2-dimensional quadrature

N=1000
J=10

$\eta = 0$ (No re-estimate)

Quadrature EM algorithm

	A1	A2	D1	Corr12
bias	0.037372	0.120246	-0.04232	-0.081
RMSE	0.23149	0.27782	0.08317	

Mirt

	A1	A2	D1	Corr12
bias	0.04361	0.05822	-0.04118	0.037
RMSE	0.26137	0.25703	0.08283	

$\eta = 10$
Correct selection rate = 87.5% (14 correct out of 16)

N=1000
J=20

$\eta = 0$ (No re-estimate)

Quadrature EM algorithm

	A1	A2	D1	Corr12
bias	0.046704	0.061098	-0.001574	-0.084788
RMSE	0.12926	0.19190	0.08633	

Mirt

	A1	A2	D1	Corr12
bias	0.021325	0.01482	-0.04118	-0.00610
RMSE	0.14501	0.18494	0.08648	

$\eta = 26$
Correct selection rate = 91.67% (33 correct out of 36)

N=1000
J=30
Rep1 ($\mathbf{Corr}_{\theta 1,\theta 2}$=0.2)
$\eta = 0$ (No re-estimate)

Quadrature EM algorithm

	A1	A2	D1	D2	D3	Corr12
bias	0.10408	0.20297	-0.0360	-0.03812	-0.01852	-0.18438
RMSE	0.14033	0.26654	0.10112	0.08042	0.073866	

Mirt

	A1	A2	D1	D2	D3	Corr12
bias	0.05797	0.0775	-0.0416	-0.0442	-0.02514	0.0211992
RMSE	0.15042	0.11642	0.10335	0.08334	0.075547	

Rep2 ($\mathbf{Corr}_{\theta 1,\theta 2}$=0.2)
$\eta = 0$ (No re-estimate)

Quadrature EM algorithm

	A1	A2	D1	D2	D3	Corr12
bias	0.050491	0.017393	0.05372	0.04487	0.01928	-0.14654
RMSE	0.111560	0.113674	0.108739	0.078204	0.076944	

Mirt

	A1	A2	D1	D2	D3	Corr12
bias	0.041656	-0.07862	0.05344	0.04439	-0.02514	0.00198
RMSE	0.095107	0.108230	0.10861	0.07750	0.077005	

Rep3 ($\mathbf{Corr_{\theta 1,\theta 2}}$=0.4)
$\eta = 0$ (No re-estimate)

Quadrature EM algorithm

	A1	A2	D1	D2	D3	Corr12
bias	0.04924	0.021141	0.05939	0.05163	0.03441	-0.16726
RMSE	0.126632	0.137595	0.113870	0.07994	0.084535	

Mirt

	A1	A2	D1	D2	D3	Corr12
bias	0.05398	-0.08304	0.05983	0.05194	0.03441	-0.00106
RMSE	0.102565	0.11478	0.11394	0.07946	0.08444	

$\eta = 30$, BIC= 61742.43 1 remaining
Correct selection rate = 98.21% (55 correct out of 56)

Confirmatory mode ($\mathbf{Corr_{\theta 1,\theta 2}}$=0.4)

Quadrature EM algorithm

	A1	A2	D1	D2	D3	Corr12
bias	0.01046637	-0.0568136	0.0696449	0.0624512	0.0462819	-0.021232
RMSE	0.0847904	0.1073549	0.119322	0.085441	0.0913672	

Mirt

	A1	A2	D1	D2	D3	Corr12
bias	0.02147419	-0.048964	0.054671	0.047638	0.0316314	-0.02
RMSE	0.0871008	0.10399608	0.1121871	0.077425	0.083060	

2-dimensional MC

Confirmatory mode ($\mathbf{Corr}_{\boldsymbol{\theta 1,\theta 2}}$=0.4)

MCEM algorithm

	A1	A2	D1	D2	D3	Corr12
bias	-0.038722	-0.1389077	0.0104327	0.005317	0.0015726	0.0331
RMSE	0.1238969	0.1890875	0.091880	0.083457	0.100800	

Mirt

	A1	A2	D1	D2	D3	Corr12
bias	0.034110	-0.08340	-0.010185	-0.027419	-0.04208	0.015
RMSE	0.1269023	0.1455260	0.097116	0.094486	0.1130207	

2-dimensional MC

Exploratory mode ($\mathbf{Corr}_{\boldsymbol{\theta 1,\theta 2}}$=0.4)

$\eta = 60$, BIC= 56287.43 0 remaining
Correct selection rate = 100% (56 correct out of 56)