Monday, September 23, 2013

10:01 PM

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| **Problem** | **Diagnostics** | **Solutions** |
| Covariance matrix is nonpositive definite | * + Is there extreme collinearity among any of the variables?   + Are there outliers that inflate the correlations among variables?   + Are incomplete cases removed via pairwise deletion?   + Is there a transcription error?   + Is there a sampling error? | * + Try to correct any diagnostic red-flags from the previous column.   + *Advanced technique*: Perform ridge adjustment. |
| There is extreme collinearity. | * + Are composite scores being correlated with their constituent subscores?   + C:\D06B0CE5\483FF1FA-CFE3-4400-8A42-26C04D9FE4AF_files\image001.png   + Are any of these greater than 0.90?   + C:\D06B0CE5\483FF1FA-CFE3-4400-8A42-26C04D9FE4AF_files\image002.png   + Equivalently, is the variance inflation factor (VIF = 1/tolerance) > 10? | Since collinearity indicates that separate variables are measuring the same thing, try to eliminate the redundant variables or combine them into a single score. |
| There are outliers in the data | * + Do any observations fall more than 3 SD from the mean?   + Use a case analysis technique such as Mardia's index or Mahalanonis distance statistic in your statistics software. | * + *Check*: Are any of the outlying cases the result of a transcription or measurement error? Do the outlying cases actually belong to your sample's population?   + Remove the outliers   + Reduce the extreme value   + Transform the variable |
| The data does not follow a normal distribution | * + Does the data follow a normal distribution?   + Is the data skewed? (SI > 3)   + Is the data lepto- or platy-kurtic? (KI > 10) | Try a transformation of the data. |