Multivariate Analysis

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Abstract

Introduction

Methodology

```
Kaiser-Meyer-Olkin factor adequacy
Call: KMO(r = data)
Overall MSA =  0.9
MSA for each item =
  X1   X2   X3   X4   X5   X6   X7   X8   X9  X10  X11  X12  X13  X14  X15  X16
0.96 0.92 0.91 0.89 0.89 0.88 0.87 0.94 0.93 0.92 0.95 0.93 0.93 0.87 0.83 0.83
```

After executing the Kaiser-Meyer-Olkin test, the MSA (measure of sampling accuracy, which varies between 0 and 1) is calculated as 0.9. This is classified as "meritorious", so we have evidence that factor analysis is suitable for this data set.

We'll start by performing factor analysis with a high number of values:

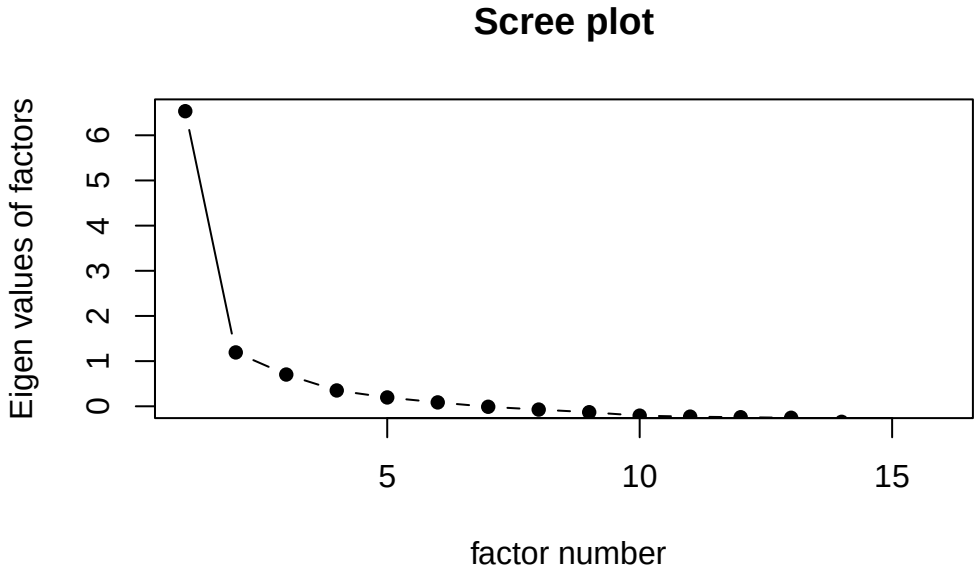
```
fa <- fa(data, nfactors = 10, rotate = "varimax", method = "cov")
print(fa$e.values, sort = TRUE, decreasing = TRUE)
```

```
 [1] 7.0557879 1.9597746 1.2922249 0.9345753 0.7955374 0.7440973 0.5667152
 [8] 0.4369622 0.3767767 0.3459880 0.3246458 0.2923566 0.2619237 0.2501044
[15] 0.2395068 0.1230230
```

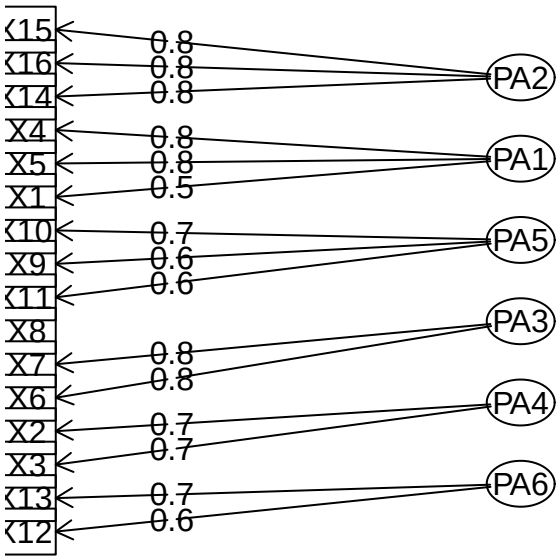
There are 3 eigenvalues greater than 1.

	MR1	MR2	MR3	MR5	MR4	MR6	MR7	MR8	MR10	MR9
SS loadings	2.44	2.27	1.68	1.44	1.354	1.163	0.933	0.197	0.1412	0.0916
Proportion Var	0.15	0.14	0.10	0.09	0.085	0.073	0.058	0.012	0.0088	0.0057
Cumulative Var	0.15	0.29	0.40	0.49	0.574	0.647	0.705	0.717	0.7263	0.7320
Proportion Explained	0.21	0.19	0.14	0.12	0.116	0.099	0.080	0.017	0.0121	0.0078
Cumulative Proportion	0.21	0.40	0.55	0.67	0.784	0.884	0.963	0.980	0.9922	1.0000

However, 10 factors aren't enough to explain 80% of the variance (???)



Factor Analysis



Results

Discussion

Conclusions

References