

# Mixed effect models: the role of the choice of the model for the random part

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**Friday 20 Oct 2023 | 12.30 p.m.**

**Room Benvenuti**

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When a researcher, especially in social sciences, marketing, psychology or neuroscience analyses the data from his/her experiment, it often boils down to a (generalized) mixed effect model.

In many instances, the choice of the fixed effect is not a big issue as it stems from the experimental design. On the contrary, the choice of an adequate model for the random part is often much more challenging and there is no golden standard in the literature.

In this talk, I will discuss several families of random effect structures and compare them on their assumptions and their performances. In particular, I will introduce a new family called gANOVA and argue that it has many distinct advantages.

These families of random effect structures can be used in the case where only one random source is present (typically the effects of the participant/subject/patient, often called hierarchical models) but also in the case with two (or more) crossed random sources, e.g. when a given set of stimuli (words, images, cases, situations, sounds) are shown to participants.

I will also discuss some resampling schemes for the above mixed effect models to obtain non-parametric inference on the fixed effects.



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