

The background of the slide features a scatter plot with four distinct data series, each represented by a different color and a corresponding regression line. The series are: purple (top right), blue (middle right), green (middle left), and red (bottom left). The plot shows a general upward trend from bottom-left to top-right, with some local fluctuations. The regression lines are thin and semi-transparent, following the general direction of the data points.

Multilevel Modeling For Longitudinal Data

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SIPPS 2021

Email list sign-up

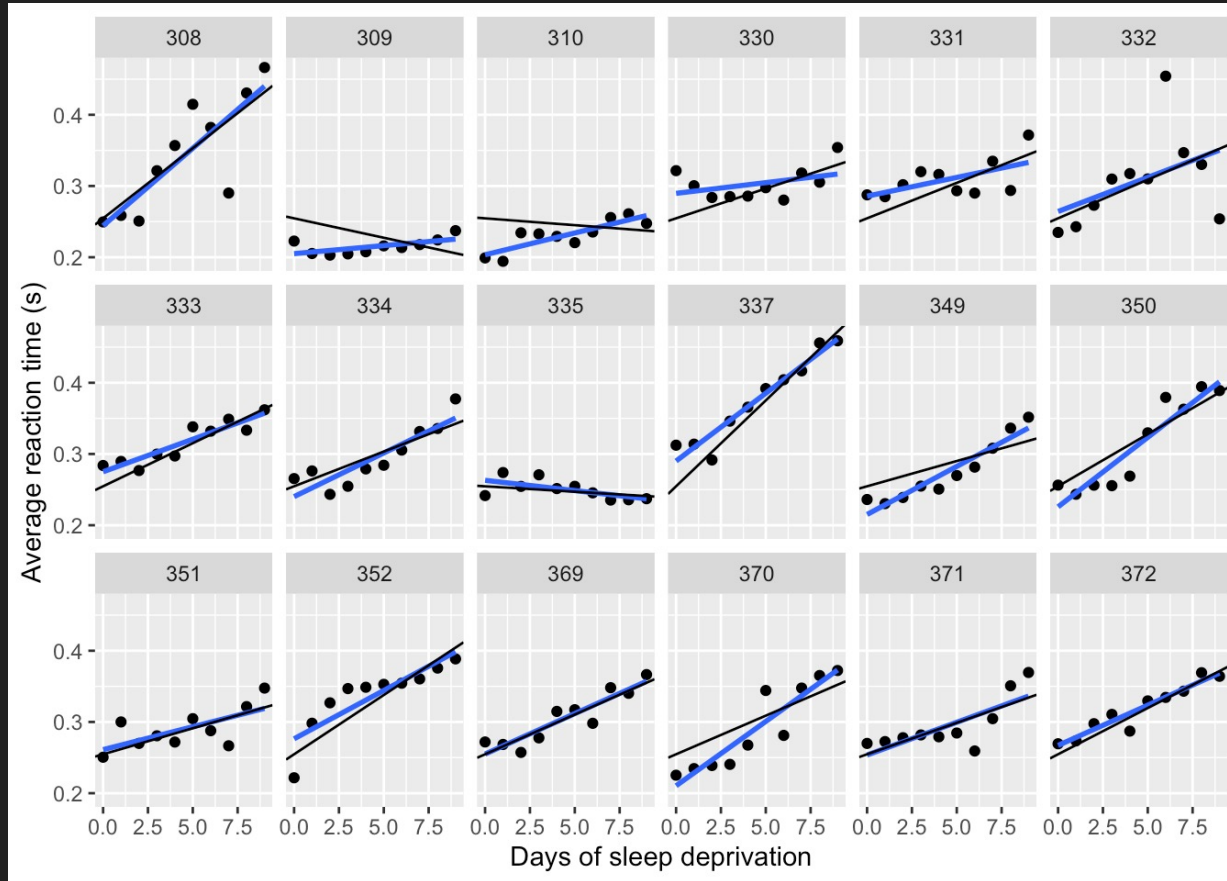
Google form to sign-up for our email list!

<https://forms.gle/Wk9wMaxKJd28JTLr6>

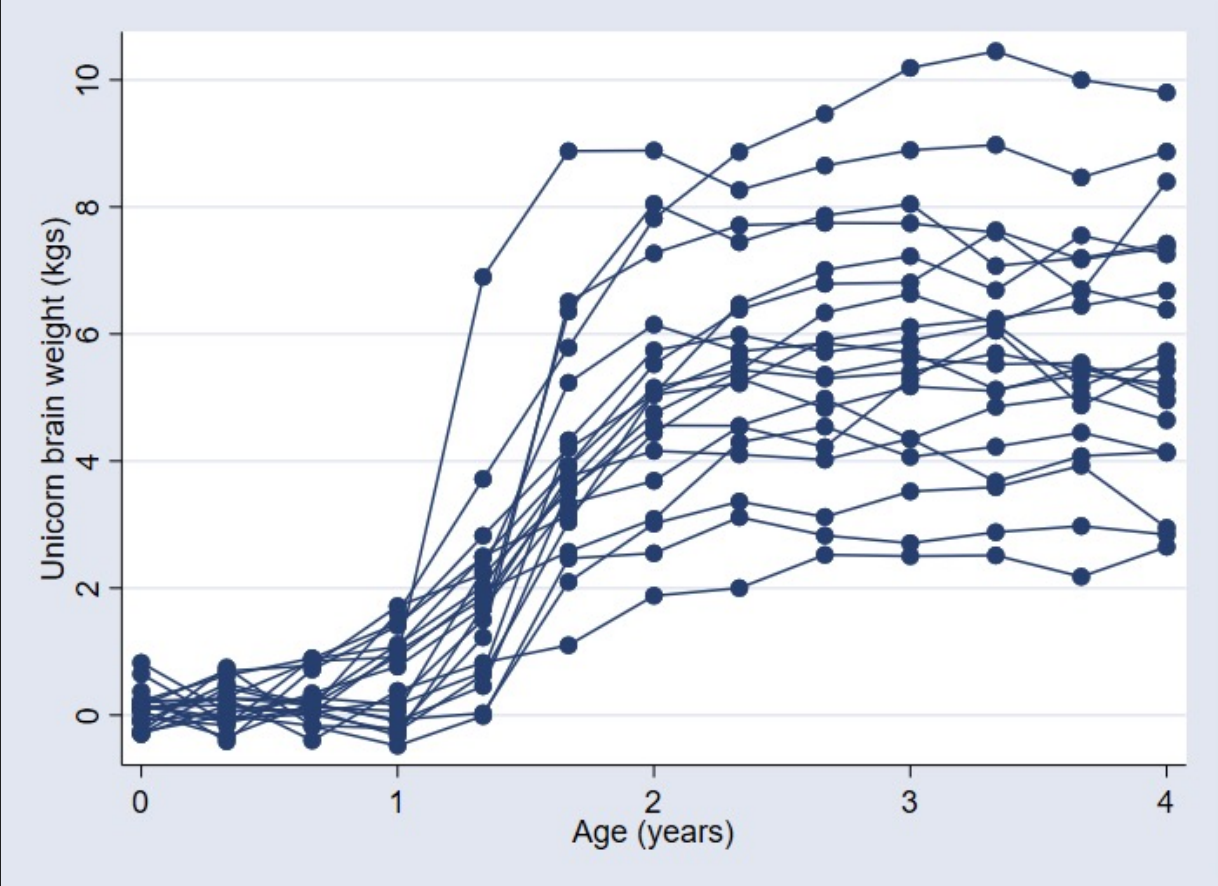
Interactive demo on nuts & bolts of multilevel modeling

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

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

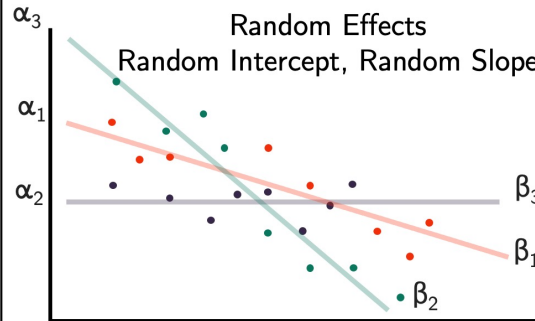
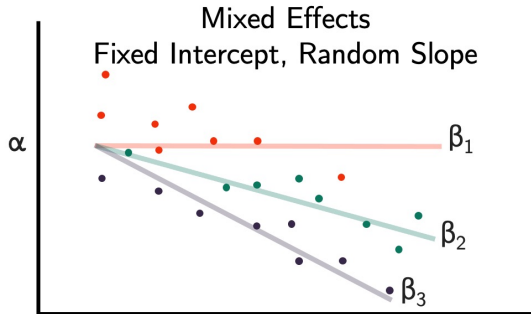
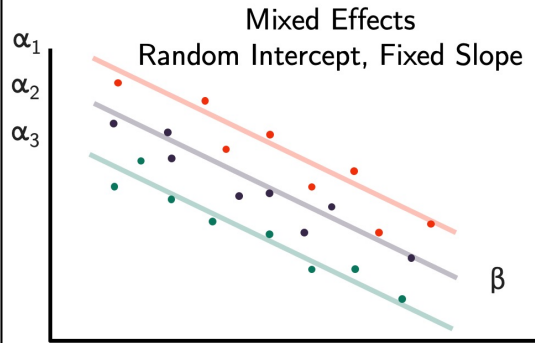
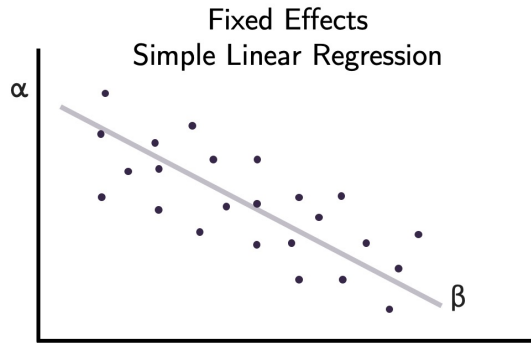


Unicorns aren't all the same either



Random intercepts & slopes

anxiety



time

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

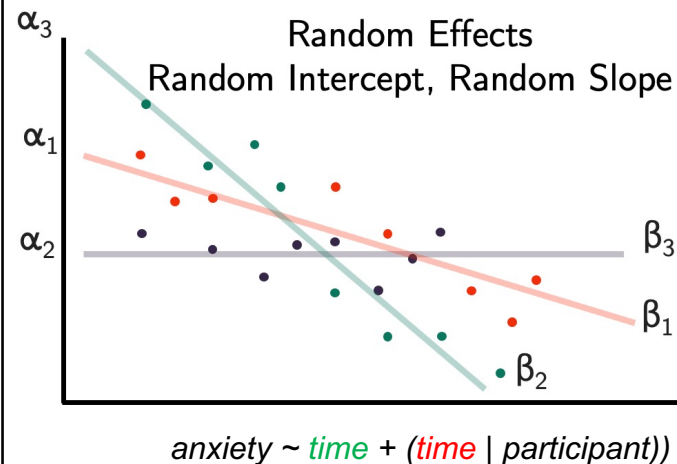
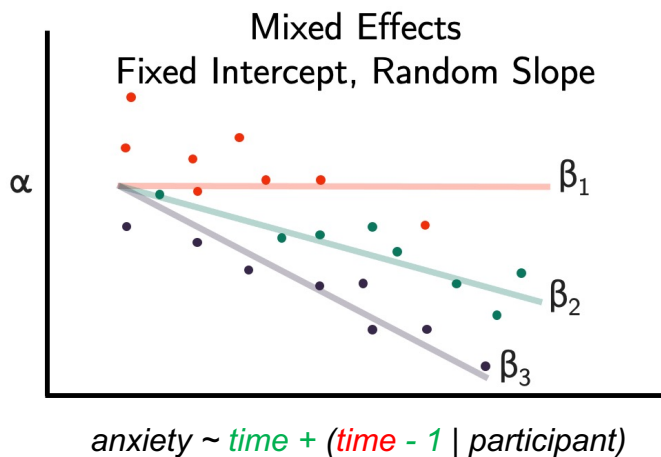
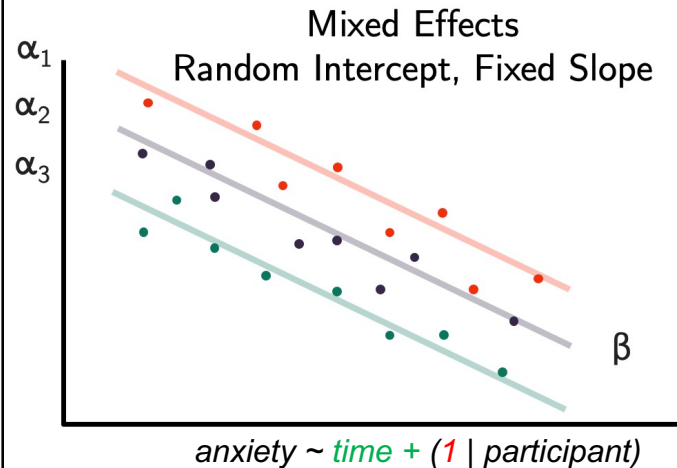
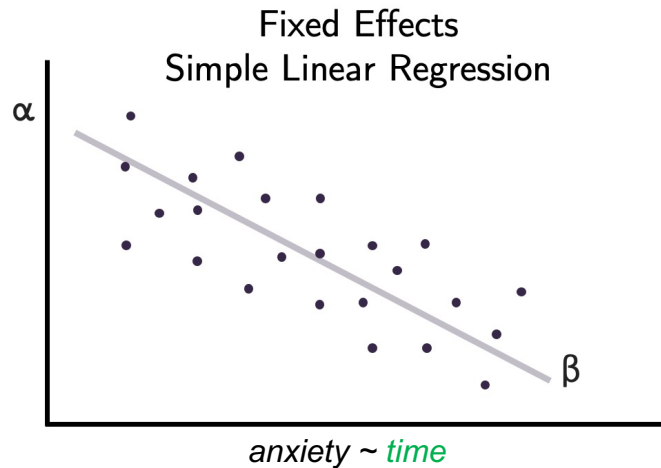
Examples

```
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



(~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



COLUMBIA UNIVERSITY
IRVING MEDICAL CENTER

Thank you for completing the SIPPS post-workshop survey. Your responses are completely CONFIDENTIAL and ANONYMOUS.

Workshop: Please select from the drop-down menu

- ✓ Coding basic
- Coding advanced
- Research skills
- Professional development
- Journal club



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

Cleaning data for multi-level modeling (June 29)

Time course / longitudinal data (July 6)

Multi-level modeling: experimental data (July 13)

Multi-level modeling: within-person change (July 20)

Advanced plotting (July 27)

Power (August 3)

