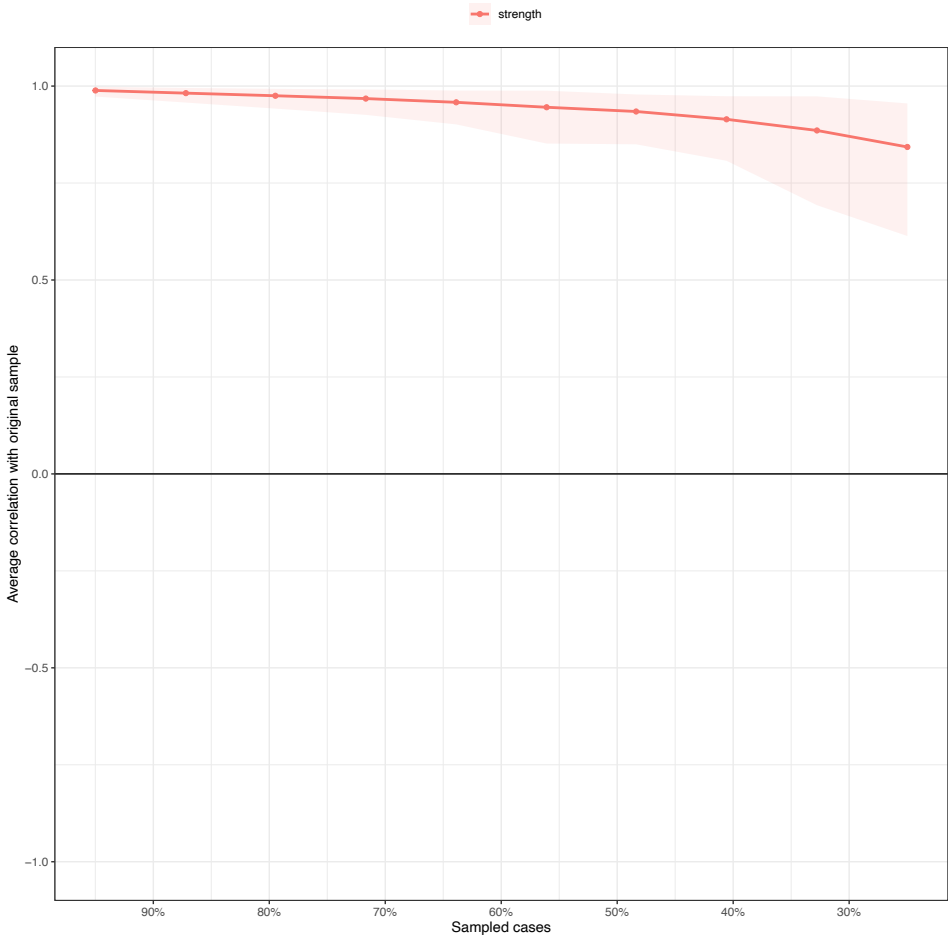

Figure S8 Strength Ce*ntrality Case-dropping Bootstraps for the CUD Symptom Network in the Full Sample*

Note: The figure shows the correlation of strength between the original and case-dropping sample based on 1000 bootstrapped samples. The correlation is always large, indicating that strength centrality is stable.

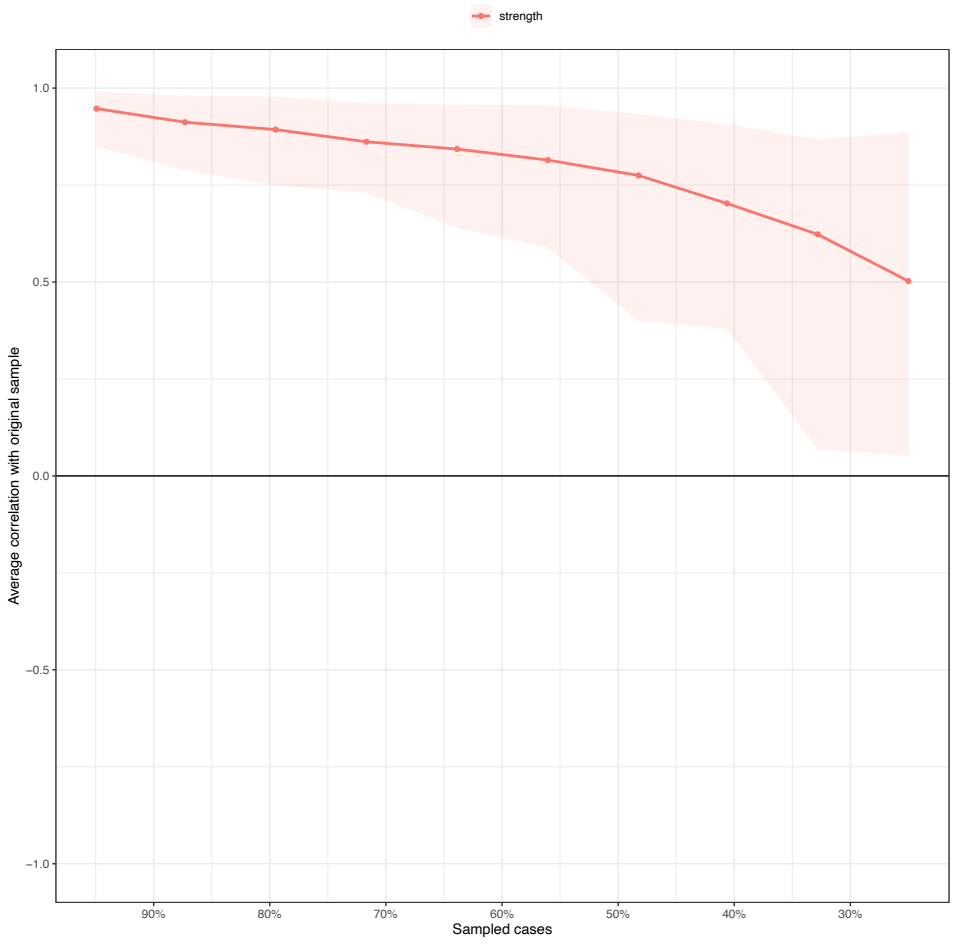

Figure S9 Strength Centrality Case-dropping Bootstraps for the CUD Symptom Network in Women

Note: The figure shows the correlation of strength between the original and case-dropping sample based on 1000 bootstrapped samples. The correlation is large except with a very small number of sampled cases, indicating that strength centrality is stable.

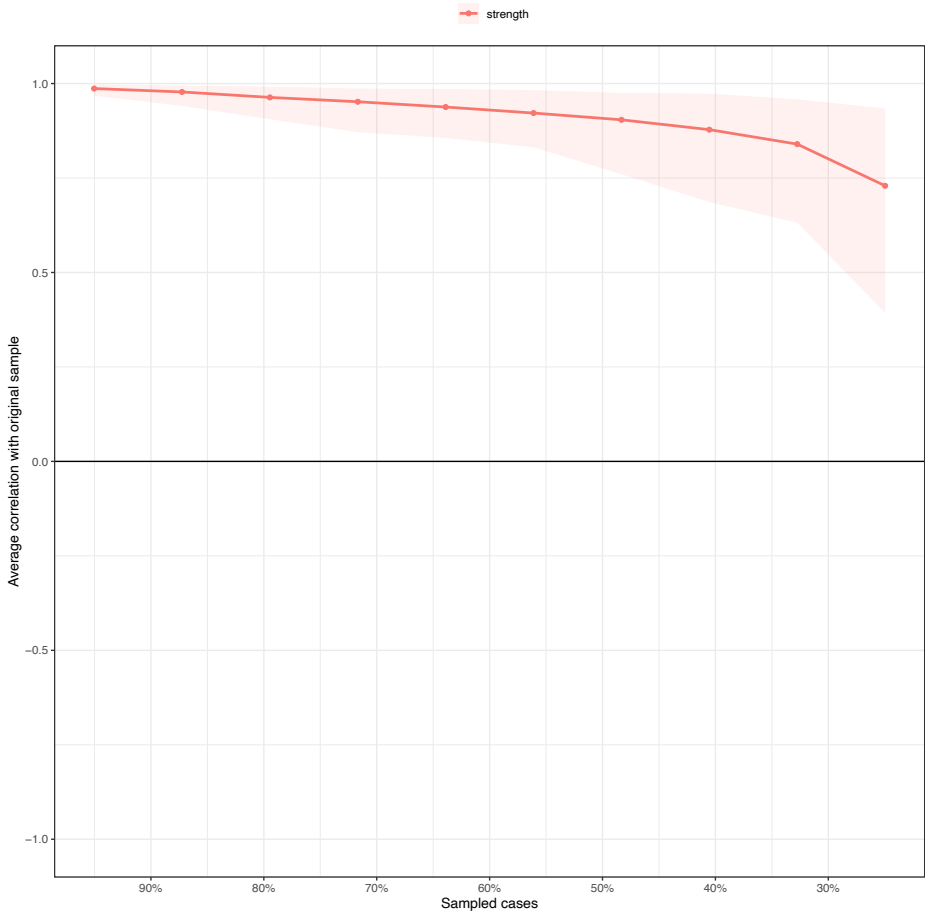

Figure S10 Strength *Centrality Case-dropping Bootstraps for the CUD Symptom Network in Men*

Note: The figure shows the correlation of strength between the original and case-dropping sample based on 1000 bootstrapped samples. The correlation is always large, indicating that strength centrality is stable.

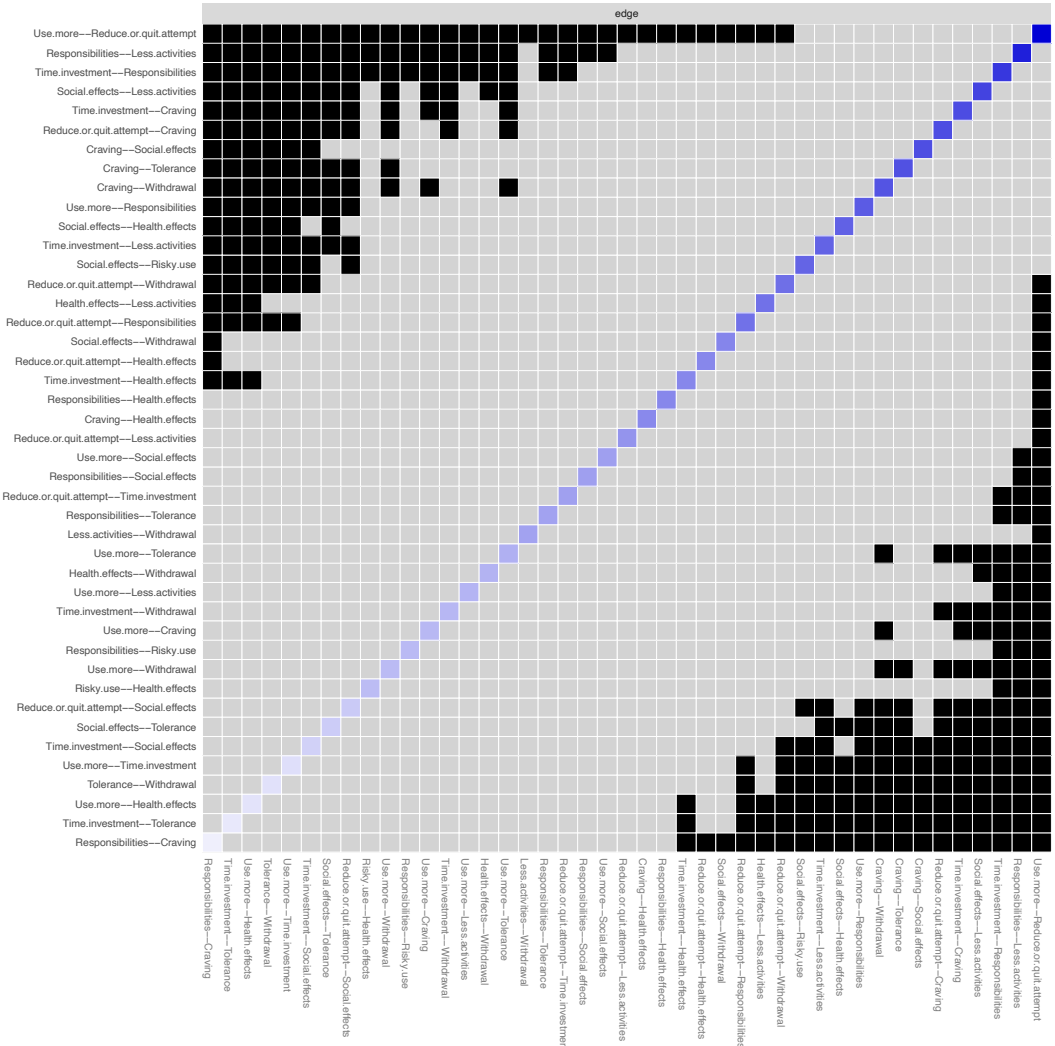

Figure S11 Bootstrapped Difference Tests to Test for Significant Differences Between Edges Within the CUD Symptom Network in the Full Sample

Note: The figure, based on 1000 bootstrapped difference tests, shows a black square for pairs of edges that are significantly different within the CUD symptom network in the full sample. For example, the edge between craving and time investment is significantly larger than the one between craving and responsibilities. Please zoom in the picture if interested in a specific edge difference. Note that this figure does not represent differences in the edges between genders, but how edges differ within the full sample network.

Table S1 Edge Weights for the CUD Symptom Networks of Women and Men

Node	Use more	Reduce or quit attempt	Time investment	Craving	Responsibilities	Social effects	Risky use	Health effects	Less activities	Tolerance	Withdrawal
Use more	0.00	1.14	0.10	0.25	0.73	0.29	0.00	0.00	0.25	0.00	0.13
Reduce or quit attempt	0.95	0.00	0.38	0.82	0.46	0.15	0.00	0.57	0.46	0.00	0.57
Time investment	0.27	0.54	0.00	0.88	0.64	0.20	0.00	0.55	0.94	**0.46**	0.21
Craving	0.27	0.65	0.51	0.00	0.14	0.90	0.00	0.29	0.00	0.50	0.73
Responsibilities	0.52	0.74	0.90	0.00	0.00	0.51	0.00	0.50	0.88	0.40	0.00
Social effects	0.61	0.30	0.17	0.30	0.00	0.00	0.56	0.57	0.67	0.00	0.52
Risky use	0.00	0.00	0.00	0.00	0.53	0.51	0.00	0.27	0.00	0.00	0.00
Health effects	0.12	0.41	0.40	0.55	0.40	0.83	0.00	0.00	0.66	0.00	0.10
Less activities	0.33	0.51	0.37	0.00	0.94	0.95	0.00	0.33	0.00	0.00	0.42
Tolerance	0.41	0.00	**0.00**	0.68	0.00	0.00	0.00	0.00	0.40	0.00	0.00
Withdrawal	0.39	0.68	0.49	0.61	0.00	0.54	0.00	0.50	0.34	0.00	0.00

Note: Edge weights for women are in the lower triangle, while edge weights for men are in the upper triangle. Bold text indicates edges that were significantly different between genders without controlling for multiple comparisons.

Table S2 Edge Weights for the CUD Symptom and Exploratory Variable Networks of Women and Men

Node	Externalizing diagnosis	Anxiety diagnosis	Mood diagnosis	Daily cigarette	Plan to quit	Plan to reduce	Use more	Reduce or quit attempt	Time investment	Responsibilities	Craving	Social effects	Risky use	Health effects	Less activities	Tolerance	Withdrawal
Externalizing diagnosis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anxiety diagnosis	0.00	0.00	1.82	0.00	0.00	0.00	0.00	**0.37**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mood diagnosis	0.00	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00
Daily cigarette	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
Plan to quit	0.00	0.00	0.00	0.00	0.00	1.48	0.24	0.00	0.33	0.52	0.00	0.00	0.00	0.55	0.56	0.00	0.00
Plan to reduce	0.00	0.00	0.00	0.00	1.84	0.00	0.12	1.06	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Use more	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.95	0.10	0.68	0.26	0.27	0.00	0.00	0.20	0.00	0.15
Reduce or quit attempt	0.00	**0.00**	0.00	0.00	0.00	1.09	0.79	0.00	0.30	0.25	0.74	0.12	0.00	0.44	0.26	0.00	0.50
Time investment	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.37	0.00	0.60	0.86	0.13	0.00	0.47	0.82	**0.40**	0.12
Responsibilities	0.00	0.00	0.00	0.00	0.00	0.15	0.48	0.56	0.87	0.00	0.16	0.45	**0.00**	0.43	0.75	0.35	0.00
Craving	0.00	0.00	**0.42**	0.00	0.00	0.00	0.23	0.52	0.46	0.00	0.00	**0.76**	0.00	0.24	0.00	0.49	0.70
Social effects	0.00	0.00	0.00	0.00	0.58	0.00	0.37	0.04	0.00	0.00	**0.00**	0.00	0.44	0.50	0.58	0.00	0.44
Risky use	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.53**	0.00	0.00	0.00	0.22	0.00	0.00	0.00
Health effects	0.00	0.00	0.00	0.00	0.24	0.00	0.09	0.28	0.38	0.39	0.53	0.64	0.00	0.00	0.54	0.00	0.04
Less activities	0.00	0.00	0.00	0.00	0.21	0.12	0.21	0.23	0.28	0.89	0.00	0.76	0.00	0.26	0.00	**0.00**	0.36
Tolerance	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00	**0.00**	0.00	0.69	0.00	0.00	0.00	**0.30**	0.00	0.00
Withdrawal	0.00	0.00	0.54	0.00	0.00	0.00	0.34	0.57	0.42	0.00	0.52	0.37	0.00	0.45	0.26	0.00	0.00

Note: Edge weights for women are in the lower triangle, while edge weights for men are in the upper triangle. Bold text indicates edges that were significantly different between genders without controlling for multiple comparisons.