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Why rotate my data using Promin?

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The aim of a factor solution is to be as simple as possible. For this to be so, the factor solution is typically rotated using an orthogonal rotation method (for example, Varimax) or an oblique rotation method (for example, Oblimin). Thurstone (1935, 1947) preferred oblique rotation and suggested that correlated factors were generally a more plausible representation of reality. Browne (2001) also pointed out that even if both orthogonal and oblique rotation can be used, oblique rotation is probably more appropriate in most practical situations. To obtain a simple factor solution, a large number of orthogonal and oblique rotations are implemented in Factor. However, the default method is Promin (Lorenzo-Seva, 1999). This rotation method allows factors to be oblique so that factor simplicity is maximized. Most rotation methods need the variables in the analysis to be pure measures of a single dimension if the factor solution after rotation is to be the simplest possible. However, the assumption that all the variables in a multidimensional questionnaire are pure measures of a single dimension is unrealistic (Ferrando & Lorenzo-Seva, 2000). Promin can deal with such situations better than other rotation methods, so it is a suitable rotation method.

Like other oblique rotation methods, Promin provides a semi-specified target matrix (in which the values that are expected to be zero in the final rotated loading matrix are the values specified), and then computes an oblique Procrustean rotation. For example, the semi-specified target obtained in a data set can be found below.

```
SEMI-SPECIFIED TARGET LOADING MATRIX
Obtained from prerotation of the loading matrix

              Variable                F   1    F   2

               1. Ex +                 0.000     ---
               2. Ex +                 0.000     ---
               3. Ex -                 0.000     ---
               4. Ex +                 0.000     ---
               5. Ex -                 0.000     ---
               6. Ex -                 0.000     ---
               7. Ex +                 0.000     ---
              8. Co -                   ---     0.000
              9. Co +                   ---     0.000
             10. Co +                   ---     0.000
             11. Co +                   ---     0.000
             12. Co -                   ---     0.000
             13. Co +                   ---     0.000
             14. Co -                   ---     0.000
```

and the final rotated loading matrix,

ROTATED LOADING MATRIX

Variable	F 1	F 2
1. Ex +	0.142	0.562
2. Ex +	-0.225	0.510
3. Ex -	0.048	-0.559
4. Ex +	-0.172	0.569
5. Ex -	-0.241	-0.520
6. Ex -	-0.130	-0.611
7. Ex +	-0.106	0.499
8. Co -	-0.513	0.117
9. Co +	0.655	0.002
10. Co +	0.672	0.019
11. Co +	0.547	0.065
12. Co -	-0.351	0.013
13. Co +	0.585	-0.044
14. Co -	-0.419	0.056

References

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