Supplementary material for "*Mediation Analysis for Survival Data with High-Dimensional Mediators*"

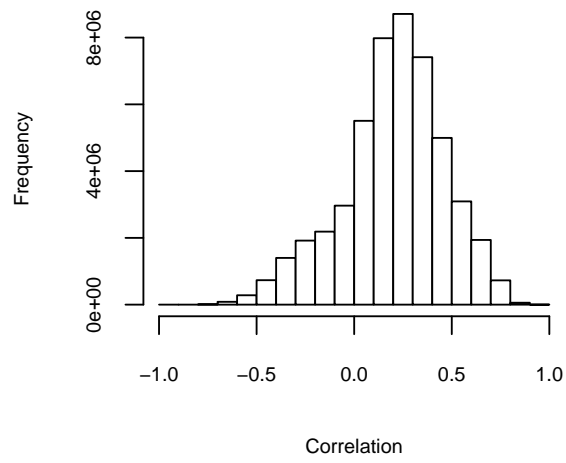Haixiang Zhang, Yinan Zheng, Lifang Hou, Cheng Zheng, and Lei Liu

The supplementary material contains Table S.1 and Figures S.1-S.3 for the main document of this article.
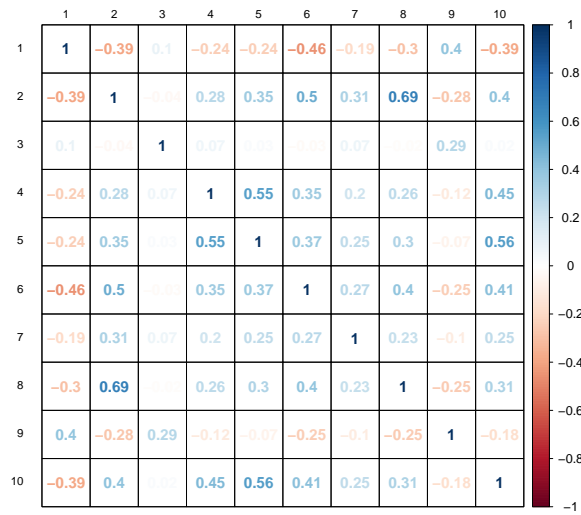
Table S.1.

Bias and MSE (in the parenthesis) of estimation for mediation effects in simulation study 1 ($n = 300$)†.

$\alpha_j\beta_j$	CR=20%		CR=40%	
	Proposed	Luo *et al*	Proposed	Luo *et al*
$\alpha_1\beta_1$	-0.0196	-0.2799	-0.0293	-0.3010
	(0.0043)	(0.1000)	(0.0060)	(0.1064)
$\alpha_2\beta_2$	-0.1407	-0.2500	-0.1549	-0.2500
	(0.0267)	(0.0625)	(0.0313)	(0.0625)
$\alpha_3\beta_3$	-0.0206	-0.0766	-0.0232	-0.1038
	(0.0017)	(0.0111)	(0.0022)	(0.0160)
$\alpha_4\beta_4$	-0.0555	-0.0900	-0.0584	-0.0900
	(0.0047)	(0.0081)	(0.0047)	(0.0081)
$\alpha_5\beta_5$	-0.0253	-0.0623	-0.0317	-0.0621
	(0.0013)	(0.0039)	(0.0016)	(0.0039)
$\alpha_6\beta_6$	-0.0145	-0.0225	-0.0152	-0.0225
	(0.0004)	(0.0005)	(0.0004)	(0.0005)
$\alpha_7\beta_7$	-0.0471	-0.2177	-0.0398	-0.2189
	(0.0047)	(0.0537)	(0.0048)	(0.0541)
$\alpha_8\beta_8$	0.0185	-0.1152	0.0208	-0.1151
	(0.0022)	(0.0143)	(0.0028)	(0.0143)
$\alpha_9\beta_9$	0.0004	-0.0649	0.0031	-0.0640
	(0.0015)	(0.0046)	(0.0022)	(0.0045)
$\alpha_{10}\beta_{10}$	-0.0147	-0.0600	-0.0089	-0.0600
	(0.0025)	(0.0036)	(0.0025)	(0.0036)
$\alpha_{11}\beta_{11}$	-6×10^{-5}	8.2×10^{-5}	0.0001	-5.5×10^{-5}
	(1.4×10^{-5})	(7×10^{-6})	(7.2×10^{-6})	(6×10^{-7})
$\alpha_{12}\beta_{12}$	0.0069	0	0.0143	0
	(0.0013)	(0)	(0.0014)	(0)
$\alpha_{13}\beta_{13}$	-4×10^{-5}	0	-3×10^{-5}	0
	(2.8×10^{-7})	(0)	(6.6×10^{-7})	(0)

† "Proposed" denotes our method; "Luo *et al*" denotes Luo et al. (2020)'s method; "CR" denotes the censoring rate of failure times.

Figure S.1 The histogram for elements in lower triangular matrix of Σ_e.

	1	2	3	4	5	6	7	8	9	10
1	1	−0.39	0.1	−0.24	−0.24	−0.46	−0.19	−0.3	0.4	−0.39
2	−0.39	1	−0.04	0.28	0.35	0.5	0.31	0.69	−0.28	0.4
3	0.1	−0.04	1	0.07			0.07		0.29	
4	−0.24	0.28	0.07	1	0.55	0.35	0.2	0.26	−0.12	0.45
5	−0.24	0.35		0.55	1	0.37	0.25	0.3		0.56
6	−0.46	0.5		0.35	0.37	1	0.27	0.4	−0.25	0.41
7	−0.19	0.31	0.07	0.2	0.25	0.27	1	0.23	−0.1	0.25
8	−0.3	0.69		0.26	0.3	0.4	0.23	1	−0.25	0.31
9	0.4	−0.28	0.29	−0.12	−0.07	−0.25	−0.1	−0.25	1	−0.18
10	−0.39	0.4	0.02	0.45	0.56	0.41	0.25	0.31	−0.18	1

Figure S.2 The $10{\times}10$ upper sub-matrix of Σ_e towards the active mediators $\{M_k\}_{k=1}^{10}$.

3