Psych Testing: Homework #5

Factor Analysis – (I would encourage the project groups to work together on this homework and each group can turn in one homework together)

1. Using the "factor_analysis_example.sav" data set on the class website perform a principal axis factor analysis with an orthogonal rotation using SPSS.
    a. Instructions:
        i. Analyze -> Data Reduction -> Factor Analysis
        ii. Click on Extraction and change "Method" from Principal Components to Principal Axis Factoring. Click on Scree Plot and click on Continue.
        iii. Click on Rotation and click on Varimax, then click on continue.
        iv. Click on OK.
    b. Questions:
        i. How many factors do you end up with?
        ii. Which items load on which factors (note: interpret the Rotated Factor Matrix and only interpret those items that have loadings above .3 on any factor)?
        iii. How did the computer calculate the extraction column in the "Communalities" box? Show me how one of the communalities was calculated.
        iv. In the "Total Variance Explained" table how are the Extraction Sums of Squared Loadings calculated differently than the Rotation Sums of Squared Loadings.
    c. Play around with other rotation methods (and leave everything else the same), and tell me which 2 factors are correlated (tell me which rotation method, which factors and the size of the correlation).
2. Using the "Stars1.sav" data set from the class website and the principal axis factoring option perform a factor analysis.
    a. Follow the same basic instructions from 1.a above except you are going play around with the different rotation methods (e.g. try different ones) to identify factors with the best simple structure (look it up in the lecture notes; Note: Interpret the Pattern Matrix when you use a rotation other than Varimax).
    b. Once simple structure is more or less identified tell me how many factors and which items load on which factor.
    c. Now, based on the content of the items (i.e. what each statement is saying) interpret each factor as to what overall construct it seems to be targeting (Note: this is the Statistics Anxiety Rating Scale).