

# Assignment 3

SEM 2: Structural Equation Modeling

Write a scientific essay (max 1,000 words) on **one** of the topics below. Each topic is accompanied by one paper to read (you may search for more but it is *not* required). You are not expected to become an expert in these topics (the assignment is only worth 10% of your final grade). The difficulty of the topic will be taken into account when grading! The deadline of this assignment is Tuesday May 28 23:59.

#### **Topic 1 (difficulty: 1)**

Read the following paper:

- Kievit, R. A., Lindenberger, U., Goodyer, I. M., Jones, P. B., Fonagy, P., Bullmore, E. T., ... & Dolan, R. J. (2017). Mutualistic coupling between vocabulary and reasoning supports cognitive development during late adolescence and early adulthood. *Psychological science*, 28(10), 1419-1431.

Write an essay describing the *g*-factor theory and mutualism theory for cognitive development, how Kievit et al. (2017) compare between these models, and what they conclude. ■

#### **Topic 2 (difficulty: 1)**

Read the following paper:

- van Bork, R., Epskamp, S., Rhemtulla, M., Borsboom, D., & van der Maas, H. L. (2017). What is the p-factor of psychopathology? Some risks of general factor modeling. *Theory & Psychology*, 27(6), 759-773.

Write an essay on what is indicated with a *positive manifold*, and discuss four (the first being factor analysis) explanations for the positive manifold. ■

#### **Topic 3 (difficulty: 2)**

Read the following paper:

- Epskamp, S., Rhemtulla, M., & Borsboom, D. (2017). Generalized Network Psychometrics: Combining Network and Latent Variable Models. *Psychometrika*, 82(4), 904-927.

From a latent variable modeling perspective, write an essay on how the Gaussian graphical model (undirected network) can be used to augment SEM. ■

#### **Topic 4 (difficulty: 2)**

Read the following paper:

- Hamaker, E. L. (2012). Why researchers should think “within-person”: A paradigmatic rationale. *Handbook of research methods for studying daily life*, 43-61.

Write an essay discussing why cross-sectional results may not lead to conclusions regarding within-person relationships. Include an example of when cross-sectional analysis leads to a *different* conclusion than time-series analysis. ■

#### **Topic 5 (difficulty: 3)**

Read the following paper:

- Molenaar, P. C. (2004). A manifesto on psychology as idiographic science: Bringing the person back into scientific psychology, this time forever. *Measurement*, 2(4), 201-218.

Write an essay on Peter Molenaar's thoughts on the generalizability of results based on inter-individual variance (e.g., cross-sectional analysis) to intra-individual conclusions. Describe the assumptions required for Gaussian (normally distributed) processes, and if these are plausible for studying questions you are interested in. ■

#### **Topic 6 (difficulty: 3)**

Read the following paper:

- Hamaker, E. L., Kuiper, R. M., & Grasman, R. P. (2015). A critique of the cross-lagged panel model. *Psychological methods*, 20(1), 102 - 116.

Write an essay describing some problems you may encounter when not taking trait-level variation in the cross-lagged panel model into account. ■