Table A1. Monte Carlo Results: Estimates in the Common Effect Model ($\rho_0\sigma_0 = 0$; $\rho_{01} = 1$)

	Homoskedastic Error in Treatment Equation								Heteroskedastic Error in Treatment Equation							
	ATE				ATT				ATE				ATT			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
I. Normally Distributed Errors																
τ_{IPW}	0.618	0.045	0.045	0.046	0.563	0.053	0.049	0.050	0.618	0.047	0.043	0.043	0.568	0.049	0.044	0.044
$\tau_{MB,0.05}$	0.337	0.111	0.108	0.114	0.240	0.103	0.101	0.107	0.358	0.130	0.103	0.103	0.736	0.110	0.101	0.101
$\tau_{MB,0.25}$	0.382	0.062	0.057	0.058	0.586	0.051	0.051	0.051	0.373	0.063	0.055	0.054	0.766	0.063	0.055	0.057
$\tau_{MB,EE,0.05}$	0.290	0.128	0.121	0.124	0.368	0.125	0.124	0.124	0.570	0.156	0.115	0.117	0.355	0.172	0.120	0.122
$\tau_{MB,EE,0.25}$	0.539	0.066	0.061	0.061	0.394	0.065	0.064	0.065	0.676	0.072	0.059	0.060	0.459	0.067	0.061	0.062
τ_{KV}	3.295	0.365	0.446	0.426	3.295	0.365	0.446	0.426	3.228	0.250	0.333	0.320	3.228	0.250	0.333	0.320
τ_{CF}	37.035	1.049	1.143	1.090	30.776	0.980	1.133	1.088	170.451	0.550	0.721	0.696	174.250	0.524	0.858	0.826
τ_{BVN}	17.010	0.285	0.318	0.309	11.132	0.210	0.234	0.228	9.938	0.256	0.264	0.260	6.702	0.193	0.201	0.198
τ_{BC}	17.009	0.290	0.324	0.316	15.764	0.287	0.318	0.310	9.938	0.270	0.293	0.289	9.245	0.277	0.311	0.307
$\tau_{MB-BC,0.05}$	16.408	0.291	0.328	0.326	14.767	0.304	0.326	0.318	9.382	0.269	0.279	0.268	8.925	0.265	0.289	0.285
$\tau_{MB-BC,0.25}$	16.466	0.279	0.313	0.303	15.129	0.279	0.308	0.297	9.435	0.249	0.254	0.249	8.987	0.261	0.269	0.264
$\tau_{BVN,EE}$	182.450	1.613	1.621	1.549	95.077	1.055	1.111	1.071	531.680	0.877	0.949	0.904	320.456	0.578	0.823	0.779
$\tau_{BC,EE}$	182.124	1.619	1.624	1.553	138.963	1.447	1.533	1.481	531.956	0.898	1.315	1.246	463.978	0.824	1.718	1.618
$\tau_{MB-BC,EE,0.05}$	181.829	1.434	1.623	1.514	137.216	1.396	1.384	1.352	531.445	0.793	1.139	1.153	451.808	0.768	0.958	0.902
$\tau_{MB-BC,EE,0.25}$	181.575	1.404	1.591	1.486	137.224	1.366	1.355	1.317	531.553	0.776	1.120	1.138	451.914	0.733	0.932	0.877
II. Asymmetric, Non-Normally Distributed Errors																
τ_{IPW}	0.614	0.049	0.047	0.048	0.562	0.055	0.052	0.051	0.614	0.049	0.045	0.046	0.565	0.051	0.049	0.050
$\tau_{MB,0.05}$	0.344	0.118	0.106	0.112	0.231	0.103	0.104	0.106	0.342	0.129	0.121	0.116	0.723	0.105	0.107	0.108
$\tau_{MB,0.25}$	0.377	0.064	0.059	0.061	0.585	0.056	0.057	0.057	0.352	0.065	0.063	0.064	0.759	0.063	0.056	0.056
$\tau_{MB,EE,0.05}$	0.286	0.142	0.129	0.129	0.362	0.128	0.120	0.121	0.577	0.174	0.133	0.134	0.351	0.161	0.129	0.130
$\tau_{MB,EE,0.25}$	0.544	0.074	0.064	0.065	0.392	0.072	0.066	0.065	0.678	0.073	0.065	0.062	0.451	0.070	0.071	0.069
τ_{KV}	3.315	0.372	0.453	0.427	3.315	0.372	0.453	0.427	3.251	0.286	0.350	0.339	3.251	0.286	0.350	0.339
τ_{CF}	36.012	1.063	1.095	1.021	29.830	1.001	1.103	1.027	167.923	0.601	0.732	0.691	171.720	0.563	0.872	0.822
τ_{BVN}	17.522	0.290	0.323	0.315	11.456	0.215	0.237	0.230	10.395	0.254	0.275	0.273	6.990	0.191	0.208	0.207
τ_{BC}	17.522	0.294	0.329	0.319	16.192	0.295	0.321	0.310	10.396	0.265	0.302	0.299	9.636	0.270	0.315	0.311
$\tau_{MB-BC,0.05}$	16.929	0.309	0.338	0.327	15.156	0.303	0.330	0.321	9.836	0.279	0.293	0.296	9.272	0.273	0.305	0.302
$\tau_{MB-BC,0.25}$	16.972	0.285	0.313	0.307	15.528	0.286	0.312	0.304	9.880	0.250	0.269	0.266	9.345	0.257	0.275	0.273
$\tau_{BVN,EE}$	180.040	1.623	1.558	1.471	93.747	1.075	1.073	1.008	525.321	0.915	0.953	0.873	316.990	0.606	0.828	0.754
$\tau_{BC,EE}$	179.706	1.634	1.566	1.480	136.692	1.483	1.490	1.400	525.591	0.936	1.294	1.184	457.657	0.859	1.695	1.549
$\tau_{MB-BC,EE,0.05}$	179.176	1.371	1.440	1.328	135.034	1.379	1.360	1.296	525.122	0.768	1.121	1.049	445.871	0.864	0.980	0.896
$\tau_{MB-BC,EE,0.25}$	178.905	1.335	1.416	1.298	135.039	1.361	1.338	1.269	525.221	0.741	1.097	1.028	445.971	0.842	0.952	0.871

Notes: Figures represent root mean squared errors. Results based on 250 data sets with 5,000 observations each. Specification (1) is under-specified (relevant higher order terms are excluded); specification (2) is correctly specified; specification (3) is over-specified (irrelevant higher order terms are included); specification (4) is over-specified (irrelevant higher order terms and an irrelevant variable are included). Shading indicates best performance within each column. See text and Table 1 for further details.

Table A2. Monte Carlo Results: Estimates in the Common Effect Model ($\rho_0\sigma_0 = -0.25$; $\rho_{01} = 1$)

	Homoskedastic Error in Treatment Equation								Heteroskedastic Error in Treatment Equation							
	ATE				ATT				ATE				ATT			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
I. Normally Distributed Errors																
τ_{IPW}	0.962	0.450	0.450	0.448	0.914	0.457	0.457	0.455	0.957	0.422	0.446	0.445	0.911	0.424	0.445	0.445
$\tau_{MB,0.05}$	0.715	0.402	0.400	0.404	0.591	0.410	0.410	0.418	0.731	0.421	0.402	0.403	1.057	0.433	0.413	0.418
$\tau_{MB,0.25}$	0.765	0.405	0.404	0.402	0.922	0.409	0.407	0.407	0.756	0.409	0.406	0.404	1.094	0.429	0.407	0.407
$\tau_{MB,EE,0.05}$	0.570	0.470	0.473	0.469	0.751	0.476	0.477	0.475	0.897	0.385	0.461	0.463	0.745	0.415	0.474	0.470
$\tau_{MB,EE,0.25}$	0.846	0.441	0.440	0.440	0.762	0.452	0.457	0.454	0.985	0.417	0.437	0.435	0.816	0.420	0.448	0.445
τ_{KV}	3.297	0.358	0.444	0.421	3.297	0.358	0.444	0.421	3.230	0.254	0.334	0.324	3.230	0.254	0.334	0.324
τ_{CF}	31.548	1.017	1.131	1.055	25.888	0.954	1.121	1.049	151.520	0.546	0.689	0.648	155.681	0.519	0.827	0.775
τ_{BVN}	15.690	0.280	0.320	0.313	10.403	0.226	0.257	0.255	9.155	0.276	0.265	0.263	6.311	0.252	0.236	0.238
τ_{BC}	15.688	0.287	0.326	0.318	14.547	0.281	0.319	0.310	9.153	0.284	0.291	0.287	8.543	0.291	0.309	0.306
$\tau_{MB-BC,0.05}$	15.166	0.300	0.336	0.329	13.626	0.295	0.325	0.318	8.689	0.286	0.282	0.287	8.257	0.303	0.288	0.291
$\tau_{MB-BC,0.25}$	15.218	0.285	0.326	0.317	13.960	0.272	0.306	0.298	8.731	0.273	0.271	0.264	8.321	0.288	0.277	0.273
$\tau_{BVN, EE}$	192.668	1.587	1.611	1.495	101.057	1.054	1.123	1.049	456.651	0.879	0.911	0.861	276.230	0.578	0.805	0.763
$\tau_{BC,EE}$	192.383	1.595	1.617	1.501	147.871	1.442	1.544	1.437	456.882	0.903	1.254	1.202	399.550	0.817	1.643	1.575
$\tau_{MB-BC,EE,0.05}$	192.277	1.411	1.590	1.495	146.205	1.373	1.408	1.327	456.393	0.829	1.148	0.997	388.780	0.751	0.929	0.904
$\tau_{MB-BC,0.25}$	192.018	1.373	1.564	1.468	146.209	1.341	1.385	1.300	456.473	0.800	1.132	0.979	388.846	0.731	0.902	0.876
II. Asymmetric, Non-Normally Distributed Errors																
τ_{IPW}	0.924	0.379	0.380	0.381	0.872	0.347	0.349	0.350	0.925	0.371	0.396	0.395	0.875	0.343	0.361	0.361
$\tau_{MB,0.05}$	0.615	0.346	0.352	0.354	0.632	0.417	0.411	0.415	0.847	0.323	0.371	0.367	1.058	0.434	0.415	0.411
$\tau_{MB,0.25}$	0.704	0.348	0.350	0.349	0.923	0.392	0.390	0.389	0.853	0.347	0.362	0.360	1.104	0.415	0.390	0.390
$\tau_{MB,EE,0.05}$	0.527	0.408	0.419	0.419	0.655	0.334	0.359	0.351	1.042	0.351	0.436	0.452	0.650	0.327	0.358	0.364
$\tau_{MB,EE,0.25}$	0.758	0.370	0.378	0.378	0.677	0.337	0.343	0.342	1.117	0.356	0.392	0.397	0.767	0.330	0.348	0.353
τ_{KV}	3.300	0.392	0.462	0.448	3.300	0.392	0.462	0.448	3.225	0.273	0.344	0.339	3.225	0.273	0.344	0.339
τ_{CF}	38.964	1.053	1.105	1.077	32.463	0.995	1.115	1.088	144.196	0.571	0.718	0.696	147.950	0.533	0.871	0.844
τ_{BVN}	14.210	0.323	0.365	0.358	9.537	0.316	0.331	0.329	8.211	0.297	0.304	0.301	5.745	0.309	0.318	0.317
τ_{BC}	14.205	0.325	0.368	0.362	13.303	0.344	0.376	0.371	8.208	0.300	0.326	0.322	7.747	0.330	0.365	0.362
$\tau_{MB-BC,0.05}$	13.626	0.323	0.368	0.363	12.510	0.391	0.410	0.409	7.830	0.292	0.318	0.316	7.520	0.396	0.400	0.395
$\tau_{MB-BC,0.25}$	13.716	0.319	0.358	0.353	12.807	0.369	0.389	0.385	7.865	0.288	0.304	0.303	7.595	0.377	0.375	0.372
$\tau_{BVN, EE}$	211.914	1.651	1.641	1.559	112.407	1.077	1.100	1.046	440.622	0.921	0.802	0.765	266.782	0.583	0.716	0.685
$\tau_{BC,EE}$	211.629	1.661	1.650	1.570	164.168	1.485	1.524	1.444	440.857	0.950	1.062	1.016	385.431	0.829	1.391	1.329
$\tau_{MB-BC,EE,0.05}$	211.782	1.501	1.649	1.547	162.254	1.400	1.383	1.294	440.103	0.928	0.974	0.908	375.160	0.751	0.836	0.772
$\tau_{MB-BC,0.25}$	211.562	1.479	1.636	1.537	162.248	1.387	1.372	1.283	440.172	0.898	0.969	0.900	375.264	0.745	0.832	0.772

Notes: See Table A1.

Table A3. Monte Carlo Results: Estimates in the Common Effect Model ($\rho_0\sigma_0 = -0.50$; $\rho_{01} = 1$)

	Homoskedastic Error in Treatment Equation								Heteroskedastic Error in Treatment Equation							
	ATE				ATT				ATE				ATT			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
I. Normally Distributed Errors																
τ_{IPW}	1.308	0.892	0.891	0.891	1.266	0.901	0.902	0.901	1.299	0.849	0.880	0.880	1.257	0.850	0.881	0.881
$\tau_{MB,0.05}$	1.098	0.783	0.786	0.789	0.964	0.805	0.803	0.807	1.110	0.807	0.788	0.787	1.380	0.820	0.801	0.807
$\tau_{MB,0.25}$	1.145	0.806	0.805	0.805	1.257	0.805	0.806	0.808	1.140	0.821	0.804	0.805	1.427	0.824	0.805	0.804
$\tau_{MB,EE,0.05}$	0.900	0.917	0.933	0.937	1.147	0.919	0.931	0.935	1.229	0.805	0.885	0.877	1.134	0.822	0.901	0.895
$\tau_{MB,EE,0.25}$	1.175	0.869	0.877	0.877	1.145	0.875	0.890	0.889	1.291	0.831	0.854	0.850	1.179	0.840	0.870	0.866
τ_{KV}	3.300	0.359	0.446	0.430	3.300	0.359	0.446	0.430	3.228	0.249	0.333	0.321	3.228	0.249	0.333	0.321
τ_{CF}	28.701	0.979	1.080	1.023	23.505	0.920	1.073	1.020	132.866	0.551	0.659	0.629	137.543	0.528	0.782	0.746
τ_{BVN}	14.022	0.275	0.305	0.301	9.463	0.283	0.308	0.315	8.295	0.281	0.253	0.257	5.874	0.357	0.307	0.318
τ_{BC}	14.019	0.282	0.309	0.308	13.032	0.275	0.301	0.300	8.291	0.277	0.274	0.272	7.774	0.276	0.296	0.292
$\tau_{MB-BC,0.05}$	13.575	0.286	0.318	0.313	12.212	0.285	0.313	0.309	7.899	0.298	0.275	0.273	7.527	0.308	0.275	0.288
$\tau_{MB-BC,0.25}$	13.621	0.279	0.305	0.303	12.506	0.267	0.291	0.288	7.938	0.295	0.253	0.258	7.595	0.293	0.258	0.260
$\tau_{BVN,EE}$	202.328	1.564	1.596	1.511	106.889	1.073	1.149	1.105	396.273	0.901	0.873	0.835	240.653	0.617	0.796	0.779
$\tau_{BC,EE}$	202.089	1.570	1.604	1.518	156.405	1.426	1.528	1.455	396.462	0.936	1.153	1.113	347.575	0.841	1.496	1.447
$\tau_{MB-BC,EE,0.05}$	202.211	1.493	1.608	1.547	154.757	1.359	1.411	1.348	396.043	0.904	1.024	1.018	338.001	0.797	0.912	0.897
$\tau_{MB-BC,EE,0.25}$	201.952	1.465	1.572	1.517	154.767	1.325	1.373	1.315	396.092	0.900	1.012	1.016	338.039	0.785	0.885	0.870
II. Asymmetric, Non-Normally Distributed Errors																
τ_{IPW}	1.147	0.625	0.626	0.627	1.086	0.487	0.489	0.490	1.151	0.642	0.668	0.667	1.091	0.515	0.533	0.533
$\tau_{MB,0.05}$	1.278	0.436	0.392	0.390	1.106	0.782	0.780	0.779	1.423	0.379	0.498	0.502	1.429	0.800	0.776	0.780
$\tau_{MB,0.25}$	1.281	0.467	0.449	0.451	1.244	0.720	0.718	0.717	1.360	0.467	0.524	0.521	1.419	0.738	0.715	0.714
$\tau_{MB,EE,0.05}$	0.710	0.775	0.746	0.776	0.720	0.497	0.543	0.543	1.653	0.606	0.640	0.648	0.802	0.447	0.539	0.513
$\tau_{MB,EE,0.25}$	0.926	0.638	0.624	0.642	0.771	0.486	0.498	0.505	1.502	0.565	0.586	0.600	0.966	0.484	0.516	0.504
τ_{KV}	3.299	0.403	0.467	0.452	3.299	0.403	0.467	0.452	3.230	0.267	0.355	0.348	3.230	0.267	0.355	0.348
τ_{CF}	62.974	1.076	1.059	1.007	56.618	0.989	1.078	1.033	117.334	0.544	0.783	0.769	119.997	0.519	0.992	0.978
τ_{BVN}	7.699	0.420	0.401	0.399	5.690	0.616	0.565	0.568	3.741	0.398	0.472	0.469	3.008	0.603	0.683	0.680
τ_{BC}	7.684	0.417	0.400	0.399	7.686	0.638	0.602	0.606	3.735	0.414	0.543	0.538	3.851	0.643	0.827	0.822
$\tau_{MB-BC,0.05}$	7.409	0.425	0.416	0.406	7.405	0.899	0.852	0.857	3.741	0.388	0.485	0.487	3.936	0.895	1.001	1.001
$\tau_{MB-BC,0.25}$	7.467	0.421	0.407	0.405	7.544	0.838	0.791	0.793	3.688	0.419	0.501	0.497	3.960	0.837	0.940	0.934
$\tau_{BVN,EE}$	273.344	1.771	1.652	1.599	148.055	1.153	1.097	1.074	345.351	0.928	0.764	0.750	209.875	0.616	0.720	0.725
$\tau_{BC,EE}$	273.100	1.781	1.661	1.608	216.400	1.576	1.493	1.449	345.551	0.956	1.097	1.097	303.242	0.840	1.446	1.451
$\tau_{MB-BC,EE,0.05}$	273.177	1.524	1.549	1.521	213.697	1.502	1.412	1.358	342.868	1.041	0.859	0.873	294.964	0.845	0.852	0.819
$\tau_{MB-BC,EE,0.25}$	272.980	1.501	1.555	1.537	213.628	1.434	1.353	1.293	342.737	1.010	0.877	0.886	295.100	0.764	0.848	0.819

Notes: See Table A1.

Table A4. Monte Carlo Results: Estimates in the Heterogeneous Effect Model ($\rho_0\sigma_0 = 0$; $\rho_{01} = 0.50$; $\rho_\delta\sigma_\delta = 0$)

| | Homoskedastic Error in Treatment Equation | | | | | | | | Heteroskedastic Error in Treatment Equation | | | | | | | |
| | ATE | | | | ATT | | | | ATE | | | | ATT | | | |
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
I. Normally Distributed Errors																
τ_{IPW}	0.617	0.043	0.044	0.042	0.564	0.049	0.051	0.049	0.619	0.044	0.044	0.045	0.569	0.048	0.045	0.046
$\tau_{MB,0.05}$	0.348	0.106	0.107	0.102	0.235	0.105	0.104	0.107	0.356	0.125	0.106	0.107	0.749	0.100	0.107	0.099
$\tau_{MB,0.25}$	0.384	0.059	0.057	0.057	0.592	0.052	0.055	0.053	0.379	0.062	0.054	0.055	0.777	0.062	0.055	0.054
$\tau_{MB,EE,0.05}$	0.285	0.119	0.126	0.132	0.360	0.116	0.120	0.127	0.588	0.157	0.122	0.129	0.352	0.154	0.122	0.126
$\tau_{MB,EE,0.25}$	0.543	0.065	0.061	0.064	0.393	0.065	0.068	0.072	0.680	0.066	0.061	0.063	0.450	0.068	0.061	0.061
τ_{KV}	3.308	0.375	0.446	0.433	3.308	0.375	0.446	0.433	3.233	0.240	0.325	0.315	3.233	0.240	0.325	0.315
τ_{CF}	36.122	1.052	1.117	1.123	30.070	0.984	1.124	1.129	174.361	0.536	0.704	0.678	178.130	0.508	0.840	0.804
τ_{BVN}	17.702	0.289	0.318	0.312	11.565	0.215	0.235	0.232	10.203	0.271	0.275	0.271	6.869	0.204	0.210	0.207
τ_{BC}	17.701	0.296	0.322	0.320	16.358	0.298	0.321	0.318	10.203	0.281	0.304	0.300	9.469	0.287	0.324	0.319
$\tau_{MB-BC,0.05}$	17.108	0.295	0.326	0.314	15.319	0.304	0.322	0.318	9.645	0.284	0.277	0.280	9.138	0.290	0.306	0.298
$\tau_{MB-BC,0.25}$	17.155	0.281	0.309	0.304	15.696	0.289	0.312	0.306	9.700	0.266	0.264	0.263	9.205	0.278	0.287	0.283
$\tau_{BVN,EE}$	184.147	1.718	1.674	1.644	96.015	1.123	1.143	1.129	550.570	0.845	0.917	0.857	331.803	0.550	0.794	0.737
$\tau_{BC,EE}$	183.817	1.729	1.683	1.654	140.006	1.548	1.584	1.567	550.844	0.867	1.238	1.153	479.056	0.779	1.608	1.491
$\tau_{MB-BC,EE,0.05}$	183.210	1.387	1.552	1.488	138.316	1.447	1.430	1.440	550.379	0.769	1.064	1.073	466.899	0.695	0.907	0.850
$\tau_{MB-BC,EE,0.25}$	182.952	1.359	1.518	1.454	138.321	1.434	1.416	1.423	550.472	0.753	1.042	1.048	466.996	0.668	0.886	0.835
II. Asymmetric, Non-Normally Distributed Errors																
τ_{IPW}	0.613	0.042	0.043	0.042	0.560	0.047	0.046	0.045	0.615	0.045	0.041	0.041	0.565	0.047	0.044	0.043
$\tau_{MB,0.05}$	0.338	0.112	0.104	0.106	0.231	0.111	0.108	0.107	0.329	0.132	0.106	0.106	0.735	0.118	0.109	0.108
$\tau_{MB,0.25}$	0.384	0.061	0.058	0.058	0.596	0.058	0.056	0.056	0.351	0.064	0.060	0.058	0.771	0.063	0.057	0.056
$\tau_{MB,EE,0.05}$	0.291	0.126	0.121	0.125	0.366	0.116	0.116	0.114	0.569	0.167	0.127	0.119	0.351	0.160	0.129	0.121
$\tau_{MB,EE,0.25}$	0.548	0.065	0.063	0.064	0.390	0.063	0.061	0.061	0.669	0.072	0.063	0.064	0.450	0.071	0.065	0.065
τ_{KV}	3.302	0.356	0.434	0.424	3.302	0.356	0.434	0.424	3.237	0.274	0.335	0.322	3.237	0.274	0.335	0.322
τ_{CF}	33.926	0.959	1.027	1.003	27.977	0.904	1.022	0.991	167.206	0.594	0.714	0.675	170.994	0.561	0.853	0.803
τ_{BVN}	17.741	0.269	0.295	0.290	11.609	0.201	0.219	0.216	10.524	0.267	0.264	0.259	7.084	0.204	0.204	0.201
τ_{BC}	17.740	0.274	0.301	0.298	16.391	0.272	0.298	0.295	10.525	0.280	0.294	0.289	9.759	0.286	0.313	0.309
$\tau_{MB-BC,0.05}$	17.135	0.274	0.298	0.297	15.340	0.288	0.304	0.294	9.946	0.288	0.271	0.265	9.401	0.300	0.296	0.291
$\tau_{MB-BC,0.25}$	17.193	0.258	0.287	0.280	15.726	0.271	0.295	0.287	10.001	0.261	0.257	0.251	9.472	0.270	0.280	0.276
$\tau_{BVN,EE}$	180.156	1.506	1.511	1.477	93.881	0.993	1.020	0.994	518.189	0.942	0.940	0.864	312.813	0.626	0.814	0.746
$\tau_{BC,EE}$	179.820	1.512	1.516	1.485	136.641	1.359	1.403	1.368	518.462	0.963	1.238	1.163	451.557	0.881	1.610	1.515
$\tau_{MB-BC,EE,0.05}$	179.175	1.326	1.474	1.469	134.948	1.296	1.280	1.252	517.991	0.837	1.059	1.033	439.958	0.874	0.930	0.884
$\tau_{MB-BC,EE,0.25}$	178.909	1.302	1.449	1.445	134.964	1.287	1.258	1.231	518.095	0.814	1.028	1.008	440.060	0.847	0.906	0.873

Notes: See Table A1.

Table A5. Monte Carlo Results: Estimates in the Heterogeneous Effect Model ($\rho_0\sigma_0 = -0.20$; $\rho_{01} = 0.50$; $\rho_\delta\sigma_\delta = -0.10$)

	Homoskedastic Error in Treatment Equation								Heteroskedastic Error in Treatment Equation							
	ATE				ATT				ATE				ATT			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
I. Normally Distributed Errors																
τ_{IPW}	0.938	0.417	0.416	0.416	0.847	0.367	0.364	0.364	0.935	0.396	0.423	0.422	0.847	0.348	0.369	0.368
$\tau_{MB,0.05}$	0.665	0.378	0.390	0.398	0.535	0.330	0.331	0.335	0.815	0.382	0.398	0.400	1.000	0.352	0.331	0.336
$\tau_{MB,0.25}$	0.725	0.387	0.389	0.389	0.846	0.323	0.323	0.323	0.805	0.390	0.391	0.392	1.028	0.344	0.325	0.324
$\tau_{MB,EE,0.05}$	0.517	0.456	0.453	0.451	0.638	0.355	0.353	0.350	0.973	0.382	0.465	0.469	0.601	0.307	0.357	0.353
$\tau_{MB,EE,0.25}$	0.781	0.415	0.411	0.411	0.639	0.323	0.325	0.322	1.049	0.389	0.417	0.415	0.698	0.306	0.328	0.326
τ_{KV}	3.307	0.363	0.431	0.415	3.266	0.365	0.429	0.409	3.234	0.241	0.313	0.304	3.195	0.246	0.316	0.304
τ_{CF}	33.363	1.007	1.058	1.057	27.519	0.944	1.070	1.071	152.847	0.533	0.723	0.701	156.972	0.516	0.867	0.835
τ_{BVN}	14.920	0.291	0.306	0.304	9.920	0.240	0.255	0.257	8.595	0.282	0.271	0.266	5.936	0.258	0.242	0.241
τ_{BC}	14.916	0.295	0.312	0.310	13.850	0.298	0.315	0.314	8.591	0.286	0.298	0.292	8.028	0.297	0.320	0.312
$\tau_{MB-BC,0.05}$	14.373	0.312	0.311	0.318	12.960	0.316	0.330	0.325	8.183	0.281	0.297	0.288	7.756	0.313	0.306	0.303
$\tau_{MB-BC,0.25}$	14.436	0.286	0.297	0.298	13.276	0.295	0.308	0.310	8.209	0.272	0.270	0.268	7.820	0.295	0.287	0.282
$\tau_{BVN,EE}$	196.025	1.630	1.594	1.551	102.978	1.081	1.113	1.094	467.360	0.784	0.907	0.872	282.797	0.532	0.813	0.777
$\tau_{BC,EE}$	195.731	1.636	1.602	1.560	150.082	1.469	1.518	1.491	467.592	0.806	1.215	1.162	407.868	0.743	1.599	1.518
$\tau_{MB-BC,EE,0.05}$	195.824	1.358	1.488	1.456	148.513	1.399	1.379	1.381	467.137	0.770	1.127	1.021	397.090	0.690	0.944	0.901
$\tau_{MB-BC,EE,0.25}$	195.576	1.323	1.455	1.422	148.524	1.373	1.367	1.366	467.206	0.755	1.117	1.004	397.180	0.672	0.924	0.878
II. Asymmetric, Non-Normally Distributed Errors																
τ_{IPW}	0.903	0.380	0.379	0.377	0.802	0.287	0.286	0.286	0.903	0.366	0.392	0.391	0.816	0.288	0.308	0.308
$\tau_{MB,0.05}$	0.586	0.315	0.324	0.324	0.616	0.384	0.390	0.387	0.931	0.284	0.340	0.343	1.038	0.402	0.387	0.381
$\tau_{MB,0.25}$	0.698	0.316	0.321	0.319	0.891	0.347	0.346	0.345	0.916	0.309	0.330	0.332	1.062	0.362	0.341	0.341
$\tau_{MB,EE,0.05}$	0.466	0.487	0.474	0.481	0.600	0.307	0.314	0.318	1.142	0.400	0.469	0.454	0.582	0.285	0.307	0.315
$\tau_{MB,EE,0.25}$	0.700	0.395	0.389	0.392	0.604	0.290	0.290	0.292	1.167	0.357	0.395	0.390	0.701	0.271	0.286	0.290
τ_{KV}	3.289	0.386	0.468	0.431	3.243	0.400	0.476	0.435	3.210	0.290	0.362	0.345	3.178	0.302	0.370	0.351
τ_{CF}	41.287	0.991	1.024	0.998	34.804	0.916	0.997	0.975	136.789	0.638	0.639	0.596	140.829	0.581	0.757	0.710
τ_{BVN}	13.017	0.294	0.359	0.350	8.790	0.212	0.246	0.246	7.393	0.261	0.277	0.273	5.225	0.235	0.253	0.253
τ_{BC}	13.009	0.295	0.361	0.353	12.238	0.269	0.326	0.322	7.388	0.271	0.303	0.300	7.033	0.278	0.327	0.325
$\tau_{MB-BC,0.05}$	12.420	0.312	0.373	0.360	11.539	0.299	0.339	0.341	7.094	0.295	0.288	0.281	6.870	0.342	0.359	0.355
$\tau_{MB-BC,0.25}$	12.527	0.296	0.351	0.339	11.819	0.273	0.315	0.312	7.112	0.264	0.275	0.270	6.929	0.306	0.317	0.317
$\tau_{BVN,EE}$	224.469	1.648	1.593	1.593	119.478	1.077	1.060	1.067	401.253	1.018	0.809	0.761	244.131	0.653	0.697	0.659
$\tau_{BC,EE}$	224.191	1.656	1.601	1.603	174.324	1.469	1.452	1.460	401.481	1.041	1.065	1.015	351.978	0.911	1.369	1.312
$\tau_{MB-BC,EE,0.05}$	224.355	1.615	1.632	1.488	172.250	1.414	1.319	1.345	400.359	0.989	1.157	1.083	342.373	0.846	0.795	0.786
$\tau_{MB-BC,EE,0.25}$	224.130	1.620	1.645	1.491	172.244	1.394	1.304	1.330	400.387	0.963	1.175	1.087	342.475	0.825	0.792	0.781

Notes: See Table A1.

Table A6. Monte Carlo Results: Estimates in the Heterogeneous Effect Model ($\rho_0\sigma_0 = -0.40$; $\rho_{01} = 0.50$; $\rho_\delta\sigma_\delta = -0.10$)

	Homoskedastic Error in Treatment Equation								Heteroskedastic Error in Treatment Equation							
	ATE				ATT				ATE				ATT			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
I. Normally Distributed Errors																
τ_{IPW}	1.215	0.769	0.769	0.769	1.129	0.721	0.721	0.720	1.208	0.738	0.769	0.768	1.123	0.687	0.716	0.716
$\tau_{MB,0.05}$	0.966	0.715	0.702	0.707	0.836	0.649	0.643	0.650	1.127	0.725	0.708	0.710	1.256	0.662	0.643	0.647
$\tau_{MB,0.25}$	1.031	0.711	0.712	0.712	1.119	0.643	0.643	0.645	1.127	0.726	0.715	0.717	1.292	0.662	0.644	0.645
$\tau_{MB,EE,0.05}$	0.805	0.797	0.810	0.803	0.954	0.695	0.699	0.702	1.238	0.706	0.795	0.798	0.905	0.648	0.703	0.698
$\tau_{MB,EE,0.25}$	1.053	0.755	0.758	0.755	0.943	0.663	0.677	0.674	1.296	0.722	0.747	0.747	0.986	0.647	0.668	0.669
τ_{KV}	3.307	0.373	0.442	0.422	3.266	0.373	0.438	0.412	3.234	0.244	0.319	0.307	3.194	0.249	0.321	0.304
τ_{CF}	29.986	0.961	1.046	1.054	24.646	0.903	1.061	1.068	136.554	0.520	0.709	0.675	140.929	0.511	0.849	0.803
τ_{BVN}	13.547	0.283	0.303	0.301	9.145	0.281	0.304	0.309	7.781	0.295	0.262	0.258	5.501	0.345	0.296	0.300
τ_{BC}	13.542	0.287	0.307	0.306	12.609	0.289	0.308	0.307	7.775	0.289	0.281	0.273	7.300	0.296	0.299	0.289
$\tau_{MB-BC,0.05}$	13.054	0.304	0.323	0.319	11.806	0.297	0.312	0.314	7.438	0.306	0.283	0.279	7.064	0.322	0.290	0.291
$\tau_{MB-BC,0.25}$	13.120	0.285	0.305	0.303	12.091	0.282	0.299	0.297	7.465	0.301	0.270	0.266	7.130	0.311	0.273	0.270
$\tau_{BVN,EE}$	203.429	1.531	1.528	1.506	107.685	1.048	1.116	1.111	406.501	0.778	0.866	0.817	246.909	0.542	0.792	0.754
$\tau_{BC,EE}$	203.175	1.536	1.535	1.513	157.020	1.397	1.489	1.475	406.701	0.804	1.149	1.087	355.602	0.734	1.509	1.421
$\tau_{MB-BC,EE,0.05}$	203.308	1.425	1.488	1.499	155.329	1.331	1.354	1.327	406.161	0.802	1.048	0.991	345.935	0.758	0.948	0.886
$\tau_{MB-BC,0.25}$	203.078	1.406	1.458	1.479	155.342	1.299	1.325	1.305	406.215	0.790	1.040	0.980	346.005	0.741	0.914	0.862
II. Asymmetric, Non-Normally Distributed Errors																
τ_{IPW}	1.091	0.606	0.605	0.606	0.992	0.446	0.446	0.448	1.094	0.606	0.634	0.633	1.007	0.465	0.487	0.487
$\tau_{MB,0.05}$	1.150	0.326	0.331	0.334	0.899	0.592	0.592	0.587	1.391	0.239	0.399	0.400	1.345	0.722	0.711	0.704
$\tau_{MB,0.25}$	1.175	0.402	0.404	0.406	1.051	0.522	0.521	0.520	1.312	0.401	0.448	0.446	1.349	0.662	0.638	0.638
$\tau_{MB,EE,0.05}$	0.657	0.778	0.766	0.751	0.612	0.368	0.367	0.370	1.587	0.563	0.642	0.629	0.774	0.476	0.477	0.489
$\tau_{MB,EE,0.25}$	0.869	0.628	0.612	0.610	0.629	0.347	0.347	0.340	1.437	0.539	0.575	0.565	0.918	0.463	0.468	0.468
τ_{KV}	3.267	0.420	0.498	0.435	3.229	0.438	0.511	0.444	3.191	0.305	0.380	0.351	3.165	0.316	0.389	0.357
τ_{CF}	56.862	1.061	1.038	0.987	50.072	0.965	0.994	0.950	115.025	0.639	0.685	0.655	118.630	0.573	0.838	0.803
τ_{BVN}	8.232	0.291	0.398	0.379	5.964	0.315	0.305	0.309	4.198	0.258	0.305	0.307	3.280	0.376	0.447	0.450
τ_{BC}	8.217	0.293	0.400	0.381	8.104	0.311	0.343	0.342	4.190	0.268	0.348	0.351	4.247	0.378	0.519	0.523
$\tau_{MB-BC,0.05}$	7.870	0.329	0.424	0.405	7.686	0.427	0.423	0.426	4.176	0.327	0.332	0.338	4.319	0.609	0.708	0.706
$\tau_{MB-BC,0.25}$	7.952	0.310	0.388	0.374	7.840	0.367	0.371	0.375	4.122	0.295	0.352	0.356	4.352	0.553	0.639	0.642
$\tau_{BVN,EE}$	275.821	1.705	1.620	1.561	149.140	1.107	1.061	1.034	325.357	0.991	0.792	0.747	199.074	0.649	0.709	0.678
$\tau_{BC,EE}$	275.580	1.713	1.629	1.571	217.405	1.506	1.453	1.403	325.553	1.013	1.068	1.026	286.900	0.891	1.380	1.330
$\tau_{MB-BC,EE,0.05}$	275.664	1.661	1.853	1.601	214.845	1.438	1.377	1.302	322.685	1.168	1.012	0.973	278.837	0.918	0.827	0.806
$\tau_{MB-BC,0.25}$	275.460	1.716	1.921	1.658	214.811	1.399	1.337	1.266	322.556	1.148	1.048	1.012	278.957	0.849	0.806	0.781

Notes: See Table A1.

Table B1. Monte Carlo Results: Estimates in the Common Effect Model ($\rho_0\sigma_0 = 0$; $\rho_{01} = 1$)

	Homoskedastic Error in Treatment Equation								Heteroskedastic Error in Treatment Equation							
	ATE				ATT				ATE				ATT			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
I. Normally Distributed Errors																
τ_{IPW}	0.613	0.007	0.007	0.007	0.559	0.007	0.007	0.007	0.614	0.015	0.010	0.010	0.564	0.010	0.007	0.007
$\tau_{MB,0.05}$	0.311	0.015	0.015	0.016	0.197	0.017	0.017	0.017	0.219	0.054	0.020	0.022	0.728	0.031	0.018	0.018
$\tau_{MB,0.25}$	0.377	0.010	0.009	0.009	0.595	0.008	0.009	0.009	0.279	0.023	0.012	0.012	0.770	0.025	0.009	0.009
$\tau_{MB,EE,0.05}$	0.288	0.017	0.017	0.016	0.416	0.016	0.016	0.018	0.396	0.098	0.025	0.025	0.341	0.112	0.025	0.024
$\tau_{MB,EE,0.25}$	0.540	0.010	0.009	0.009	0.328	0.009	0.008	0.009	0.535	0.022	0.013	0.013	0.428	0.030	0.013	0.013
τ_{KV}	3.306	0.049	0.050	0.050	3.306	0.049	0.050	0.050	3.235	0.037	0.041	0.042	3.235	0.037	0.041	0.042
τ_{CF}	27.276	0.135	0.150	0.150	19.349	0.127	0.144	0.145	157.369	0.080	0.094	0.094	161.421	0.074	0.108	0.109
τ_{BVN}	17.382	0.045	0.044	0.044	11.385	0.034	0.033	0.033	10.126	0.036	0.035	0.035	6.841	0.028	0.027	0.027
τ_{BC}	17.381	0.047	0.045	0.045	16.077	0.047	0.045	0.045	10.126	0.038	0.039	0.039	9.420	0.039	0.041	0.041
$\tau_{MB-BC,0.05}$	16.760	0.050	0.045	0.046	15.028	0.051	0.050	0.049	9.508	0.066	0.040	0.039	9.119	0.055	0.039	0.039
$\tau_{MB-BC,0.25}$	16.826	0.046	0.043	0.043	15.426	0.048	0.047	0.046	9.570	0.041	0.035	0.034	9.162	0.046	0.036	0.036
$\tau_{BVN, EE}$	167.075	0.206	0.214	0.214	85.262	0.137	0.145	0.145	482.431	0.118	0.120	0.120	292.731	0.078	0.100	0.101
$\tau_{BC,EE}$	166.687	0.206	0.214	0.214	123.793	0.189	0.201	0.201	482.729	0.119	0.163	0.164	421.995	0.110	0.205	0.207
$\tau_{MB-BC,EE,0.05}$	166.333	0.160	0.160	0.161	122.325	0.185	0.184	0.184	482.217	0.132	0.143	0.145	410.725	0.132	0.124	0.123
$\tau_{MB-BC,0.25}$	166.059	0.157	0.157	0.158	122.413	0.181	0.180	0.180	482.355	0.102	0.137	0.138	410.812	0.091	0.118	0.115
II. Asymmetric, Non-Normally Distributed Errors																
τ_{IPW}	0.613	0.007	0.007	0.007	0.559	0.008	0.008	0.008	0.615	0.014	0.009	0.009	0.565	0.010	0.006	0.006
$\tau_{MB,0.05}$	0.311	0.017	0.016	0.016	0.195	0.015	0.015	0.014	0.226	0.045	0.019	0.020	0.732	0.033	0.015	0.014
$\tau_{MB,0.25}$	0.379	0.008	0.008	0.007	0.587	0.008	0.007	0.007	0.284	0.021	0.010	0.010	0.769	0.026	0.008	0.008
$\tau_{MB,EE,0.05}$	0.269	0.019	0.020	0.020	0.417	0.019	0.017	0.019	0.389	0.116	0.025	0.026	0.343	0.120	0.022	0.022
$\tau_{MB,EE,0.25}$	0.523	0.010	0.010	0.010	0.326	0.009	0.010	0.010	0.536	0.022	0.014	0.014	0.433	0.033	0.012	0.012
τ_{KV}	3.308	0.056	0.067	0.067	3.308	0.056	0.067	0.067	3.236	0.039	0.050	0.050	3.236	0.039	0.050	0.050
τ_{CF}	27.359	0.139	0.165	0.165	19.434	0.131	0.168	0.169	157.832	0.077	0.079	0.079	161.850	0.075	0.097	0.097
τ_{BVN}	17.319	0.041	0.044	0.044	11.340	0.031	0.033	0.033	10.064	0.035	0.043	0.042	6.800	0.027	0.033	0.033
τ_{BC}	17.318	0.042	0.044	0.044	16.028	0.042	0.045	0.045	10.064	0.040	0.047	0.047	9.367	0.041	0.050	0.050
$\tau_{MB-BC,0.05}$	16.698	0.041	0.045	0.045	14.983	0.043	0.046	0.046	9.454	0.057	0.045	0.045	9.074	0.052	0.046	0.046
$\tau_{MB-BC,0.25}$	16.767	0.039	0.043	0.043	15.375	0.041	0.044	0.044	9.512	0.040	0.041	0.041	9.113	0.047	0.044	0.044
$\tau_{BVN, EE}$	167.087	0.237	0.253	0.253	85.225	0.157	0.177	0.177	483.683	0.104	0.114	0.114	293.371	0.071	0.099	0.100
$\tau_{BC,EE}$	166.700	0.239	0.255	0.255	123.856	0.215	0.246	0.246	483.982	0.111	0.154	0.154	423.223	0.103	0.200	0.201
$\tau_{MB-BC,EE,0.05}$	166.422	0.215	0.237	0.231	122.394	0.214	0.229	0.228	483.462	0.153	0.133	0.144	411.892	0.152	0.141	0.129
$\tau_{MB-BC,EE,0.25}$	166.148	0.209	0.231	0.226	122.484	0.209	0.225	0.224	483.609	0.093	0.130	0.140	411.982	0.095	0.136	0.126

Notes: Figures represent root mean squared errors. Results based on 50 data sets with 250,000 observations each. Specification (1) is under-specified (relevant higher order terms are excluded); specification (2) is correctly specified; specification (3) is over-specified (irrelevant higher order terms are included); specification (4) is over-specified (irrelevant higher order terms and an irrelevant variable are included). Shading indicates best performance within each column. See text and Table 1 for further details.

Table B2. Monte Carlo Results: Estimates in the Common Effect Model ($\rho_0\sigma_0 = -0.25$; $\rho_{01} = 1$)

	Homoskedastic Error in Treatment Equation								Heteroskedastic Error in Treatment Equation							
	ATE				ATT				ATE				ATT			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
I. Normally Distributed Errors																
τ_{IPW}	0.960	0.443	0.442	0.442	0.913	0.447	0.447	0.447	0.957	0.415	0.441	0.441	0.910	0.419	0.440	0.440
$\tau_{MB,0.05}$	0.707	0.403	0.403	0.403	0.580	0.404	0.403	0.403	0.628	0.426	0.401	0.401	1.063	0.425	0.404	0.404
$\tau_{MB,0.25}$	0.766	0.403	0.403	0.403	0.933	0.403	0.404	0.403	0.678	0.426	0.403	0.403	1.107	0.426	0.403	0.403
$\tau_{MB,EE,0.05}$	0.506	0.440	0.436	0.439	0.806	0.425	0.429	0.439	0.764	0.403	0.417	0.418	0.731	0.426	0.416	0.421
$\tau_{MB,EE,0.25}$	0.769	0.423	0.419	0.420	0.722	0.415	0.419	0.423	0.874	0.418	0.412	0.412	0.796	0.427	0.413	0.415
τ_{KV}	3.305	0.049	0.051	0.051	3.305	0.049	0.051	0.051	3.236	0.037	0.043	0.043	3.236	0.037	0.043	0.043
τ_{CF}	23.561	0.146	0.154	0.155	15.780	0.134	0.147	0.148	141.735	0.089	0.087	0.088	146.081	0.104	0.101	0.101
τ_{BVN}	15.681	0.038	0.039	0.038	10.423	0.110	0.111	0.111	9.069	0.089	0.045	0.045	6.283	0.170	0.128	0.128
τ_{BC}	15.680	0.038	0.039	0.039	14.542	0.039	0.040	0.040	9.068	0.066	0.039	0.039	8.483	0.069	0.049	0.048
$\tau_{MB-BC,0.05}$	15.145	0.043	0.044	0.044	13.606	0.046	0.047	0.046	8.546	0.114	0.049	0.048	8.238	0.123	0.056	0.055
$\tau_{MB-BC,0.25}$	15.204	0.040	0.040	0.039	13.959	0.040	0.040	0.040	8.597	0.113	0.048	0.048	8.283	0.123	0.052	0.052
$\tau_{BVN,EE}$	181.638	0.226	0.232	0.232	94.236	0.203	0.212	0.213	423.670	0.131	0.109	0.110	257.843	0.144	0.139	0.140
$\tau_{BC,EE}$	181.311	0.226	0.231	0.231	137.118	0.203	0.213	0.214	423.924	0.146	0.156	0.156	371.475	0.117	0.205	0.205
$\tau_{MB-BC,EE,0.05}$	181.512	0.284	0.284	0.268	135.534	0.245	0.240	0.234	423.461	0.124	0.121	0.108	361.312	0.165	0.178	0.173
$\tau_{MB-BC,EE,0.25}$	181.250	0.292	0.295	0.275	135.617	0.239	0.236	0.223	423.572	0.112	0.127	0.111	361.377	0.159	0.169	0.165
II. Asymmetric, Non-Normally Distributed Errors																
τ_{IPW}	0.920	0.378	0.378	0.379	0.867	0.346	0.345	0.345	0.920	0.364	0.389	0.389	0.869	0.336	0.354	0.354
$\tau_{MB,0.05}$	0.584	0.313	0.312	0.312	0.611	0.397	0.397	0.397	0.688	0.168	0.330	0.329	1.070	0.418	0.398	0.397
$\tau_{MB,0.25}$	0.696	0.324	0.323	0.323	0.922	0.382	0.382	0.382	0.734	0.294	0.337	0.337	1.099	0.403	0.381	0.381
$\tau_{MB,EE,0.05}$	0.474	0.329	0.338	0.347	0.678	0.319	0.325	0.325	1.029	0.131	0.327	0.327	0.654	0.263	0.340	0.331
$\tau_{MB,EE,0.25}$	0.714	0.337	0.341	0.343	0.623	0.328	0.330	0.331	1.174	0.295	0.337	0.337	0.742	0.303	0.341	0.338
τ_{KV}	3.308	0.050	0.059	0.060	3.308	0.050	0.059	0.060	3.236	0.035	0.042	0.043	3.236	0.035	0.042	0.043
τ_{CF}	32.442	0.127	0.154	0.155	24.922	0.115	0.168	0.170	136.049	0.080	0.125	0.125	139.976	0.096	0.165	0.165
τ_{BVN}	14.003	0.085	0.063	0.063	9.419	0.203	0.185	0.185	7.817	0.121	0.115	0.115	5.525	0.228	0.227	0.227
τ_{BC}	13.998	0.082	0.061	0.061	13.129	0.149	0.132	0.132	7.814	0.108	0.119	0.119	7.434	0.176	0.185	0.185
$\tau_{MB-BC,0.05}$	13.391	0.070	0.056	0.055	12.332	0.223	0.207	0.207	7.392	0.056	0.129	0.129	7.291	0.280	0.262	0.262
$\tau_{MB-BC,0.25}$	13.503	0.082	0.067	0.068	12.642	0.208	0.192	0.192	7.439	0.095	0.137	0.137	7.321	0.265	0.245	0.246
$\tau_{BVN,EE}$	192.489	0.214	0.231	0.232	100.548	0.187	0.206	0.207	404.059	0.137	0.103	0.103	246.207	0.136	0.145	0.145
$\tau_{BC,EE}$	192.162	0.215	0.232	0.233	146.399	0.190	0.220	0.221	404.319	0.143	0.130	0.130	354.978	0.121	0.166	0.166
$\tau_{MB-BC,EE,0.05}$	192.340	0.272	0.266	0.296	144.747	0.200	0.210	0.222	403.660	0.225	0.138	0.138	345.181	0.169	0.149	0.153
$\tau_{MB-BC,EE,0.25}$	192.100	0.289	0.272	0.315	144.800	0.195	0.209	0.220	403.805	0.150	0.145	0.145	345.269	0.146	0.148	0.154

Notes: See Table B1.

Table B3. Monte Carlo Results: Estimates in the Common Effect Model ($\rho_0\sigma_0 = -0.50$; $\rho_{01} = 1$)

	Homoskedastic Error in Treatment Equation								Heteroskedastic Error in Treatment Equation							
	ATE				ATT				ATE				ATT			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
I. Normally Distributed Errors																
τ_{IPW}	1.308	0.885	0.885	0.885	1.267	0.895	0.895	0.895	1.300	0.844	0.876	0.876	1.258	0.846	0.878	0.878
$\tau_{MB,0.05}$	1.098	0.803	0.803	0.803	0.962	0.802	0.802	0.802	1.037	0.825	0.802	0.803	1.396	0.822	0.802	0.802
$\tau_{MB,0.25}$	1.153	0.808	0.808	0.808	1.269	0.808	0.808	0.808	1.079	0.829	0.808	0.808	1.442	0.829	0.808	0.808
$\tau_{MB,EE,0.05}$	0.892	0.881	0.906	0.905	1.194	0.844	0.857	0.854	1.140	0.815	0.808	0.807	1.127	0.823	0.815	0.815
$\tau_{MB,EE,0.25}$	1.134	0.847	0.860	0.859	1.128	0.826	0.834	0.832	1.216	0.828	0.811	0.811	1.165	0.832	0.819	0.818
τ_{KV}	3.306	0.049	0.052	0.052	3.306	0.049	0.052	0.052	3.234	0.037	0.044	0.044	3.234	0.037	0.044	0.044
τ_{CF}	20.497	0.143	0.152	0.153	12.761	0.131	0.147	0.148	126.651	0.095	0.088	0.088	131.347	0.148	0.102	0.102
τ_{BVN}	14.015	0.035	0.041	0.041	9.478	0.217	0.218	0.218	8.016	0.163	0.064	0.064	5.724	0.332	0.249	0.249
τ_{BC}	14.013	0.035	0.041	0.041	13.034	0.036	0.041	0.041	8.012	0.122	0.039	0.039	7.547	0.120	0.067	0.066
$\tau_{MB-BC,0.05}$	13.560	0.038	0.045	0.044	12.209	0.041	0.045	0.044	7.587	0.186	0.067	0.067	7.355	0.199	0.070	0.070
$\tau_{MB-BC,0.25}$	13.615	0.037	0.043	0.043	12.516	0.038	0.042	0.042	7.629	0.190	0.071	0.071	7.402	0.205	0.073	0.073
$\tau_{BVN,EE}$	196.059	0.215	0.225	0.226	103.024	0.274	0.284	0.286	366.667	0.165	0.111	0.111	224.012	0.228	0.215	0.216
$\tau_{BC,EE}$	195.792	0.214	0.224	0.225	150.196	0.196	0.213	0.214	366.876	0.205	0.218	0.216	322.578	0.127	0.293	0.291
$\tau_{MB-BC,EE,0.05}$	195.956	0.276	0.319	0.320	148.467	0.218	0.270	0.285	366.468	0.179	0.128	0.127	313.453	0.147	0.155	0.155
$\tau_{MB-BC,EE,0.25}$	195.713	0.287	0.343	0.343	148.532	0.213	0.268	0.281	366.544	0.161	0.133	0.132	313.492	0.136	0.150	0.150
II. Asymmetric, Non-Normally Distributed Errors																
τ_{IPW}	1.143	0.625	0.625	0.625	1.082	0.485	0.485	0.485	1.148	0.639	0.667	0.667	1.088	0.511	0.530	0.530
$\tau_{MB,0.05}$	1.249	0.209	0.195	0.195	1.082	0.777	0.777	0.777	1.668	0.102	0.402	0.403	1.429	0.800	0.776	0.775
$\tau_{MB,0.25}$	1.324	0.368	0.368	0.368	1.235	0.714	0.714	0.714	1.503	0.382	0.432	0.432	1.415	0.731	0.714	0.714
$\tau_{MB,EE,0.05}$	0.702	0.240	0.248	0.250	0.685	0.211	0.219	0.219	1.667	0.110	0.286	0.287	0.812	0.100	0.322	0.322
$\tau_{MB,EE,0.25}$	0.919	0.379	0.382	0.382	0.754	0.352	0.355	0.355	1.503	0.382	0.420	0.420	0.956	0.362	0.419	0.419
τ_{KV}	3.308	0.046	0.057	0.057	3.308	0.046	0.057	0.057	3.237	0.032	0.043	0.043	3.237	0.032	0.043	0.043
τ_{CF}	55.276	0.259	0.146	0.146	48.756	0.158	0.226	0.227	106.842	0.079	0.420	0.420	109.851	0.158	0.579	0.579
τ_{BVN}	7.556	0.290	0.149	0.150	5.627	0.574	0.496	0.496	2.989	0.308	0.378	0.378	2.681	0.572	0.645	0.645
τ_{BC}	7.540	0.287	0.146	0.146	7.590	0.567	0.486	0.486	2.980	0.323	0.448	0.448	3.324	0.587	0.762	0.762
$\tau_{MB-BC,0.05}$	7.330	0.209	0.150	0.150	7.303	0.850	0.777	0.777	2.964	0.101	0.402	0.403	3.546	0.865	0.961	0.960
$\tau_{MB-BC,0.25}$	7.409	0.367	0.320	0.320	7.456	0.786	0.714	0.714	2.804	0.381	0.432	0.432	3.534	0.797	0.898	0.898
$\tau_{BVN,EE}$	247.707	0.231	0.231	0.232	133.124	0.233	0.235	0.238	297.161	0.143	0.159	0.160	182.871	0.252	0.288	0.290
$\tau_{BC,EE}$	247.435	0.234	0.234	0.235	194.123	0.202	0.203	0.204	297.392	0.160	0.375	0.377	263.627	0.220	0.518	0.521
$\tau_{MB-BC,EE,0.05}$	247.530	0.230	0.238	0.239	191.798	0.200	0.209	0.209	294.649	0.103	0.286	0.287	255.954	0.095	0.296	0.287
$\tau_{MB-BC,EE,0.25}$	247.313	0.356	0.363	0.363	191.728	0.331	0.339	0.339	294.485	0.366	0.420	0.420	256.098	0.352	0.433	0.424

Notes: See Table B1.

Table B4. Monte Carlo Results: Estimates in the Heterogeneous Effect Model ($\rho_0\sigma_0 = 0$; $\rho_{01} = 0.50$; $\rho_\delta\sigma_\delta = 0$)

	Homoskedastic Error in Treatment Equation								Heteroskedastic Error in Treatment Equation							
	ATE				ATT				ATE				ATT			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
I. Normally Distributed Errors																
τ_{IPW}	0.611	0.007	0.007	0.007	0.557	0.008	0.008	0.008	0.613	0.016	0.008	0.008	0.563	0.011	0.007	0.007
$\tau_{MB,0.05}$	0.308	0.015	0.015	0.016	0.194	0.016	0.015	0.016	0.226	0.049	0.018	0.019	0.731	0.029	0.015	0.015
$\tau_{MB,0.25}$	0.377	0.009	0.008	0.009	0.567	0.007	0.007	0.008	0.284	0.023	0.009	0.009	0.764	0.022	0.008	0.008
$\tau_{MB,EE,0.05}$	0.279	0.019	0.017	0.017	0.415	0.017	0.019	0.018	0.391	0.118	0.028	0.028	0.343	0.127	0.025	0.025
$\tau_{MB,EE,0.25}$	0.534	0.010	0.009	0.009	0.326	0.008	0.010	0.011	0.534	0.023	0.012	0.013	0.431	0.033	0.013	0.012
τ_{KV}	3.306	0.050	0.061	0.061	3.306	0.050	0.061	0.061	3.234	0.038	0.049	0.049	3.234	0.038	0.049	0.049
τ_{CF}	27.636	0.145	0.167	0.166	19.622	0.139	0.168	0.167	158.316	0.092	0.091	0.091	162.315	0.089	0.104	0.105
τ_{BVN}	17.143	0.045	0.051	0.051	11.224	0.034	0.038	0.038	9.918	0.035	0.036	0.036	6.705	0.027	0.028	0.028
τ_{BC}	17.142	0.045	0.052	0.051	15.881	0.046	0.051	0.051	9.918	0.039	0.041	0.041	9.242	0.039	0.043	0.043
$\tau_{MB-BC,0.05}$	16.523	0.045	0.050	0.051	14.848	0.049	0.053	0.053	9.312	0.058	0.039	0.041	8.960	0.049	0.041	0.040
$\tau_{MB-BC,0.25}$	16.593	0.043	0.049	0.050	15.221	0.046	0.051	0.051	9.371	0.040	0.036	0.036	8.994	0.043	0.038	0.038
$\tau_{BVN,EE}$	166.623	0.208	0.215	0.214	84.909	0.142	0.152	0.152	483.662	0.131	0.113	0.113	293.214	0.089	0.095	0.096
$\tau_{BC,EE}$	166.235	0.208	0.215	0.214	123.559	0.195	0.211	0.210	483.961	0.134	0.154	0.155	423.469	0.127	0.199	0.202
$\tau_{MB-BC,EE,0.05}$	165.888	0.205	0.221	0.221	122.106	0.183	0.190	0.192	483.444	0.147	0.129	0.130	412.021	0.152	0.116	0.114
$\tau_{MB-BC,EE,0.25}$	165.611	0.200	0.220	0.220	122.194	0.180	0.188	0.190	483.588	0.108	0.124	0.127	412.109	0.101	0.111	0.111
II. Asymmetric, Non-Normally Distributed Errors																
τ_{IPW}	0.614	0.006	0.006	0.006	0.560	0.007	0.007	0.007	0.616	0.015	0.010	0.009	0.566	0.010	0.008	0.007
$\tau_{MB,0.05}$	0.306	0.014	0.016	0.015	0.199	0.014	0.014	0.013	0.221	0.064	0.023	0.023	0.723	0.031	0.015	0.015
$\tau_{MB,0.25}$	0.379	0.008	0.008	0.008	0.589	0.009	0.009	0.009	0.283	0.026	0.011	0.011	0.771	0.027	0.008	0.008
$\tau_{MB,EE,0.05}$	0.282	0.018	0.017	0.018	0.420	0.015	0.015	0.017	0.393	0.099	0.030	0.029	0.344	0.095	0.024	0.024
$\tau_{MB,EE,0.25}$	0.530	0.009	0.008	0.008	0.329	0.009	0.009	0.009	0.537	0.023	0.015	0.015	0.432	0.031	0.011	0.012
τ_{KV}	3.305	0.058	0.068	0.068	3.305	0.058	0.068	0.068	3.234	0.038	0.045	0.044	3.234	0.038	0.045	0.044
τ_{CF}	27.126	0.149	0.179	0.181	19.219	0.141	0.186	0.187	157.292	0.082	0.094	0.093	161.302	0.080	0.115	0.114
τ_{BVN}	17.249	0.041	0.047	0.047	11.299	0.030	0.034	0.034	10.089	0.032	0.033	0.033	6.817	0.024	0.025	0.025
τ_{BC}	17.248	0.043	0.048	0.048	15.967	0.041	0.047	0.047	10.089	0.037	0.037	0.037	9.391	0.035	0.039	0.039
$\tau_{MB-BC,0.05}$	16.623	0.042	0.049	0.049	14.929	0.040	0.045	0.044	9.472	0.073	0.044	0.043	9.088	0.041	0.037	0.037
$\tau_{MB-BC,0.25}$	16.697	0.041	0.046	0.046	15.319	0.041	0.046	0.046	9.536	0.040	0.033	0.033	9.136	0.040	0.034	0.034
$\tau_{BVN,EE}$	162.321	0.197	0.210	0.212	82.511	0.132	0.155	0.156	483.221	0.114	0.109	0.109	293.090	0.077	0.097	0.097
$\tau_{BC,EE}$	161.933	0.198	0.211	0.213	119.898	0.181	0.216	0.217	483.521	0.121	0.148	0.147	422.807	0.113	0.197	0.197
$\tau_{MB-BC,EE,0.05}$	161.612	0.149	0.194	0.212	118.464	0.172	0.192	0.190	483.005	0.152	0.184	0.151	411.489	0.158	0.117	0.114
$\tau_{MB-BC,EE,0.25}$	161.342	0.146	0.190	0.210	118.555	0.167	0.187	0.186	483.149	0.117	0.181	0.148	411.578	0.135	0.113	0.109

Notes: See Table B1.

Table B5. Monte Carlo Results: Estimates in the Heterogeneous Effect Model ($\rho_0\sigma_0 = -0.20$; $\rho_{01} = 0.50$; $\rho_\delta\sigma_\delta = -0.10$)

	Homoskedastic Error in Treatment Equation								Heteroskedastic Error in Treatment Equation							
	ATE				ATT				ATE				ATT			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
I. Normally Distributed Errors																
τ_{IPW}	0.934	0.411	0.411	0.411	0.841	0.359	0.358	0.359	0.931	0.387	0.415	0.415	0.841	0.337	0.359	0.359
$\tau_{MB,0.05}$	0.627	0.379	0.380	0.380	0.514	0.314	0.314	0.314	0.666	0.409	0.381	0.380	0.993	0.341	0.315	0.315
$\tau_{MB,0.25}$	0.723	0.381	0.381	0.381	0.827	0.312	0.312	0.311	0.714	0.401	0.380	0.380	1.018	0.333	0.311	0.311
$\tau_{MB,EE,0.05}$	0.485	0.413	0.418	0.415	0.674	0.335	0.330	0.333	0.865	0.352	0.395	0.394	0.610	0.323	0.323	0.325
$\tau_{MB,EE,0.25}$	0.734	0.394	0.397	0.396	0.593	0.313	0.311	0.311	1.016	0.381	0.388	0.388	0.688	0.321	0.310	0.309
τ_{KV}	3.307	0.057	0.061	0.061	3.265	0.085	0.077	0.077	3.230	0.060	0.073	0.073	3.190	0.094	0.107	0.106
τ_{CF}	24.804	0.141	0.157	0.157	17.013	0.135	0.159	0.159	140.267	0.086	0.092	0.092	144.515	0.100	0.105	0.106
τ_{BVN}	14.301	0.044	0.049	0.049	9.538	0.090	0.090	0.090	8.081	0.084	0.042	0.042	5.634	0.144	0.101	0.101
τ_{BC}	14.297	0.046	0.051	0.051	13.330	0.046	0.050	0.050	8.078	0.065	0.040	0.040	7.607	0.068	0.046	0.046
$\tau_{MB-BC,0.05}$	13.721	0.045	0.049	0.048	12.457	0.049	0.052	0.052	7.626	0.117	0.045	0.044	7.408	0.106	0.041	0.040
$\tau_{MB-BC,0.25}$	13.817	0.045	0.049	0.049	12.771	0.046	0.051	0.051	7.674	0.107	0.043	0.043	7.434	0.100	0.039	0.039
$\tau_{BVN, EE}$	177.681	0.204	0.212	0.212	91.840	0.160	0.173	0.174	411.959	0.150	0.116	0.116	250.768	0.110	0.121	0.120
$\tau_{BC,EE}$	177.353	0.205	0.214	0.214	133.895	0.191	0.211	0.210	412.214	0.170	0.174	0.175	362.114	0.132	0.225	0.227
$\tau_{MB-BC,EE,0.05}$	177.553	0.278	0.305	0.286	132.404	0.229	0.228	0.227	411.710	0.195	0.112	0.112	351.874	0.225	0.163	0.174
$\tau_{MB-BC,EE,0.25}$	177.304	0.295	0.325	0.300	132.484	0.220	0.222	0.216	411.859	0.155	0.111	0.111	351.951	0.178	0.155	0.169
II. Asymmetric, Non-Normally Distributed Errors																
τ_{IPW}	0.904	0.375	0.375	0.375	0.801	0.282	0.281	0.281	0.903	0.361	0.389	0.389	0.816	0.283	0.303	0.303
$\tau_{MB,0.05}$	0.534	0.285	0.285	0.285	0.506	0.267	0.267	0.267	0.848	0.106	0.300	0.300	1.039	0.385	0.362	0.362
$\tau_{MB,0.25}$	0.647	0.298	0.298	0.298	0.792	0.245	0.245	0.245	0.861	0.266	0.310	0.309	1.065	0.361	0.340	0.340
$\tau_{MB,EE,0.05}$	0.460	0.289	0.288	0.287	0.509	0.183	0.223	0.212	1.078	0.114	0.301	0.301	0.597	0.267	0.323	0.310
$\tau_{MB,EE,0.25}$	0.693	0.303	0.303	0.303	0.463	0.176	0.192	0.188	1.182	0.266	0.310	0.310	0.694	0.266	0.291	0.288
τ_{KV}	3.270	0.135	0.115	0.114	3.223	0.178	0.156	0.155	3.198	0.110	0.118	0.117	3.164	0.142	0.149	0.148
τ_{CF}	34.210	0.143	0.164	0.165	26.526	0.129	0.169	0.169	133.661	0.090	0.123	0.121	137.815	0.077	0.165	0.163
τ_{BVN}	12.598	0.085	0.133	0.133	8.523	0.070	0.047	0.048	6.736	0.034	0.033	0.033	4.829	0.137	0.141	0.141
τ_{BC}	12.590	0.086	0.135	0.135	11.874	0.037	0.061	0.061	6.730	0.034	0.039	0.039	6.474	0.082	0.096	0.096
$\tau_{MB-BC,0.05}$	11.959	0.091	0.132	0.131	11.092	0.038	0.047	0.048	6.476	0.171	0.053	0.053	6.401	0.209	0.194	0.194
$\tau_{MB-BC,0.25}$	12.071	0.080	0.120	0.120	11.378	0.036	0.057	0.057	6.493	0.039	0.060	0.060	6.428	0.185	0.172	0.172
$\tau_{BVN, EE}$	203.226	0.194	0.200	0.200	106.534	0.147	0.160	0.160	387.550	0.135	0.111	0.111	236.670	0.103	0.130	0.130
$\tau_{BC,EE}$	202.909	0.195	0.200	0.201	155.163	0.170	0.196	0.197	387.804	0.145	0.148	0.147	341.458	0.113	0.194	0.193
$\tau_{MB-BC,EE,0.05}$	203.077	0.197	0.201	0.201	153.521	0.197	0.220	0.221	386.839	0.249	0.133	0.132	331.802	0.131	0.150	0.158
$\tau_{MB-BC,EE,0.25}$	202.844	0.196	0.202	0.202	153.566	0.187	0.212	0.214	386.944	0.149	0.138	0.137	331.898	0.106	0.133	0.138

Notes: See Table B1.

Table B6. Monte Carlo Results: Estimates in the Heterogeneous Effect Model ($\rho_0\sigma_0 = -0.40$; $\rho_{01} = 0.50$; $\rho_\delta\sigma_\delta = -0.10$)

	Homoskedastic Error in Treatment Equation								Heteroskedastic Error in Treatment Equation							
	ATE				ATT				ATE				ATT			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
I. Normally Distributed Errors																
τ_{IPW}	1.213	0.766	0.766	0.766	1.125	0.717	0.717	0.717	1.206	0.731	0.764	0.764	1.119	0.679	0.709	0.709
$\tau_{MB,0.05}$	0.933	0.709	0.707	0.708	0.820	0.635	0.634	0.634	1.003	0.733	0.709	0.710	1.260	0.658	0.636	0.637
$\tau_{MB,0.25}$	1.026	0.711	0.711	0.711	1.100	0.636	0.636	0.636	1.046	0.735	0.709	0.709	1.288	0.656	0.635	0.635
$\tau_{MB,EE,0.05}$	0.798	0.742	0.748	0.745	0.981	0.660	0.661	0.660	1.066	0.710	0.719	0.718	0.923	0.664	0.650	0.648
$\tau_{MB,EE,0.25}$	1.029	0.726	0.729	0.728	0.916	0.643	0.642	0.643	1.176	0.730	0.714	0.714	0.981	0.656	0.637	0.637
τ_{KV}	3.308	0.056	0.059	0.060	3.266	0.084	0.076	0.075	3.230	0.059	0.073	0.072	3.190	0.094	0.106	0.105
τ_{CF}	22.211	0.139	0.152	0.152	14.515	0.131	0.153	0.153	127.727	0.088	0.088	0.089	132.249	0.129	0.101	0.102
τ_{BVN}	12.995	0.039	0.046	0.046	8.801	0.171	0.170	0.171	7.288	0.142	0.055	0.055	5.220	0.274	0.199	0.199
τ_{BC}	12.990	0.042	0.048	0.048	12.146	0.042	0.048	0.048	7.283	0.111	0.039	0.039	6.902	0.110	0.057	0.057
$\tau_{MB-BC,0.05}$	12.471	0.042	0.048	0.049	11.359	0.044	0.049	0.048	6.914	0.171	0.059	0.059	6.743	0.168	0.055	0.055
$\tau_{MB-BC,0.25}$	12.565	0.040	0.046	0.046	11.639	0.040	0.046	0.046	6.957	0.173	0.056	0.056	6.771	0.165	0.052	0.052
$\tau_{BVN,EE}$	188.387	0.189	0.197	0.196	98.420	0.212	0.224	0.225	366.080	0.179	0.113	0.113	223.582	0.175	0.189	0.189
$\tau_{BC,EE}$	188.107	0.190	0.198	0.197	143.685	0.174	0.197	0.196	366.300	0.214	0.186	0.187	322.652	0.140	0.241	0.243
$\tau_{MB-BC,EE,0.05}$	188.276	0.272	0.268	0.274	142.092	0.212	0.241	0.230	365.845	0.204	0.108	0.109	313.279	0.163	0.174	0.168
$\tau_{MB-BC,EE,0.25}$	188.045	0.293	0.285	0.291	142.157	0.205	0.232	0.223	365.954	0.178	0.109	0.109	313.337	0.143	0.160	0.156
II. Asymmetric, Non-Normally Distributed Errors																
τ_{IPW}	1.092	0.603	0.603	0.602	0.993	0.441	0.441	0.440	1.095	0.603	0.634	0.634	1.008	0.460	0.483	0.483
$\tau_{MB,0.05}$	1.128	0.287	0.286	0.286	0.995	0.689	0.689	0.689	1.604	0.147	0.338	0.337	1.348	0.719	0.695	0.695
$\tau_{MB,0.25}$	1.253	0.388	0.389	0.388	1.163	0.632	0.632	0.632	1.439	0.379	0.422	0.422	1.348	0.657	0.639	0.639
$\tau_{MB,EE,0.05}$	0.654	0.308	0.309	0.310	0.673	0.321	0.318	0.283	1.603	0.145	0.338	0.338	0.793	0.133	0.439	0.438
$\tau_{MB,EE,0.25}$	0.868	0.396	0.396	0.395	0.719	0.380	0.380	0.370	1.438	0.380	0.422	0.422	0.921	0.360	0.442	0.442
τ_{KV}	3.245	0.213	0.190	0.188	3.207	0.251	0.226	0.225	3.177	0.149	0.158	0.157	3.150	0.175	0.183	0.182
τ_{CF}	51.147	0.280	0.172	0.172	43.927	0.203	0.161	0.161	109.578	0.117	0.306	0.305	113.324	0.097	0.433	0.432
τ_{BVN}	7.665	0.067	0.199	0.199	5.629	0.258	0.181	0.181	3.094	0.070	0.128	0.128	2.693	0.337	0.398	0.398
τ_{BC}	7.648	0.067	0.200	0.200	7.633	0.178	0.098	0.098	3.084	0.078	0.174	0.174	3.374	0.290	0.419	0.419
$\tau_{MB-BC,0.05}$	7.374	0.113	0.227	0.227	7.344	0.456	0.380	0.380	3.108	0.121	0.228	0.227	3.587	0.573	0.644	0.644
$\tau_{MB-BC,0.25}$	7.505	0.047	0.131	0.131	7.512	0.399	0.323	0.323	2.948	0.129	0.311	0.310	3.589	0.511	0.588	0.588
$\tau_{BVN,EE}$	256.376	0.269	0.268	0.269	137.582	0.225	0.227	0.227	296.109	0.154	0.147	0.146	182.724	0.193	0.237	0.237
$\tau_{BC,EE}$	256.111	0.270	0.270	0.271	200.640	0.232	0.239	0.239	296.333	0.154	0.270	0.270	263.603	0.158	0.367	0.366
$\tau_{MB-BC,EE,0.05}$	256.210	0.260	0.261	0.263	198.253	0.228	0.230	0.233	293.332	0.136	0.297	0.298	255.717	0.123	0.303	0.304
$\tau_{MB-BC,EE,0.25}$	255.996	0.314	0.311	0.311	198.206	0.286	0.288	0.286	293.167	0.229	0.378	0.378	255.845	0.225	0.373	0.376

Notes: See Table B1.

Appendix C

1. Initial sample size in ECLS-K data by wave

```
        Wave |      Freq.      Percent        Cum.
-------------+------------------------------------
           1 |     21,260        18.59       18.59
           2 |     21,260        18.59       37.19
           3 |     17,487        15.29       52.48
           4 |     17,487        15.29       67.77
           5 |     15,305        13.39       81.16
           6 |     11,820        10.34       91.49
           7 |      9,725         8.51      100.00
-------------+------------------------------------
       Total |    114,344       100.00
```

where waves 1 and 2 are from fall and spring kindergarten, 3 and 4 are from fall and spring first grade, and 5, 6, and 7 are from spring third, fifth, and eighth grades, respectively.

2. Clean age: drop observations with inconsistent birthdates across waves (57 kids, 361 observations)

```
        Wave |      Freq.      Percent        Cum.
-------------+------------------------------------
           1 |     21,203        18.60       18.60
           2 |     21,203        18.60       37.20
           3 |     17,431        15.29       52.50
           4 |     17,431        15.29       67.79
           5 |     15,248        13.38       81.17
           6 |     11,777        10.33       91.50
           7 |      9,690         8.50      100.00
-------------+------------------------------------
       Total |    113,983       100.00
```

3. Clean age: obtain age from reported age or difference between assessment date and birthday; drop observations with missing age in every wave (22 kids, 71 observations)

```
        Wave |      Freq.      Percent        Cum.
-------------+------------------------------------
           1 |     21,184        18.60       18.60
           2 |     21,184        18.60       37.19
           3 |     17,417        15.29       52.48
           4 |     17,417        15.29       67.77
           5 |     15,246        13.38       81.16
           6 |     11,776        10.34       91.50
           7 |      9,688         8.50      100.00
-------------+------------------------------------
       Total |    113,912       100.00
```

4. Clean height:
        -drop if height is nonsensical and insufficient observations to deduce
which value(s) are incorrect
                *drop if height falls 2x across waves (8 kids, 54 obs)
                *drop if height falls 1x across waves, but height is non-missing
in 3 waves or less (125 kids, 424 obs)
                *drop if height falls at least once over a 2-wave period, but
height is non-missing in 3 waves or less (23 kids, 99 obs)
        -drop those with missing height in all waves (298 kids, 787 obs)
        -impute height to replace missing values or "bad" values with fitted
values from child-specific regressions of height on age using "good" values
only if height reported in 2+ waves
        -impute height to replace missing values for obs with height reported
in only 1 wave with fitted values from a pooled regression of height on wave
dummies using remaining sample
        -check imputations for nonsensical values
                *drop if height falls by 2+ inches across any waves (49 kids, 325
obs)
                *drop if imputed height exceeds 80 inches (4 kids, 21 obs)

```
     Wave |      Freq.     Percent        Cum.
------------+-----------------------------------
         1 |    20,681       18.43       18.43
         2 |    20,681       18.43       36.86
         3 |    17,200       15.33       52.19
         4 |    17,200       15.33       67.52
         5 |    15,112       13.47       80.99
         6 |    11,698       10.43       91.42
         7 |     9,630        8.58      100.00
------------+-----------------------------------
     Total |   112,202      100.00
```

5. Clean weight:
        -drop those with missing weight in all waves (3 kids, 11 obs)
        -drop if weight is nonsensical (roughly bouncing around wildly) and
insufficient observations (non-missing in 3- waves) to deduce which value(s)
are incorrect (52 kids, 170 obs)
        -correct values for 16 students where a missing "1" in the 100s place
is obvious (e.g., weight = 16 instead of 116)
        -drop if weight is nonsensical (roughly bouncing around wildly) and not
feasible to figure out which waves may be incorrect (1 kid, 7 obs)
        -impute weight to replace missing values or "bad" values with fitted
values from child-specific regressions of weight on age using "good" values
only if 4+ "good" values available
        -impute weight to replace missing values for obs with 3- "good" values
available with fitted values from a pooled regression of weight on wave
dummies using remaining sample
        -check imputations for nonsensical values
                *drop if weight is nonsensical (roughly bouncing around wildly)
(245 kids, 1369 obs)
                *drop if weight < 30 pounds in any wave (131 kids, 791 obs)

```
     Wave |      Freq.     Percent        Cum.
------------+-----------------------------------
         1 |    20,245       18.43       18.43
         2 |    20,245       18.43       36.86
         3 |    16,915       15.40       52.26
```

```
          4 |     16,915          15.40          67.65
          5 |     14,733          13.41          81.06
          6 |     11,408          10.38          91.45
          7 |      9,393           8.55         100.00
------------+---------------------------------
      Total |    109,854         100.00
```

6. Clean BMI:
     -drop if BMI is nonsensical (roughly bouncing around wildly) (33 kids,
221 observations)

```
       Wave |      Freq.        Percent         Cum.
------------+---------------------------------
          1 |     20,212          18.44          18.44
          2 |     20,212          18.44          36.88
          3 |     16,882          15.40          52.28
          4 |     16,882          15.40          67.68
          5 |     14,700          13.41          81.09
          6 |     11,375          10.38          91.46
          7 |      9,360           8.54         100.00
------------+---------------------------------
      Total |    109,623         100.00
```

7. Drop if not attending public school (3804 kids, 22822 observations)

```
       Wave |      Freq.        Percent         Cum.
------------+---------------------------------
          1 |     16,423          18.92          18.92
          2 |     16,423          18.92          37.84
          3 |     13,078          15.07          52.91
          4 |     13,078          15.07          67.97
          5 |     11,498          13.25          81.22
          6 |      8,996          10.36          91.58
          7 |      7,305           8.42         100.00
------------+---------------------------------
      Total |     86,801         100.00
```

8. Drop if SBP participation is missing in Spring 1st grade wave (1741 kids,
17046 observations)

```
       Wave |      Freq.        Percent         Cum.
------------+---------------------------------
          1 |     11,252          16.13          16.13
          2 |     11,252          16.13          32.26
          3 |     11,337          16.25          48.51
          4 |     11,337          16.25          64.77
          5 |     10,027          14.37          79.14
          6 |      7,932          11.37          90.51
          7 |      6,618           9.49         100.00
------------+---------------------------------
      Total |     69,755         100.00
```

9. Final Sample:
     -Third grade: 9952 kids (75 kids lost due to all missing covariates
from waves 1,2)
     -Fifth grade: 7876 kids (56 kids lost due to all missing covariates
from waves 1,2)

10. Final Low Income Sample: drop if hh pov ratio > 200% or missing in Spring 1st grade
    -Third grade: 5026 kids
    -Fifth grade: 3921 kids

Table D1. Effect of SBP Participation: Low Income Households, ATE

	Third Grade Outcome				Fifth Grade Outcome			
	BMI Growth	**Overweight**	**Obese**	**Underweight**	**BMI Growth**	**Overweight**	**Obese**	**Underweight**
τ_{IPW}	0.006	0.024	0.025	-0.018	0.016	0.053	0.052	-0.019
	[0.002, 0.012]	[-0.001, 0.055]	[0.007, 0.050]	[-0.030, -0.002]	[0.010, 0.024]	[0.030, 0.089]	[0.028, 0.079]	[-0.033, -0.004]
$\tau_{MB,0.05}$	-0.012	-0.026	0.052	-0.015	0.015	0.122	0.108	-0.015
	[-0.019, 0.023]	[-0.100, 0.121]	[-0.077, 0.114]	[-0.075, 0.038]	[-0.022, 0.049]	[-0.095, 0.159]	[-0.062, 0.151]	[-0.069, 0.045]
$\tau_{MB,0.25}$	-0.001	0.034	0.041	-0.026	0.018	0.034	0.051	-0.019
	[-0.007, 0.012]	[-0.040, 0.056]	[-0.022, 0.060]	[-0.045, 0.005]	[-0.000, 0.028]	[-0.019, 0.096]	[-0.004, 0.086]	[-0.045, 0.010]
$\tau_{MB-EE,0.05}$	0.015	0.082	0.096	-0.013	-0.012	0.055	0.034	-0.012
	[-0.005, 0.030]	[-0.043, 0.180]	[-0.037, 0.134]	[-0.053, 0.044]	[-0.017, 0.056]	[-0.035, 0.194]	[-0.038, 0.159]	[-0.065, 0.040]
$\tau_{MB-EE,0.25}$	0.007	0.032	0.024	-0.023	0.008	0.062	0.038	-0.036
	[-0.000, 0.016]	[-0.010, 0.085]	[-0.009, 0.061]	[-0.039, 0.006]	[-0.003, 0.029]	[0.007, 0.106]	[0.003, 0.090]	[-0.047, 0.008]
τ_{KV}	0.009	0.019	-0.187	0.059	0.039	0.189	0.042	0.129
	[-0.056, 0.054]	[-0.289, 0.360]	[-0.430, 0.139]	[-0.129, 0.211]	[-0.035, 0.120]	[-0.187, 0.432]	[-0.230, 0.269]	[-0.143, 0.261]
τ_{BVN}	-0.029	-0.247	-0.209	-0.021	-0.024	-0.240	-0.092	-0.010
	[-0.083, 0.033]	[-0.558, 0.124]	[-0.474, 0.056]	[-0.202, 0.141]	[-0.119, 0.071]	[-0.615, 0.169]	[-0.409, 0.237]	[-0.205, 0.153]
τ_{BC}	-0.029	-0.256	-0.216	-0.020	-0.023	-0.246	-0.092	-0.011
	[-0.082, 0.034]	[-0.559, 0.125]	[-0.483, 0.054]	[-0.202, 0.144]	[-0.117, 0.074]	[-0.628, 0.167]	[-0.413, 0.245]	[-0.206, 0.155]
$\tau_{MB-BC,0.05}$	-0.045	-0.292	-0.176	-0.017	-0.021	-0.161	-0.029	-0.008
	[-0.089, 0.037]	[-0.582, 0.104]	[-0.488, 0.052]	[-0.218, 0.135]	[-0.115, 0.068]	[-0.647, 0.148]	[-0.409, 0.274]	[-0.204, 0.206]
$\tau_{MB-BC,0.25}$	-0.035	-0.232	-0.188	-0.029	-0.018	-0.249	-0.086	-0.012
	[-0.085, 0.032]	[-0.552, 0.103]	[-0.466, 0.048]	[-0.201, 0.153]	[-0.123, 0.067]	[-0.634, 0.178]	[-0.402, 0.257]	[-0.196, 0.172]
P*	0.494	0.482	0.482	0.665	0.679	0.498	0.498	0.191
	[0.132, 0.950]	[0.105, 0.892]	[0.124, 0.852]	[0.065, 0.940]	[0.049, 0.930]	[0.112, 0.913]	[0.081, 0.946]	[0.049, 0.892]
P*$_{EE}$	0.020	0.812	0.757	0.931	0.395	0.966	0.346	0.718
	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]

Notes: Sample is restricted to households with income less than 200% of the federal povery line. See Table 6 for further details.

Table D2. Effect of SBP Participation: Low Income Households, ATT

	Third Grade Outcome				Fifth Grade Outcome			
	BMI Growth	**Overweight**	**Obese**	**Underweight**	**BMI Growth**	**Overweight**	**Obese**	**Underweight**
τ_{IPW}	0.006	0.027	0.029	-0.017	0.015	0.051	0.052	-0.018
	[0.000, 0.012]	[-0.003, 0.060]	[0.008, 0.055]	[-0.033, -0.003]	[0.007, 0.022]	[0.019, 0.083]	[0.026, 0.081]	[-0.034, -0.001]
$\tau_{MB,0.05}$	-0.011	0.022	0.063	0.008	0.037	0.131	0.104	0.004
	[-0.024, 0.021]	[-0.103, 0.138]	[-0.074, 0.141]	[-0.079, 0.040]	[-0.019, 0.037]	[-0.085, 0.174]	[-0.074, 0.171]	[-0.077, 0.071]
$\tau_{MB,0.25}$	0.002	0.041	0.040	-0.021	0.008	0.031	0.042	-0.008
	[-0.008, 0.012]	[-0.028, 0.073]	[-0.020, 0.075]	[-0.045, 0.011]	[-0.000, 0.026]	[-0.021, 0.103]	[-0.004, 0.108]	[-0.043, 0.018]
$\tau_{MB-EE,0.05}$	0.016	0.078	0.062	-0.014	0.000	0.070	0.014	0.000
	[-0.008, 0.029]	[-0.040, 0.146]	[-0.035, 0.126]	[-0.065, 0.034]	[-0.014, 0.042]	[-0.039, 0.178]	[-0.029, 0.154]	[-0.075, 0.044]
$\tau_{MB-EE,0.25}$	0.009	0.032	0.023	-0.021	0.018	0.034	0.046	-0.031
	[-0.001, 0.018]	[-0.013, 0.077]	[-0.002, 0.065]	[-0.043, 0.003]	[0.004, 0.030]	[0.008, 0.104]	[0.016, 0.096]	[-0.047, 0.003]
τ_{KV}	0.009	0.019	-0.187	0.059	0.039	0.189	0.042	0.129
	[-0.056, 0.054]	[-0.289, 0.360]	[-0.430, 0.139]	[-0.129, 0.211]	[-0.035, 0.120]	[-0.187, 0.432]	[-0.230, 0.269]	[-0.143, 0.261]
τ_{BVN}	-0.014	-0.135	-0.113	-0.019	-0.005	-0.117	-0.033	-0.012
	[-0.047, 0.022]	[-0.329, 0.086]	[-0.264, 0.049]	[-0.124, 0.087]	[-0.064, 0.052]	[-0.348, 0.128]	[-0.221, 0.165]	[-0.134, 0.094]
τ_{BC}	-0.030	-0.256	-0.214	-0.019	-0.018	-0.248	-0.092	-0.007
	[-0.088, 0.035]	[-0.578, 0.119]	[-0.458, 0.057]	[-0.198, 0.170]	[-0.120, 0.082]	[-0.640, 0.181]	[-0.414, 0.267]	[-0.214, 0.178]
$\tau_{MB-BC,0.05}$	-0.044	-0.248	-0.169	0.006	0.006	-0.153	-0.034	0.014
	[-0.097, 0.032]	[-0.585, 0.139]	[-0.503, 0.090]	[-0.199, 0.161]	[-0.126, 0.081]	[-0.662, 0.188]	[-0.396, 0.287]	[-0.225, 0.215]
$\tau_{MB-BC,0.25}$	-0.031	-0.230	-0.192	-0.023	-0.024	-0.253	-0.095	0.002
	[-0.091, 0.033]	[-0.587, 0.109]	[-0.458, 0.074]	[-0.195, 0.170]	[-0.118, 0.081]	[-0.630, 0.188]	[-0.426, 0.268]	[-0.211, 0.194]
P*	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]
P*$_{EE}$	0.790	0.825	0.980	0.874	0.704	0.246	0.577	0.828
	[0.282, 0.980]	[0.354, 0.980]	[0.139, 0.980]	[0.099, 0.980]	[0.310, 0.980]	[0.051, 0.980]	[0.296, 0.980]	[0.321, 0.980]

Notes: See Table D1.

Table D3. Effect of SBP Participation

	Third Grade Outcome				Fifth Grade Outcome			
	BMI Growth	Overweight	Obese	Underweight	BMI Growth	Overweight	Obese	Underweight
A. ATE								
τ_{IPW}	0.012	0.038	0.034	-0.017	0.013	0.036	0.046	-0.012
	[0.008, 0.017]	[0.008, 0.063]	[0.013, 0.062]	[-0.029, -0.003]	[0.005, 0.021]	[0.004, 0.070]	[0.012, 0.077]	[-0.027, 0.007]
$\tau_{MB,0.05}$	0.006	-0.004	-0.009	-0.023	0.011	0.046	0.020	-0.020
	[-0.004, 0.022]	[-0.058, 0.086]	[-0.056, 0.068]	[-0.058, 0.029]	[-0.014, 0.037]	[-0.083, 0.107]	[-0.051, 0.091]	[-0.056, 0.054]
$\tau_{MB,0.25}$	0.007	0.022	0.018	-0.022	0.010	0.028	0.026	0.003
	[0.003, 0.014]	[-0.023, 0.046]	[-0.013, 0.040]	[-0.035, -0.001]	[-0.002, 0.018]	[-0.019, 0.061]	[-0.006, 0.062]	[-0.024, 0.022]
$\tau_{MB-EE,0.05}$	0.018	0.078	0.085	-0.023	0.019	0.081	0.115	-0.026
	[0.004, 0.034]	[0.019, 0.158]	[0.007, 0.161]	[-0.064, 0.020]	[-0.001, 0.046]	[-0.033, 0.147]	[-0.018, 0.194]	[-0.066, 0.036]
$\tau_{MB-EE,0.25}$	0.015	0.048	0.047	-0.022	0.016	0.047	0.059	-0.025
	[0.006, 0.024]	[0.004, 0.079]	[0.006, 0.088]	[-0.042, -0.001]	[0.002, 0.026]	[-0.006, 0.083]	[0.006, 0.104]	[-0.043, 0.017]
τ_{KV}	-0.018	-0.101	-0.181	-0.019	-0.011	-0.142	-0.142	0.016
	[-0.040, 0.016]	[-0.267, 0.094]	[-0.305, -0.018]	[-0.122, 0.085]	[-0.046, 0.031]	[-0.267, 0.026]	[-0.258, 0.013]	[-0.069, 0.096]
τ_{BVN}	-0.009	-0.149	-0.186	-0.035	-0.018	-0.170	-0.133	0.044
	[-0.033, 0.016]	[-0.298, 0.016]	[-0.307, -0.064]	[-0.109, 0.072]	[-0.054, 0.019]	[-0.318, -0.035]	[-0.237, 0.004]	[-0.034, 0.127]
τ_{BC}	-0.011	-0.158	-0.199	-0.034	-0.023	-0.186	-0.151	0.051
	[-0.036, 0.016]	[-0.313, 0.018]	[-0.327, -0.067]	[-0.116, 0.083]	[-0.064, 0.018]	[-0.346, -0.036]	[-0.269, -0.000]	[-0.035, 0.141]
$\tau_{MB-BC,0.05}$	-0.002	-0.172	-0.203	-0.032	-0.015	-0.140	-0.120	0.023
	[-0.030, 0.020]	[-0.306, 0.042]	[-0.311, -0.041]	[-0.122, 0.066]	[-0.057, 0.032]	[-0.331, -0.017]	[-0.253, 0.030]	[-0.056, 0.154]
$\tau_{MB-BC,0.25}$	-0.001	-0.145	-0.176	-0.031	-0.016	-0.158	-0.114	0.046
	[-0.031, 0.016]	[-0.297, 0.025]	[-0.297, -0.052]	[-0.107, 0.065]	[-0.057, 0.017]	[-0.312, -0.012]	[-0.221, 0.032]	[-0.030, 0.131]
P*	0.945	0.388	0.446	0.020	0.616	0.321	0.612	0.676
	[0.070, 0.971]	[0.126, 0.880]	[0.231, 0.828]	[0.020, 0.872]	[0.099, 0.956]	[0.101, 0.790]	[0.207, 0.966]	[0.041, 0.969]
P*$_{EE}$	0.020	0.050	0.030	0.020	0.029	0.059	0.023	0.020
	[0.020, 0.850]	[0.020, 0.965]	[0.020, 0.965]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.979]	[0.020, 0.961]
B. ATT								
τ_{IPW}	0.008	0.028	0.018	-0.011	0.011	0.030	0.026	-0.006
	[0.004, 0.012]	[0.005, 0.050]	[-0.004, 0.039]	[-0.023, 0.001]	[0.005, 0.018]	[0.003, 0.057]	[0.003, 0.050]	[-0.019, 0.008]
$\tau_{MB,0.05}$	0.016	0.054	0.018	-0.012	0.006	-0.013	-0.002	-0.009
	[0.004, 0.028]	[-0.019, 0.099]	[-0.040, 0.058]	[-0.035, 0.023]	[-0.005, 0.030]	[-0.063, 0.071]	[-0.065, 0.072]	[-0.046, 0.026]
$\tau_{MB,0.25}$	0.009	0.030	0.018	-0.012	0.012	0.028	0.033	0.002
	[0.004, 0.015]	[-0.000, 0.058]	[-0.006, 0.043]	[-0.029, 0.003]	[0.004, 0.021]	[-0.004, 0.064]	[-0.002, 0.062]	[-0.016, 0.019]
$\tau_{MB-EE,0.05}$	0.005	0.037	0.014	-0.001	0.011	0.027	0.015	-0.020
	[-0.002, 0.018]	[-0.008, 0.092]	[-0.030, 0.053]	[-0.034, 0.019]	[-0.001, 0.026]	[-0.042, 0.082]	[-0.040, 0.074]	[-0.045, 0.022]
$\tau_{MB-EE,0.25}$	0.007	0.028	0.014	-0.010	0.011	0.030	0.024	0.000
	[0.002, 0.012]	[-0.002, 0.061]	[-0.012, 0.041]	[-0.026, 0.007]	[0.004, 0.020]	[-0.007, 0.065]	[-0.008, 0.061]	[-0.018, 0.017]
τ_{KV}	-0.018	-0.101	-0.181	-0.019	-0.011	-0.142	-0.142	0.016
	[-0.040, 0.016]	[-0.267, 0.094]	[-0.305, -0.018]	[-0.122, 0.085]	[-0.046, 0.031]	[-0.267, 0.026]	[-0.258, 0.013]	[-0.069, 0.096]
τ_{BVN}	0.005	-0.051	-0.067	-0.032	0.001	-0.062	-0.029	0.010
	[-0.007, 0.017]	[-0.129, 0.029]	[-0.124, -0.007]	[-0.072, 0.019]	[-0.019, 0.019]	[-0.131, 0.009]	[-0.082, 0.042]	[-0.031, 0.051]
τ_{BC}	0.002	-0.169	-0.199	-0.063	-0.014	-0.210	-0.112	0.033
	[-0.031, 0.034]	[-0.357, 0.042]	[-0.346, -0.046]	[-0.171, 0.068]	[-0.065, 0.038]	[-0.399, -0.025]	[-0.256, 0.076]	[-0.079, 0.146]
$\tau_{MB-BC,0.05}$	0.011	-0.131	-0.186	-0.061	-0.017	-0.236	-0.130	0.027
	[-0.022, 0.044]	[-0.324, 0.083]	[-0.339, -0.033]	[-0.157, 0.073]	[-0.061, 0.040]	[-0.387, -0.050]	[-0.266, 0.050]	[-0.079, 0.134]
$\tau_{MB-BC,0.25}$	0.004	-0.155	-0.185	-0.061	-0.011	-0.195	-0.095	0.039
	[-0.027, 0.034]	[-0.329, 0.047]	[-0.328, -0.036]	[-0.152, 0.059]	[-0.059, 0.038]	[-0.377, -0.021]	[-0.232, 0.075]	[-0.068, 0.141]
P*	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]
P*$_{EE}$	0.686	0.757	0.734	0.704	0.778	0.714	0.737	0.763
	[0.566, 0.850]	[0.668, 0.920]	[0.643, 0.916]	[0.343, 0.980]	[0.357, 0.975]	[0.073, 0.980]	[0.354, 0.937]	[0.324, 0.965]

Notes: Treatment is defined as participation in SBP in first and third grades (first, third, and fifth grades) in Columns 1-4 (5-8). See Table 6 for more details.

Table D4. Effect of SBP Participation: Low Income Households

	Third Grade Outcome				Fifth Grade Outcome			
	BMI Growth	Overweight	Obese	Underweight	BMI Growth	Overweight	Obese	Underweight
A. ATE								
τ_{IPW}	0.009	0.031	0.019	-0.012	0.001	-0.001	0.017	-0.005
	[0.004, 0.014]	[0.008, 0.059]	[-0.004, 0.039]	[-0.027, 0.003]	[-0.007, 0.011]	[-0.030, 0.035]	[-0.011, 0.051]	[-0.026, 0.011]
$\tau_{\text{MB,0.05}}$	0.011	0.099	0.030	-0.037	0.011	0.036	0.017	-0.038
	[-0.010, 0.031]	[-0.094, 0.127]	[-0.073, 0.094]	[-0.078, 0.038]	[-0.025, 0.035]	[-0.134, 0.129]	[-0.096, 0.120]	[-0.072, 0.066]
$\tau_{\text{MB,0.25}}$	0.011	0.015	0.017	-0.014	0.013	-0.016	0.018	-0.006
	[0.002, 0.018]	[-0.027, 0.067]	[-0.026, 0.045]	[-0.045, 0.007]	[-0.011, 0.020]	[-0.067, 0.070]	[-0.030, 0.073]	[-0.027, 0.027]
$\tau_{\text{MB-EE,0.05}}$	0.016	0.033	-0.005	-0.053	0.008	0.068	0.054	-0.049
	[-0.010, 0.031]	[-0.038, 0.138]	[-0.059, 0.082]	[-0.071, 0.042]	[-0.027, 0.040]	[-0.107, 0.141]	[-0.066, 0.124]	[-0.082, 0.030]
$\tau_{\text{MB-EE,0.25}}$	0.011	0.027	0.011	-0.034	0.014	0.034	0.029	-0.007
	[0.003, 0.020]	[-0.003, 0.075]	[-0.023, 0.054]	[-0.045, 0.006]	[-0.010, 0.021]	[-0.048, 0.068]	[-0.031, 0.065]	[-0.037, 0.014]
τ_{KV}	0.015	0.089	-0.119	0.055	0.001	0.050	-0.013	0.048
	[-0.030, 0.056]	[-0.193, 0.263]	[-0.298, 0.095]	[-0.092, 0.165]	[-0.070, 0.052]	[-0.249, 0.229]	[-0.242, 0.156]	[-0.118, 0.145]
τ_{BVN}	0.018	-0.283	-0.245	-0.136	0.010	-0.102	-0.015	0.009
	[-0.040, 0.070]	[-0.546, 0.054]	[-0.439, 0.015]	[-0.292, 0.055]	[-0.078, 0.077]	[-0.384, 0.237]	[-0.317, 0.239]	[-0.155, 0.190]
τ_{BC}	0.020	-0.289	-0.251	-0.135	0.005	-0.115	-0.023	0.009
	[-0.037, 0.072]	[-0.549, 0.054]	[-0.449, 0.013]	[-0.292, 0.064]	[-0.082, 0.074]	[-0.399, 0.245]	[-0.331, 0.234]	[-0.162, 0.193]
$\tau_{\text{MB-BC,0.05}}$	0.016	-0.204	-0.226	-0.154	0.014	-0.063	-0.020	-0.025
	[-0.037, 0.077]	[-0.585, 0.107]	[-0.427, 0.043]	[-0.280, 0.068]	[-0.080, 0.085]	[-0.410, 0.275]	[-0.348, 0.258]	[-0.168, 0.207]
$\tau_{\text{MB-BC,0.25}}$	0.015	-0.288	-0.239	-0.131	0.016	-0.115	-0.019	0.007
	[-0.034, 0.072]	[-0.562, 0.069]	[-0.445, 0.021]	[-0.281, 0.052]	[-0.075, 0.074]	[-0.370, 0.237]	[-0.309, 0.228]	[-0.151, 0.199]
P*	0.021	0.415	0.407	0.357	0.514	0.118	0.506	0.137
	[0.022, 0.920]	[0.182, 0.807]	[0.124, 0.741]	[0.065, 0.880]	[0.060, 0.934]	[0.036, 0.855]	[0.020, 0.909]	[0.046, 0.874]
P*$_{\text{EE}}$	0.143	0.951	0.020	0.282	0.809	0.884	0.980	0.103
	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]
B. ATT								
τ_{IPW}	0.008	0.035	0.023	-0.013	0.007	0.025	0.028	-0.006
	[0.002, 0.014]	[0.009, 0.063]	[-0.003, 0.043]	[-0.027, -0.001]	[-0.002, 0.016]	[-0.008, 0.051]	[-0.004, 0.057]	[-0.024, 0.009]
$\tau_{\text{MB,0.05}}$	0.010	0.005	-0.031	-0.004	0.010	0.056	0.015	0.007
	[-0.008, 0.036]	[-0.067, 0.139]	[-0.089, 0.101]	[-0.062, 0.051]	[-0.022, 0.042]	[-0.087, 0.151]	[-0.101, 0.126]	[-0.057, 0.059]
$\tau_{\text{MB,0.25}}$	0.014	0.043	0.031	-0.008	0.011	0.015	0.020	-0.010
	[0.003, 0.020]	[-0.011, 0.077]	[-0.019, 0.059]	[-0.034, 0.011]	[-0.005, 0.023]	[-0.026, 0.065]	[-0.024, 0.067]	[-0.030, 0.020]
$\tau_{\text{MB-EE,0.05}}$	0.003	0.042	0.000	-0.021	0.007	0.074	0.055	-0.014
	[-0.014, 0.024]	[-0.048, 0.115]	[-0.047, 0.089]	[-0.060, 0.030]	[-0.015, 0.038]	[-0.052, 0.133]	[-0.032, 0.130]	[-0.065, 0.028]
$\tau_{\text{MB-EE,0.25}}$	0.009	0.033	0.019	-0.017	0.013	0.041	0.030	-0.011
	[0.000, 0.016]	[-0.001, 0.077]	[-0.014, 0.051]	[-0.035, 0.006]	[-0.002, 0.023]	[-0.019, 0.077]	[-0.019, 0.074]	[-0.031, 0.015]
τ_{KV}	0.015	0.089	-0.119	0.055	0.001	0.050	-0.013	0.048
	[-0.030, 0.056]	[-0.193, 0.263]	[-0.298, 0.095]	[-0.092, 0.165]	[-0.070, 0.052]	[-0.249, 0.229]	[-0.242, 0.156]	[-0.118, 0.145]
τ_{BVN}	0.017	-0.132	-0.118	-0.080	0.008	-0.061	0.007	0.003
	[-0.014, 0.046]	[-0.266, 0.045]	[-0.228, 0.018]	[-0.167, 0.025]	[-0.039, 0.043]	[-0.205, 0.125]	[-0.157, 0.151]	[-0.083, 0.095]
τ_{BC}	0.031	-0.307	-0.268	-0.153	0.011	-0.166	-0.011	0.017
	[-0.031, 0.089]	[-0.600, 0.085]	[-0.481, 0.014]	[-0.324, 0.069]	[-0.093, 0.091]	[-0.491, 0.281]	[-0.375, 0.295]	[-0.172, 0.228]
$\tau_{\text{MB-BC,0.05}}$	0.032	-0.322	-0.309	-0.137	0.013	-0.125	-0.022	0.029
	[-0.032, 0.105]	[-0.572, 0.088]	[-0.514, 0.050]	[-0.301, 0.063]	[-0.089, 0.097]	[-0.457, 0.303]	[-0.393, 0.295]	[-0.168, 0.229]
$\tau_{\text{MB-BC,0.25}}$	0.036	-0.285	-0.247	-0.141	0.014	-0.166	-0.017	0.012
	[-0.029, 0.094]	[-0.577, 0.090]	[-0.468, 0.040]	[-0.319, 0.063]	[-0.086, 0.089]	[-0.492, 0.281]	[-0.382, 0.295]	[-0.168, 0.216]
P*	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]
P*$_{\text{EE}}$	0.631	0.888	0.731	0.593	0.825	0.781	0.980	0.750
	[0.243, 0.980]	[0.110, 0.980]	[0.106, 0.980]	[0.354, 0.980]	[0.442, 0.980]	[0.231, 0.980]	[0.276, 0.980]	[0.434, 0.980]

Notes: Treatment is defined as participation in SBP in first and third grades (first, third, and fifth grades) in Columns 1-4 (5-8). See Table 7 for more details.

Table E1. Effect of NSLP Participation

	Third Grade Outcome				Fifth Grade Outcome			
	BMI Growth	**Overweight**	**Obese**	**Underweight**	**BMI Growth**	**Overweight**	**Obese**	**Underweight**
A. ATE								
τ_{IPW}	0.006	0.048	0.034	-0.008	0.009	0.048	0.033	-0.008
	[0.001, 0.011]	[0.021, 0.071]	[0.010, 0.053]	[-0.023, 0.006]	[0.001, 0.017]	[0.017, 0.075]	[0.006, 0.057]	[-0.027, 0.005]
$\tau_{MB,0.05}$	-0.011	0.099	0.010	0.021	-0.005	0.062	0.100	-0.027
	[-0.008, 0.025]	[-0.055, 0.127]	[-0.041, 0.122]	[-0.072, 0.048]	[-0.012, 0.033]	[-0.047, 0.143]	[-0.038, 0.124]	[-0.072, 0.036]
$\tau_{MB,0.25}$	0.003	0.053	0.020	-0.001	0.010	0.049	0.016	-0.012
	[-0.001, 0.013]	[-0.004, 0.075]	[-0.005, 0.076]	[-0.034, 0.018]	[-0.001, 0.019]	[-0.006, 0.087]	[-0.002, 0.070]	[-0.039, 0.016]
$\tau_{MB-EE,0.05}$	0.009	0.002	0.033	0.022	0.007	0.076	0.036	0.022
	[-0.010, 0.027]	[-0.027, 0.151]	[-0.031, 0.101]	[-0.070, 0.042]	[-0.012, 0.035]	[-0.043, 0.147]	[-0.042, 0.104]	[-0.067, 0.041]
$\tau_{MB-EE,0.25}$	0.005	0.034	0.011	0.001	0.008	0.048	0.027	0.000
	[-0.001, 0.013]	[0.000, 0.086]	[-0.008, 0.062]	[-0.031, 0.017]	[-0.003, 0.020]	[-0.008, 0.086]	[-0.004, 0.061]	[-0.031, 0.016]
τ_{KV}	0.024	0.130	0.290	0.016	0.012	0.234	0.195	0.083
	[-0.019, 0.067]	[-0.144, 0.348]	[0.102, 0.471]	[-0.149, 0.180]	[-0.048, 0.079]	[-0.016, 0.469]	[-0.027, 0.383]	[-0.091, 0.202]
τ_{BVN}	0.008	0.030	0.199	0.041	0.009	0.106	0.207	0.039
	[-0.033, 0.051]	[-0.235, 0.282]	[0.026, 0.377]	[-0.103, 0.172]	[-0.054, 0.076]	[-0.145, 0.377]	[-0.065, 0.393]	[-0.121, 0.166]
τ_{BC}	0.009	0.038	0.208	0.042	0.009	0.117	0.214	0.044
	[-0.032, 0.051]	[-0.221, 0.291]	[0.029, 0.384]	[-0.106, 0.178]	[-0.054, 0.076]	[-0.142, 0.385]	[-0.060, 0.402]	[-0.122, 0.166]
$\tau_{MB-BC,0.05}$	-0.011	0.091	0.175	0.063	-0.005	0.110	0.270	0.022
	[-0.039, 0.050]	[-0.254, 0.292]	[0.011, 0.384]	[-0.125, 0.185]	[-0.060, 0.082]	[-0.137, 0.365]	[-0.071, 0.410]	[-0.137, 0.163]
$\tau_{MB-BC,0.25}$	0.003	0.046	0.185	0.041	0.010	0.098	0.186	0.037
	[-0.034, 0.049]	[-0.239, 0.269]	[0.013, 0.365]	[-0.091, 0.154]	[-0.058, 0.073]	[-0.149, 0.347]	[-0.058, 0.386]	[-0.126, 0.168]
P*	0.697	0.970	0.838	0.945	0.807	0.263	0.750	0.843
	[0.044, 0.975]	[0.160, 0.966]	[0.395, 0.961]	[0.081, 0.980]	[0.141, 0.980]	[0.132, 0.976]	[0.202, 0.967]	[0.116, 0.975]
P*_EE	0.980	0.769	0.597	0.980	0.980	0.980	0.191	0.962
	[0.021, 0.980]	[0.071, 0.980]	[0.139, 0.980]	[0.053, 0.980]	[0.020, 0.980]	[0.040, 0.980]	[0.032, 0.980]	[0.062, 0.980]
B. ATT								
τ_{IPW}	0.006	0.050	0.037	-0.006	0.009	0.048	0.033	-0.006
	[0.000, 0.012]	[0.021, 0.074]	[0.009, 0.059]	[-0.021, 0.010]	[0.000, 0.017]	[0.014, 0.078]	[0.002, 0.060]	[-0.028, 0.007]
$\tau_{MB,0.05}$	0.016	0.052	0.014	-0.038	0.015	0.042	0.013	-0.027
	[0.005, 0.025]	[-0.002, 0.109]	[-0.031, 0.061]	[-0.076, 0.004]	[-0.001, 0.035]	[-0.022, 0.124]	[-0.035, 0.067]	[-0.082, 0.022]
$\tau_{MB,0.25}$	0.006	0.045	0.012	-0.013	0.010	0.051	0.025	-0.011
	[0.000, 0.011]	[0.012, 0.069]	[-0.010, 0.031]	[-0.036, 0.005]	[0.003, 0.020]	[0.019, 0.087]	[0.004, 0.061]	[-0.034, 0.012]
$\tau_{MB-EE,0.05}$	0.010	-0.002	0.012	-0.048	0.007	0.061	0.013	0.009
	[-0.008, 0.024]	[-0.043, 0.140]	[-0.030, 0.115]	[-0.067, 0.043]	[-0.014, 0.036]	[-0.046, 0.162]	[-0.049, 0.117]	[-0.071, 0.041]
$\tau_{MB-EE,0.25}$	0.005	0.043	0.014	-0.022	0.008	0.051	0.033	-0.002
	[-0.002, 0.014]	[-0.003, 0.092]	[-0.005, 0.079]	[-0.029, 0.020]	[-0.003, 0.021]	[-0.012, 0.099]	[-0.008, 0.072]	[-0.034, 0.017]
τ_{KV}	0.024	0.130	0.290	0.016	0.012	0.234	0.195	0.083
	[-0.019, 0.067]	[-0.144, 0.348]	[0.102, 0.471]	[-0.149, 0.180]	[-0.048, 0.079]	[-0.016, 0.469]	[-0.027, 0.383]	[-0.091, 0.202]
τ_{BVN}	0.010	0.035	0.150	0.020	0.011	0.099	0.164	0.024
	[-0.024, 0.042]	[-0.160, 0.221]	[0.013, 0.283]	[-0.092, 0.118]	[-0.037, 0.061]	[-0.081, 0.303]	[-0.037, 0.306]	[-0.095, 0.117]
τ_{BC}	0.012	0.044	0.184	0.026	0.012	0.124	0.198	0.038
	[-0.029, 0.050]	[-0.188, 0.267]	[0.016, 0.346]	[-0.111, 0.147]	[-0.048, 0.072]	[-0.113, 0.369]	[-0.051, 0.369]	[-0.110, 0.151]
$\tau_{MB-BC,0.05}$	0.021	0.048	0.137	-0.011	0.018	0.105	0.151	0.009
	[-0.015, 0.053]	[-0.142, 0.250]	[-0.015, 0.288]	[-0.130, 0.086]	[-0.033, 0.075]	[-0.091, 0.351]	[-0.062, 0.332]	[-0.119, 0.115]
$\tau_{MB-BC,0.25}$	0.011	0.041	0.135	0.014	0.013	0.115	0.163	0.026
	[-0.028, 0.046]	[-0.161, 0.243]	[-0.011, 0.272]	[-0.109, 0.117]	[-0.040, 0.066]	[-0.094, 0.338]	[-0.041, 0.321]	[-0.103, 0.133]
P*	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]
P*_EE	0.980	0.807	0.526	0.760	0.980	0.110	0.916	0.949
	[0.020, 0.980]	[0.075, 0.980]	[0.047, 0.980]	[0.157, 0.980]	[0.105, 0.980]	[0.157, 0.980]	[0.026, 0.980]	[0.094, 0.980]

Notes: Treatment is defined as participation in NSLP in first grade. BMI growth measured from fall first grade. Overweight (obese) is deifned as BMI above the 85th (95th) percentile. Underweight is defined as BMI below the 20th percentile. Covariates include all variables from Table 5 entered linearly, as well as squared and interaction terms for the continuous covariates. 90% empirical confidence intervals in brackets are obtained using 250 bootstrap repetitions. IPW = inverse propensity score weighting estimator; MB = minimum-biased estimator using θ = 0.0.5 or 0.25; KV = Klein and Vella (2009) estimator; BVN = Heckman bivariate normal selection model; and, P* is the bias-minimizing propensity score.

Table E2. Effect of NSLP Participation

	Third Grade Outcome				Fifth Grade Outcome			
	BMI Growth	Overweight	Obese	Underweight	BMI Growth	Overweight	Obese	Underweight
A. ATE								
τ_{IPW}	0.006	0.025	0.033	-0.007	0.009	0.034	0.034	0.000
	[0.002, 0.009]	[0.008, 0.041]	[0.019, 0.046]	[-0.018, 0.004]	[0.004, 0.014]	[0.009, 0.051]	[0.014, 0.051]	[-0.011, 0.011]
$\tau_{MB,0.05}$	0.010	-0.022	0.090	0.003	0.022	0.138	0.014	-0.004
	[-0.011, 0.022]	[-0.055, 0.109]	[-0.025, 0.107]	[-0.063, 0.034]	[-0.011, 0.030]	[-0.053, 0.128]	[-0.026, 0.125]	[-0.056, 0.034]
$\tau_{MB,0.25}$	0.006	0.003	0.047	-0.007	0.010	0.025	0.044	-0.012
	[-0.002, 0.010]	[-0.018, 0.058]	[-0.001, 0.065]	[-0.029, 0.013]	[0.000, 0.019]	[-0.005, 0.068]	[0.014, 0.075]	[-0.024, 0.016]
$\tau_{MB-EE,0.05}$	0.014	0.050	0.010	0.001	0.014	0.095	0.021	0.015
	[-0.000, 0.027]	[-0.016, 0.120]	[-0.028, 0.105]	[-0.068, 0.032]	[-0.005, 0.031]	[-0.052, 0.108]	[-0.041, 0.092]	[-0.030, 0.042]
$\tau_{MB-EE,0.25}$	0.005	0.034	0.018	-0.006	0.010	0.010	0.029	-0.003
	[-0.001, 0.012]	[-0.006, 0.059]	[-0.002, 0.059]	[-0.026, 0.011]	[0.002, 0.020]	[-0.001, 0.064]	[0.005, 0.058]	[-0.019, 0.017]
τ_{KV}	0.032	0.275	0.330	-0.169	0.065	0.473	0.431	-0.011
	[-0.021, 0.099]	[-0.015, 0.584]	[0.055, 0.551]	[-0.334, 0.028]	[-0.011, 0.135]	[0.095, 0.680]	[0.128, 0.645]	[-0.178, 0.178]
τ_{BVN}	-0.013	0.229	0.102	0.016	0.047	0.177	0.361	-0.084
	[-0.076, 0.059]	[-0.110, 0.553]	[-0.162, 0.385]	[-0.160, 0.201]	[-0.038, 0.119]	[-0.138, 0.481]	[0.059, 0.561]	[-0.263, 0.093]
τ_{BC}	-0.011	0.232	0.106	0.015	0.048	0.183	0.365	-0.082
	[-0.074, 0.061]	[-0.110, 0.554]	[-0.161, 0.388]	[-0.161, 0.197]	[-0.038, 0.120]	[-0.133, 0.487]	[0.062, 0.570]	[-0.262, 0.096]
$\tau_{MB-BC,0.05}$	-0.004	0.178	0.156	0.020	0.059	0.277	0.330	-0.081
	[-0.074, 0.058]	[-0.130, 0.532]	[-0.177, 0.369]	[-0.167, 0.193]	[-0.039, 0.120]	[-0.173, 0.499]	[0.053, 0.579]	[-0.266, 0.100]
$\tau_{MB-BC,0.25}$	-0.009	0.203	0.112	0.011	0.046	0.165	0.359	-0.089
	[-0.073, 0.058]	[-0.115, 0.531]	[-0.171, 0.376]	[-0.152, 0.193]	[-0.040, 0.114]	[-0.136, 0.472]	[0.057, 0.581]	[-0.259, 0.096]
P*	0.892	0.731	0.880	0.941	0.538	0.550	0.686	0.766
	[0.074, 0.958]	[0.225, 0.914]	[0.219, 0.963]	[0.128, 0.972]	[0.112, 0.925]	[0.177, 0.909]	[0.502, 0.868]	[0.081, 0.969]
P*$_{EE}$	0.980	0.980	0.454	0.980	0.958	0.711	0.314	0.980
	[0.033, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.020, 0.980]
B. ATT								
τ_{IPW}	0.006	0.026	0.037	-0.006	0.009	0.035	0.036	0.000
	[0.002, 0.010]	[0.006, 0.044]	[0.021, 0.051]	[-0.018, 0.005]	[0.002, 0.015]	[0.008, 0.055]	[0.014, 0.058]	[-0.012, 0.011]
$\tau_{MB,0.05}$	0.008	0.014	0.040	-0.017	0.021	0.061	0.013	0.027
	[-0.009, 0.014]	[-0.046, 0.079]	[-0.037, 0.067]	[-0.037, 0.044]	[0.000, 0.041]	[-0.015, 0.143]	[-0.027, 0.086]	[-0.042, 0.056]
$\tau_{MB,0.25}$	0.004	0.023	0.017	0.005	0.011	0.033	0.027	0.003
	[-0.000, 0.009]	[-0.003, 0.046]	[-0.003, 0.039]	[-0.015, 0.021]	[0.003, 0.018]	[-0.002, 0.063]	[0.002, 0.059]	[-0.016, 0.025]
$\tau_{MB-EE,0.05}$	0.014	0.050	0.054	-0.045	0.016	0.046	-0.002	0.003
	[-0.009, 0.026]	[-0.036, 0.108]	[-0.037, 0.108]	[-0.050, 0.031]	[-0.007, 0.032]	[-0.057, 0.112]	[-0.045, 0.107]	[-0.046, 0.034]
$\tau_{MB-EE,0.25}$	0.006	0.034	0.017	-0.020	0.010	0.034	0.041	0.008
	[0.000, 0.013]	[-0.007, 0.064]	[-0.002, 0.066]	[-0.025, 0.014]	[-0.000, 0.020]	[-0.001, 0.066]	[0.004, 0.069]	[-0.022, 0.017]
τ_{KV}	0.032	0.275	0.330	-0.169	0.065	0.473	0.431	-0.011
	[-0.021, 0.099]	[-0.015, 0.584]	[0.055, 0.551]	[-0.334, 0.028]	[-0.011, 0.135]	[0.095, 0.680]	[0.128, 0.645]	[-0.178, 0.178]
τ_{BVN}	-0.005	0.156	0.068	0.003	0.035	0.133	0.247	-0.052
	[-0.047, 0.043]	[-0.070, 0.381]	[-0.104, 0.257]	[-0.119, 0.127]	[-0.022, 0.084]	[-0.078, 0.343]	[0.046, 0.398]	[-0.168, 0.060]
τ_{BC}	-0.005	0.206	0.087	0.006	0.047	0.182	0.333	-0.068
	[-0.063, 0.059]	[-0.103, 0.502]	[-0.148, 0.343]	[-0.160, 0.174]	[-0.031, 0.114]	[-0.117, 0.480]	[0.052, 0.544]	[-0.232, 0.085]
$\tau_{MB-BC,0.05}$	-0.002	0.179	0.087	-0.007	0.056	0.195	0.284	-0.035
	[-0.061, 0.047]	[-0.102, 0.475]	[-0.180, 0.306]	[-0.146, 0.166]	[-0.022, 0.127]	[-0.102, 0.492]	[0.030, 0.502]	[-0.216, 0.107]
$\tau_{MB-BC,0.25}$	-0.006	0.189	0.063	0.016	0.046	0.167	0.298	-0.059
	[-0.057, 0.053]	[-0.105, 0.473]	[-0.149, 0.310]	[-0.143, 0.157]	[-0.030, 0.109]	[-0.128, 0.437]	[0.030, 0.506]	[-0.209, 0.102]
P*	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]
P*$_{EE}$	0.980	0.980	0.769	0.721	0.820	0.272	0.852	0.020
	[0.020, 0.980]	[0.020, 0.980]	[0.103, 0.980]	[0.036, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.045, 0.980]	[0.061, 0.980]

Notes: Treatment is defined as participation in NSLP in first and third grades (first, third, and fifth grades) in Columns 1-4 (5-8). See Table E1 for more details.

Table E3. Effect of NSLP Participation: Low Income Households

	Third Grade Outcome				Fifth Grade Outcome			
	BMI Growth	Overweight	Obese	Underweight	BMI Growth	Overweight	Obese	Underweight
A. ATE								
τ_{IPW}	0.003	0.055	0.036	0.012	0.005	0.054	0.016	0.004
	[-0.006, 0.012]	[0.013, 0.105]	[-0.005, 0.073]	[-0.015, 0.033]	[-0.009, 0.020]	[0.001, 0.115]	[-0.042, 0.070]	[-0.032, 0.025]
$\tau_{MB,0.05}$	-0.009	0.071	0.010	0.009	-0.001	0.013	-0.049	0.029
	[-0.026, 0.038]	[-0.092, 0.185]	[-0.120, 0.163]	[-0.074, 0.091]	[-0.045, 0.034]	[-0.133, 0.187]	[-0.144, 0.152]	[-0.105, 0.082]
$\tau_{MB,0.25}$	0.002	0.036	0.025	0.014	-0.002	0.026	0.002	0.011
	[-0.017, 0.016]	[-0.052, 0.108]	[-0.047, 0.088]	[-0.042, 0.046]	[-0.020, 0.019]	[-0.051, 0.112]	[-0.051, 0.098]	[-0.059, 0.041]
$\tau_{MB-EE,0.05}$	0.013	0.067	0.087	0.048	0.003	0.095	0.001	0.045
	[-0.026, 0.036]	[-0.085, 0.212]	[-0.060, 0.156]	[-0.054, 0.100]	[-0.037, 0.039]	[-0.121, 0.179]	[-0.153, 0.150]	[-0.089, 0.111]
$\tau_{MB-EE,0.25}$	-0.001	0.026	0.041	0.039	-0.004	0.008	0.005	0.000
	[-0.014, 0.018]	[-0.052, 0.140]	[-0.041, 0.092]	[-0.029, 0.058]	[-0.021, 0.027]	[-0.063, 0.117]	[-0.070, 0.092]	[-0.057, 0.039]
τ_{KV}	0.040	0.061	0.151	-0.080	-0.058	-0.171	0.004	-0.104
	[-0.039, 0.093]	[-0.358, 0.439]	[-0.236, 0.319]	[-0.237, 0.178]	[-0.135, 0.050]	[-0.416, 0.275]	[-0.289, 0.305]	[-0.279, 0.138]
τ_{BVN}	-0.006	-0.139	-0.035	-0.083	-0.072	-0.255	0.011	-0.145
	[-0.076, 0.060]	[-0.452, 0.256]	[-0.326, 0.225]	[-0.198, 0.154]	[-0.139, 0.039]	[-0.463, 0.184]	[-0.307, 0.343]	[-0.269, 0.101]
τ_{BC}	-0.006	-0.143	-0.031	-0.082	-0.077	-0.266	0.009	-0.133
	[-0.079, 0.060]	[-0.468, 0.265]	[-0.340, 0.245]	[-0.201, 0.162]	[-0.149, 0.041]	[-0.486, 0.197]	[-0.315, 0.378]	[-0.271, 0.121]
$\tau_{MB-BC,0.05}$	-0.009	-0.087	-0.054	-0.074	-0.068	-0.272	-0.049	-0.099
	[-0.063, 0.067]	[-0.489, 0.291]	[-0.358, 0.230]	[-0.236, 0.149]	[-0.140, 0.043]	[-0.475, 0.237]	[-0.386, 0.391]	[-0.307, 0.113]
$\tau_{MB-BC,0.25}$	0.002	-0.122	-0.038	-0.069	-0.068	-0.259	0.002	-0.117
	[-0.065, 0.056]	[-0.465, 0.257]	[-0.355, 0.207]	[-0.214, 0.129]	[-0.137, 0.033]	[-0.444, 0.166]	[-0.304, 0.340]	[-0.262, 0.065]
P*	0.754	0.566	0.940	0.971	0.593	0.744	0.952	0.955
	[0.073, 0.980]	[0.108, 0.980]	[0.170, 0.980]	[0.112, 0.980]	[0.036, 0.970]	[0.137, 0.980]	[0.073, 0.980]	[0.279, 0.980]
P*$_{EE}$	0.848	0.707	0.365	0.697	0.672	0.518	0.980	0.067
	[0.049, 0.980]	[0.083, 0.980]	[0.042, 0.980]	[0.056, 0.980]	[0.028, 0.980]	[0.032, 0.980]	[0.027, 0.980]	[0.035, 0.980]
B. ATT								
τ_{IPW}	0.003	0.057	0.036	0.011	0.005	0.056	0.015	0.004
	[-0.006, 0.013]	[0.013, 0.108]	[-0.007, 0.074]	[-0.018, 0.032]	[-0.010, 0.021]	[-0.000, 0.119]	[-0.047, 0.074]	[-0.035, 0.024]
$\tau_{MB,0.05}$	0.000	0.086	0.094	0.051	-0.004	0.070	0.045	0.048
	[-0.023, 0.018]	[-0.066, 0.149]	[-0.028, 0.137]	[-0.009, 0.118]	[-0.039, 0.026]	[-0.071, 0.157]	[-0.078, 0.143]	[-0.042, 0.112]
$\tau_{MB,0.25}$	0.002	0.040	0.027	0.034	-0.006	0.014	0.020	0.001
	[-0.014, 0.009]	[-0.041, 0.091]	[-0.036, 0.086]	[-0.007, 0.057]	[-0.019, 0.018]	[-0.054, 0.109]	[-0.044, 0.089]	[-0.038, 0.040]
$\tau_{MB-EE,0.05}$	-0.039	-0.037	-0.048	-0.045	0.000	0.054	0.045	0.058
	[-0.030, 0.044]	[-0.097, 0.264]	[-0.093, 0.165]	[-0.082, 0.088]	[-0.053, 0.054]	[-0.157, 0.240]	[-0.179, 0.167]	[-0.105, 0.082]
$\tau_{MB-EE,0.25}$	-0.014	0.011	0.010	0.012	0.020	0.076	0.020	0.009
	[-0.014, 0.020]	[-0.032, 0.148]	[-0.038, 0.096]	[-0.043, 0.047]	[-0.018, 0.033]	[-0.040, 0.160]	[-0.070, 0.097]	[-0.061, 0.040]
τ_{KV}	0.040	0.061	0.151	-0.080	-0.058	-0.171	0.004	-0.104
	[-0.039, 0.093]	[-0.358, 0.439]	[-0.236, 0.319]	[-0.237, 0.178]	[-0.135, 0.050]	[-0.416, 0.275]	[-0.289, 0.305]	[-0.279, 0.138]
τ_{BVN}	-0.010	-0.121	-0.018	-0.049	-0.064	-0.216	0.026	-0.104
	[-0.069, 0.048]	[-0.398, 0.206]	[-0.267, 0.196]	[-0.147, 0.149]	[-0.123, 0.035]	[-0.396, 0.173]	[-0.250, 0.325]	[-0.214, 0.107]
τ_{BC}	-0.011	-0.142	-0.017	-0.053	-0.077	-0.252	0.024	-0.100
	[-0.079, 0.056]	[-0.451, 0.241]	[-0.308, 0.216]	[-0.163, 0.174]	[-0.147, 0.039]	[-0.457, 0.188]	[-0.293, 0.367]	[-0.236, 0.147]
$\tau_{MB-BC,0.05}$	-0.011	-0.064	0.053	0.002	-0.066	-0.162	0.052	-0.031
	[-0.072, 0.049]	[-0.363, 0.231]	[-0.204, 0.210]	[-0.098, 0.207]	[-0.133, 0.035]	[-0.373, 0.205]	[-0.229, 0.317]	[-0.176, 0.176]
$\tau_{MB-BC,0.25}$	-0.009	-0.110	-0.014	-0.014	-0.067	-0.219	0.027	-0.078
	[-0.067, 0.040]	[-0.367, 0.181]	[-0.240, 0.185]	[-0.122, 0.157]	[-0.121, 0.032]	[-0.390, 0.127]	[-0.222, 0.321]	[-0.190, 0.129]
P*	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]
P*$_{EE}$	0.906	0.823	0.916	0.949	0.913	0.911	0.020	0.980
	[0.317, 0.980]	[0.384, 0.980]	[0.430, 0.980]	[0.259, 0.980]	[0.392, 0.980]	[0.601, 0.980]	[0.474, 0.980]	[0.550, 0.980]

Notes: Sample is restricted to households with income less than 200% of the federal povery line. Treatment is defined as participation in NSLP in first grade. BMI growth measured from fall first grade. Overweight (obese) is deifned as BMI above the 85th (95th) percentile. Underweight is defined as BMI below the 20th percentile. Covariates include all variables from Table 5 entered linearly, as well as squared and interaction terms for the continuous covariates. 90% empirical confidence intervals in brackets are obtained using 250 bootstrap repetitions. IPW = inverse propensity score weighting estimator; MB = minimum-biased estimator using θ = 0.0.5 or 0.25; KV = Klein and Vella (2009) estimator; BVN = Heckman bivariate normal selection model; and, P* is the bias-minimizing propensity score.

Table E4. Effect of NSLP Participation: Low Income Households

	Third Grade Outcome				Fifth Grade Outcome			
	BMI Growth	Overweight	Obese	Underweight	BMI Growth	Overweight	Obese	Underweight
A. ATE								
τ_{IPW}	0.008	0.056	0.054	-0.004	0.005	0.021	0.030	-0.001
	[0.001, 0.014]	[0.020, 0.094]	[0.019, 0.080]	[-0.023, 0.017]	[-0.007, 0.013]	[-0.017, 0.057]	[-0.003, 0.060]	[-0.021, 0.022]
$\tau_{MB,0.05}$	-0.003	0.031	0.053	0.028	-0.002	-0.083	0.003	0.004
	[-0.022, 0.028]	[-0.075, 0.163]	[-0.084, 0.124]	[-0.075, 0.076]	[-0.032, 0.040]	[-0.113, 0.162]	[-0.103, 0.144]	[-0.061, 0.073]
$\tau_{MB,0.25}$	0.006	0.022	0.027	-0.008	0.003	0.004	0.041	-0.002
	[-0.009, 0.017]	[-0.026, 0.101]	[-0.029, 0.085]	[-0.037, 0.036]	[-0.015, 0.024]	[-0.045, 0.086]	[-0.030, 0.082]	[-0.037, 0.034]
$\tau_{MB\text{-}EE,0.05}$	-0.009	0.033	0.023	-0.057	0.006	0.055	-0.015	0.010
	[-0.020, 0.030]	[-0.079, 0.139]	[-0.043, 0.118]	[-0.083, 0.087]	[-0.035, 0.022]	[-0.117, 0.153]	[-0.073, 0.155]	[-0.051, 0.074]
$\tau_{MB\text{-}EE,0.25}$	0.004	0.024	0.027	-0.019	0.003	0.014	0.029	0.008
	[-0.008, 0.023]	[-0.022, 0.111]	[-0.019, 0.086]	[-0.040, 0.033]	[-0.015, 0.016]	[-0.042, 0.079]	[-0.030, 0.084]	[-0.027, 0.037]
τ_{KV}	-0.011	0.040	0.133	-0.081	-0.024	-0.197	0.066	0.022
	[-0.077, 0.054]	[-0.309, 0.307]	[-0.166, 0.247]	[-0.239, 0.123]	[-0.100, 0.082]	[-0.529, 0.226]	[-0.235, 0.317]	[-0.198, 0.204]
τ_{BVN}	-0.060	-0.145	-0.220	0.005	-0.006	-0.192	0.111	-0.024
	[-0.123, 0.026]	[-0.562, 0.306]	[-0.492, 0.149]	[-0.226, 0.220]	[-0.096, 0.089]	[-0.576, 0.322]	[-0.255, 0.387]	[-0.259, 0.177]
τ_{BC}	-0.053	-0.145	-0.214	0.007	-0.005	-0.196	0.112	-0.024
	[-0.116, 0.037]	[-0.567, 0.310]	[-0.497, 0.150]	[-0.228, 0.223]	[-0.100, 0.092]	[-0.584, 0.316]	[-0.255, 0.380]	[-0.263, 0.184]
$\tau_{MB\text{-}BC,0.05}$	-0.056	-0.098	-0.194	0.028	-0.010	-0.289	0.076	-0.005
	[-0.125, 0.041]	[-0.559, 0.317]	[-0.458, 0.160]	[-0.260, 0.224]	[-0.098, 0.108]	[-0.568, 0.338]	[-0.278, 0.412]	[-0.251, 0.184]
$\tau_{MB\text{-}BC,0.25}$	-0.047	-0.107	-0.220	-0.008	-0.006	-0.202	0.114	-0.010
	[-0.111, 0.040]	[-0.550, 0.319]	[-0.512, 0.161]	[-0.229, 0.207]	[-0.091, 0.094]	[-0.576, 0.303]	[-0.232, 0.406]	[-0.246, 0.170]
P*	0.542	0.219	0.679	0.787	0.616	0.737	0.933	0.980
	[0.067, 0.935]	[0.048, 0.979]	[0.099, 0.970]	[0.145, 0.980]	[0.097, 0.980]	[0.099, 0.965]	[0.139, 0.980]	[0.094, 0.980]
P*$_{EE}$	0.628	0.020	0.199	0.913	0.980	0.020	0.240	0.026
	[0.021, 0.980]	[0.020, 0.980]	[0.020, 0.980]	[0.054, 0.980]	[0.042, 0.980]	[0.032, 0.980]	[0.026, 0.980]	[0.030, 0.980]
B. ATT								
τ_{IPW}	0.009	0.059	0.057	-0.006	0.005	0.020	0.031	-0.003
	[0.001, 0.016]	[0.020, 0.100]	[0.019, 0.084]	[-0.026, 0.017]	[-0.008, 0.014]	[-0.021, 0.059]	[-0.007, 0.064]	[-0.024, 0.022]
$\tau_{MB,0.05}$	-0.005	0.036	0.026	0.043	0.002	0.060	-0.019	-0.001
	[-0.022, 0.014]	[-0.078, 0.117]	[-0.042, 0.107]	[-0.022, 0.099]	[-0.023, 0.028]	[-0.076, 0.148]	[-0.068, 0.088]	[-0.062, 0.067]
$\tau_{MB,0.25}$	0.006	0.024	0.030	0.005	0.003	0.012	0.030	0.007
	[-0.009, 0.013]	[-0.027, 0.070]	[-0.025, 0.069]	[-0.016, 0.043]	[-0.013, 0.015]	[-0.044, 0.071]	[-0.026, 0.075]	[-0.022, 0.039]
$\tau_{MB\text{-}EE,0.05}$	-0.004	0.105	-0.093	-0.021	0.005	0.130	0.041	0.044
	[-0.022, 0.032]	[-0.098, 0.164]	[-0.076, 0.138]	[-0.079, 0.071]	[-0.043, 0.033]	[-0.128, 0.171]	[-0.079, 0.154]	[-0.079, 0.075]
$\tau_{MB\text{-}EE,0.25}$	0.006	0.043	0.028	-0.017	0.003	-0.007	0.041	-0.005
	[-0.008, 0.024]	[-0.018, 0.119]	[-0.031, 0.083]	[-0.044, 0.031]	[-0.014, 0.021]	[-0.046, 0.085]	[-0.029, 0.092]	[-0.033, 0.034]
τ_{KV}	-0.011	0.040	0.133	-0.081	-0.024	-0.197	0.066	0.022
	[-0.077, 0.054]	[-0.309, 0.307]	[-0.166, 0.247]	[-0.239, 0.123]	[-0.100, 0.082]	[-0.529, 0.226]	[-0.235, 0.317]	[-0.198, 0.204]
τ_{BVN}	-0.051	-0.129	-0.171	0.023	-0.004	-0.142	0.077	-0.006
	[-0.098, 0.019]	[-0.470, 0.218]	[-0.370, 0.118]	[-0.161, 0.189]	[-0.072, 0.070]	[-0.437, 0.245]	[-0.224, 0.276]	[-0.176, 0.147]
τ_{BC}	-0.052	-0.158	-0.199	0.030	-0.005	-0.179	0.087	-0.007
	[-0.109, 0.031]	[-0.559, 0.257]	[-0.436, 0.124]	[-0.184, 0.229]	[-0.087, 0.086]	[-0.531, 0.265]	[-0.257, 0.323]	[-0.204, 0.178]
$\tau_{MB\text{-}BC,0.05}$	-0.056	-0.144	-0.187	0.072	-0.006	-0.109	0.028	-0.005
	[-0.110, 0.023]	[-0.497, 0.203]	[-0.385, 0.110]	[-0.107, 0.220]	[-0.081, 0.096]	[-0.444, 0.284]	[-0.235, 0.254]	[-0.191, 0.178]
$\tau_{MB\text{-}BC,0.25}$	-0.045	-0.156	-0.183	0.034	-0.005	-0.157	0.077	0.003
	[-0.098, 0.025]	[-0.504, 0.184]	[-0.405, 0.104]	[-0.150, 0.209]	[-0.077, 0.077]	[-0.487, 0.247]	[-0.254, 0.259]	[-0.182, 0.172]
P*	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]	[0.500, 0.500]
P*$_{EE}$	0.020	0.888	0.855	0.959	0.951	0.878	0.951	0.926
	[0.172, 0.980]	[0.177, 0.980]	[0.128, 0.977]	[0.191, 0.980]	[0.272, 0.980]	[0.346, 0.980]	[0.357, 0.980]	[0.411, 0.980]

Notes: Treatment is defined as participation in NSLP in first and third grades (first, third, and fifth grades) in Columns 1-4 (5-8). See Table E3 for more details.