

Answers to additional health questions

Chapter 15 Factor Analysis

Use the procedures shown in Chapter 15 to explore the structure underlying the set of questions designed to assess the impact of sleep problems on various aspects of people's lives. These items are labelled *impact1* to *impact7*. They were originally designed to tap one overall dimension – is this supported by the results of factor analysis?

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.856
Bartlett's Test of Sphericity	Approx. Chi-Square	600.393
	df	21
	Sig.	.000

Communalities

	Initial	Extraction
mood	1.000	.687
energy level	1.000	.567
concent	1.000	.642
memory	1.000	.512
life sat	1.000	.725
oveall well-being	1.000	.806
relationships	1.000	.670

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.610	65.854	65.854	4.610	65.854	65.854
2	.869	12.409	78.262			
3	.539	7.701	85.963			
4	.361	5.152	91.115			
5	.260	3.715	94.830			
6	.242	3.462	98.292			
7	.120	1.708	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix ^a

	Component
	1
overall well-being	.898
life sat	.852
mood	.829
relationships	.819
concent	.801
energy level	.753
memory	.716

Extraction Method: Principal Component Analysis.

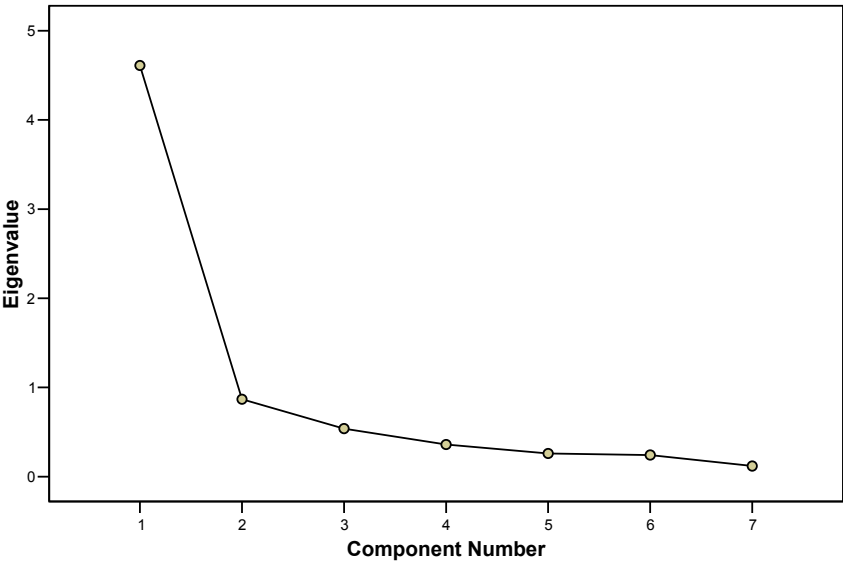
a. 1 components extracted.

Rotated Component Matrix ^a

Dummy category	
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a. Only one component was extracted.
The solution cannot be rotated.

Scree Plot



Results of parallel analysis for impact of sleep problem (Sleep.sav)

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+++++
Eigenvalue #      Random Eigenvalue      Standard Dev
+++++
1                1.3503                  .0780
2                1.2082                  .0539
3                1.0815                  .0425
4                0.9896                  .0404
5                0.8922                  .0334
6                0.7936                  .0526
7                0.6846                  .0582
+++++
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Monte Carlo PCA for Parallel Analysis
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Output from sleep.sav

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
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Extraction Method: Principal Component Analysis.

There are a number of indications that support a one factor solution:

- *In the Total Variance Explained table only one factor recorded an eigenvalue above 1*
- *The screeplot showed a change in the slope of the line between the first and second factors*
- *Parallel analysis showed that only the first eigenvalue (4.61) was larger than the corresponding value generated from a random data set*
- *Inspection of the Component Matrix table shows that all items load strongly on the one underlying component (all above .716)*