TABLE A3.
MSEs for each parameter estimate in study 2.

	small DIF				large DIF			
	20% DIF		60% DIF		20% DIF		60% DIF	
parameter	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$
a_{31}	0.096	0.082	0.087	0.070	0.089	0.080	0.057	0.046
a_{32}	0.053	0.050	0.061	0.054	0.055	0.031	0.038	0.025
a_{41}	0.055	0.035	0.057	0.045	0.060	0.034	0.057	0.027
a_{42}	0.021	0.013	0.023	0.011	0.018	0.011	0.026	0.010
a_{51}	0.013	0.015	0.014	0.012	0.012	0.013	0.018	0.007
a_{52}	0.013	0.009	0.014	0.010	0.018	0.011	0.019	0.006
a_{61}	0.011	0.010	0.009	0.007	0.011	0.008	0.021	0.007
a_{62}	0.011	0.009	0.010	0.009	0.011	0.010	0.014	0.009
a_{71}	0.044	0.031	0.045	0.036	0.046	0.030	0.045	0.036
a_{72}	0.041	0.033	0.041	0.026	0.040	0.036	0.052	0.027
a_{81}	0.090	0.057	0.105	0.058	0.042	0.048	0.078	0.033
a_{82}	0.106	0.067	0.122	0.084	0.085	0.063	0.151	0.075
a_{91}	0.166	0.089	0.158	0.090	0.154	0.105	0.112	0.078
a_{92}	0.013	0.015	0.013	0.015	0.011	0.015	0.011	0.021
$a_{10,1}$	0.017	0.012	0.018	0.019	0.015	0.010	0.015	0.008
$a_{10,2}$	0.013	0.015	0.014	0.015	0.015	0.014	0.025	0.013
$a_{11,1}$	0.014	0.007	0.014	0.007	0.014	0.006	0.014	0.007
$a_{11,2}$	0.114	0.105	0.088	0.061	0.134	0.105	0.049	0.028
$a_{12,1}$	0.023	0.040	0.026	0.048	0.040	0.031	0.034	0.032
$a_{12,2}$	0.055	0.026	0.036	0.020	0.053	0.027	0.031	0.013
$a_{13,1}$	0.023	0.020	0.030	0.020	0.023	0.020	0.027	0.014
$a_{13,2}$	0.133	0.093	0.151	0.086	0.121	0.079	0.215	0.111
$a_{14,1}$	0.059	0.054	0.065	0.023	0.074	0.060	0.098	0.061
$a_{14,2}$	0.066	0.045	0.071	0.042	0.058	0.043	0.093	0.047
$a_{15,1}$	0.049	0.031	0.062	0.044	0.050	0.031	0.112	0.051
$a_{15,2}$	0.053	0.029	0.058	0.028	0.051	0.026	0.058	0.019
d_1	0.036	0.018	0.028	0.019	0.033	0.017	0.029	0.017
d_2	0.023	0.018	0.044	0.023	0.021	0.018	0.052	0.028
d_3	0.024	0.013	0.021	0.017	0.020	0.015	0.034	0.019
d_4	0.026	0.010	0.025	0.010	0.025	0.010	0.032	0.014
d_5	0.081	0.023	0.029	0.024	0.082	0.019	0.038	0.022
d_6	0.011	0.004	0.012	0.003	0.011	0.003	0.011	0.005
d_7	0.014	0.006	0.014	0.007	0.015	0.007	0.020	0.018
d_8	0.015	0.008	0.014	0.009	0.020	0.008	0.024	0.015
d_9	0.012	0.004	0.012	0.005	0.012	0.004	0.014	0.006
d_{10}	0.009	0.007	0.010	0.007	0.010	0.007	0.013	0.006
d_{11}	0.035	0.021	0.042	0.019	0.033	0.021	0.046	0.013
d_{12}	0.036	0.026	0.024	0.022	0.037	0.029	0.056	0.044
d_{13}	0.035	0.015	0.034	0.020	0.038	0.017	0.052	0.020
d_{14}	0.032	0.014	0.028	0.021	0.037	0.013	0.056	0.021
d_{15}	0.034	0.015	0.028	0.016	0.035	0.016	0.039	0.020

TABLE A3.
(continued)

	small DIF				large DIF			
	20% DIF		60% DIF		20% DIF		60% DIF	
parameter	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$
β_{31}	0.009	0.005	0.046	0.038	0.009	0.004	0.070	0.022
β_{32}	0.013	0.012	0.012	0.010	0.012	0.013	0.020	0.020
β_{33}	0.014	0.006	0.013	0.005	0.011	0.006	0.012	0.005
β_{34}	0.008	0.006	0.008	0.004	0.008	0.007	0.009	0.006
β_{41}	0.027	0.015	0.040	0.027	0.035	0.012	0.064	0.017
β_{42}	0.021	0.006	0.016	0.006	0.017	0.017	0.015	0.014
β_{43}	0.008	0.005	0.007	0.003	0.008	0.003	0.007	0.003
β_{44}	0.005	0.004	0.004	0.004	0.004	0.004	0.006	0.004
β_{51}	0.009	0.008	0.042	0.034	0.009	0.007	0.068	0.024
β_{52}	0.022	0.015	0.017	0.021	0.019	0.016	0.016	0.016
β_{53}	0.013	0.011	0.011	0.009	0.012	0.011	0.010	0.007
β_{54}	0.011	0.009	0.016	0.009	0.011	0.008	0.015	0.005
β_{61}	0.005	0.003	0.008	0.006	0.005	0.003	0.006	0.004
β_{62}	0.017	0.007	0.016	0.007	0.019	0.008	0.011	0.008
β_{63}	0.004	0.003	0.004	0.002	0.005	0.003	0.004	0.003
β_{64}	0.005	0.002	0.005	0.002	0.005	0.002	0.006	0.003
β_{71}	0.006	0.005	0.005	0.004	0.007	0.005	0.006	0.004
β_{72}	0.028	0.017	0.054	0.035	0.026	0.018	0.070	0.043
β_{73}	0.008	0.005	0.008	0.005	0.007	0.006	0.007	0.003
β_{74}	0.011	0.005	0.006	0.005	0.012	0.006	0.006	0.004
β_{81}	0.004	0.004	0.005	0.004	0.004	0.003	0.005	0.004
β_{82}	0.040	0.017	0.057	0.028	0.050	0.014	0.080	0.035
β_{83}	0.006	0.003	0.006	0.004	0.005	0.003	0.005	0.003
β_{84}	0.007	0.004	0.009	0.005	0.004	0.004	0.005	0.004
β_{91}	0.005	0.003	0.003	0.001	0.006	0.003	0.004	0.002
β_{92}	0.022	0.010	0.037	0.016	0.025	0.010	0.046	0.018
β_{93}	0.008	0.004	0.006	0.004	0.008	0.004	0.003	0.003
β_{94}	0.006	0.003	0.005	0.003	0.007	0.003	0.004	0.002
$\beta_{10,1}$	0.005	0.003	0.005	0.003	0.006	0.003	0.005	0.002
$\beta_{10,2}$	0.021	0.010	0.026	0.011	0.024	0.012	0.042	0.018
$\beta_{10,3}$	0.004	0.002	0.004	0.002	0.004	0.003	0.005	0.002
$\beta_{10,4}$	0.004	0.003	0.003	0.003	0.004	0.003	0.004	0.003
$\beta_{11,1}$	0.009	0.007	0.014	0.011	0.011	0.008	0.012	0.007
$\beta_{11,2}$	0.036	0.016	0.059	0.039	0.039	0.013	0.088	0.026
$\beta_{11,3}$	0.010	0.005	0.010	0.005	0.011	0.005	0.010	0.007
$\beta_{11,4}$	0.012	0.006	0.013	0.005	0.013	0.007	0.013	0.007
$\beta_{12,1}$	0.006	0.008	0.041	0.025	0.007	0.008	0.052	0.020
$\beta_{12,2}$	0.029	0.010	0.079	0.039	0.029	0.009	0.111	0.077
$\beta_{12,3}$	0.009	0.007	0.007	0.005	0.008	0.008	0.008	0.006
$\beta_{12,4}$	0.007	0.008	0.007	0.008	0.007	0.007	0.006	0.005
$\beta_{13,1}$	0.017	0.012	0.030	0.027	0.017	0.010	0.045	0.016
$\beta_{13,2}$	0.035	0.019	0.056	0.031	0.052	0.017	0.072	0.026

TABLE A3.
(continued)

	small DIF				large DIF			
	20% DIF		60% DIF		20% DIF		60% DIF	
parameter	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$
$\beta_{13,3}$	0.008	0.007	0.009	0.006	0.008	0.004	0.010	0.005
$\beta_{13,4}$	0.009	0.005	0.010	0.004	0.006	0.005	0.006	0.003
$\beta_{14,1}$	0.014	0.006	0.036	0.026	0.013	0.005	0.055	0.018
$\beta_{14,2}$	0.021	0.012	0.031	0.027	0.024	0.013	0.061	0.024
$\beta_{14,3}$	0.010	0.005	0.008	0.005	0.009	0.005	0.012	0.006
$\beta_{14,4}$	0.006	0.006	0.006	0.005	0.007	0.006	0.009	0.004
$\beta_{15,1}$	0.013	0.007	0.028	0.025	0.011	0.005	0.032	0.009
$\beta_{15,2}$	0.012	0.013	0.010	0.018	0.014	0.014	0.027	0.017
$\beta_{15,3}$	0.009	0.005	0.007	0.005	0.011	0.005	0.007	0.006
$\beta_{15,4}$	0.008	0.006	0.008	0.007	0.008	0.006	0.008	0.004
γ_{311}	0.013	0.009	0.068	0.032	0.011	0.009	0.113	0.029
γ_{321}	0.092	0.051	0.086	0.043	0.077	0.040	0.069	0.042
γ_{331}	0.018	0.011	0.010	0.013	0.016	0.009	0.016	0.012
γ_{341}	0.014	0.008	0.023	0.010	0.014	0.007	0.022	0.014
γ_{411}	0.034	0.019	0.045	0.027	0.035	0.019	0.086	0.018
γ_{421}	0.039	0.016	0.036	0.017	0.041	0.022	0.042	0.028
γ_{431}	0.011	0.008	0.012	0.007	0.012	0.007	0.011	0.010
γ_{441}	0.013	0.005	0.011	0.007	0.017	0.009	0.008	0.008
γ_{511}	0.011	0.006	0.033	0.025	0.008	0.006	0.060	0.025
γ_{521}	0.041	0.031	0.061	0.029	0.034	0.029	0.046	0.032
γ_{531}	0.013	0.009	0.017	0.007	0.013	0.009	0.013	0.005
γ_{541}	0.007	0.009	0.008	0.010	0.009	0.009	0.011	0.005
γ_{611}	0.006	0.004	0.008	0.007	0.006	0.005	0.009	0.005
γ_{621}	0.023	0.015	0.024	0.011	0.017	0.017	0.033	0.013
γ_{631}	0.009	0.004	0.008	0.004	0.007	0.004	0.013	0.005
γ_{641}	0.005	0.006	0.005	0.005	0.004	0.005	0.010	0.006
γ_{711}	0.017	0.008	0.010	0.008	0.017	0.008	0.017	0.005
γ_{721}	0.022	0.015	0.022	0.012	0.017	0.017	0.036	0.014
γ_{731}	0.014	0.007	0.013	0.005	0.013	0.006	0.015	0.007
γ_{741}	0.011	0.013	0.010	0.012	0.013	0.012	0.012	0.006
γ_{811}	0.008	0.007	0.007	0.008	0.012	0.005	0.010	0.008
γ_{821}	0.033	0.013	0.035	0.010	0.044	0.014	0.039	0.018
γ_{831}	0.011	0.006	0.012	0.007	0.013	0.004	0.013	0.003
γ_{841}	0.010	0.008	0.010	0.008	0.011	0.007	0.009	0.005
γ_{911}	0.008	0.005	0.005	0.002	0.007	0.006	0.013	0.004
γ_{921}	0.016	0.014	0.025	0.013	0.016	0.012	0.023	0.015
γ_{931}	0.011	0.004	0.008	0.006	0.012	0.004	0.008	0.004
γ_{941}	0.011	0.004	0.007	0.006	0.009	0.004	0.011	0.004
$\gamma_{10,11}$	0.009	0.003	0.010	0.004	0.009	0.003	0.011	0.002
$\gamma_{10,21}$	0.014	0.012	0.010	0.011	0.014	0.010	0.021	0.011
$\gamma_{10,31}$	0.008	0.006	0.008	0.006	0.008	0.007	0.009	0.005
$\gamma_{10,41}$	0.009	0.004	0.006	0.004	0.008	0.004	0.008	0.005

TABLE A3.
(continued)

	small DIF				large DIF			
	20% DIF		60% DIF		20% DIF		60% DIF	
parameter	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$
$\gamma_{11,11}$	0.010	0.005	0.018	0.014	0.010	0.005	0.020	0.011
$\gamma_{11,21}$	0.026	0.012	0.021	0.011	0.021	0.012	0.027	0.022
$\gamma_{11,31}$	0.018	0.009	0.015	0.008	0.018	0.008	0.016	0.008
$\gamma_{11,41}$	0.014	0.004	0.015	0.004	0.017	0.004	0.022	0.008
$\gamma_{12,11}$	0.013	0.008	0.036	0.028	0.014	0.008	0.058	0.017
$\gamma_{12,21}$	0.059	0.021	0.093	0.018	0.052	0.018	0.043	0.032
$\gamma_{12,31}$	0.013	0.012	0.011	0.009	0.013	0.013	0.018	0.008
$\gamma_{12,41}$	0.013	0.012	0.014	0.015	0.012	0.010	0.016	0.009
$\gamma_{13,11}$	0.034	0.014	0.047	0.025	0.024	0.028	0.078	0.019
$\gamma_{13,21}$	0.080	0.050	0.080	0.035	0.051	0.023	0.073	0.019
$\gamma_{13,31}$	0.015	0.015	0.014	0.012	0.018	0.007	0.015	0.010
$\gamma_{13,41}$	0.018	0.009	0.019	0.010	0.010	0.009	0.013	0.007
$\gamma_{14,11}$	0.013	0.016	0.048	0.053	0.014	0.015	0.113	0.039
$\gamma_{14,21}$	0.055	0.040	0.083	0.035	0.046	0.043	0.033	0.034
$\gamma_{14,31}$	0.016	0.007	0.025	0.011	0.017	0.006	0.024	0.012
$\gamma_{14,41}$	0.015	0.010	0.018	0.011	0.014	0.011	0.016	0.014
$\gamma_{15,11}$	0.018	0.012	0.021	0.018	0.021	0.011	0.015	0.021
$\gamma_{15,21}$	0.061	0.037	0.057	0.035	0.056	0.037	0.079	0.032
$\gamma_{15,31}$	0.018	0.013	0.011	0.011	0.019	0.016	0.016	0.011
$\gamma_{15,41}$	0.015	0.012	0.011	0.014	0.020	0.013	0.023	0.011
γ_{312}	0.014	0.007	0.016	0.007	0.009	0.006	0.026	0.010
γ_{322}	0.028	0.020	0.015	0.019	0.028	0.018	0.017	0.019
γ_{332}	0.011	0.007	0.009	0.006	0.011	0.006	0.011	0.008
γ_{342}	0.012	0.007	0.014	0.007	0.012	0.007	0.011	0.009
γ_{412}	0.009	0.006	0.012	0.007	0.012	0.007	0.023	0.006
γ_{422}	0.017	0.015	0.017	0.017	0.018	0.012	0.025	0.015
γ_{432}	0.007	0.006	0.005	0.007	0.005	0.006	0.007	0.006
γ_{442}	0.015	0.007	0.016	0.007	0.014	0.006	0.017	0.006
γ_{512}	0.010	0.007	0.016	0.008	0.008	0.005	0.023	0.009
γ_{522}	0.028	0.017	0.017	0.017	0.031	0.015	0.026	0.020
γ_{532}	0.011	0.007	0.016	0.008	0.010	0.006	0.013	0.011
γ_{542}	0.016	0.011	0.017	0.011	0.016	0.010	0.014	0.010
γ_{612}	0.008	0.005	0.011	0.006	0.006	0.004	0.017	0.004
γ_{622}	0.019	0.018	0.019	0.021	0.019	0.021	0.018	0.009
γ_{632}	0.010	0.004	0.009	0.004	0.009	0.003	0.010	0.006
γ_{642}	0.009	0.006	0.010	0.006	0.009	0.006	0.011	0.005
γ_{712}	0.014	0.012	0.014	0.010	0.014	0.013	0.014	0.007
γ_{722}	0.076	0.050	0.173	0.090	0.082	0.063	0.240	0.205
γ_{732}	0.014	0.014	0.015	0.008	0.017	0.015	0.013	0.010
γ_{742}	0.018	0.018	0.016	0.017	0.018	0.019	0.012	0.013
γ_{812}	0.012	0.007	0.011	0.009	0.008	0.006	0.014	0.008
γ_{822}	0.108	0.056	0.126	0.067	0.140	0.068	0.227	0.127

TABLE A3.
(continued)

	small DIF				large DIF			
	20% DIF		60% DIF		20% DIF		60% DIF	
parameter	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$
γ_{832}	0.018	0.007	0.018	0.008	0.017	0.006	0.016	0.008
γ_{842}	0.015	0.010	0.013	0.015	0.015	0.010	0.020	0.007
γ_{912}	0.012	0.005	0.010	0.004	0.014	0.004	0.013	0.005
γ_{922}	0.031	0.030	0.054	0.028	0.038	0.030	0.069	0.039
γ_{932}	0.011	0.008	0.014	0.006	0.011	0.008	0.016	0.007
γ_{942}	0.013	0.010	0.008	0.008	0.012	0.009	0.011	0.005
$\gamma_{10,12}$	0.009	0.004	0.012	0.004	0.009	0.004	0.013	0.005
$\gamma_{10,22}$	0.030	0.011	0.032	0.022	0.040	0.012	0.043	0.033
$\gamma_{10,32}$	0.007	0.004	0.011	0.004	0.008	0.005	0.011	0.008
$\gamma_{10,42}$	0.010	0.004	0.011	0.005	0.011	0.004	0.013	0.008
$\gamma_{11,12}$	0.015	0.012	0.014	0.021	0.020	0.013	0.024	0.014
$\gamma_{11,22}$	0.098	0.058	0.119	0.064	0.130	0.066	0.099	0.125
$\gamma_{11,32}$	0.017	0.016	0.021	0.014	0.015	0.015	0.026	0.014
$\gamma_{11,42}$	0.030	0.020	0.028	0.026	0.025	0.022	0.024	0.014
$\gamma_{12,12}$	0.017	0.011	0.024	0.010	0.018	0.012	0.027	0.011
$\gamma_{12,22}$	0.085	0.043	0.178	0.086	0.100	0.057	0.266	0.143
$\gamma_{12,32}$	0.019	0.010	0.026	0.011	0.020	0.011	0.016	0.012
$\gamma_{12,42}$	0.025	0.011	0.019	0.006	0.026	0.011	0.016	0.014
$\gamma_{13,12}$	0.013	0.006	0.016	0.008	0.010	0.009	0.022	0.008
$\gamma_{13,22}$	0.104	0.059	0.123	0.076	0.129	0.064	0.194	0.097
$\gamma_{13,32}$	0.012	0.010	0.016	0.012	0.011	0.006	0.024	0.011
$\gamma_{13,42}$	0.013	0.011	0.017	0.012	0.015	0.009	0.020	0.006
$\gamma_{14,12}$	0.017	0.010	0.012	0.006	0.018	0.008	0.020	0.013
$\gamma_{14,22}$	0.054	0.045	0.069	0.058	0.064	0.052	0.131	0.076
$\gamma_{14,32}$	0.018	0.007	0.014	0.008	0.019	0.006	0.015	0.012
$\gamma_{14,42}$	0.016	0.011	0.024	0.010	0.015	0.010	0.021	0.009
$\gamma_{15,12}$	0.014	0.007	0.019	0.009	0.013	0.007	0.018	0.013
$\gamma_{15,22}$	0.056	0.036	0.086	0.043	0.068	0.035	0.129	0.075
$\gamma_{15,32}$	0.016	0.012	0.015	0.011	0.017	0.012	0.017	0.010
$\gamma_{15,42}$	0.017	0.009	0.021	0.012	0.019	0.009	0.019	0.008
Υ_{11}	0.004	0.003	0.006	0.007	0.004	0.002	0.010	0.004
Υ_{12}	0.033	0.022	0.026	0.019	0.028	0.020	0.029	0.018
Υ_{13}	0.004	0.002	0.004	0.002	0.004	0.002	0.003	0.002
Υ_{14}	0.004	0.002	0.004	0.002	0.003	0.003	0.003	0.002
Υ_{21}	0.001	0.002	0.002	0.002	0.002	0.002	0.003	0.001
Υ_{22}	0.033	0.023	0.064	0.039	0.031	0.021	0.078	0.041
Υ_{23}	0.006	0.001	0.006	0.001	0.005	0.001	0.004	0.002
Υ_{24}	0.004	0.002	0.005	0.003	0.005	0.002	0.004	0.002
$\Delta_{(110)}$	0.011	0.011	0.011	0.013	0.011	0.011	0.013	0.008
$\Delta_{(220)}$	0.010	0.010	0.012	0.008	0.009	0.009	0.010	0.004
$\eta_{(11)1}$	0.005	0.003	0.017	0.010	0.005	0.003	0.033	0.011
$\eta_{(11)2}$	0.013	0.012	0.014	0.012	0.016	0.010	0.018	0.012

TABLE A3.
(continued)

	small DIF				large DIF			
	20% DIF		60% DIF		20% DIF		60% DIF	
parameter	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$	$N = 500$	$N = 1000$
$\eta_{(11)3}$	0.005	0.002	0.005	0.002	0.005	0.002	0.005	0.003
$\eta_{(11)4}$	0.007	0.003	0.008	0.003	0.008	0.002	0.005	0.003
$\eta_{(22)1}$	0.003	0.002	0.003	0.002	0.004	0.002	0.004	0.002
$\eta_{(22)2}$	0.022	0.010	0.034	0.021	0.034	0.013	0.096	0.065
$\eta_{(22)3}$	0.003	0.002	0.004	0.002	0.003	0.002	0.004	0.003
$\eta_{(22)4}$	0.005	0.001	0.005	0.001	0.005	0.002	0.005	0.003
$\Omega_{(12)}$	0.007	0.009	0.008	0.008	0.006	0.008	0.012	0.007