Workshop: Dealing with Hierarchical, Nested and Temporal Dependencies in Data: An introduction to (Generalized) Linear and Nonlinear Mixed Models

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In the behavioural sciences data is often naturally clustered on multiple hierarchically nested levels:

> Measurement occasions within students >> Students within schools >> Schools within universities >> Universities within countries

Such dependencies are a clear violation of the assumption of independent measurements, because measurements within student 1 will be more alike than a random selection of measurements from other students and students within a university will be more alike compared to a random sample of students from other universities, etc.
This poses a problem for most classical statistical models, such as multiple regression and analysis of variance based on the general linear model. The models introduced in the workshop go by many different names: Mixed effect models, multilevel models, hierarchical regression, but they share the same basic features: They allow clustering of scores at different aggregate levels of the data, which, in many cases, leads to more realistic statistical models.
The main focus of the workshop will be hands-on experience with data analysis using the R statistical computing environment. No special background knowledge is required to participate.

Tentative program:

I. Introduction to random effects in statistical models

- Fixed vs. Random effects
- Random intercepts, random slopes and covariance matrix structures
- Cross-level interactions

II. The multilevel model for change

- Repeated measurements as a clustering level within individuals
- Growth curve models
- Models of piece-wise and nonlinear growth

III. Advanced models

- The generalized linear mixed model for binary outcomes and count data
- Cross-classified and multiple membership models
- Multivariate-multilevel models

The number of participants is limited to 18 persons. Please register **until May 26th** using: Graduiertenschule-HF@uni-koeln.de.
Participants will be asked to bring their laptops with them which have R software already installed.

Date:
2nd June 2017, 10 am to 5 pm

Venue:
Seminar room of the Graduate School
"City-Passage Lindenthal", 2nd floor, Dürener Straße 89, 50931 Cologne

Registration:
Graduiertenschule-HF@uni-koeln.de