PRACTICAL Week 11 – Mediation Analysis

For the mediation analysis, we will use PROCESS v4.0 for SPSS by A. F. Hayes. If you use PROCESS macro in your paper, cite this book: http://afhayes.com/introduction-to-mediation-moderation-and-conditional-process-analysis.html

Download the macro here: https://www.processmacro.org/download.html. In SPSS, go to Extensions – Utilities – Install Custom Dialog and locate "process.spd" file on your PC. The installed macro can be found under Regression tab.

PROCESS dialog window does not allow users to paste and save the syntax. For this reason, you will be asked to **upload both SPSS syntax and SPSS output** at the end of the practical!

Paste calculations and answers into the syntax file as usual.

Task 1

1. Open Health Survey England.sav
2. Explore the variables (descriptives, missing data, outliers) that we will use in the mediation analysis. Run bivariate correlations between the variables.
   a. age
   b. bmival
   c. cvd
3. Test whether the association between age and the likelihood of a cardiovascular event (cvd) is mediated by BMI (bmival).
   a. What are the Cox and Snell R-square and Nagelkerke R-square of the model?
   b. What is the effect (magnitude and significance) of age on BMI (a path)?
   c. What is the effect (magnitude, including OR, and significance) of BMI on the likelihood of experiencing a cardiovascular event (b path)?
   d. What is the effect (magnitude, including OR, and significance) of age on the likelihood of experiencing a cardiovascular event (c' path or direct effect)?
   e. What is the magnitude and significance of the indirect effect (a*b)?
   f. No, partial, or full mediation?
   g. Write-up the results.

Task 2

1. Open workshop_data.sav
2. Explore the variables (descriptives, missing data, outliers) that we will use in the mediation analysis. Run bivariate correlations between the variables.
   a. monitoring
   b. impulsivity
   c. deviance
3. Test whether maternal monitoring is associated with deviance through impulsivity.
   a. What is the R-square of the model?

b. Interpret all paths in the model (a, b, c' – direct effect, c – total effect, a*b – indirect effect) in terms of their magnitude and significance.
c. Did the magnitude and significance of the total effect (c path) change after including mediator into the model?
d. No, partial, or full mediation?
e. Write-up the results.

Submit your practical:
- Save your syntax and output files to Homework Vaults

Helpful notes:

$OR = Exp(B)$

Formula that allows the interpretation of ORs as percentage change in odds of the outcome per unit increase on a predictor: $100\% * (OR – 1)$.

$OR = 1.4$ $100\%*(1.4-1) = 40\%$

$OR = 0.8$ $100\%*(0.8-1) = -20\%$

Examples:

For each unit increase in BMI, the odds of diabetes increase by a factor of 1.104 (95%CI: 1.09-1.12).
or
The likelihood of diabetes is 10.4% higher for each unit increase in BMI; OR=1.104 (95%CI: 1.09-1.12).