SOME THOUGHTS FOR THE WORKING GROUP

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**Information organization in speech communication**

Assumption: syllable is a relevant ‘chunk’ of information

But syllables are not identical (in duration and composition)...

... and from an information theoretic viewpoint, they don’t carry the same amount of information.
**Research Questions: Linguistics**

- **Bottom line: large variation in language sound system**
  - Sound inventories (from ~10 to ~150 distinct sounds)
  - Syllable structures (from few hundreds to few thousands of distinct syllables)

- **Impact of the language system on information transmission**
  - Similar/different patterns in the distribution of information along the speech signal?
  - Similar/different overall information rate (= communicative efficiency)?
    - Cross-language studies
Research Questions: (Neuro)cognition

✓ Synchronization with (theta) brain oscillations?
  - Pay attention to different language rhythms and speech rate variations

✓ Existence of an optimal information rate?
  - Preference for constant vs. alternation of high- and low-information chunks?
  - Notion of uniform information density (e.g. Jaeger, 2010)?
  - Additional role of biomechanical factors?

✓ Impact and/or interaction with
  - Attentional processes
  - Phonological loop and verbal working memory

✓ More far-fetched issues
  - Adaptation / co-evolution between languages and brain?
  - Difficulties in perception & understanding of foreign languages caused by difficulties in (brain-)tuning to information pace??
  - Human-Human Interaction: tuning of information rates?
FORTHCOMING...

✓ A cross-language study of information rate
  - Interaction between average syllabic rate and syllabic density of information
  - Connection between syllabic density of information and syllabic complexity and entropy

✓ Some thoughts on temporal features of degraded speech
  - Reversed speech
  - Accelerated speech
  - Cocktail party

✓ What is easy and hard
  - (Pretty) easy: develop cross-language comparison (they are not so common so far)
  - Hard: get the right interpretation of your results…