**Assignment 4: ANOVA Approach to Longitudinal Data II**

(Own Data)

This assignment is intended to familiarize you with covariance patterns models and repeated measures ANOVA with time-invariant predictors.

**Assignment**

1. Select a variable in your data for modeling over time. (1 variable, at least 3 occasions). Use the same variable and data as Assignment 3.
2. Covariance Pattern Model
   1. Select 3-5 covariance patterns you deem reasonable for your data
   2. Use the *gls* function in the *nlme* package to run covariance pattern models to test whether the means are equal across measurement occasions.
   3. Assess the fit of the covariance patterns using AIC and BIC, and determine the best fitting covariance pattern model
   4. Make a table including the omnibus test results, fit indices, and fixed effects estimates of the best fitting model
   5. Write a few sentences reporting the model selection procedure and results of the best fitting model.
3. Repeated Measures ANOVA with Groups/Time-Invariant Covariate
   1. Select a grouping variable (e.g., sex) or time-invariant covariate
   2. Use the *gls* function with compound symmetry **or** unstructured covariance pattern to run repeated measures ANOVA with the grouping variable or time-invariant covariate, test for an interaction effect with time
   3. Test for 1 to 2 contrasts with correct spacing
   4. Write a few sentences reporting the results and their interpretation.
4. Include the code you used to complete the assignment.

\*\*Prepare the text, tables, and figures in a format that conforms to APA style.

**Please upload your completed assignment to Canvas by the beginning of class in Week 5.**