My first estimation of heritability
-a primer on the analysis of twin data

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Prologue

Insights from twin studies

Exposure→Outcome

- What is the contribution of genetic and environmental factors to the variation in outcome?
- What kind of genetic and environmental influences to expect?

Using R

The following steps should end up with estimation heritability (of BMI) - maybe the first one!:

1. See accompanying document 'installation-R.pdf'. Download and install R from The Comprehensive R Archive Network: *cran.r-project.org/*.

2. See accompanying document 'Rstudio.pdf'. Download and install R Studio from The RStudio homepage *https://www.rstudio.com*

3. Start RStudio and write at the prompt

   ```
   > install.packages("mets")
   ```

4. Start analyzing by typing

   ```
   > library(mets)
   > data(twinbmi)
   > twinlm(bmi~age*gender,id="tvparnr",DZ="DZ",zyg="zyg",data=twinbmi)
   ```

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Theory and Method

In the first lecture we will cover

- Within pair similarity: Correlation and assumptions.
- Biometric modelling of genetic and environmental influences for a continuous trait.

Using OpenMx in R

We will mostly be using the R package 'mets', but in parallel we will show how the same analysis can be applied using 'OpenMx'.

- Suitable for advanced structural equation modeling.
- The homepage: *openmx.psyc.virginia.edu/*
- For installation, open R and type

  ```
  > source('http://openmx.psyc.virginia.edu/getOpenMx.R')
  ```

- The accompanying demo-files can be viewed by

  ```
  > demo(package='OpenMx')
  ```

  and the people behind OpenMx can be cited by

  ```
  > citation("OpenMx")
  ```