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| --- | --- | --- |
| File | Description | Details |
| resp.csv | Response matrix | 600 individuals \* 20 items |
| Group.csv | Group indicators | Three groups. 200 individuals per group. |
| Indic.csv | Factor loading indicators | Simple structure. 10 items each domain |
| resp2grp.csv | Response matrix | 400 individuals \* 20 items |
| Group2grp.csv | Group indicators | Two groups. 200 individuals per group. |
| resp4grp.csv | Response matrix | 800 individuals \* 20 items |
| Group4grp.csv | Group indicators | Four groups. 200 individuals per group. |

True parameters ( 20% Uniform DIF)

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| --- | --- | --- | --- | --- | --- |
| A11 | A21 | D11 | Beta1 | Beta2 | Beta3 |
| 2.177533 | 0 | 0.031216 | 0 | 0 | 0 |
| 0 | 2.462224 | -1.28415 | 0 | 0 | 0 |
| 1.927346 | 0 | 0.583933 | 0 | 0 | 0 |
| 2.410381 | 0 | -2.06891 | 0.5 | 1 | 0.75 |
| 2.455728 | 0 | 0.120023 | 0.5 | 1 | 0.75 |
| 2.340659 | 0 | -3.25984 | 0 | 0 | 0 |
| 1.843661 | 0 | -0.41698 | 0 | 0 | 0 |
| 1.856577 | 0 | -0.51721 | 0 | 0 | 0 |
| 1.92839 | 0 | 0.892665 | 0 | 0 | 0 |
| 1.947499 | 0 | 1.332311 | 0 | 0 | 0 |
| 1.902594 | 0 | 0.850175 | 0 | 0 | 0 |
| 0 | 2.438204 | 0.820125 | 0.5 | 1 | 0.75 |
| 0 | 1.821228 | -0.37809 | 0.5 | 1 | 0.75 |
| 0 | 2.226039 | -0.9986 | 0 | 0 | 0 |
| 0 | 1.930993 | -0.27731 | 0 | 0 | 0 |
| 0 | 1.883545 | 0.191088 | 0 | 0 | 0 |
| 0 | 1.843101 | 1.734021 | 0 | 0 | 0 |
| 0 | 2.123956 | 0.058013 | 0 | 0 | 0 |
| 0 | 2.421439 | -1.8693 | 0 | 0 | 0 |
| 0 | 2.158204 | -0.63405 | 0 | 0 | 0 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

The EMM algorithm is fastest. It takes around 15 min to run three tuning parameter values. The power is 75%.

Tuning parameters are selected from [y-10, y+10] with a step length 4, and .

If the selected tuning parameter is equal to y-10, we further do estimation on [max(0,y-22), y-14].

If the selected tuning parameter is equal to y+10, we further do estimation on [y+14, y+22].