

Testdata Example – Take 2

Principal Components Factor Analysis

```
> factfit(testdata, factpca(testdata)[,1:4])
$loadings
      [,1]      [,2]      [,3]      [,4]
Mechanics_C -0.7127067  0.5550836  0.41409734 -0.09079732
Vectors_C   -0.7694490  0.3796873 -0.47027942  0.18568155
Algebra_O   -0.8976179 -0.1109959 -0.02471381 -0.06763638
Analysis_O  -0.8150623 -0.3335926 -0.09084104 -0.41495100
Statistics_O -0.7816221 -0.4045832  0.20847763  0.41037979

$eigenvalues
[1] 3.1809801 0.7395718 0.4449651 0.3878924 0.2465905

$communalities
  Mechanics_C  Vectors_C  Algebra_O  Analysis_O  Statistics_O
      0.996      0.992      0.823      0.956      0.986

$residuals
      Mechanics_C  Vectors_C  Algebra_O  Analysis_O  Statistics_O
Mechanics_C      0.000      0.006     -0.027      0.014      0.008
Vectors_C        0.006      0.000     -0.038      0.019      0.010
Algebra_O       -0.027     -0.038      0.000     -0.088     -0.049
Analysis_O       0.014      0.019     -0.088      0.000      0.024
Statistics_O     0.008      0.010     -0.049      0.024      0.000
```

Principal Factor Factor Analysis

```
> factfit(testdata, factpf(testdata)[,1:4])
$loadings
      [,1]      [,2]      [,3]      [,4]
Mechanics_C -0.6459890  0.35354561  0.05517247  0.0974979172
Vectors_C   -0.7125528  0.30300833 -0.03689476 -0.1046423460
Algebra_O   -0.8639382 -0.05134392 -0.01293553  0.0008739166
Analysis_O  -0.7864129 -0.24856797 -0.19094522  0.0299393840
Statistics_O -0.7419269 -0.27558100  0.20485299 -0.0171433585

$eigenvalues
[1] 3.1809801 0.7395718 0.4449651 0.3878924 0.2465905

$communalities
  Mechanics_C  Vectors_C  Algebra_O  Analysis_O  Statistics_O
      0.555      0.612      0.749      0.718      0.669

$residuals
      Mechanics_C  Vectors_C  Algebra_O  Analysis_O  Statistics_O
Mechanics_C      0.000     -0.002      0.007     -0.003     -0.002
Vectors_C       -0.002      0.000      0.009     -0.004     -0.003
Algebra_O       0.007      0.009      0.000      0.016      0.012
Analysis_O      -0.003     -0.004      0.016      0.000     -0.005
Statistics_O    -0.002     -0.003      0.012     -0.005      0.000
```

Iterated Principal Factor Factor Analysis

```
> factfit(testdata,factiter(testdata,maxfactors=4))
$loadings
      [,1]      [,2]      [,3]      [,4]
Mechanics_C -0.6436117  0.35713695  0.05306932  0.1067259372
Vectors_C   -0.7103868  0.30827134 -0.03376568 -0.1134800012
Algebra_O   -0.8815063 -0.05537935 -0.01607746  0.0003239359
Analysis_O  -0.7869167 -0.25086796 -0.20098234  0.0298279466
Statistics_O -0.7409077 -0.27347534  0.21886585 -0.0159709881

$eigenvalues
[1] 3.1809801 0.7395718 0.4449651 0.3878924 0.2465905

$communalities
  Mechanics_C  Vectors_C  Algebra_O  Analysis_O  Statistics_O
      0.556      0.614      0.780      0.723      0.672

$residuals
      Mechanics_C  Vectors_C  Algebra_O  Analysis_O  Statistics_O
Mechanics_C      0          0          0          0          0
Vectors_C        0          0          0          0          0
Algebra_O        0          0          0          0          0
Analysis_O       0          0          0          0          0
Statistics_O     0          0          0          0          0
```

With two factors...

```
> factfit(testdata,factiter(testdata,maxfactors=2))
$loadings
      [,1]      [,2]
Mechanics_C -0.6427481  0.34238813
Vectors_C   -0.7081926  0.28687446
Algebra_O   -0.8966056 -0.08718704
Analysis_O  -0.7710248 -0.23504622
Statistics_O -0.7179803 -0.22818573

$eigenvalues
[1] 3.1809801 0.7395718 0.4449651 0.3878924 0.2465905

$communalities
  Mechanics_C  Vectors_C  Algebra_O  Analysis_O  Statistics_O
      0.530      0.584      0.812      0.650      0.568

$residuals
      Mechanics_C  Vectors_C  Algebra_O  Analysis_O  Statistics_O
Mechanics_C      0.000      0.000      0.000      -0.006      0.006
Vectors_C        0.000      0.000      0.000      0.006      -0.007
Algebra_O        0.000      0.000      0.000      -0.001      0.001
Analysis_O       -0.006      0.006      -0.001      0.000      0.000
Statistics_O     0.006      -0.007      0.001      0.000      0.000
```

With one factor...

```
> factfit(testdata,factiter(testdata,maxfactors=1))
```

```
$loadings
```

```
          [,1]  
Mechanics_C -0.6137512  
Vectors_C   -0.6862139  
Algebra_O   -0.9149267  
Analysis_O  -0.7608302  
Statistics_O -0.7105918
```

```
$eigenvalues
```

```
[1] 3.1809801 0.7395718 0.4449651 0.3878924 0.2465905
```

```
$communalities
```

Mechanics_C	Vectors_C	Algebra_O	Analysis_O	Statistics_O
0.377	0.471	0.837	0.579	0.505

```
$residuals
```

	Mechanics_C	Vectors_C	Algebra_O	Analysis_O	Statistics_O
Mechanics_C	0.000	0.132	-0.015	-0.058	-0.047
Vectors_C	0.132	0.000	-0.018	-0.037	-0.051
Algebra_O	-0.015	-0.018	0.000	0.015	0.015
Analysis_O	-0.058	-0.037	0.015	0.000	0.067
Statistics_O	-0.047	-0.051	0.015	0.067	0.000