

Spring 2023 - Homework Assignment on Classical Psychometrics

Be sure to follow the *Assessment Guideline 1: Writing up Homework* at the end of the syllabus in preparing the homework for submission.

In each homework report, be sure to include an introductory and a summary paragraph. Also, include the relevant parts of your SAS code where appropriate in your answer for each question.

A study was conducted on 459 subjects to develop a questionnaire on personality traits from which scores for aspects of these traits could be computed. The investigators collected data on 44 items relating to personality and proposed to conduct a series of classical psychometric analyses. The data for this study have been stored in a saved data set, *personality.sas7bdat*, that has been posted on Blackboard Learn for the assignment for the class on classical psychometrics via Cronbach alpha, principal component and exploratory factor analyses. You are to perform the following analyses and interpret the results. As always, provide an introductory and summary paragraph in your report.

1. Perform a Cronbach alpha analysis of these items. Does this set of items show good internal consistency reliability? Present specific numeric evidence to support your conclusion. Do you think that it is possible that this set of items is not unidimensional in nature? If so, why? If not, why not? Again, present specific numeric evidence to support your conclusion.
2. Perform an exploratory factor analysis of these data using VARIMAX rotation. Can these 44 items be reduced in dimension? If so, how many factors are sufficient to do so? Present specific numeric evidence to support your conclusion. Which items “loaded high” on which factors? For the factors that you identified, provide a description of what each latent factor is measuring. Be sure also to include the *plots=pathdiagram* option in your PROC FACTOR statement.
3. Continue work on the Course Project.