

Principal Components Analysis Homework

The Illness Behavior Questionnaire (IBQ) was developed to help delineate patient's attitudes, ideas, affects, and attributions in relation to illness. The IBQ is comprised of 62 self-report, binary-response items.

Conduct an exploratory components analysis on the 62 (P1 to P62) variables. Examine the scree plot to determine the number of components to extract...but so you all get the same output, extract 3 components. Rotate the components using Promax and interpret the rotated components on the basis of the factor score coefficients, structure coefficients, and loadings (pattern coefficients).

After coming up with labels for the components, answer the following specific questions:

- a. What is the *eigenvalue* value (AKA, “*latent root*”) for the first component?
- b. What proportion of total item variance is explained by the first unrotated component?
- c. What proportion of total item variance is explained by the second unrotated component?
- d. What proportion of total item variance is explained by the first, second, and third components, combined?
- e. What is the correlation between the first component and item #10 on the IBQ?
- f. What are the regression weight values for predicting the scores on item #16 from the three principal components? List the values.
- g. Compute the refined component scores in SPSS (select the Regression factor scores). Rank the observations in SPSS on the first component. Which participant received the highest component score on the first component?
- h. How much of the variance in item #2 is explained by the three components?