

Supplementary Material:

Relationships between childhood trauma and perceived stress in the general population: a network perspective.

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Figures:

Supplementary figure S1. Centrality plot depicting z-standardized strength centrality indices of the network generated based on the original sample.

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Tables:

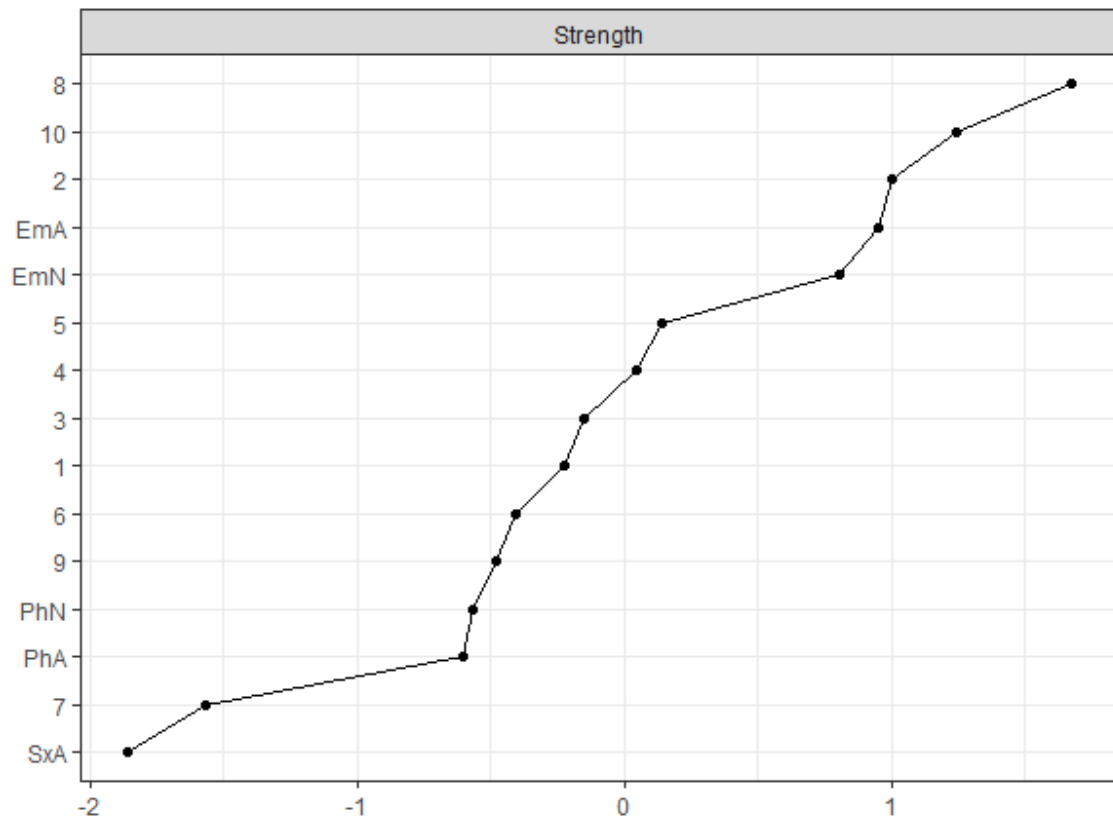
Supplementary table 1. Weighted adjacency matrix for the network model generated based on the original data set.

Supplementary table 2. Weighted adjacency matrix for the network model generated based on the replication data set.

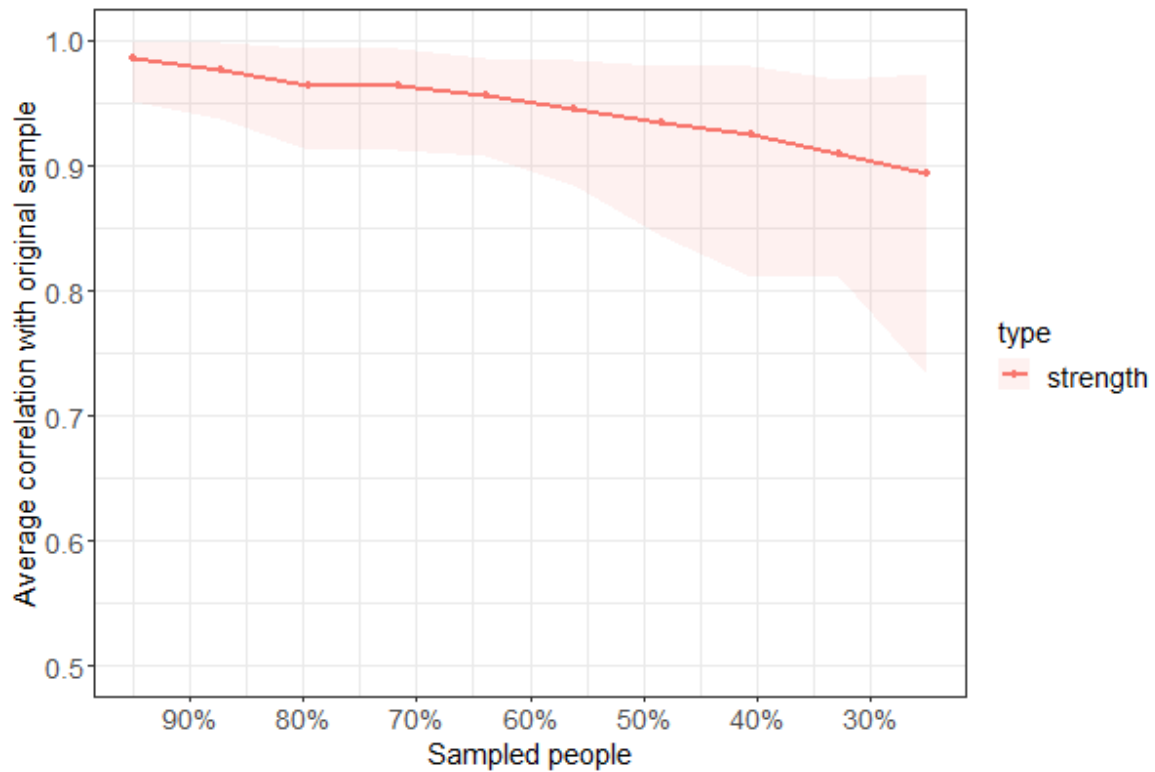
Supplementary table 3. Weighted adjacency matrix for the network model generated based on the combined data set.

Supplementary table 4. Weighted adjacency matrix for the network model generated based on data of the male participants from the combined sample.

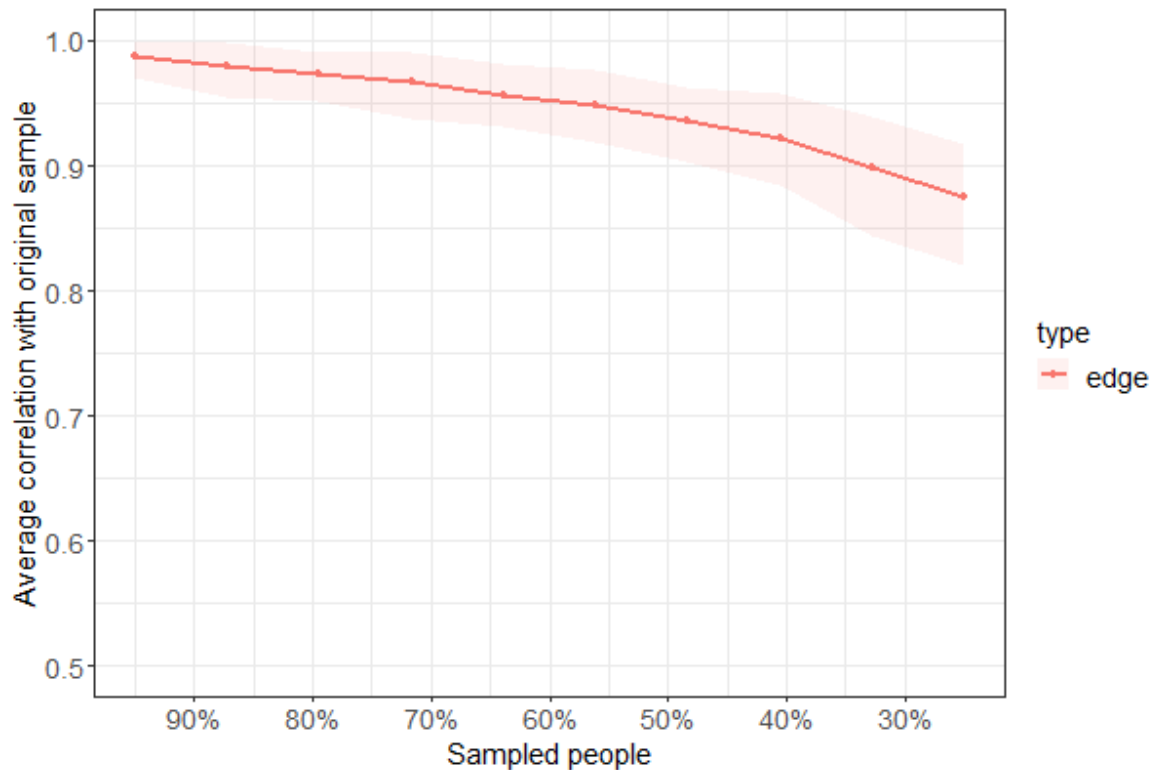
Supplementary table 5. Weighted adjacency matrix for the network model generated based on data of the female participants from the combined sample.



Supplementary figure S1. Centrality plot depicting z-standardized strength centrality indices of the network generated based on the original sample. Labels: EmN = Emotional Neglect; PhN = Physical Neglect; EmA = Emotional Abuse; PhA = Physical Abuse; SxA = Sexual Abuse; 1 = Upset by something unexpected; 2 = Unable to control important things; 3 = Felt nervous and stressed; 4 = Not confident to handle personal problems; 5 = Things were not going your way; 6 = Could not cope with all things to do; 7 = Unable to control irritations in life, 8 = Did not feel on top of things; 9 = Angered by things outside control; 10 = Difficulties piling up can't overcome.

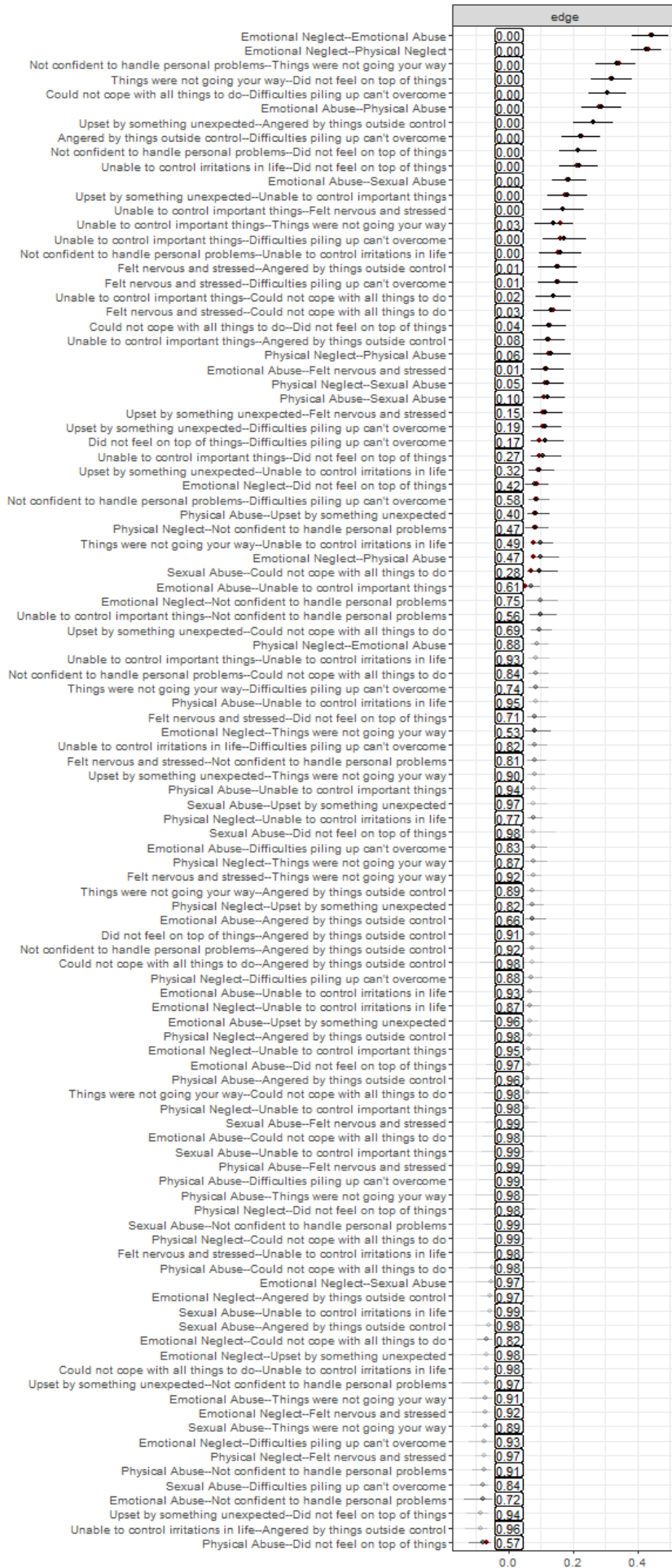


Supplementary figure S2. Stability of centrality indices obtained by case-dropping subset bootstrap in the original sample (Costenbader & Valente, 2003). The x-axis depicts the percentage of cases of the original sample used at each step. The y-axis depicts the average of correlations between the strength centrality values from the original network and the strength centrality values from networks that were re-estimated after dropping increasing percentages of cases. The maximum proportion of observations that could be dropped while confidently (95%) retaining results that correlate highly ($r > .7$) with the strength centrality estimates in the original sample was 75%, indicating high stability.

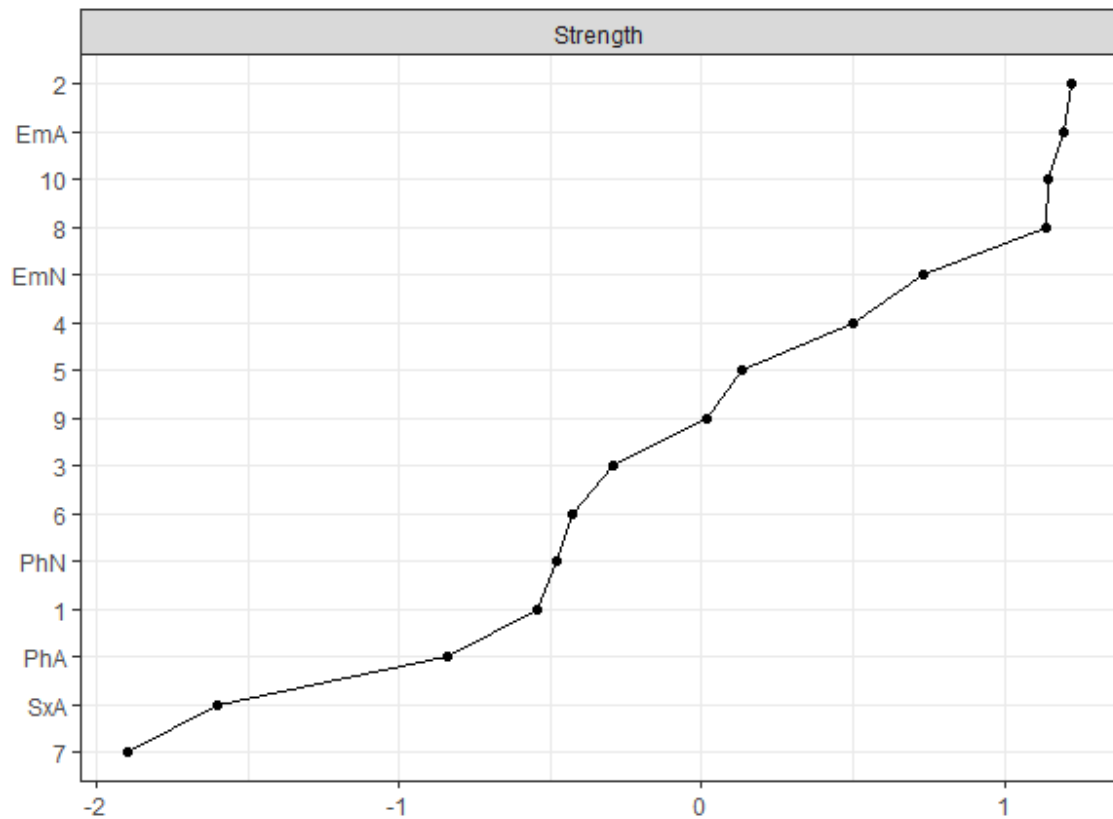


Supplementary figure S3. Stability of edge weights obtained by case-dropping subset bootstrap in the original sample (Costenbader & Valente, 2003). The x-axis depicts the percentage of cases of the original sample used at each step. The y-axis depicts the average of correlations between the edge weights from the original network and the edge weights from networks that were re-estimated after dropping increasing percentages of cases. The maximum proportion of observations that could be dropped while confidently (95%) retaining results that correlate highly ($r > .7$) with the centrality estimates in the original sample was 75%, indicating high stability.

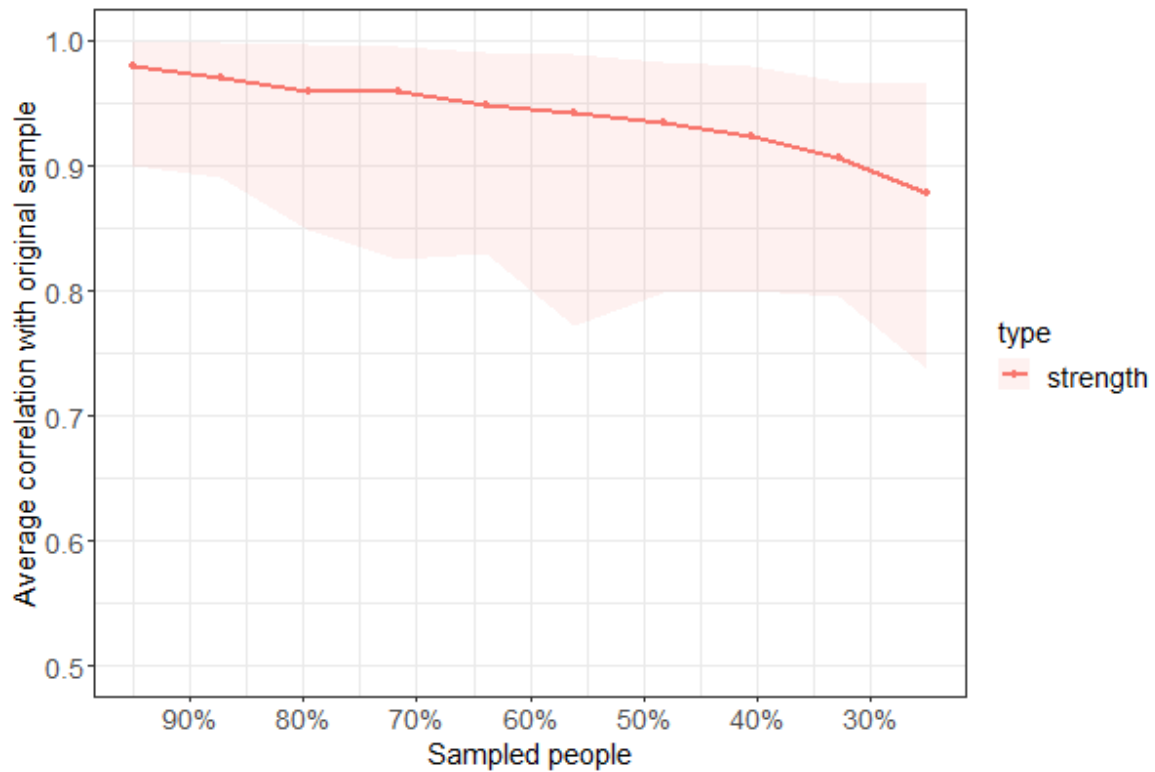
• Bootstrap mean • Sample



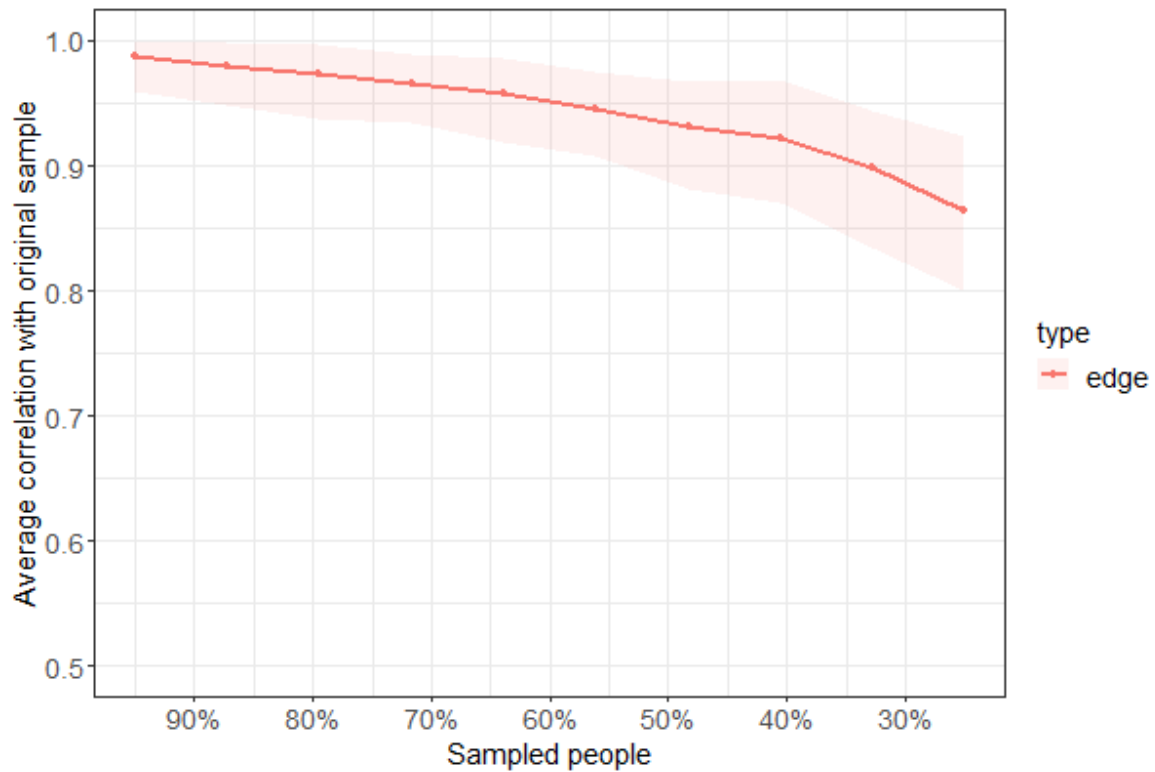
Supplementary figure S4. Edge values with 95% confidence intervals obtained from bootstrapping in the original sample. Confidence intervals are calculated based on those networks in which the edge was included (rather than set to zero). The transparency of the confidence interval reflects how often the edge was included in the networks generated in the bootstrapping procedure. The number in the box gives the proportion of sampled networks in which each edge was not included (i.e., set to zero).



Supplementary figure S5. Centrality plot depicting z-standardized strength centrality indices of the network generated based on the replication sample. *Labels:* EmN = Emotional Neglect; PhN = Physical Neglect; EmA = Emotional Abuse; PhA = Physical Abuse; SxA = Sexual Abuse; 1 = Upset by something unexpected; 2 = Unable to control important things; 3 = Felt nervous and stressed; 4 = Not confident to handle personal problems; 5 = Things were not going your way; 6 = Could not cope with all things to do; 7 = Unable to control irritations in life, 8 = Did not feel on top of things; 9 = Angered by things outside control; 10 = Difficulties piling up can't overcome.

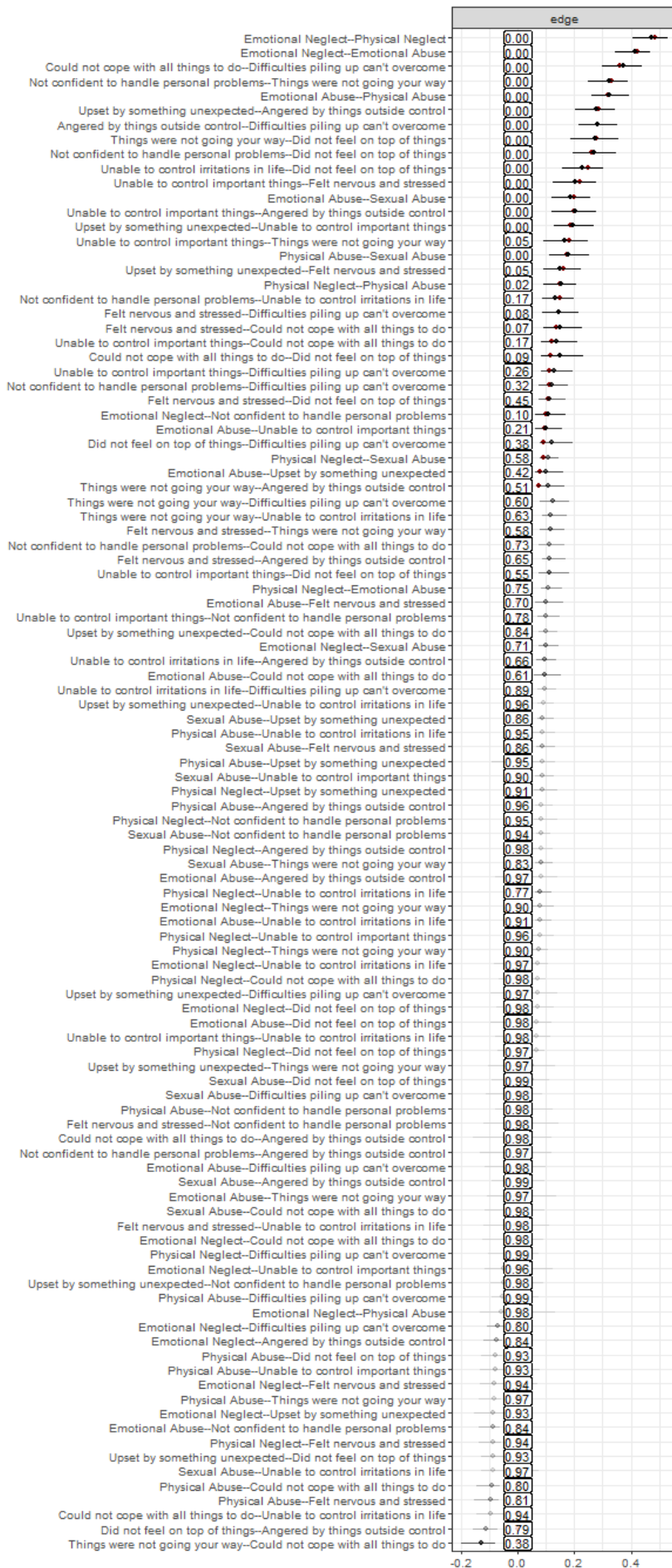


Supplementary figure S6. Stability of centrality indices obtained by case-dropping subset bootstrap in the replication sample (Costenbader & Valente, 2003). The x-axis depicts the percentage of cases of the replication sample used at each step. The y-axis depicts the average of correlations between the strength centrality values from the original network and the strength centrality values from networks that were re-estimated after dropping increasing percentages of cases. The maximum proportion of observations that could be dropped while confidently (95%) retaining results that correlate highly ($r > .7$) with the strength centrality estimates in the original sample was 75%, indicating high stability.

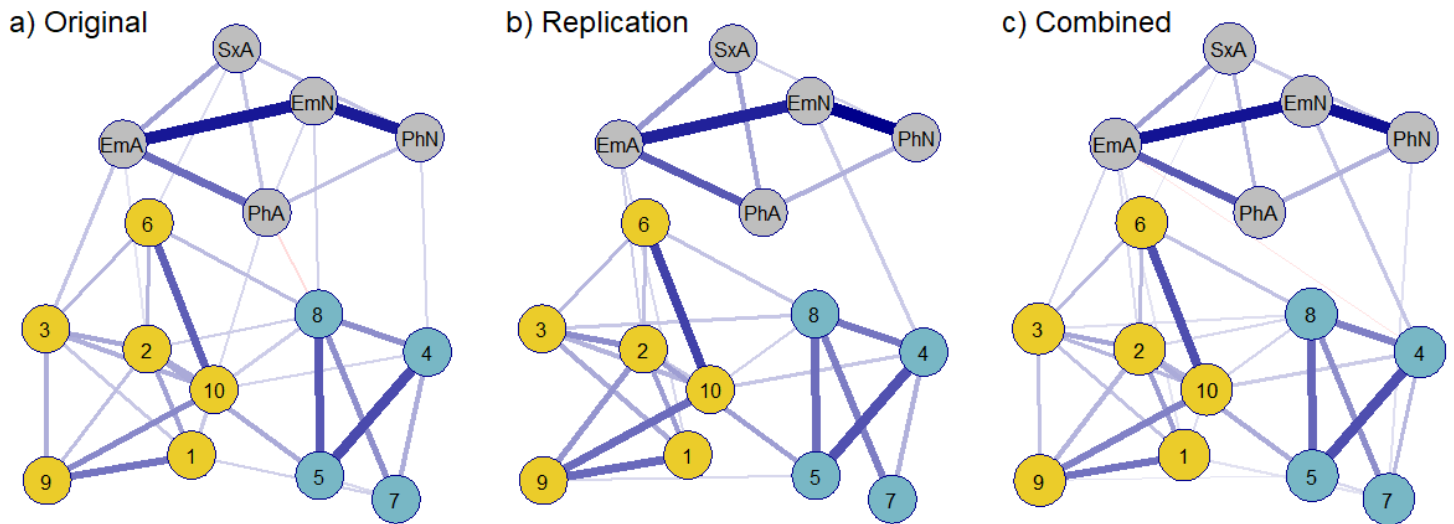


Supplementary figure S7. Stability of edge weights obtained by case-dropping subset bootstrap in the replication sample (Costenbader & Valente, 2003). The x-axis depicts the percentage of cases of the replication sample used at each step. The y-axis depicts the average of correlations between the edge weights from the original network and the edge weights from networks that were re-estimated after dropping increasing percentages of cases. The maximum proportion of observations that could be dropped while confidently (95%) retaining results that correlate highly ($r > .7$) with the centrality estimates in the original sample was 75%, indicating high stability.

• Bootstrap mean • Sample



Supplementary figure S8. Edge values with 95% confidence intervals obtained from bootstrapping in the replication sample. Confidence intervals are calculated based on those networks in which the edge was included (rather than set to zero). The transparency of the confidence interval reflects how often the edge was included in the networks generated in the bootstrapping procedure. The number in the box gives the proportion of sampled networks in which each edge was not included (i.e., set to zero).



Supplementary figure S9. Comparison of networks generated in a) the original sample (MIDUS Biomarker Project, $n = 1252$), b) the replication sample (MIDUS Refresher Biomarker Project, $n = 862$) and c) the combined sample ($n = 2114$). Blue coloring of edges indicates positive relationships, and red coloring indicates negative relationships. The thicker the edge, the stronger the association between two variables. Node coloring represents the three communities detected with the walktrap algorithm (Pons & Latapy, 2005). The blue-colored community represents “perceived self-efficacy” and the yellow-colored community represents “perceived helplessness” (Roberti, Harrington, & Storch, 2006). We plotted all three networks with the force-directed layout of the original network, generated by the Fruchterman-Reingold algorithm (Fruchterman & Reingold, 1991). To facilitate comparison, minimum and maximum of edge weights were scaled identically across networks. *Labels:* EmN = Emotional Neglect; PhN = Physical Neglect; EmA = Emotional Abuse; PhA = Physical Abuse; SxA = Sexual Abuse; 1 = Upset by something unexpected; 2 = Unable to control important things; 3 = Felt nervous and stressed; 4 = Not confident to handle personal problems; 5 = Things were not going your way; 6 = Could not cope with all things to do; 7 = Unable to control irritations in life, 8 = Did not feel on top of things; 9 = Angered by things outside control; 10 = Difficulties piling up can't overcome.

Supplementary table 1. Weighted adjacency matrix for the network model generated based on the original data set.

	EmN	PhN	EmA	PhA	SxA	1	2	3	4	5	6	7	8	9	10
EmN	0	0.43	0.44	0.08	0	0	0	0	0	0	0	0	0.09	0	0
PhN	0.43	0	0	0.12	0.11	0	0	0	0.08	0	0	0	0	0	0
EmA	0.44	0	0	0.28	0.18	0	0.05	0.11	0	0	0	0	0	0	0
PhA	0.08	0.12	0.28	0	0.11	0.08	0	0	0	0	0	0	-0.07	0	0
SxA	0	0.11	0.18	0.11	0	0	0	0	0	0	0.07	0	0	0	0
1	0	0	0	0.08	0	0	0.18	0.11	0	0	0	0.09	0	0.26	0.10
2	0	0	0.05	0	0	0.18	0	0.17	0	0.16	0.14	0	0.09	0.12	0.16
3	0	0	0.11	0	0	0.11	0.17	0	0	0	0.14	0	0	0.15	0.15
4	0	0.08	0	0	0	0	0	0	0	0.34	0	0.16	0.22	0	0.09
5	0	0	0	0	0	0	0.16	0	0.34	0	0	0.08	0.32	0	0
6	0	0	0	0	0.07	0	0.14	0.14	0	0	0	0	0.13	0	0.30
7	0	0	0	0	0	0.09	0	0	0.16	0.08	0	0	0.21	0	0
8	0.09	0	0	-0.07	0	0	0.09	0	0.22	0.32	0.13	0.21	0	0	0.10
9	0	0	0	0	0	0.26	0.12	0.15	0	0	0	0	0	0	0.23
10	0	0	0	0	0	0.10	0.16	0.15	0.09	0	0.30	0	0.10	0.23	0

Abbreviations: EmN = Emotional Neglect; PhN = Physical Neglect; EmA = Emotional Abuse; PhA = Physical Abuse; SxA = Sexual Abuse; 1 = Upset by something unexpected; 2 = Unable to control important things; 3 = Felt nervous and stressed; 4 = Not confident to handle personal problems; 5 = Things were not going your way; 6 = Could not cope with all things to do; 7 = Unable to control irritations in life, 8 = Did not feel on top of things; 9 = Angered by things outside control; 10 = Difficulties piling up can't overcome.

Supplementary table 2. Weighted adjacency matrix for the network model generated based on the replication data set.

	EmN	PhN	EmA	PhA	SxA	1	2	3	4	5	6	7	8	9	10
EmN	0	0.48	0.42	0	0	0	0	0	0.10	0	0	0	0	0	0
PhN	0.48	0	0	0.15	0.09	0	0	0	0	0	0	0	0	0	0
EmA	0.42	0	0	0.32	0.20	0.08	0.10	0	0	0	0	0	0	0	0
PhA	0	0.15	0.32	0	0.17	0	0	0	0	0	0	0	0	0	0
SxA	0	0.09	0.20	0.17	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0.08	0	0	0	0.19	0.16	0	0	0	0	0	0.28	0
2	0	0	0.10	0	0	0.19	0	0.22	0	0.18	0.12	0	0	0.20	0.11
3	0	0	0	0	0	0.16	0.22	0	0	0	0.14	0	0.11	0	0.14
4	0.10	0	0	0	0	0	0	0	0	0.33	0	0.15	0.26	0	0.11
5	0	0	0	0	0	0	0.18	0	0.33	0	0	0	0.28	0.07	0
6	0	0	0	0	0	0	0.12	0.14	0	0	0	0	0.12	0	0.36
7	0	0	0	0	0	0	0	0	0.15	0	0	0	0.25	0	0
8	0	0	0	0	0	0	0	0.11	0.26	0.28	0.12	0.25	0	0	0.09
9	0	0	0	0	0	0.28	0.20	0	0	0.07	0	0	0	0	0.28
10	0	0	0	0	0	0	0.11	0.14	0.11	0	0.36	0	0.09	0.28	0

Abbreviations: EmN = Emotional Neglect; PhN = Physical Neglect; EmA = Emotional Abuse; PhA = Physical Abuse; SxA = Sexual Abuse; 1 = Upset by something unexpected; 2 = Unable to control important things; 3 = Felt nervous and stressed; 4 = Not confident to handle personal problems; 5 = Things were not going your way; 6 = Could not cope with all things to do; 7 = Unable to control irritations in life, 8 = Did not feel on top of things; 9 = Angered by things outside control; 10 = Difficulties piling up can't overcome.

Supplementary table 3. Weighted adjacency matrix for the network model generated based on the combined data set.

	EmN	PhN	EmA	PhA	SxA	1	2	3	4	5	6	7	8	9	10
EmN	0	0.46	0.45	0	0	0	0	0	0.11	0	0	0	0	0	0
PhN	0.46	0	0	0.15	0.10	0	0	0	0	0	0	0.06	0	0	0
EmA	0.45	0	0	0.31	0.19	0.05	0.07	0.08	-0.05	0	0	0	0	0	0
PhA	0	0.15	0.31	0	0.14	0	0	0	0	0	0	0	0	0	0
SxA	0	0.10	0.19	0.14	0	0	0	0	0	0	0.05	0	0	0	0
1	0	0	0.05	0	0	0	0.19	0.12	0	0	0	0.06	0	0.27	0.07
2	0	0	0.07	0	0	0.19	0	0.17	0	0.16	0.13	0	0.08	0.14	0.15
3	0	0	0.08	0	0	0.12	0.17	0	0	0	0.13	0	0.07	0.12	0.14
4	0.11	0	-0.05	0	0	0	0	0	0	0.33	0	0.13	0.24	0	0.10
5	0	0	0	0	0	0	0.16	0	0.33	0	0	0.08	0.29	0.05	0
6	0	0	0	0	0.05	0	0.13	0.13	0	0	0	0	0.12	0	0.33
7	0	0.06	0	0	0	0.06	0	0	0.13	0.08	0	0	0.21	0	0
8	0	0	0	0	0	0	0.08	0.07	0.24	0.29	0.12	0.21	0	0	0.08
9	0	0	0	0	0	0.27	0.14	0.12	0	0.05	0	0	0	0	0.24
10	0	0	0	0	0	0.07	0.15	0.14	0.10	0	0.33	0	0.08	0.24	0

Abbreviations: EmN = Emotional Neglect; PhN = Physical Neglect; EmA = Emotional Abuse; PhA = Physical Abuse; SxA = Sexual Abuse; 1 = Upset by something unexpected; 2 = Unable to control important things; 3 = Felt nervous and stressed; 4 = Not confident to handle personal problems; 5 = Things were not going your way; 6 = Could not cope with all things to do; 7 = Unable to control irritations in life, 8 = Did not feel on top of things; 9 = Angered by things outside control; 10 = Difficulties piling up can't overcome.

Supplementary table 4. Weighted adjacency matrix for the network model generated based on data of the male participants from the combined sample.

	EmN	PhN	EmA	PhA	SxA	1	2	3	4	5	6	7	8	9	10
EmN	0	0.45	0.40	0	0	0	0	0	0	0	0	0.06	0.07	0	0
PhN	0.45	0	0	0.12	0.10	0	0	0	0	0.07	0	0	0	0	0
EmA	0.40	0	0	0.35	0.11	0	0.09	0.07	0	0	0	0	0	0	0
PhA	0	0.12	0.35	0	0.1	0	0	0	0	0	0	0	0	0	0
SxA	0	0.10	0.11	0.10	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0.15	0.12	0	0	0	0	0	0.31	0.08
2	0	0	0.09	0	0	0.15	0	0.17	0	0.15	0.14	0	0.10	0.15	0.16
3	0	0	0.07	0	0	0.12	0.17	0	0	0	0.09	0	0	0.16	0.15
4	0	0	0	0	0	0	0	0	0	0.31	0	0.16	0.30	0	0.08
5	0	0.07	0	0	0	0	0.15	0	0.31	0	0	0	0.30	0	0
6	0	0	0	0	0	0	0.14	0.09	0	0	0	0	0.11	0	0.34
7	0.06	0	0	0	0	0	0	0	0.16	0	0	0	0.21	0	0
8	0.07	0	0	0	0	0	0.10	0	0.30	0.30	0.11	0.21	0	0	0.13
9	0	0	0	0	0	0.31	0.15	0.16	0	0	0	0	0	0	0.21
10	0	0	0	0	0	0.08	0.16	0.15	0.08	0	0.34	0	0.13	0.21	0

Abbreviations: EmN = Emotional Neglect; PhN = Physical Neglect; EmA = Emotional Abuse; PhA = Physical Abuse; SxA = Sexual Abuse; 1 = Upset by something unexpected; 2 = Unable to control important things; 3 = Felt nervous and stressed; 4 = Not confident to handle personal problems; 5 = Things were not going your way; 6 = Could not cope with all things to do; 7 = Unable to control irritations in life, 8 = Did not feel on top of things; 9 = Angered by things outside control; 10 = Difficulties piling up can't overcome.

Supplementary table 5. Weighted adjacency matrix for the network model generated based on data of the female participants from the combined sample.

	EmN	PhN	EmA	PhA	SxA	1	2	3	4	5	6	7	8	9	10
EmN	0	0.45	0.48	0	0	0	0	0	0.08	0	0	0	0	0	0
PhN	0.45	0	0	0.15	0.12	0	0	0	0	0	0	0	0	0	0
EmA	0.48	0	0	0.30	0.19	0.07	0.05	0.08	0	0	0	0	0	0	0
PhA	0	0.15	0.30	0	0.20	0	0	0	0	0	0	0	0	0	0
SxA	0	0.12	0.19	0.20	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0.07	0	0	0	0.24	0.11	0	0	0.08	0	0	0.25	0
2	0	0	0.05	0	0	0.24	0	0.17	0	0.21	0.11	0	0	0.16	0.14
3	0	0	0.08	0	0	0.11	0.17	0	0	0	0.12	0	0.14	0.09	0.14
4	0.08	0	0	0	0	0	0	0	0	0.36	0	0.13	0.2	0	0.12
5	0	0	0	0	0	0	0.21	0	0.36	0	0	0.08	0.31	0	0
6	0	0	0	0	0	0.08	0.11	0.12	0	0	0	0	0.15	0	0.32
7	0	0	0	0	0	0	0	0	0.13	0.08	0	0	0.24	0	0.08
8	0	0	0	0	0	0	0	0.14	0.20	0.31	0.15	0.24	0	0	0
9	0	0	0	0	0	0.25	0.16	0.09	0	0	0	0	0	0	0.29
10	0	0	0	0	0	0	0.14	0.14	0.12	0	0.32	0.08	0	0.29	0

Abbreviations: EmN = Emotional Neglect; PhN = Physical Neglect; EmA = Emotional Abuse; PhA = Physical Abuse; SxA = Sexual Abuse; 1 = Upset by something unexpected; 2 = Unable to control important things; 3 = Felt nervous and stressed; 4 = Not confident to handle personal problems; 5 = Things were not going your way; 6 = Could not cope with all things to do; 7 = Unable to control irritations in life, 8 = Did not feel on top of things; 9 = Angered by things outside control; 10 = Difficulties piling up can't overcome.

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