Multilevel Modeling For Longitudinal Data

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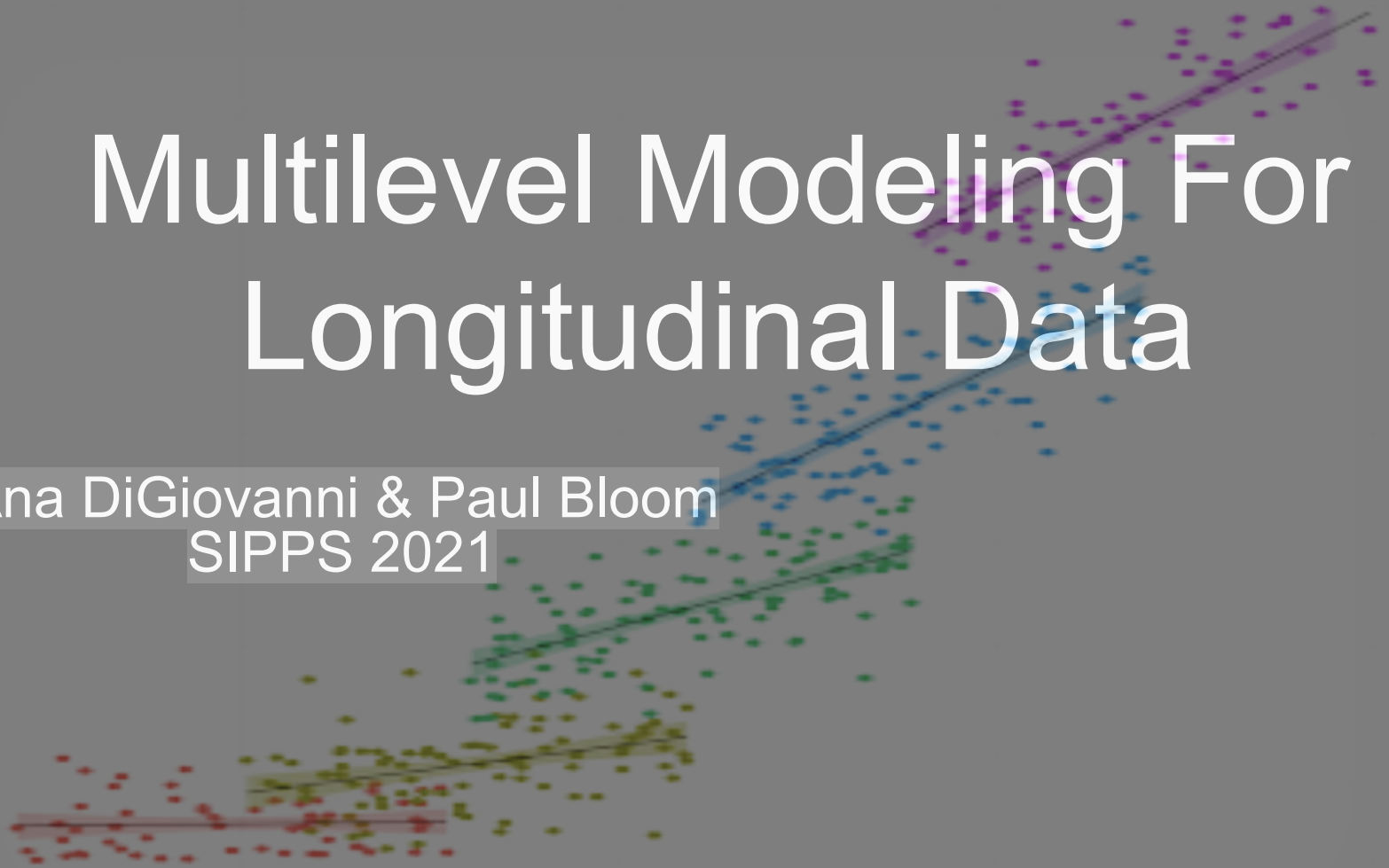
SIPPS 2021



Email list sign-up

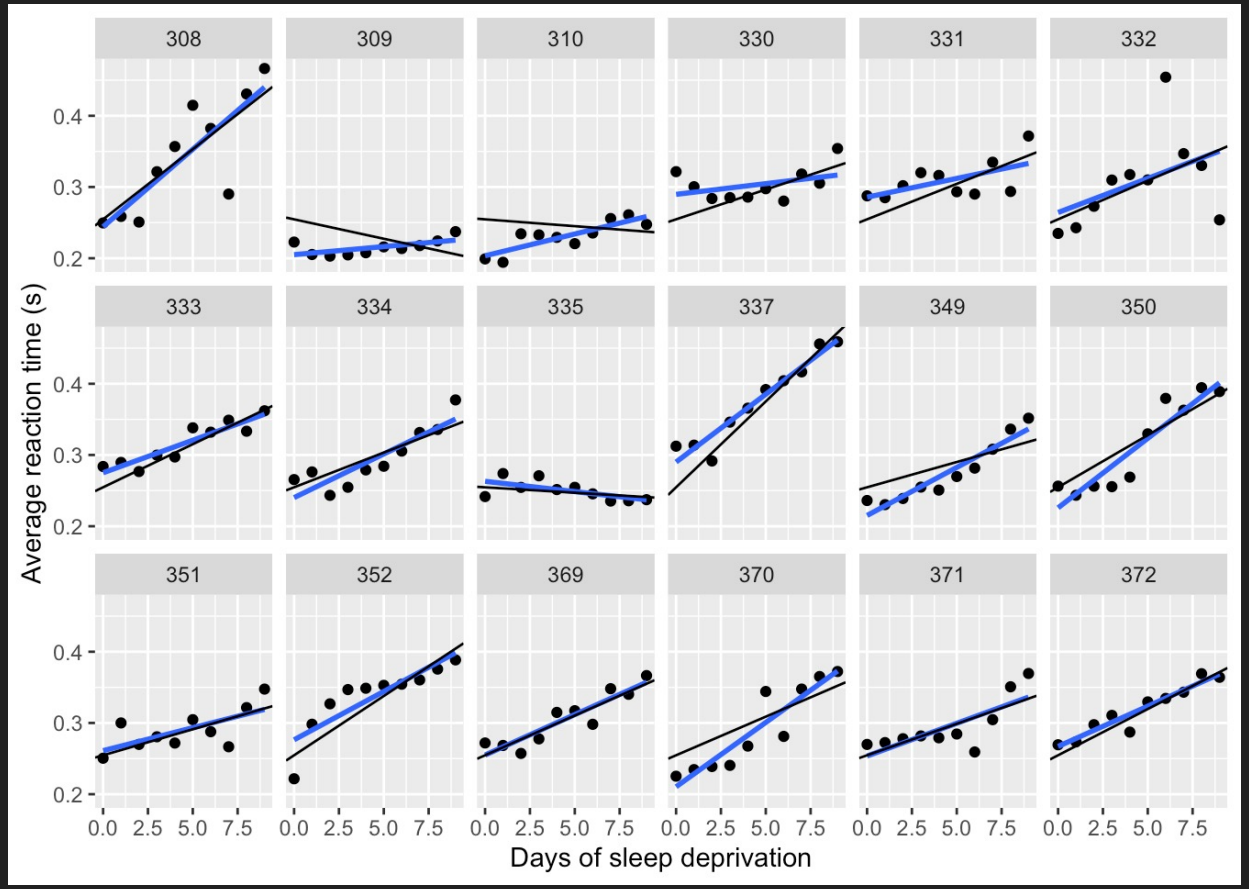
Google form to sign-up for our email list!

https://forms.gle/Wk9wMaxKJd28JTLr6

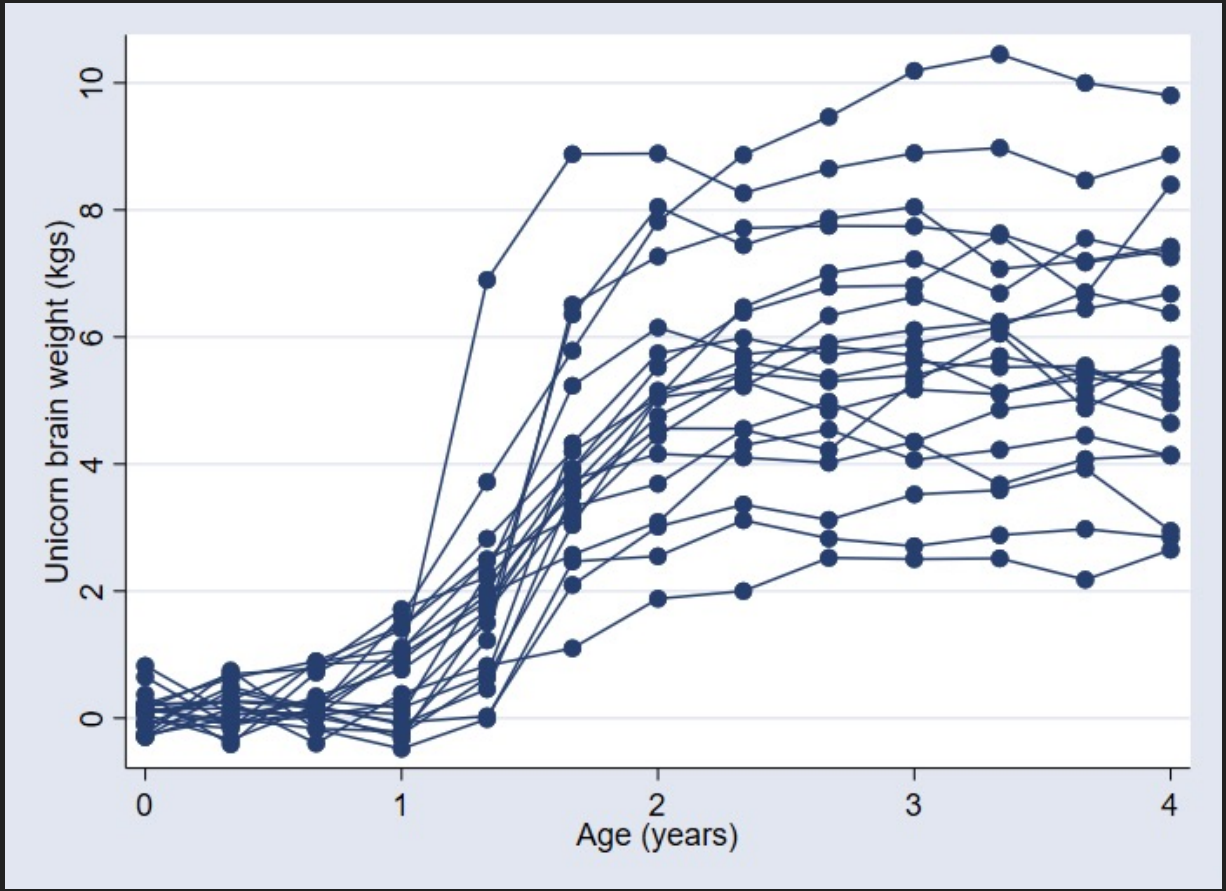
Interactive demo on nuts & bolts of multilevel modeling

- http://mfviz.com/hierarchical-models/

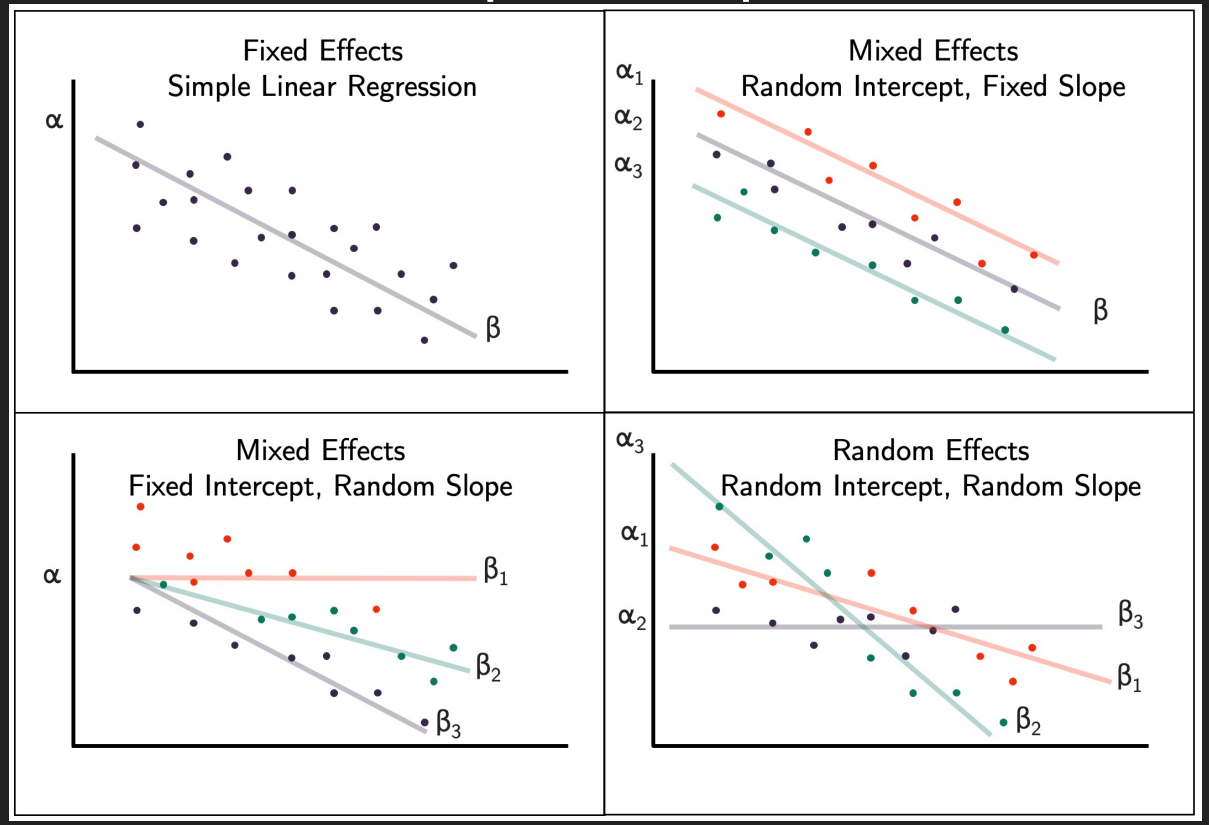
Why we need these: people aren't all the same!



Unicorns aren’t all the same either



Random intercepts & slopes



In a lot of psychology situations, each participant would get a random intercept & slope (each color is a different participant)

Multilevel model syntax in R

- Random intercepts
  - (1 | participant)

- Random slopes
  - (time | participant)
  - (condition | participant)
  - (condition * time | participant)

  Note: random intercepts are *automatically* included in this notation when we include random slopes

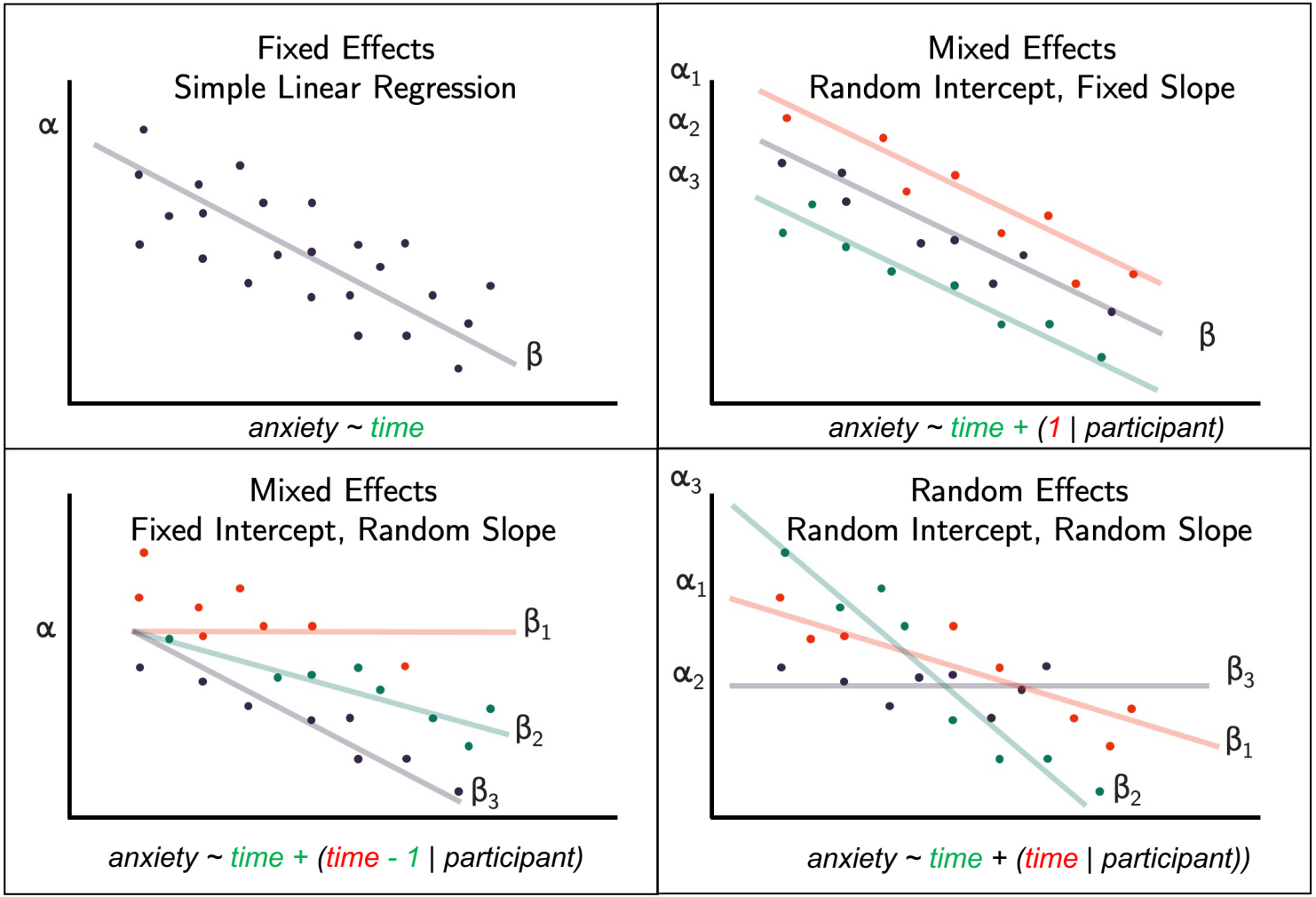
Examples

rstanarm::stan_glmer(data = df, anxiety ~ time + (1 | participant))

rstanarm::stan_glmer(data = df, anxiety ~ time + (time | participant))

FIXED: describes the whole group

RANDOM: describes a specific participant


Fixed Effects
Simple Linear Regression
α
β
anxiety ~ time
Mixed Effects
Random Intercept, Fixed Slope
α1
α2
α3
β
anxiety ~ time + (1 | participant)
Mixed Effects
Fixed Intercept, Random Slope
α
β1
β2
β3
anxiety ~ time + (time - 1 | participant)
Random Effects
Random Intercept, Random Slope
α3
α1
α2
β3
β1
β2
anxiety ~ time + (time | participant))

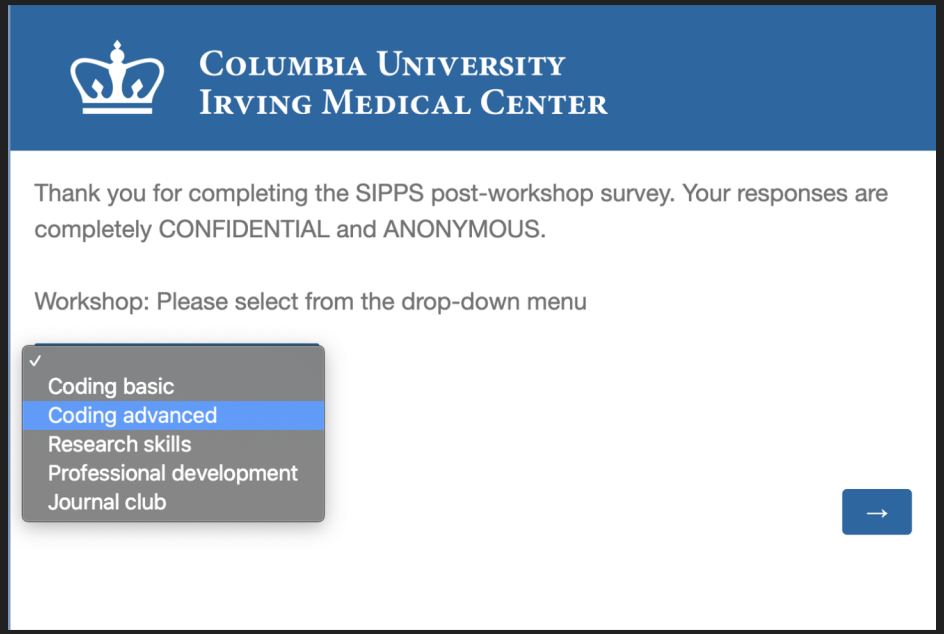
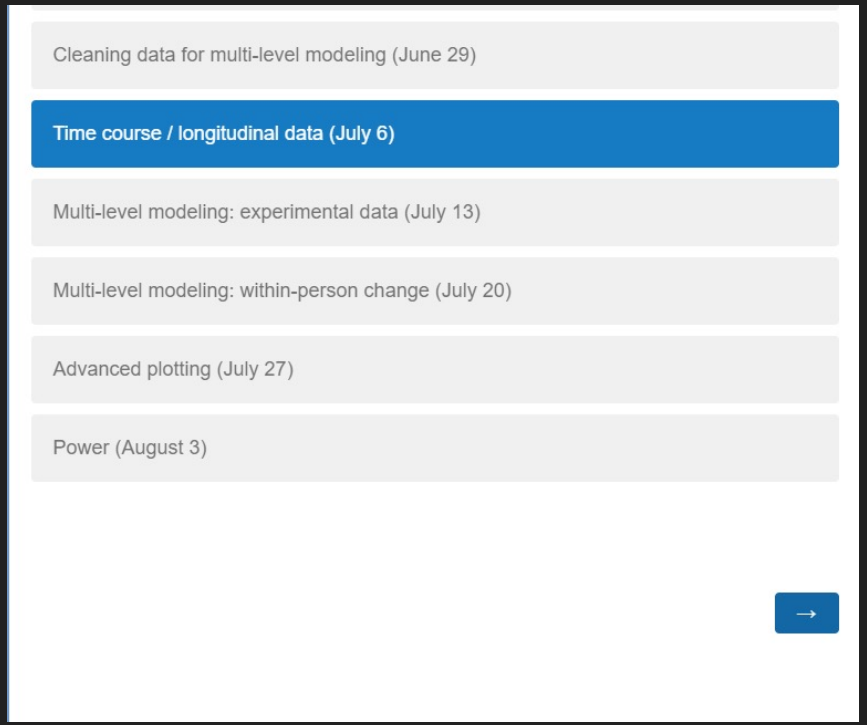
(~1 minute survey)

Post-workshop survey (anonymous)

link: https://cumc.co1.qualtrics.com/jfe/form/SV_9HVYLAL5iXvjEmq

Time course / longitudinal data (July 6)

1. Select “Coding advanced” and press arrow



2. Select “Time course/longitudinal data” and press arrow