Name _____

Psychology 516
Applied Multivariate Analysis
Homework 6
Due October 18, 2018

In the last homework assignment, you used exploratory factor analysis to examine the factor structure of the NEO-PI. The inventory is assumed to measure the five major dimensions of personality: neuroticism, extraversion, openness, agreeableness, and conscientiousness. Each dimension is scored on 6 subscales, listed below. The file (Set_5) contains the subscale scores.

Neuroticism: Anxiety
Neuroticism: Angry_Hostility
Neuroticism: Depression
Neuroticism: Self_Consciousness
Neuroticism: Impulsiveness
Neuroticism: Vulnerability
Extraversion: Warmth
Extraversion: Gregariousness
Extraversion: Assertiveness
Extraversion: Activity
Extraversion: Excitement_Seeking
Extraversion: Positive_Emotions
Openness: Fantasy
Openness: Aesthetics
Openness: Feelings
Openness: Actions
Openness: Ideas
Openness: Values
Agreeableness: Trust
Agreeableness: Straightforwardness
Agreeableness: Altruism
Agreeableness: Compliance
Agreeableness: Modesty
Agreeableness: Tender_Mindedness
Conscientiousness: Competence
Conscientiousness: Order
Conscientiousness: Dutifulness
Conscientiousness: Achievement_Striving
Conscientiousness: Self_Discipline
Conscientiousness: Deliberation

Use confirmatory factor analysis to answer the following questions.

1. First, test the hypothesis that the structure of personality is best described by five <u>independent</u> factors. How well does this model fit the data? Base your decision on the χ^2 goodness of fit test along with the goodness-of-fit index of your choice.
2. Now allow the factors to correlate
   (a) Does this model fit the data significantly better? Use a χ^2 difference test to answer the question.
   (b) Which of the factor correlations are statistically significant?
3. Test a model that constrains all factor correlations to be equal.
   (a) Is this constraint acceptable (i.e., is it statistically different from the model tested in Question 2)?
   (b) Is the estimated latent variable correlation significant?
4. Use the most parsimonious model from the first three steps. Constrain the loadings within each dimension to be equal. Is this simplification acceptable?
5. Use the modification indices to diagnose the major problem with the model in Question 2. What change to that model would produce the biggest improvement in model fit?