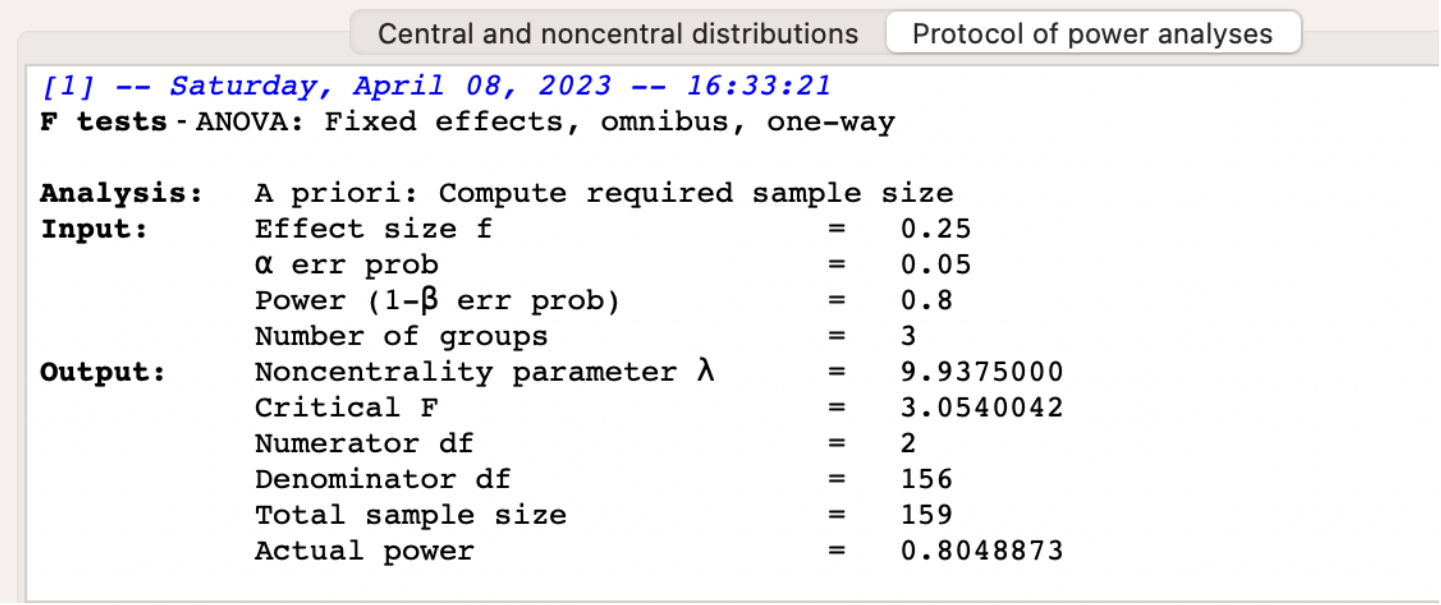
Lesson 9 Hands On G*Power

Scenario 1

A company is hoping to collect data about the different marketing strategies they have undertake via social media. They want to measure the number of people who follow their posts on Facebook, Twitter, and LinkedIn to determine if one site works better than the others.

The dependent variable is the number of people, which is continuous.
The independent variables are their posts on each of 3 platforms (categorical)
Because this is one dependent variable with 3 independent variables, we would run a one way ANOVA



They would need a total sample size of 159 to get their desired statistical power.

Scenario 2

You have been hired to predict how roofing companies will fare in the upcoming years. There are several predictors: yearly hurricanes, winter storms, shingle prices, and GDP.

Because it is a prediction, I can see it would be a regression
DV: farability (income/profitability) of roofing companies. Probably their profits (continuous)
IV: 4 of them in hurricanes, winter storms, shingle prices and GDP. All continuous

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F tests - Linear multiple regression: Fixed model, R² deviation from zero

Analysis:   A priori: Compute required sample size
Input:      Effect size f²                =   0.15
            α err prob                    =   0.05
            Power (1-β err prob)          =   0.8
            Number of predictors          =   4
Output:     Noncentrality parameter λ     =   12.7500000
            Critical F                    =   2.4858849
            Numerator df                  =   4
            Denominator df                =   80
            Total sample size             =   85
            Actual power                  =   0.8030923
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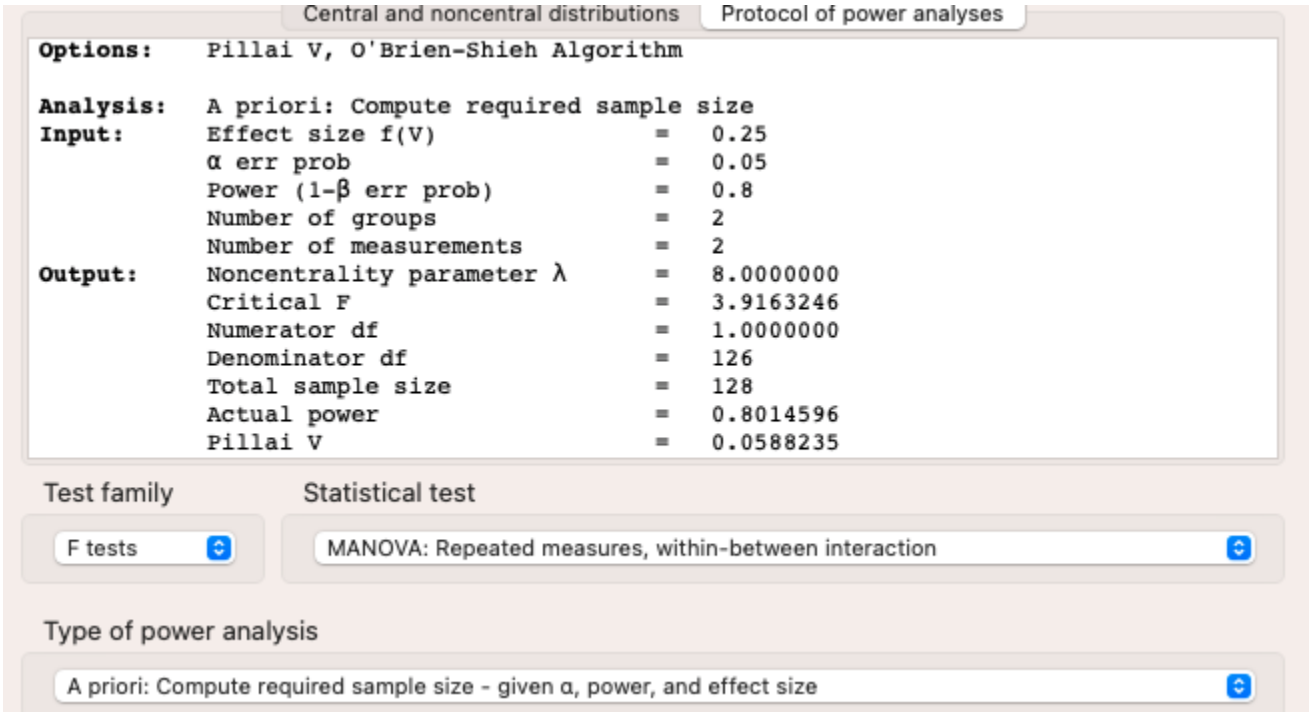
They will need a sample size of 85 to get the statistical power they desire.

Scenario 3

A hospital has contracted with you to determine how to improve patient care, as measured continuously by both pain level and disability level. They are examining these metrics upon admission to the hospital and at discharge from the hospital, and they are comparing their current standard of care to one where they check on the patients every hour.

DV: pain level and disability level, which are related and continuous
There is a time component between admission to discharge.
Comparing current procedures vs once every hour, which is a between subjects design.
Therefore they will be doing a Repeated measures MANOVA, within-between interaction



They would need a sample size of 128 to get their desired Statistical Power