

## PSC205A Assignment 04: PCA and FA

\*\*\*Please, upload your assignment to CANVAS as “HM4\_LastName” Thanks!\*\*\*

The file “emotion\_short.csv” contains data from 364 individuals on the PANAS (Positive and Negative Affective Scale). The variables in the data set are:

id female (0 = male; 1 = female)

interested irritable distressed alert excited ashamed upset inspired strong nervous

guilty determined scared attentive hostile jittery enthusiastic active proud afraid

The goal of this analysis is to perform both a PCA and a FA to determine whether a meaningful structure underlies these data

1. Run a PCA separately to each of the two gender groups and:

- attempt to identify an optimal number of components for each group
- report a table with eigenvalues (and percent variance explained) for each group
- rotate the solution using the VARIMAX procedure and report differences between this solution and the unrotated one (include the loading matrix in your report).

2. Run a FA (using Principal Axis Factoring) separately to each of the two groups and:

- attempt to identify an optimal number of factors for each group
- report a table with eigenvalues (and percent variance explained) for each group
- rotate the solution using the PROMAX procedure and report differences between this solution and the unrotated one (include the loading matrix in your report and the factor intercorrelation matrix)
- report differences between the factor matrix and structure matrix for each group (include matrices in your report)
- report differences between the results from PCA and FA

3. Based on these analyses, interpret the structure of affect for these two groups of individuals.

Make sure you talk about which is the most reasonable number of factors for each group, the variables that comprise each factor, the relationships among the factors, and the relevance of using either PCA or FA to make such inferences.

4. Discuss whether or not PCA and FA are relevant to the notion of multivariate static and dynamic concepts.
5. Discuss whether or not PCA and FA are relevant to the study of the individual and individual processes.