

(Not) everybody does:

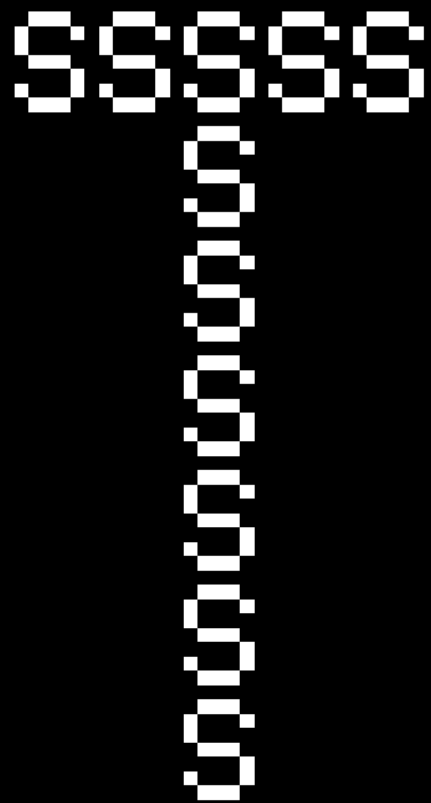
Testing for individual differences and similarities in hierarchical data

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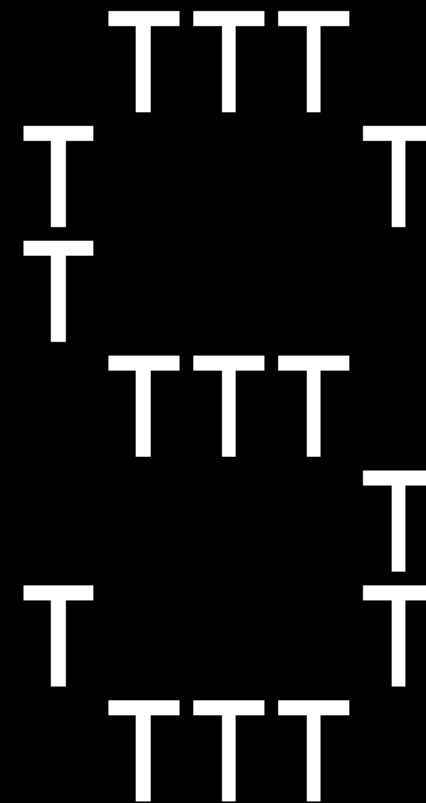
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Navon letter task

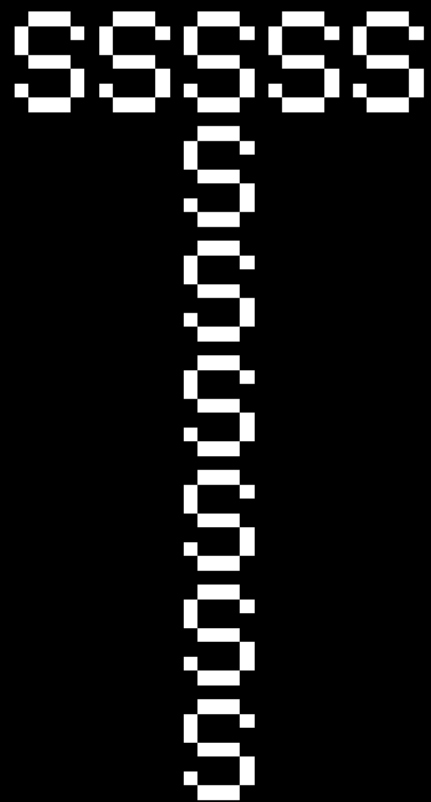


Report the **Large** letter

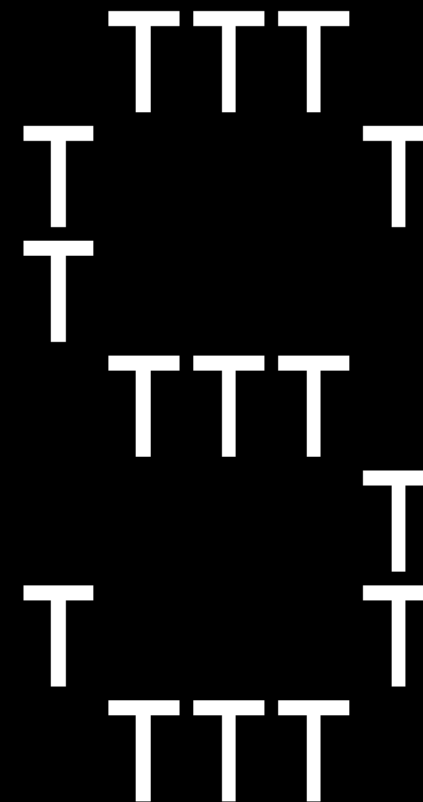
Report the **Small** letter



Navon letter task



Global or Local attention



Question

“On average, more **local** attention than **global** attention?”

Question

“On average, more local attention than global attention?”

“Do **individual** effects vary around the **average** effect?”

Question

“On average, more local attention than global attention?”

“Do individual effects vary around the average effect?”

“Does everybody have a preferred mode of attention?”

Question

“On average, more local attention than global attention?”

“Do individual effects vary around the average effect?”

“Does everybody have a preferred mode of attention?”

“Does **everybody** have **the same mode** of attention?”

Experimental psychology

Many

- conditions
- participants
- repeated measures



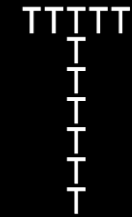
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Nested data

Question cntd

- Presence, size and direction of an **average effect**

Question cntd

- Presence, size and direction of an average effect
- Presence of between individual variance

Question cntd

- Presence, size and direction of an average effect
- Presence of between individual variance
- Homogeneity of individual effects

Question cntd

- Presence, size and direction of an average effect
- Presence of between individual variance
- Homogeneity of individual effects
- Qualitative differences of individual effects

Question cntd

- Presence, size and direction of an average effect
Multilevel model
- Presence of between individual variance
Multilevel model
- Homogeneity of individual effects
- Qualitative differences of individual effects

Question cntd

- Presence, size and direction of an average effect

Multilevel model

- Presence of between individual variance

Multilevel model

- Homogeneity of individual effects

Evidence synthesis or constrained multilevel

- Qualitative differences of individual effects

Evidence synthesis ? Constrained multilevel ?

Does everybody?

All for one or some for all? Evaluating informative hypotheses using multiple N = 1 studies.

[Klaassen F](#)¹, [Zedelius CM](#)², [Veling H](#)³, [Aarts H](#)⁴, [Hooijink H](#)^{5,6}.

⊕ Author information

Abstract

Analyses are mostly executed at the population level, whereas in many applications the interest is on the individual level instead of the population level. In this paper, multiple N = 1 experiments are considered, where participants perform multiple trials with a dichotomous outcome in various conditions. Expectations with respect to the performance of participants can be translated into so-called informative hypotheses. These hypotheses can be evaluated for each participant separately using Bayes factors. A Bayes factor expresses the relative evidence for two hypotheses based on the data of one individual. This paper proposes to "average" these individual Bayes factors in the od BF, the average relative evidence. The od BF can be used to determine whether one hypothesis is

Some do and some don't? Accounting for variability of individual difference structures.

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A prevailing notion in experimental psychology is that individuals' performance in a task varies gradually in a continuous fashion. In a Stroop task, for example, the true average effect may be 50ms with a standard deviation of say 30ms. In this case, some individuals will have greater effects than 50ms, some will have smaller, and some are forecasted to have negative effects in sign—they respond faster to incongruent items than to congruent ones! But are there people who have a true negative effect in Stroop or any other task? We highlight three *qualitatively different* effects: negative effects, null effects, and positive effects. The main goal of this paper

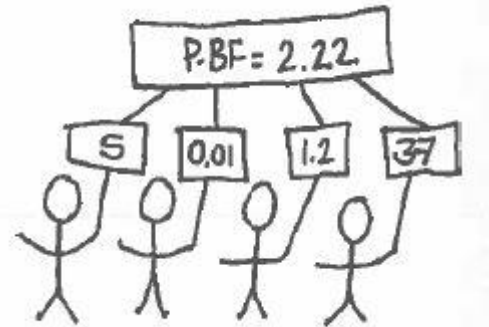
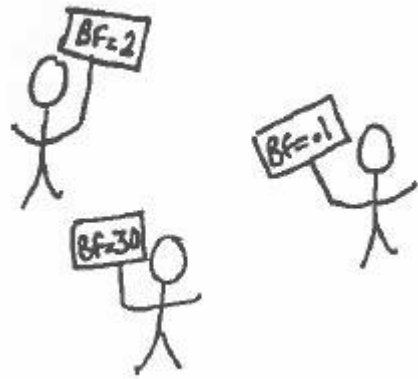
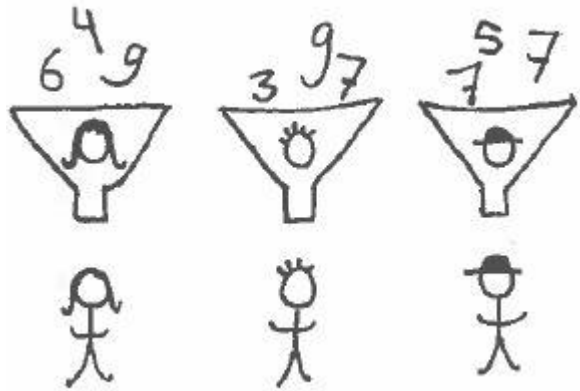
evidence synthesis

VS

constrained multilevel

Evidence synthesis

- No dependence between individuals modelled
- Individual Bayes factors
- Average evidence



Evidence synthesis

Evaluate the **homogeneity** of preferred hypotheses for a **sample** of individuals

- Small sample
- Explore various models
- Limited generalizability

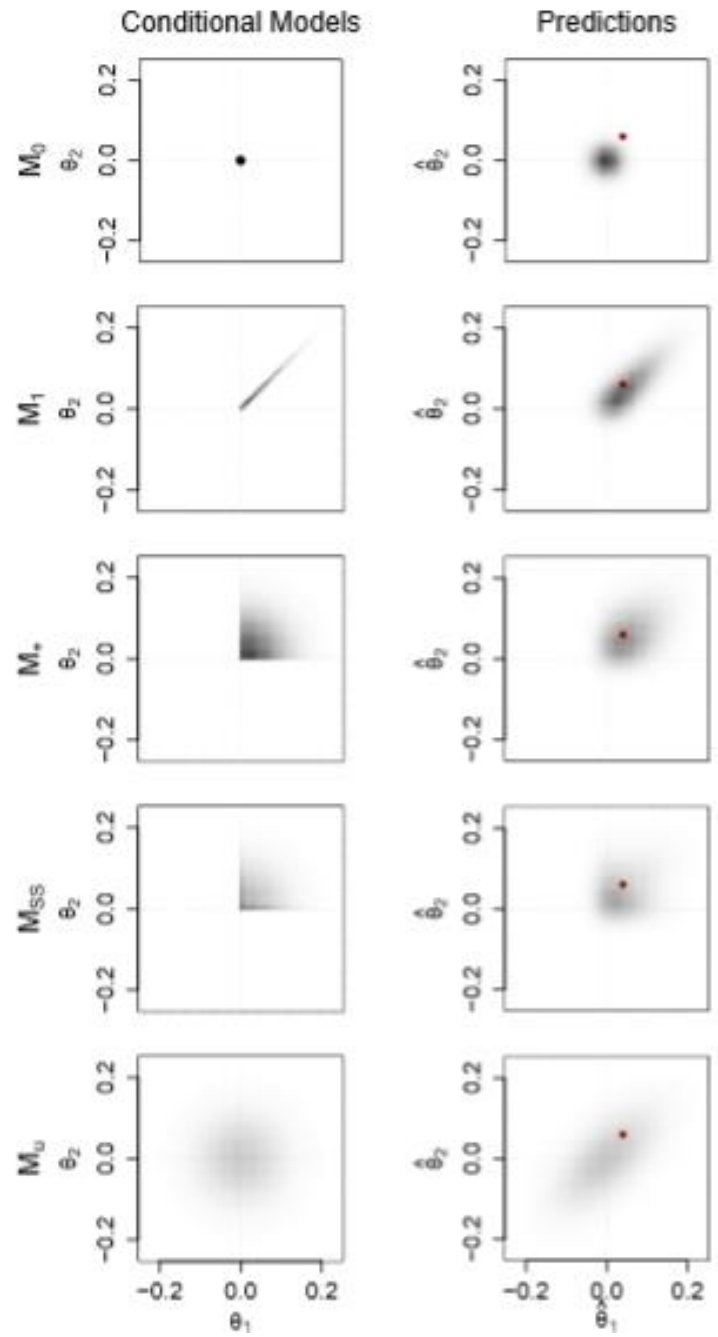
evidence synthesis

VS

constrained multilevel

Constrained multilevel

- Dependence between individuals accounted for
- Constrained prior distributions at individual level
- Evidence for `everybody does' versus `average does'



Haaf, J. and Rouder, J. (2018).
Some do and some don't?

Constrained multilevel

Evaluate the hypothesis that an order constrained effect holds for a population of individuals

- Large sample
- Generalizability
- Limited flexibility

What if not everybody does?

Prior expectations

- Effect size
- Sample size
- Composition of the population

What is your question..

What is your question...

(Not) everybody does?

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