

# Differential treatment of initial syllables rears its head

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## What protects initial syllables?

In Shona, [i] and [e] contrast in initial syllables only (Beckman 1997, 1998)

/sek+irir/	IDENT(high)-σ1	AGREE(high)	IDENT(high)
a. se.ki.rir		*!	
b. si.ki.rir	*!		*
c. <del>se</del> .ke.rer			**

More contrast in initial syllables → protection by positional faithfulness.

Claimed sources of initial syllable faithfulness:

- Greater phonetic length, at least in Turkish (Barnes 2006)
- Psycholinguistic prominence (Beckman 1997, 1998)

But English appears to be going the wrong way:

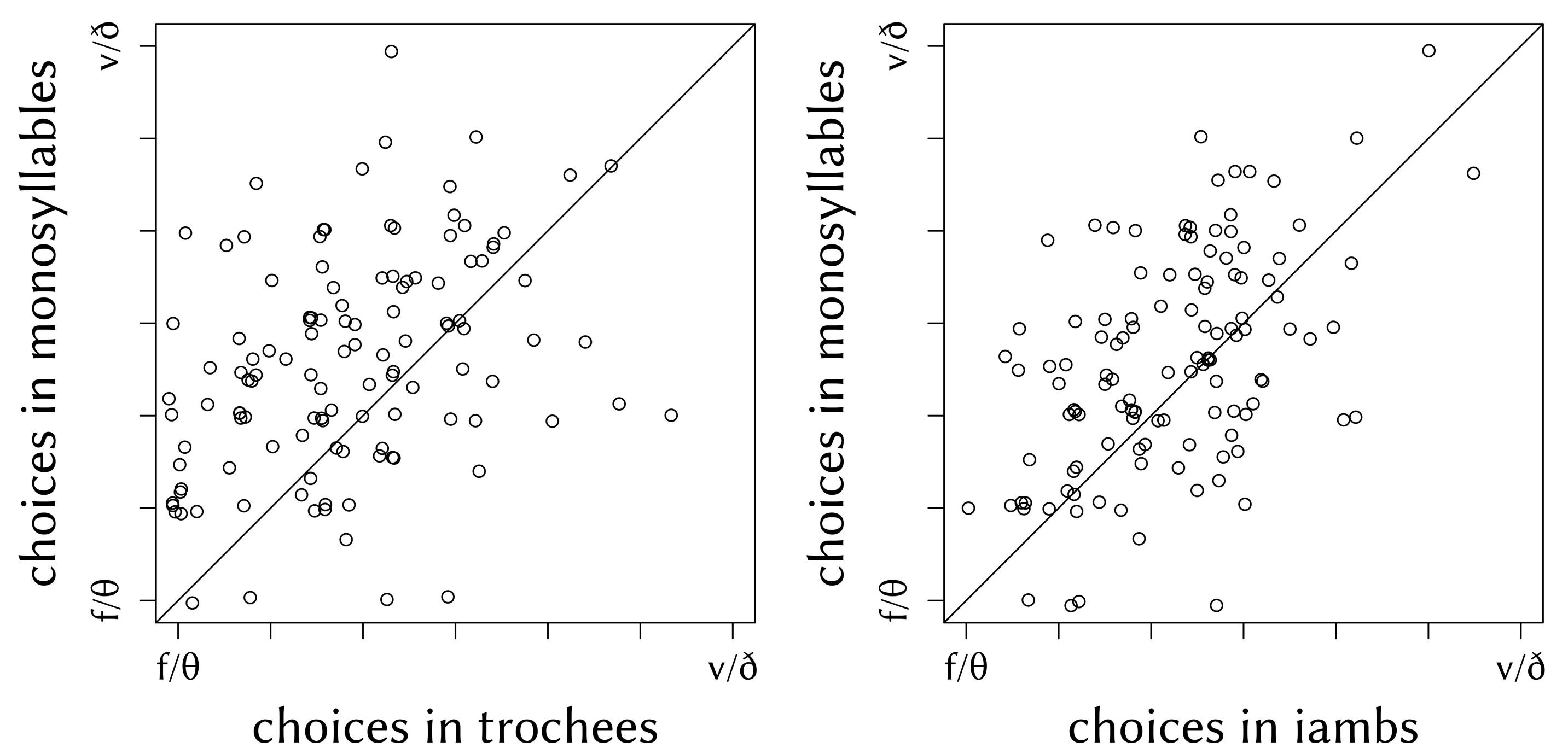
- English has *less* protection for alternations in initial syllables
- English initial syllables have *reduced* phonetic length (Barnes 2006)

The English lexicon has a historical accident. English speakers don't extend the lexical pattern, and prefer the Universal pattern when given a chance.

## English lexicon: Initial syllables less faithful than later syllables

In real words of English,  $f\sim v$  and  $\theta\sim\delta$  alternations are more common in monosyllables → fricatives get *less* protection in initial syllables

Judgments for 126 words on a scale of 1–7 from 120 Mechanical Turkers:

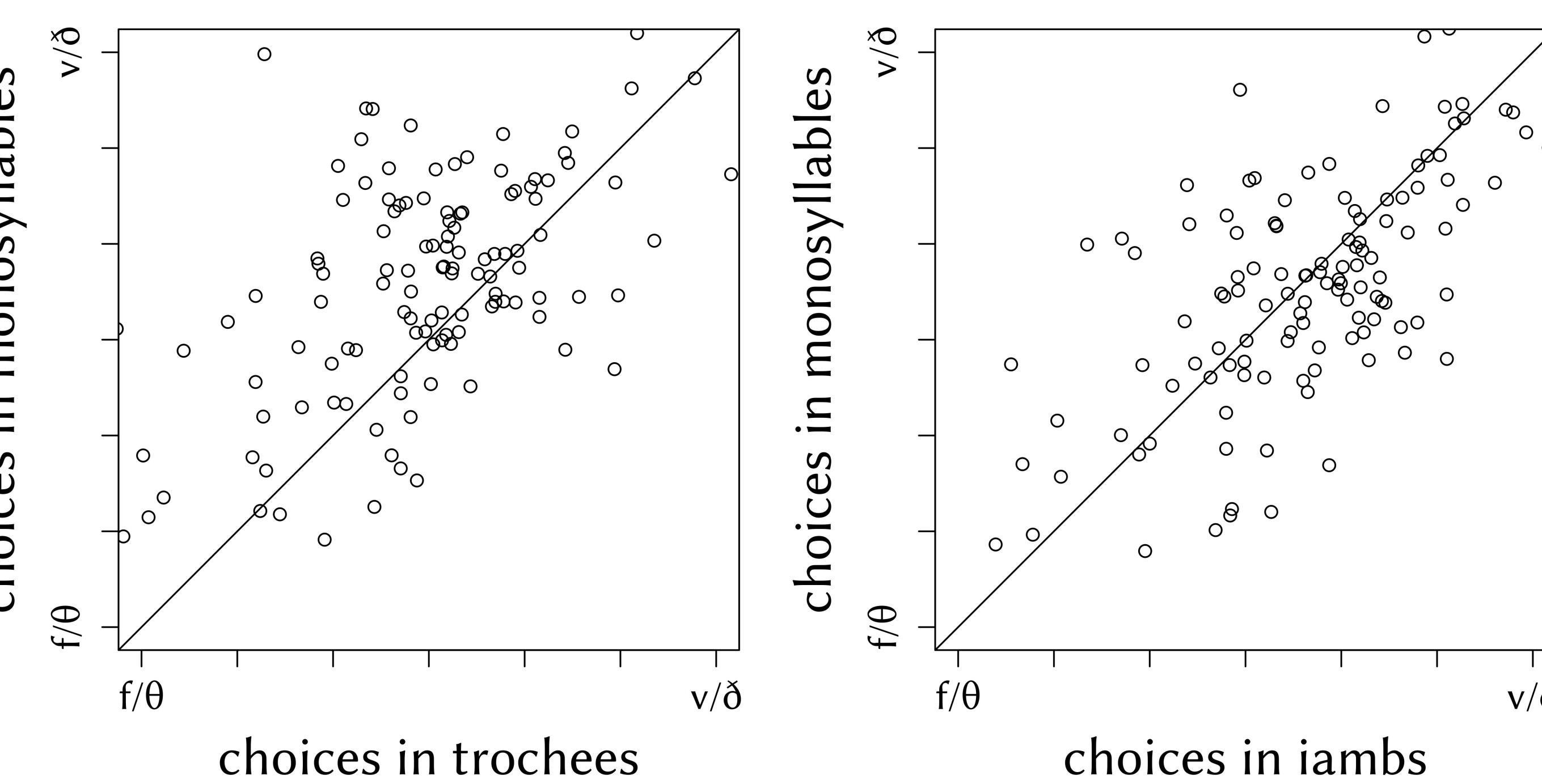


monosyllables [sluθ] (3.6) > iambs [moʊtɪf] (3.2) > trochees [mæmɪθ] (2.8)

- Stress effect: trochees significantly less voicy than monos
- Weight effect: long vowels and diphthongs significantly more voicy
- Anti-initial syllable faithfulness effect: iambs significantly less voicy than monos

## A surfeit of the stimulus effect: No size effect in wugs

Judgments for 132 wugs on a scale of 1–7 from 120 Mechanical Turkers:



Results:

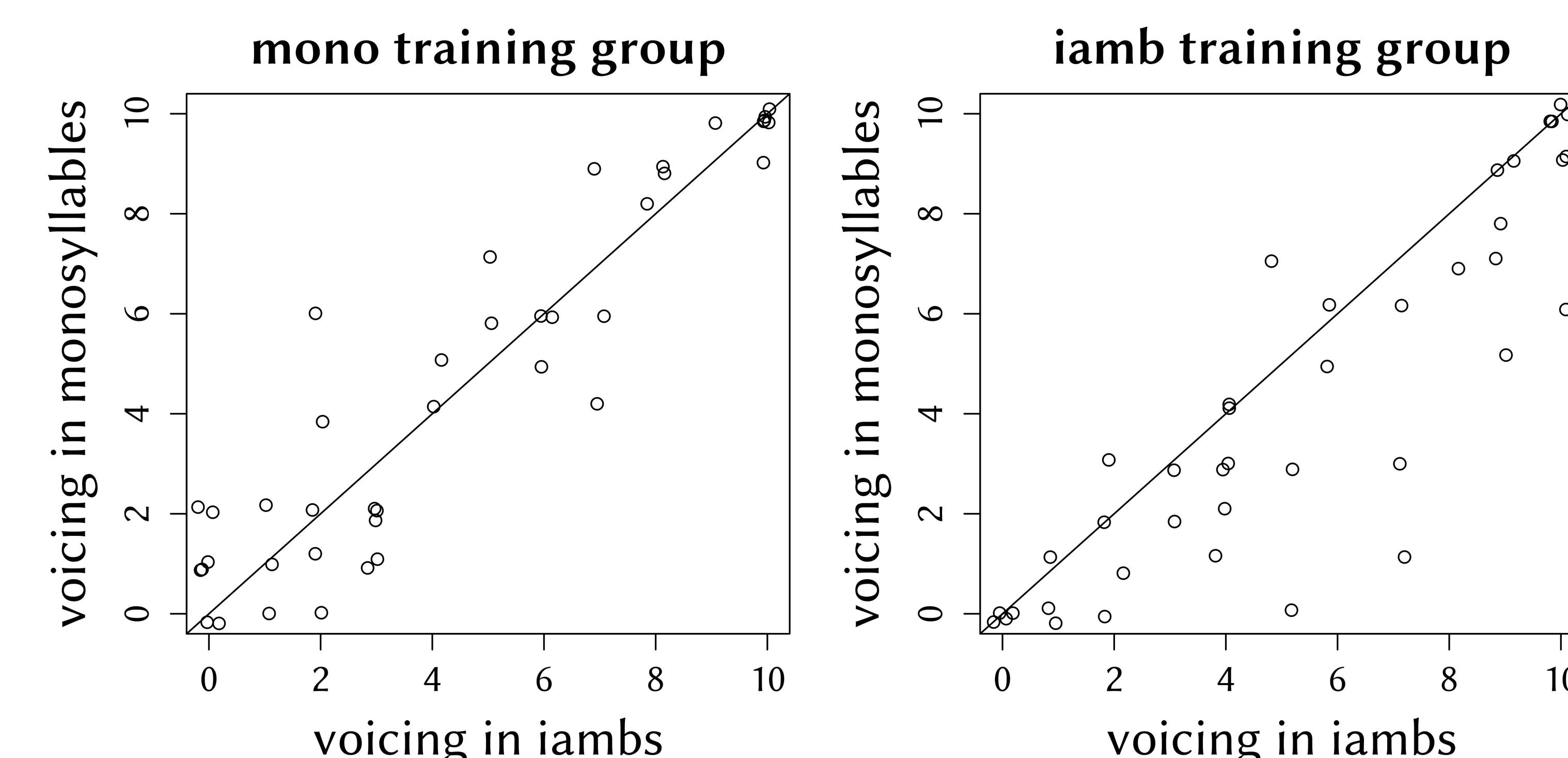
- Stress effect: trochees significantly less voicy than monos
- Weight effect: long vowels and diphthongs significantly more voicy
- Place effect: [θ] significantly less voicy than [f]
- No Anti-initial syllable faithfulness effect: iambs just as voicy as monos (with a trend for more voicy iambs)

## English speakers protect initial syllables in artificial languages

We taught 80 Mechanical Turkers voicing alternations on stops:

In monosyllables (mip ~ mibni) or in iambs (təgep ~ təgebni)

Then we tested everybody on both monos and iambs.



Results:

- The mono training group voices everything equally
- The iamb training group voices iambs significantly more than monos

## Learning without generalizing

"Inside-out" analysis (Hayes 1995, 1999; Becker 2009; Becker et al. 2011):

Monosyllables rely on the ranking of IDENT(voice)-σ1

/naɪf + z/	IDENT(voice) <sub>aff</sub>	IDENT(voice)-σ1	IDENT(voice)
a. <del>na</del> ɪfz		*	*
b. naɪfs	*!		
/stæf + z/	IDENT(voice)-σ1	IDENT(voice) <sub>aff</sub>	IDENT(voice)
a. stævz	*!		*
b. <del>st</del> æfs		*	

Polysyllables aren't affected by IDENT(voice)-σ1:

/dʒəræf + z/	IDENT(voice)-σ1	IDENT(voice) <sub>aff</sub>	IDENT(voice)
a. <del>dʒ</del> ərævz			*
b. dʒəræfs		*!	
/bəlif + z/	IDENT(voice)-σ1	IDENT(voice)	IDENT(voice) <sub>aff</sub>
a. bəlivz		*!	
b. <del>b</del> əlifs			*

Cloning (Pater 2006, 2009; Coetze 2008; Becker 2009) resolves the conflicts:

- (1) IDENT(voice)-σ1<sub>stæf</sub> ≫ IDENT(voice)<sub>bəlif</sub> ≫ IDENT(voice)<sub>aff</sub> ≫ IDENT(voice)<sub>dʒəræf</sub>, IDENT(voice)-σ1<sub>naɪf</sub>

A fuller lexicon:

- (2) IDENT(voice)-σ1<sub>30 items</sub> ≫ IDENT(voice)<sub>90 items</sub> ≫ IDENT(voice)<sub>aff</sub> ≫ IDENT(voice)<sub>10 items</sub>, IDENT(voice)-σ1<sub>70 items</sub>

But now the odds are stacked against the monosyllables:

- (3) IDENT(voice)-σ1<sub>30%</sub> ≫ IDENT(voice)<sub>90%</sub> ≫ IDENT(voice)<sub>aff</sub> ≫ IDENT(voice)<sub>10%</sub>, IDENT(voice)-σ1<sub>70%</sub>

Individual items can be learned, but the generalization cannot be projected.

Possible grammars: Monosyllables are protected more than polysyllables; Monosyllables and polysyllables are equally protected.

Impossible grammar: \*Polysyllables are protected more than monosyllables.

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