Supplementary Material:

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

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

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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; <math>3 = Feltnervous 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 inlife, <math>8 = Did not feel on top of things; 9 = Angered by things outside control; 10 = Difficultiespiling 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

			edge	
Emotional NeglectEmotional Abuse	ļ	0.00		
Emotional NeglectPhysical Neglect Not confident to bandle personal problemsThings were not going your way		0.00		_
Things were not going your wayDid not feel on top of things	ļ	0.00	-	_
Could not cope with all things to doDifficulties piling up can't overcome		0.00		_
Upset by something unexpected-Angered by things outside control		0.00	i	
Angered by things outside control-Difficulties piling up can't overcome		0.00		
Not confident to handle personal problemsDid not feel on top of things-		0.00		
Emotional AbuseSexual Abuse-		0.00		
Upset by something unexpectedUnable to control important things-		0.00		
Unable to control important thingsFelt nervous and stressed Unable to control important thingsThings were not going your way		0.00		
Unable to control important thingsDifficulties piling up can't overcome	ĺ	0.00		
Not confident to handle personal problemsUnable to control irritations in life		0.00		
Felt nervous and stressedAngered by things outside control - Felt nervous and stressedDifficulties niling up can't overcome -		0.01 0.01		
Unable to control important things-Could not cope with all things to do	i	0.02	j•_	
Felt nervous and stressedCould not cope with all things to do-	Í	0.03		
Could not cope with all things to doDid not feel on top of things		0.04		
Physical Neglect-Physical Abuse		0.06		
Emotional AbuseFelt nervous and stressed	ļ	0.01		
Physical NeglectSexual Abuse - Rhysical Abuse - Sexual Abuse -		0.05		
Upset by something unexpectedFelt nervous and stressed		0.15		
Upset by something unexpectedDifficulties piling up can't overcome -	ļ	0.19		
Did not feel on top of things-Difficulties piling up can't overcome		0.17		
Upset by something unexpected-Unable to control irritations in life		0.27		
Emotional NeglectDid not feel on top of things-		0.42		
Not confident to handle personal problemsDifficulties piling up can't overcome		0.58	•	
Physical AbuseUpset by something unexpected Physical NeolectNot confident to handle personal problems		0.40	-	
Things were not going your wayUnable to control irritations in life		0.49	••	
Emotional NeglectPhysical Abuse		0.47	••	
Sexual Abuse-Could not cope with all things to do Emotional Abuse-Unable to control important things		0.28	•	
Emotional Neglect-Not confident to handle personal problems		0.75		
Unable to control important thingsNot confident to handle personal problems		0.56		
Upset by something unexpectedCould not cope with all things to do- Physical NeolectEmotional Abuse		0.69	• •	
Unable to control important thingsUnable to control irritations in life-		0.93		
Not confident to handle personal problemsCould not cope with all things to do-	ļ	0.84	-	
Things were not going your wayDifficulties piling up can't overcome -		0.74	•	
Fight nervous and stressedDid not feel on top of things		0.95	•	
Emotional NeglectThings were not going your way	ļ	0.53	•	
Unable to control irritations in lifeDifficulties piling up can't overcome		0.82	•	
Feit nervous and stressedNot confident to nandle personal problems Upset by something unexpectedThings were not going your way		0.01	•	
Physical AbuseUnable to control important things-		0.94	•	
Sexual AbuseUpset by something unexpected		0.97	•	
Physical NeglectUnable to control irritations in life Sexual AbuseDid not feel on top of things		0.77	•	
Emotional AbuseDifficulties piling up can't overcome		0.83	•	
Physical Neglect-Things were not going your way		0.87	•	
Feit nervous and stressed I nings were not going your way Things were not going your wayAngered by things outside control -		0.92	•	
Physical NeglectUpset by something unexpected		0.82	•	
Emotional AbuseAngered by things outside control		0.66	•	
Not confident to handle personal problemsAngered by things outside control		0.91		
Could not cope with all things to do-Angered by things outside control		0.98	• · · · · · · · · · · · · · · · · · · ·	
Physical Neglect-Difficulties piling up can't overcome		0.88	•	
Emotional AbuseUnable to control irritations in life		0.93	•	
Emotional AbuseUpset by something unexpected		0.96	•	
Physical Neglect-Angered by things outside control		0.98	•	
Emotional NeglectUnable to control important things		0.95	0	
Physical AbuseAngered by things outside control		0.96	•	
Things were not going your wayCould not cope with all things to do-		0.98	0	
Physical NeglectUnable to control important things Sexual AbuseFelt nervous and stressed		0.98		
Emotional AbuseCould not cope with all things to do		0.98	J	
Sexual AbuseUnable to control important things-		0.99		
Physical AbuseFelt nervous and stressed Physical AbuseDifficulties piling up cap't overcome		0.99		
Physical Abuse-Things were not going your way	l	0.98		
Physical NeglectDid not feel on top of things-		0.98		
Sexual AbuseNot confident to handle personal problems - Rhysical NealectCould not cope with all things to do		0.99		
Felt nervous and stressedUnable to control irritations in life		0.98		
Physical AbuseCould not cope with all things to do-		0. <u>98</u>		
Emotional NeglectSexual Abuse -		0.97		
Sexual AbuseUnable to control irritations in life	-	0.99	j	
Sexual Abuse-Angered by things outside control	*	0.98		
Emotional Neglect-Could not cope with all things to do		0.82		
Could not cope with all things to do-Unable to control irritations in life	•	0.98	j	
Upset by something unexpectedNot confident to handle personal problems	*	0.97		
Emotional AbuseThings were not going your way Emotional Neglect-Ealt approve and storaged		0.91		
Sexual AbuseThings were not going your way	+	0.89	į	
Emotional Neglect-Difficulties piling up can't overcome	•	0.93		
Physical AbuseNot confident to handle personal problems		0.97		
Sexual AbuseDifficulties piling up can't overcome		0.84	į – – –	
Emotional AbuseNot confident to handle personal problems	*	0.72		
upset by something unexpectedDid not feel on top of things Unable to control irritations in lifeAngered by things outside control a		0.94		
Physical AbuseDid not feel on top of things	-	0.57	<u>i </u>	
		0.0	0.2	0.4

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

			edge
Emotional NeglectPhysical Neglect		0.00	
Emotional NeglectEmotional Abuse Could not cope with all things to doDifficulties piling up can't overcome		0.00	
Not confident to handle personal problemsThings were not going your way		0.00	
Emotional AbusePhysical Abuse Upset by something unexpectedAngered by things outside control		0.00	
Angered by things outside controlDifficulties piling up can't overcome		0.00	
Things were not going your wayDid not feel on top of things Not confident to handle personal problemsDid not feel on top of things:		0.00	
Unable to control irritations in lifeDid not feel on top of things		0.00	
Unable to control important thingsFelt nervous and stressed		0.00	
Emotional AbuseSexual Abuse Unable to control important thingsAngered by things outside control		0.00	
Upset by something unexpectedUnable to control important things		0.00	
Unable to control important thingsThings were not going your way Physical AbuseSexual Abuse		0.05	
Upset by something unexpectedFelt nervous and stressed		0.05	
Physical NeglectPhysical Abuse		0.02	
Felt nervous and stressedDifficulties piling up can't overcome		0.08	
Felt nervous and stressedCould not cope with all things to do		0.07	
Could not cope with all things to doDid not feel on top of things:		0.09	++
Unable to control important thingsDifficulties piling up can't overcome		0.26	
Not confident to handle personal problemsDifficulties piling up can't overcome Felt nervous and stressedDid not feel on top of things:		0.32	
Emotional NeglectNot confident to handle personal problems		0.10	••
Emotional AbuseUnable to control important things: Did not feel on top of thingsDifficulties piling up can't overcome		0.21	•
Physical Neglect-Sexual Abuse:		0.58	•
Emotional AbuseUpset by something unexpected		0.42	••
Things were not going your wayAngered by things outside control Things were not going your wayDifficulties piling up can't overcome		0.51	•
Things were not going your wayUnable to control irritations in life		0.63	•
Not confident to handle personal problemsCould not come with all things to do		0.58	•
Felt nervous and stressedAngered by things outside control		0.65	•
Unable to control important thingsDid not feel on top of things: Physical Neolect-Emotional Abuse		0.55	-
Emotional Abuse-Felt nervous and stressed		0.70	• ·
Unable to control important thingsNot confident to handle personal problems		0.78	•
Upset by something unexpectedCould not cope with all things to do Emotional NeglectSexual Abuse:		0.04	•
Unable to control irritations in life-Angered by things outside control		0.66	•
Emotional AbuseCould not cope with all things to do Unable to control irritations in lifeDifficulties piling up can't overcome		0.61	
Upset by something unexpectedUnable to control irritations in life		0.96	•
Sexual AbuseUpset by something unexpected		0.86	•
Sexual AbuseFelt nervous and stressed		0.86	•
Physical AbuseUpset by something unexpected		0.95	•
Physical Neglect-Upset by something unexpected		0.90	•
Physical Abuse-Angered by things outside control		0.96	
Physical Neglect-Not confident to handle personal problems: Sexual Abuse-Not confident to handle personal problems:		0.95	•
Physical Neglect-Angered by things outside control		0.98	
Sexual AbuseThings were not going your way Emotional AbuseAngered by things outside control		0.83	•
Physical NeglectUnable to control irritations in life		0.77	•
Emotional NeglectThings were not going your way Emotional AbuseUnable to control irritations in life		0.90	•
Physical Neglect-Unable to control important things:		0.96	•
Physical NeglectThings were not going your way		0.90	•
Physical Neglect-Could not cope with all things to do		0.97	•
Upset by something unexpectedDifficulties piling up can't overcome		0.97	•
Emotional Neglect-Did not feel on top of things: Emotional Abuse-Did not feel on top of things:		0.98	•
Unable to control important thingsUnable to control irritations in life		0.98	o
Physical NeglectDid not teel on top of things Upset by something unexpectedThings were not going your way		0.97 0.97	
Sexual AbuseDid not feel on top of things	-	0.99	
Sexual Abuse-Difficulties piling up can't overcome Physical Abuse-Not confident to handle personal problems:		0.98 0.98	
Felt nervous and stressed-Not confident to handle personal problems		0.98	
Could not cope with all things to do-Angered by things outside control		0.98	
Emotional Abuse-Difficulties piling up can't overcome		0.98	
Sexual Abuse-Angered by things outside control		0.99	
Sexual AbuseCould not cope with all things to do		0.98	
Felt nervous and stressedUnable to control irritations in life		0.98	
Physical Neglect-Could not cope with all things to do Physical Neglect-Difficulties piling up can't overcome		0.90	
Emotional NeglectUnable to control important things		0.96	
Upset by something unexpectedNot confident to handle personal problems: Physical AbuseDifficulties niling up can't overcome:		0.98	
Emotional NeglectPhysical Abuse		0.98	
Emotional NeglectDifficulties piling up can't overcome Emotional NeglectAngered by things outside control		0.80	
Physical AbuseDid not feel on top of things	•	0.93	
Physical AbuseUnable to control important things Emotional Neglect-Felt percuss and stressed		0.93	
Physical Abuse-Things were not going your way		0.97	
Emotional Neglect-Upset by something unexpected		0.93	
Physical Neglect-Felt nervous and stressed		0.94	
Upset by something unexpectedDid not feel on top of things		0.93	
Sexual AbuseUnable to control irritations in life Physical AbuseCould not cope with all things to do		0.97	
Physical AbuseFelt nervous and stressed		0.81	
Did not cope with all things to doUnable to control irritations in life Did not feel on top of thingsAngered by things outside control	•	0.94	
Things were not going your way-Could not cope with all things to do	•	0.38	
	-0.2	0.0	0.2 0.4

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 bluecolored community represents "perceived self-efficacy" and the vellow-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.

	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

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

0 0
0 0
0 0
0 0
0 0
0.28 0
0.20 0.11
0 0.14
0 0.11
0.07 0
0 0.36
0 0
0 0.09
0 0.28
0.28 0

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	0.46	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

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

Abbreviations: EmN = Emotional Neglect; PhN = Physical Neglect; <math>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.

	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

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	0.48	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

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

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