Evidence for the Maximum Onset Principle in Morpheme Segmentation

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Background

Factors in child morpheme segmentation:

➔ distributional cues [1, 2]

➔ a preference for onsets over codas [3], i.e. **Maximal Onset Principle (MOP)**

How about adults?

➔ Evidence for using phonotactics [1, 2]

➔ But are they still **onset-maximizing?**

Ex. phonotactically neutral, but different wrt. MOP

	Onset Maximizing	Onset Non-maximizing
progress	[pra.**gr**ɛs]	[pra**g.r**ɛs]

Methods

Artificial language learning paradigm: adults taught language where phonotactics & MOP variably aid in segmenting [stem+plural] items

Assumes: speakers prefer segmentations that match syllabifications (causing errors like /pəpag+**ram**/ → *[pə.pa.+**gram**]

Participants

60 English speakers (recruited through Prolific)

Stimuli

Stems: CVCVC stems ending in {b,d,g} **or** {s,n,l}

Plural suffix: /-ram/ **or** /-kpam/

Procedure & Conditions

1. **Training**: participants presented (auditorily & orthographically) with 30 CVCVC stem/plural suffix pairs.
   ➔ **Table 1**: Two between-speaker factors varied in training
   - ◆ **suffix** (ram vs. kpam)
   - ◆ type of **stem-final consonant** shown ({s,n,l} vs. {b,d,g})
2. **Testing**: free response of suffixed forms of 30 new stems (10 x {b,d,g}, {s,n,l}, V-final)
   - ◆ **Predicted learning accuracy:** A > B > C > D

Table 1: experimental conditions & predictions

Condition	A	B	C	D
Correct suffix	ram	kpam	ram	kpam
Stem-final C	{s,n,l}	{b,d,g}	{b,d,g}	{s,n,l}
Syllabifications	*[pə.pa.lram] [pə.pal.ram]	*[pə.pagk.pam] *[pə.pag.kpam]	[pə.pa.gram] [pə.pag.ram]	*[pə.pal.kpam] [pə.palk.pam]
Phonotactic bias	ram	none	none	pam
MOP bias	ram	kpam	gram	pam

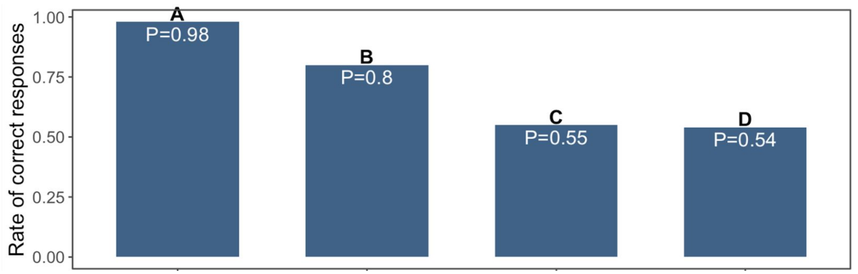

Figure 1: experiment results
(rate of correct responses by condition)

Results & Discussion

Figure 1: speakers utilize the MOP

➔ Participants performed better in A/B (MOP = "helpful") than Cond C/D (MOP = "harmful").

...but they prefer learning phonotactically licit syllables/morphemes.

➔ In Cond B&D, where suffix [-kpam] is phonotactically illicit, suffix was often mislearned as [-pam]

Some speakers learn system of phonotactically conditioned allomorphy.

➔ Pattern in Cond B & D (correct = **/kpam/**):
V-final: papa+**kpam** → [papak.pam]
{s,n,l}: papal+**kpam** → [papalk.pam]
{b,d,g}: papag**+pam** (cf. *[papag.**kp**am])

Future Work:

➔ This study assumes **morpheme boundaries line up with syllabications.** Does this hold across languages?

References

[1] Jusczyk, P. & Aslin, R. (1995). Infants' detection of the sound patterns of words in fluent speech. *Cognitive psychology, 29*(1), 1-23. **[2]** Saffran, J. R., Aslin, R. N., & Newport, E. L. (1996). Statistical learning by 8-month-old infants. *Science*, *274*, 1926-1928. **[3]** Seidl A, Johnson EK. (2008). Boundary alignment enables 11-month-olds to segment vowel initial words from speech. *J Child Lang, 35*(1), 1-24. **[4]** McQueen, J. M. (1998). Segmentation of continuous speech using phonotactics. *Journal of memory dnd language, 39*(1), 21-46. **[5]** Dahan, D. & Brent, M. (1999). On the discovery of novel wordlike units from utterances: an artificial-language study with implications for native-language acquisition. J*ournal of Experimental Psychology: General, 128*(2), 165.