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SL ACROSS LG LEARNING TASKS

- Speech segmentation (replicated many times, see Black & Bergmann, 2017) with artificial and natural stimuli
- Non-adjacent dependency extraction (i.e. learning $AX_{\{1-3\}}C$ triplets) which adults can do & also simultaneously learn to segment, but maybe not infants
- Modeling? segmentation behavior has been captured w/ recurrent neural networks, forwards & backwards transitional probability, & sequence chunking, all based on given information about syllable boundaries. Whole-utterance chunking can replicate segmentation w/ phone input instead.
- Morphological inflection (& errors) Modeling only here, but using accumulated sequence information & a "memory" mechanism that focuses on the end of the sentence, replicates phenomena like *he go away.
- Word-referent mapping now replicated w/ nouns & verbs (& simultaneous learning of these - w/ adults) & can account for learning even above mutual exclusivity
- Grammatical category formation distributions & co-occurrences of words are good cues to grammatical category (in English??) — this may be supplemented by use of frequent frames (e.g. he ___ the) which can themselves, when combined account for a large portion of early vocabulary
- Syntactic combinations Zyo speech accounted for by simple derivations on parental utterances (66% substitutions, 15% additions, 10% removal, 7% insertions, 1% rearrangements) providing a basis for abstractions over these initial constructions

Emergent general principles of SL: GROUPING and |DIVI|DING|

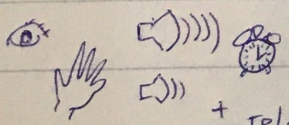
§ ROLE of the BROADER ENVIRONMENT § What is available besides TP?

- Speech segmentation: allophonic variation, phonotactic constraints, prosody, stress/rhythm, word/phrase-final lengthening
  - ↳ boosts learning of TPs alone, perhaps importance given messiness & variability in TPs in real speech
  - ↳ stress used over statistics by 9mos when in conflict
- Word meanings: prosody, gesture, gaze, CDS features facilitating recognition & attention, especially in (imperfect) combination of cues
  - ↳ again boosts learning over co-occurrence stats alone
- Dependency structures: prosody (esp. pauses), phonological similarity, utterance position (i.e. toward the edges).
- Grammatical categories: prosody, phonological grouping cues, utterance position & resulting duration
- Syntactic structures: prosodic structure (intensity, duration, pitch) boosts learnability of embedded syntactic structures & syntactic segmentation

Multiple cue use

Cues may combine differently for learning depending on the language but learners should weigh more available & reliable cues most heavily

↳ chaotic combination of many cues may be closer to reality



but this may not always be a hindrance:

VARIABILITY CAN BE GOOD
- → more robust generalization
- → resistance to noise
- → highlights stable components
- → encourages multiple cue use

↳ dynamic system accounts for cue use & attention in context & across development

? Vast majority of this work (incl. modeling) focuses on English — do we expect all these SL processes in learning to hold up cross-linguistically?