1. Background and research questions
- How do people learn the phonological alternations of their language?
  - Is phonological learning the result of an unbiased search for patterns? (a)
  - Or is learning guided by biases against certain patterns? (a)
  - What types of patterns are dispreferred by learners? (b)
  - What is the nature of these biases? (b)
  - How can we account for them in learning models? (b)
- Much of the recent literature supports a soft bias approach: certain patterns are dispreferred, but may be learned given enough input. (b)

2. Case study: Saltatory alternations
- **Saltatory alternation:** An alternation in which an intermediate non-alternating sound is "jumped over."
  - E.g. Campidanian Sardinian: [kama \( \rightarrow \) [kama]\(^{\text{b}} \)] 'the bread'
  - [kama] \( \rightarrow \) [kama]\(^{\text{v}} \)] 'the wine'
- **Why are they interesting?**
  - Relatedly uncommon.
- It has been long argued that alternations between similar sounds are better than alternations between less similar. (b)
  - Accounting for them is not theoretically straightforward, e.g., classical OT (c) cannot.

3. The experiments: Are learners biased against saltatory alternations?
**Method**
- Artificial language learning paradigm
- Participants: 20 UCLA undergrads per experiment.
- Procedure - 3 phases:
  - Exposure: Learn alternations by hearing pairs of nonwords with a singular and plural picture.
  - Verification: Tested on subset of exposure pairs. Participants choose between changing and non-changing auditory plural options (order counterbalanced).

4. Modeling overview
- How can we account for the dispreferred status, but ultimate learnability, of saltatory alternations?
- I use Maximum entropy grammar models. (b)
- Implemented using the Maxent Grammar Tool (from Bruce Hayes’ webpage).

5. The models
**I. Traditional faithfulness** (b), Unbiased
- Faithfulness constraints:
  - \( \text{ident}(\text{voice}), \text{ident}(\text{cont}), \text{ident}(\text{son}) \)
- Flat prior: For all constraints, \( \mu = 0, \sigma = 0.5 \)

6. Conclusions
- Language learners disprefer saltatory alternations, but they are not unlearnable.
- A MaxEnt grammar model can account for both of these observations, provided that:
  - It has a more expressive set of constraints (such as the "MAP" variety).
  - It has a similarity bias, derived from confusion matrix data, preferring alternations between similar sounds.

7. References