

Grammatical Conditioning in the Development of Phonological Productions

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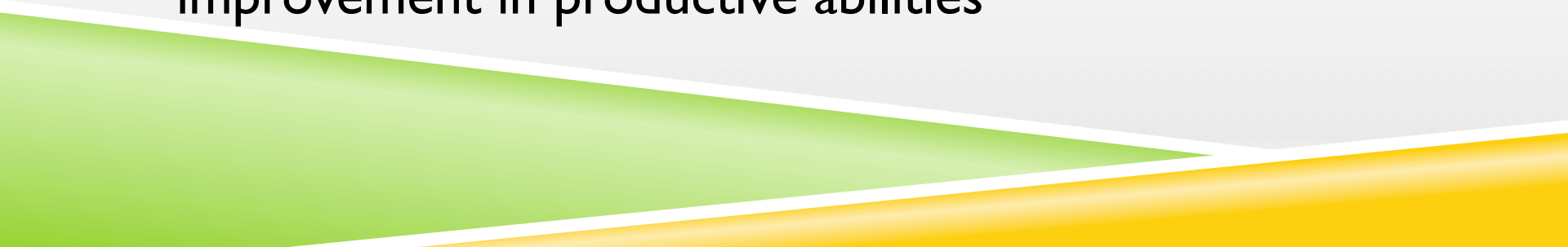
Introduction

- ▶ While children's babbles gradually evolve from articulatorily-predictable vocalizations into forms which match the statistical properties of the ambient language (MacNeilage & Davis 1990; Kern & Davis 2009; Vihman 1996), production patterns in later words cannot always be captured statistically (Demuth 2007)

Introduction

- ▶ Grammatical/phonological perspective:
 - ▶ Sounds are learned categorically; acquisition of a sound is influenced by factors such as its syllable position, and whether that position is present in the child's grammar
- ▶ Statistical/gradient perspective:
 - ▶ Sounds are learned gradiently; the child will slowly learn how to reproduce sounds in a way that is more reflective of how they appear in adult speech
- ▶ How do we decide which model to use? It depends on what children do – but what children do depends on what they, themselves, understand.

Hypothesis

- ▶ Children's level of understanding of their language's phonological system may be observable in their speech
 - ▶ Grammatical/phonological learners will display effects or stages which reflect their understanding of phonology
 - ▶ Statistical/gradient learners will show gradual improvement in productive abilities
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Data

- ▶ This work looks at two cases studies of children learning European Portuguese:
- ▶ Inês: 0;11.13 to 4;02.17
 - ▶ Shows clear positional effects
- ▶ Joana: 0;11.23 to 4;10.07
 - ▶ Shows gradual improvement with no positional effects
- ▶ Data come from the CHILDES database (Correia, Costa, Freitas, 2010), and are analyzed with Phon

European Portuguese

Consonantal Inventory of Onsets

(Mateus & d'Andrade 2000, Cruz-Ferreira 1999)

	Bilabial	Labiodental	Alveolar	Postalveolar	Palatal	Velar	Uvular
Plosive	p b		t d			k g	
Nasal	m		n		ɲ		
Fricative		f v	s z	ʃ ʒ			ʁ
Lateral			l		ʎ		
Flap			ɾ				
Glide	w				j		

European Portuguese

Consonantal Inventory of Codas

(Mateus & d'Andrade 2000, Cruz-Ferreira 1999)

	Bilabial	Labiodental	Alveolar	Postalveolar	Palatal	Velar	Uvular
Plosive							
Nasal							
Fricative				ʃ (3)			
Lateral						ɫ	
Flap			ɾ				
Glide							

European Portuguese

- ▶ Word-final codas in EP are susceptible to two kinds of resyllabification (Mateus & d'Andrade 2000):

- ▶ Utterance-final:

An epenthetic vowel is added after /r/ and /l/

e.g. /'mew 'flor/ ['mew 'flori]

- ▶ Utterance-medial:

/ʃ, r, t/ coda will become the onset of a following vowel-initial word

e.g. /'maʃ a/ ['ma la]

When this occurs with /ʃ/, there is POA substitution as well

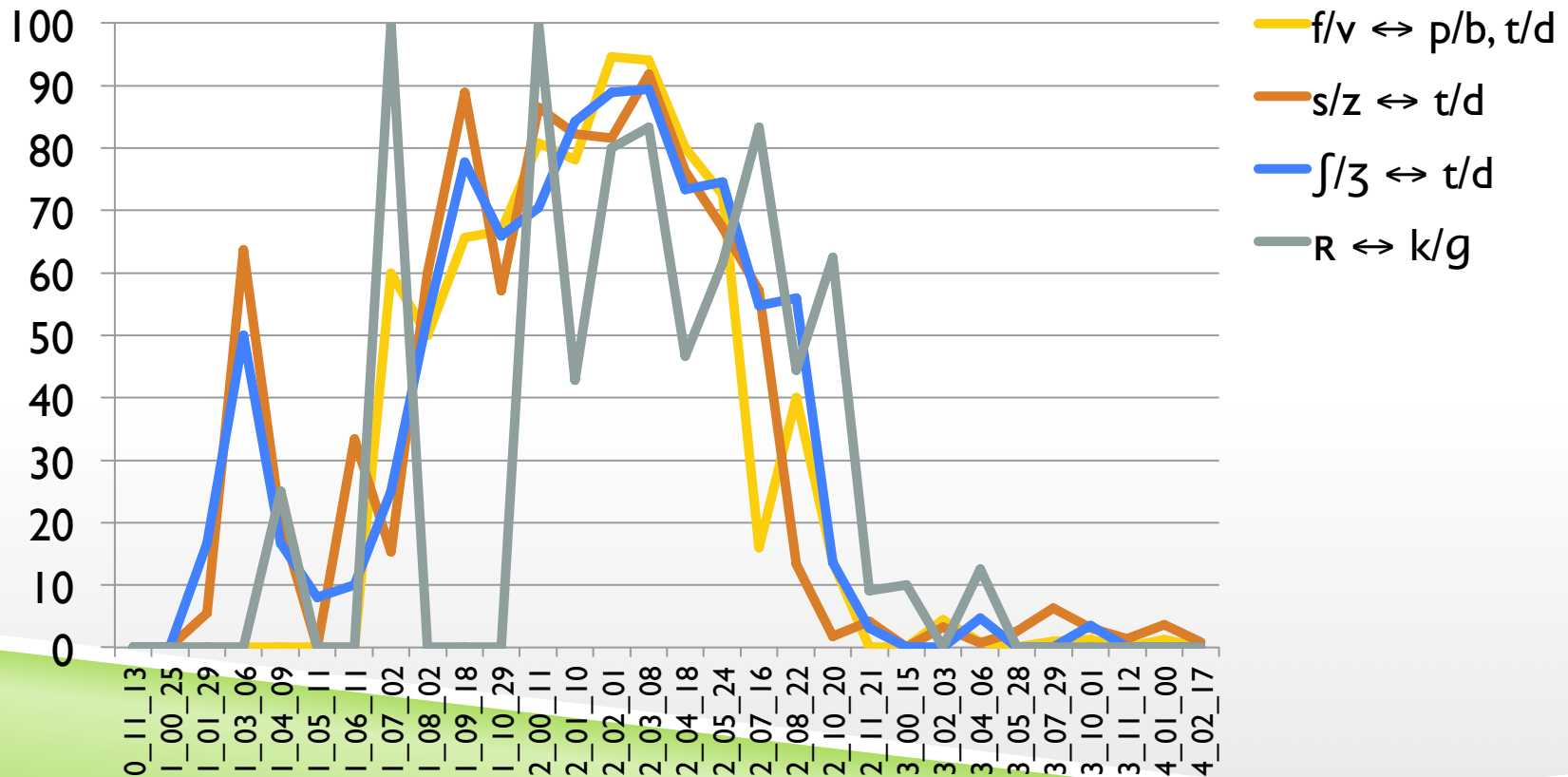
e.g. /'poʃʃ 'ɛ/ ['poj 'zɛ]

Inês – a grammatical/categorical learner

- ▶ Evidence of systematic behaviours in Inês's development:
 - ▶ Systematic stopping of all fricative onsets stopping, but not codas
 - ▶ Positional effects within the development of /ʃ/
 - ▶ Stages of deletion before sweeping changes in production
- ▶ See also Rose (2014)

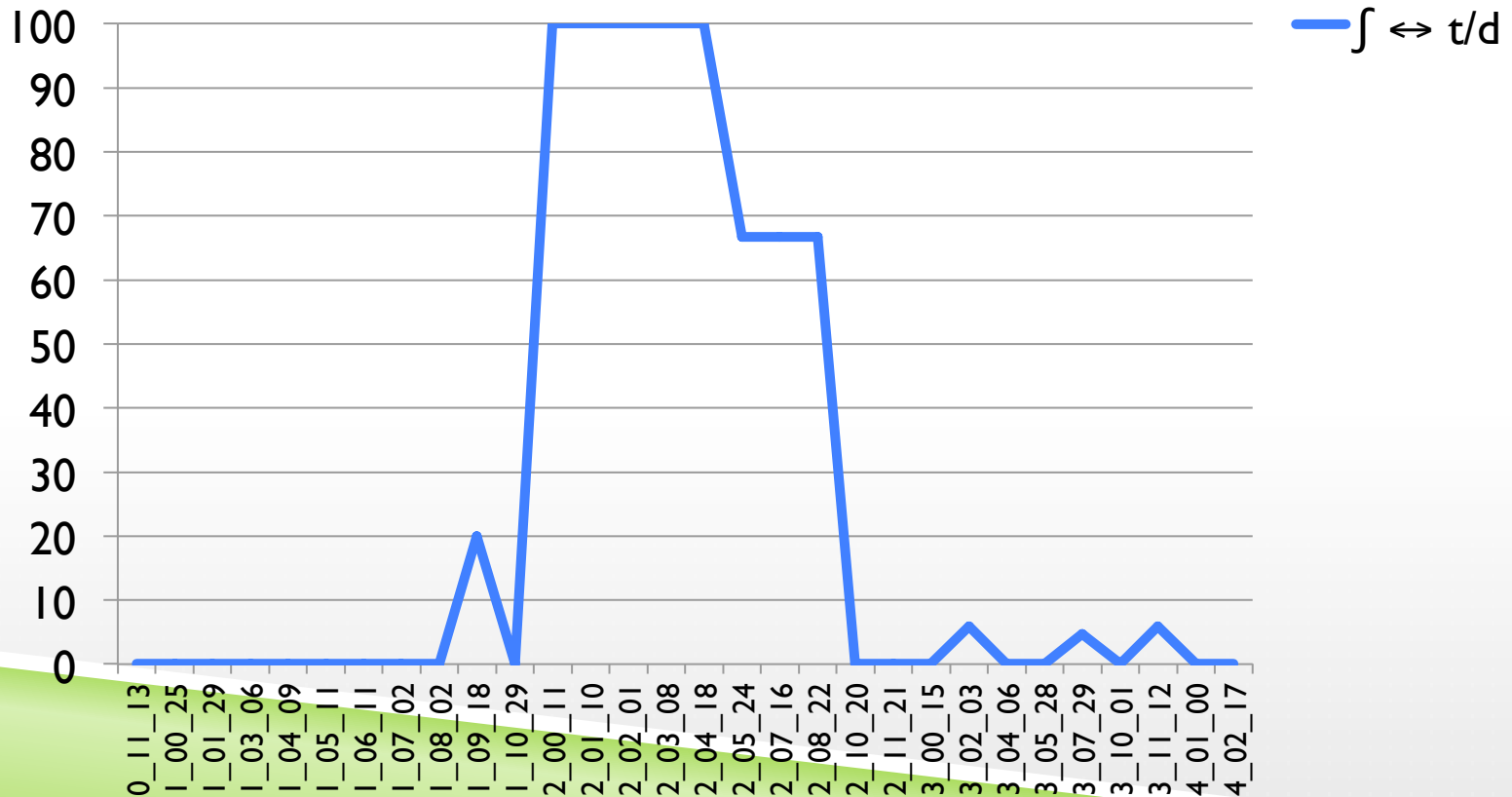
Inês's Fricative Stopping

► Fricative onsets



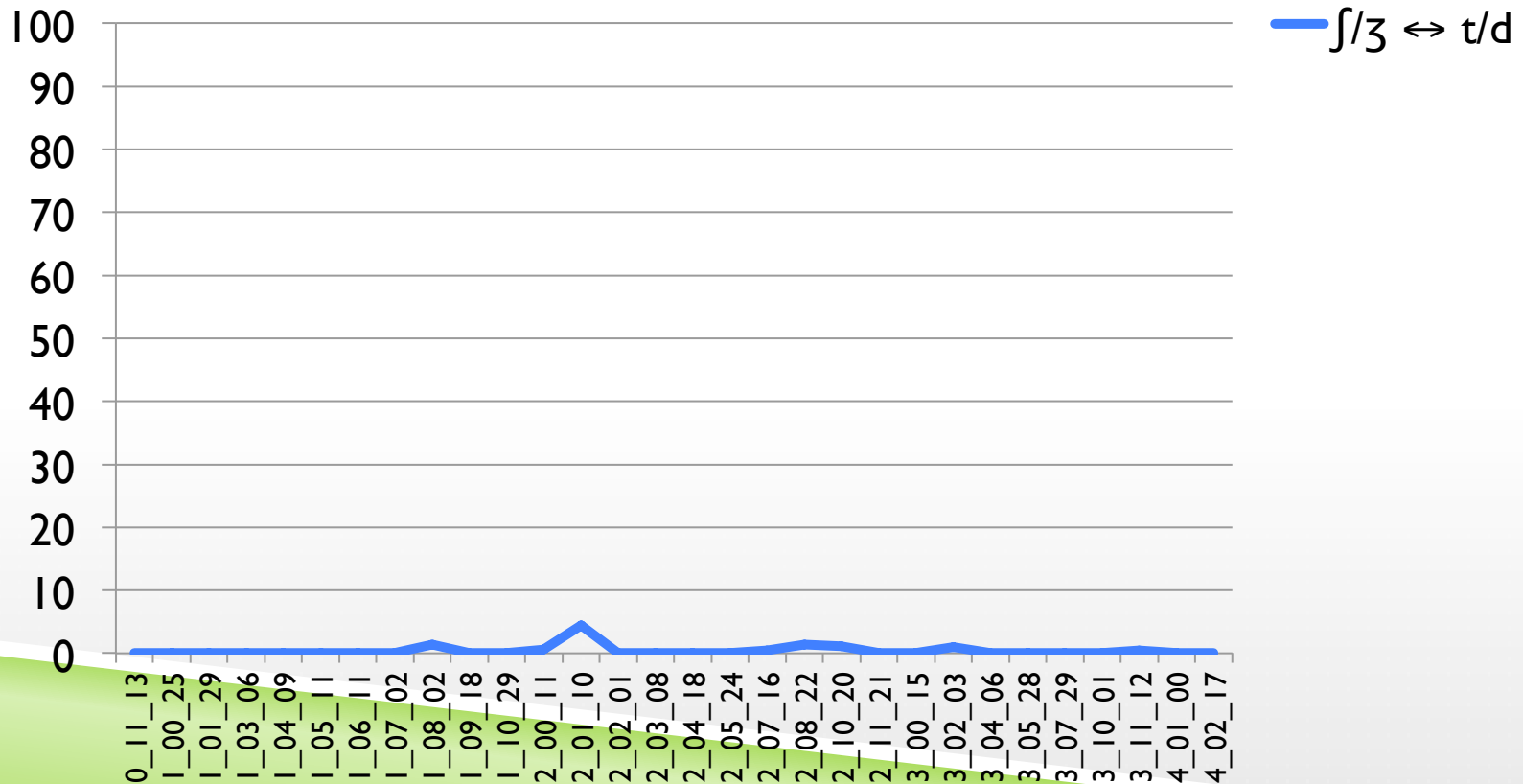
Inês's Fricative Stopping

- ▶ Resyllabified coda /ʃ/ (before vowel-initial words)



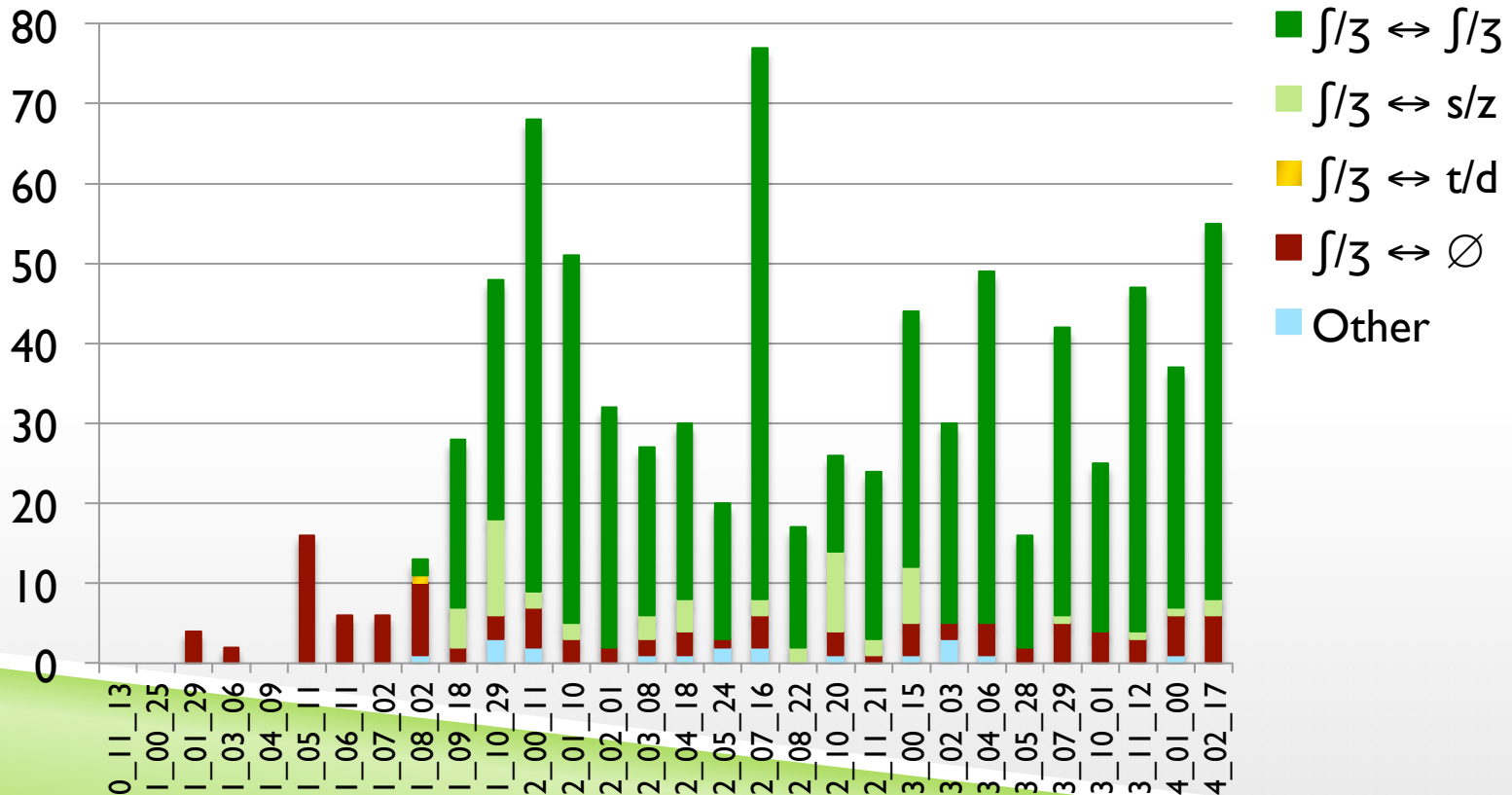
Inês's Fricative Stopping

► Non-resyllabified coda /ʃ/



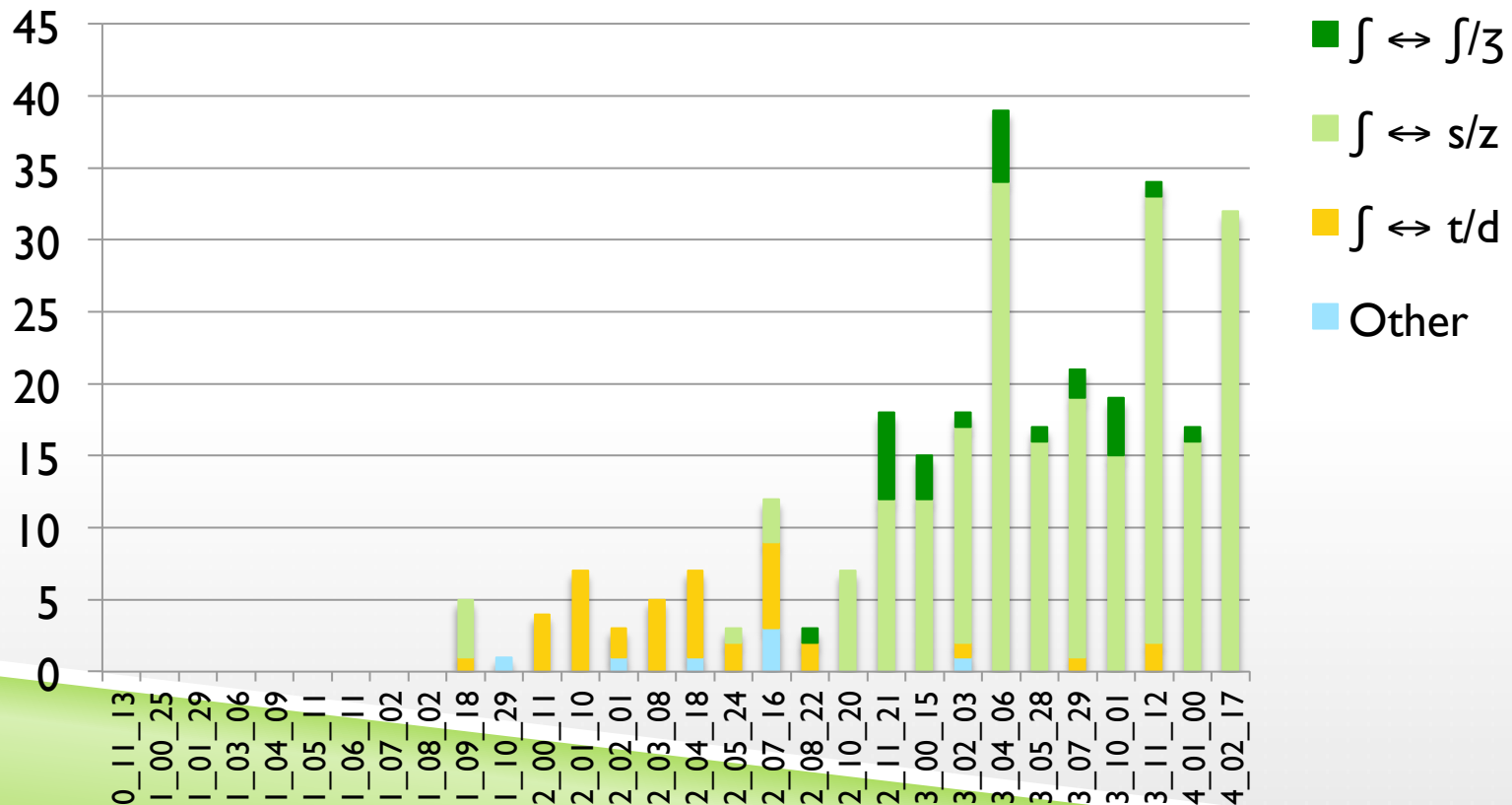
Inês's Development

► /ʃ/ in utterance final codas



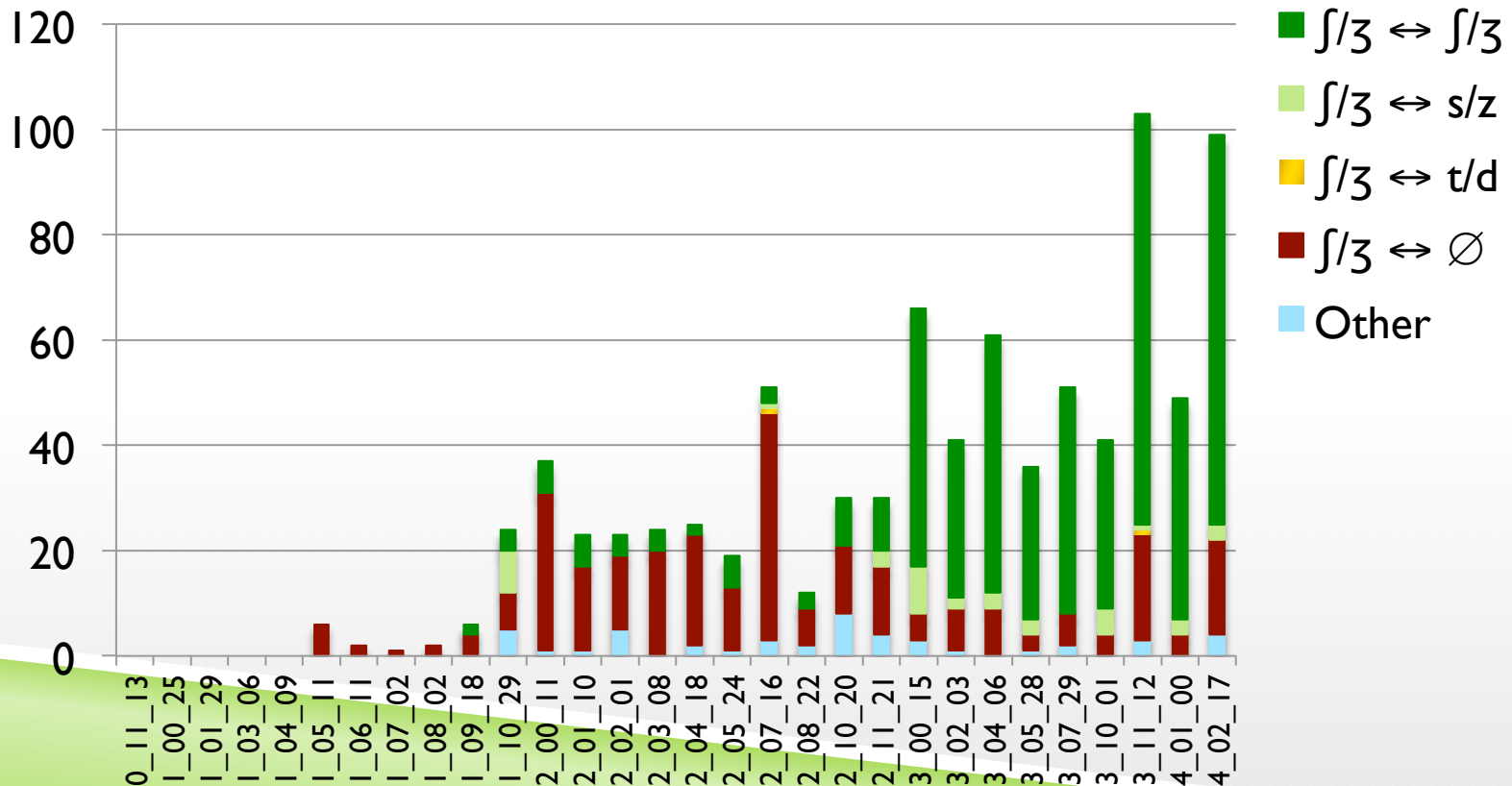
Inês's Development

► /ʃ/ in utterance medial word final codas (resyllabified)



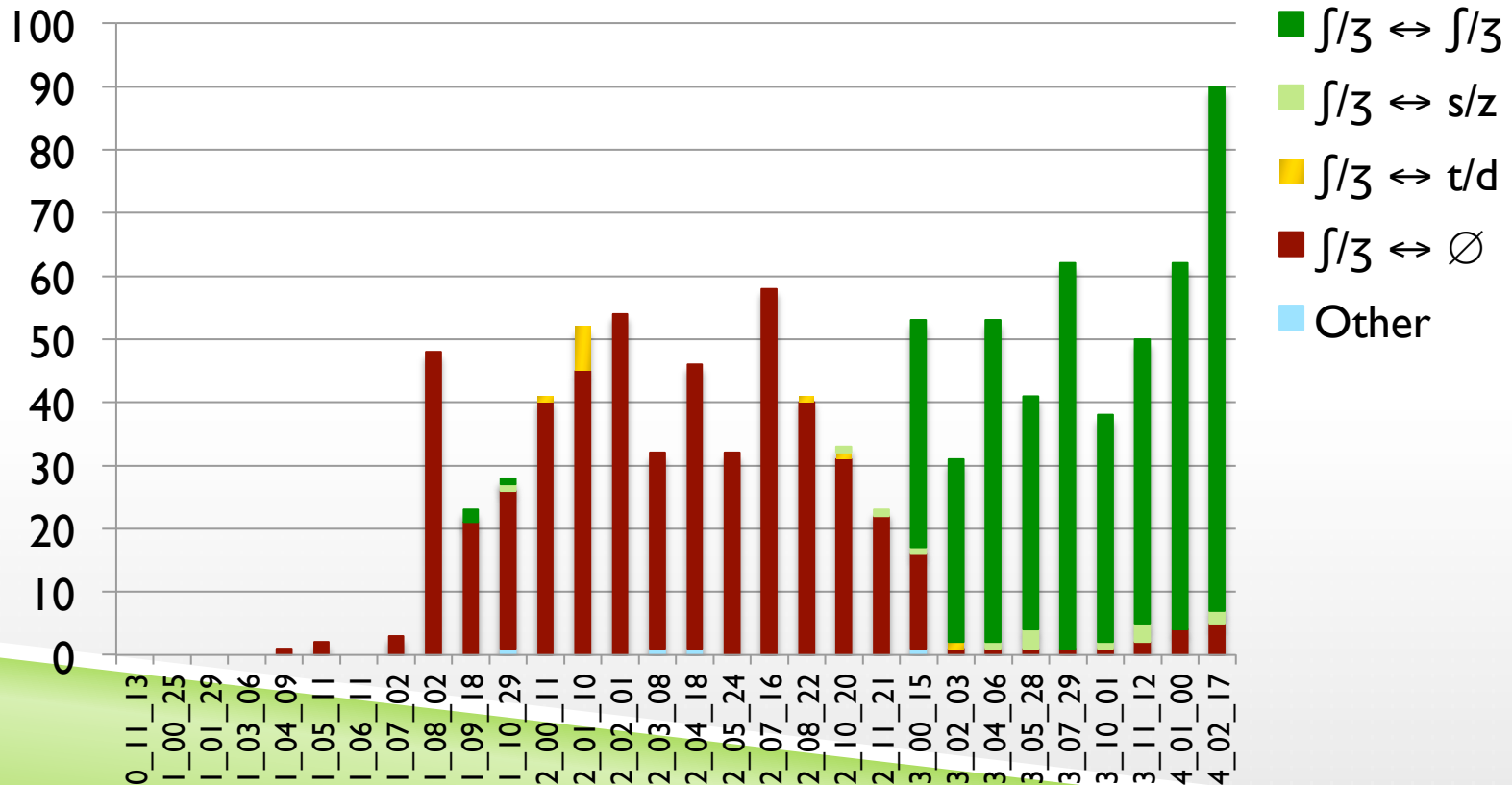
Inês's Development

► /ʃ/ in ... word final codas (non-resyllabified)

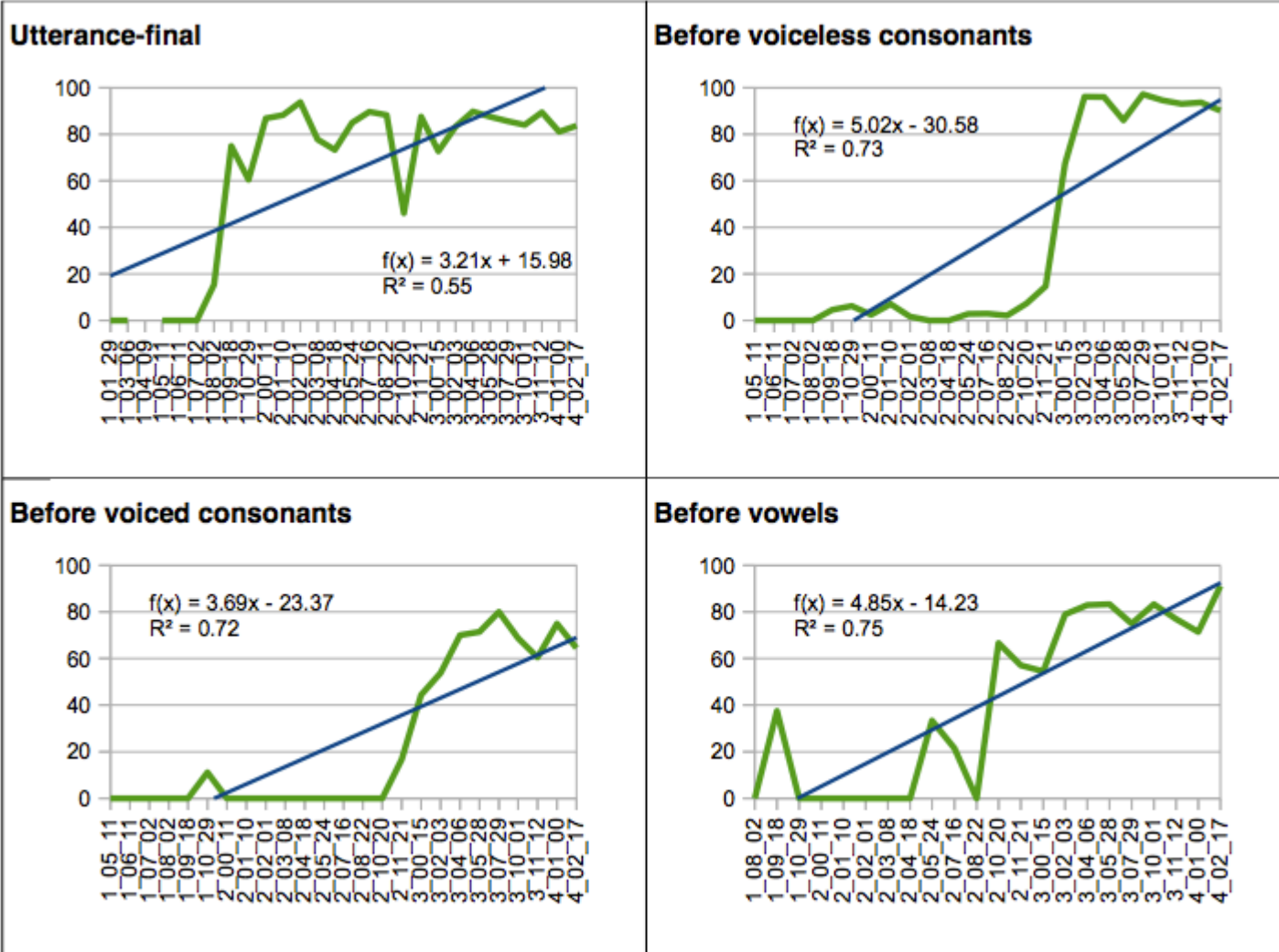


Inês's Development

► /ʃ/ in word medial codas



Inês's Development

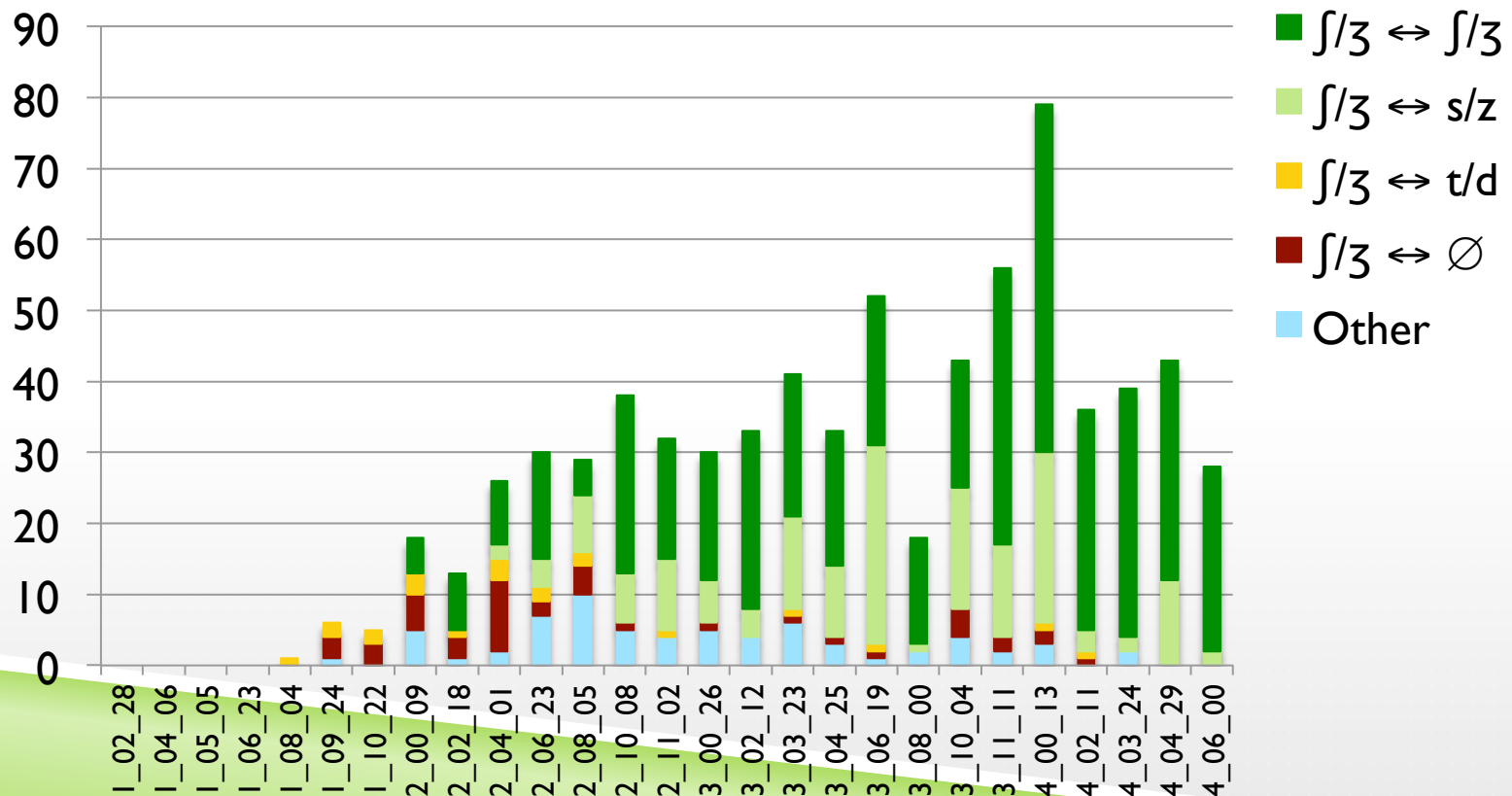


Joana – a statistical/gradient learner

- ▶ With respect to the development of /ʃ/ and /ʒ/ in different positions (i.e. within the syllable, word, or utterance), Joana shows no clear positional effects
- ▶ She shows no sweeping changes, including no deletion stages which could reflect her awareness of syllable positions she doesn't understand

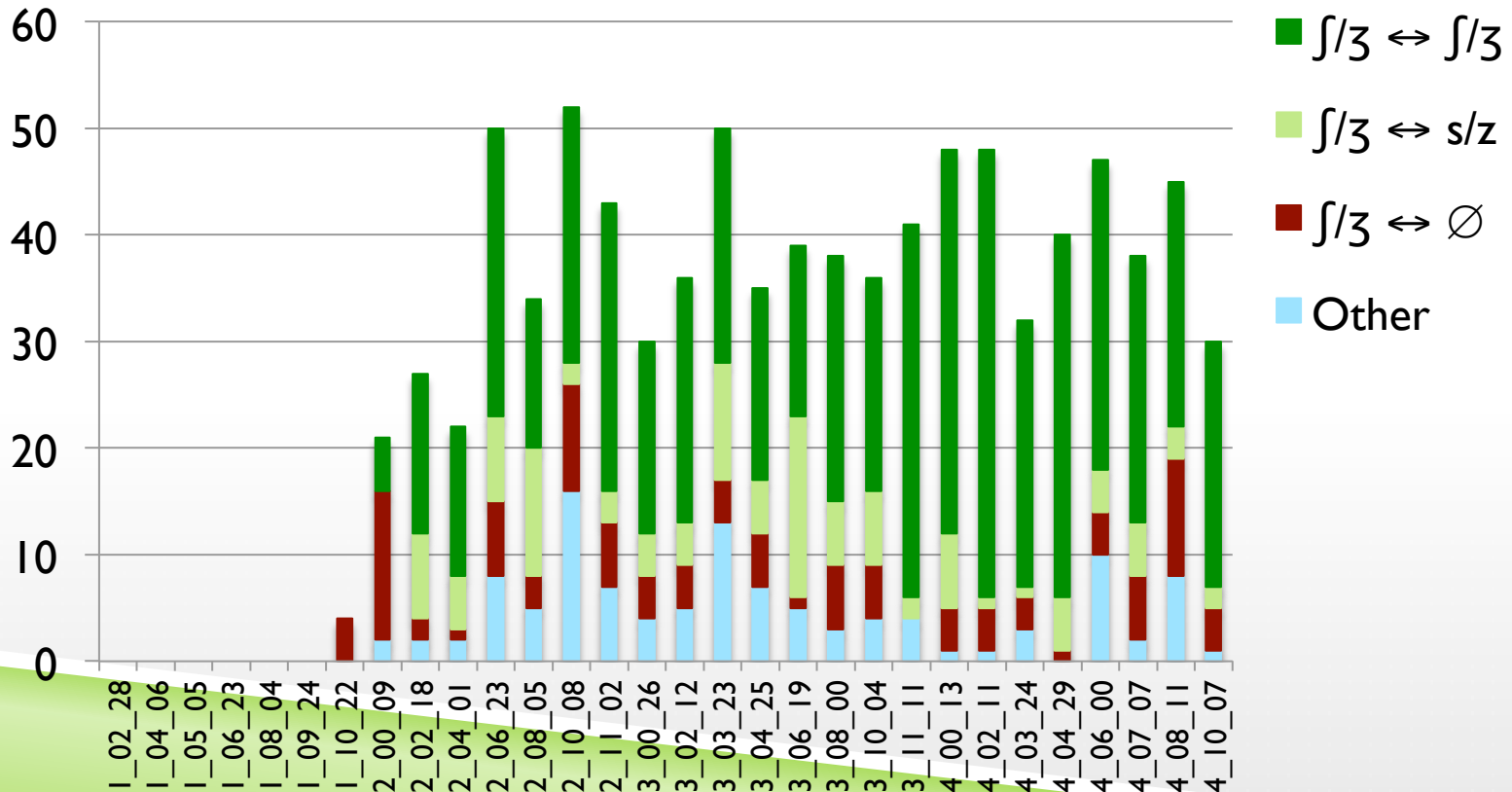
Joana's Development

► /ʃ/ and /ʒ/ in onsets



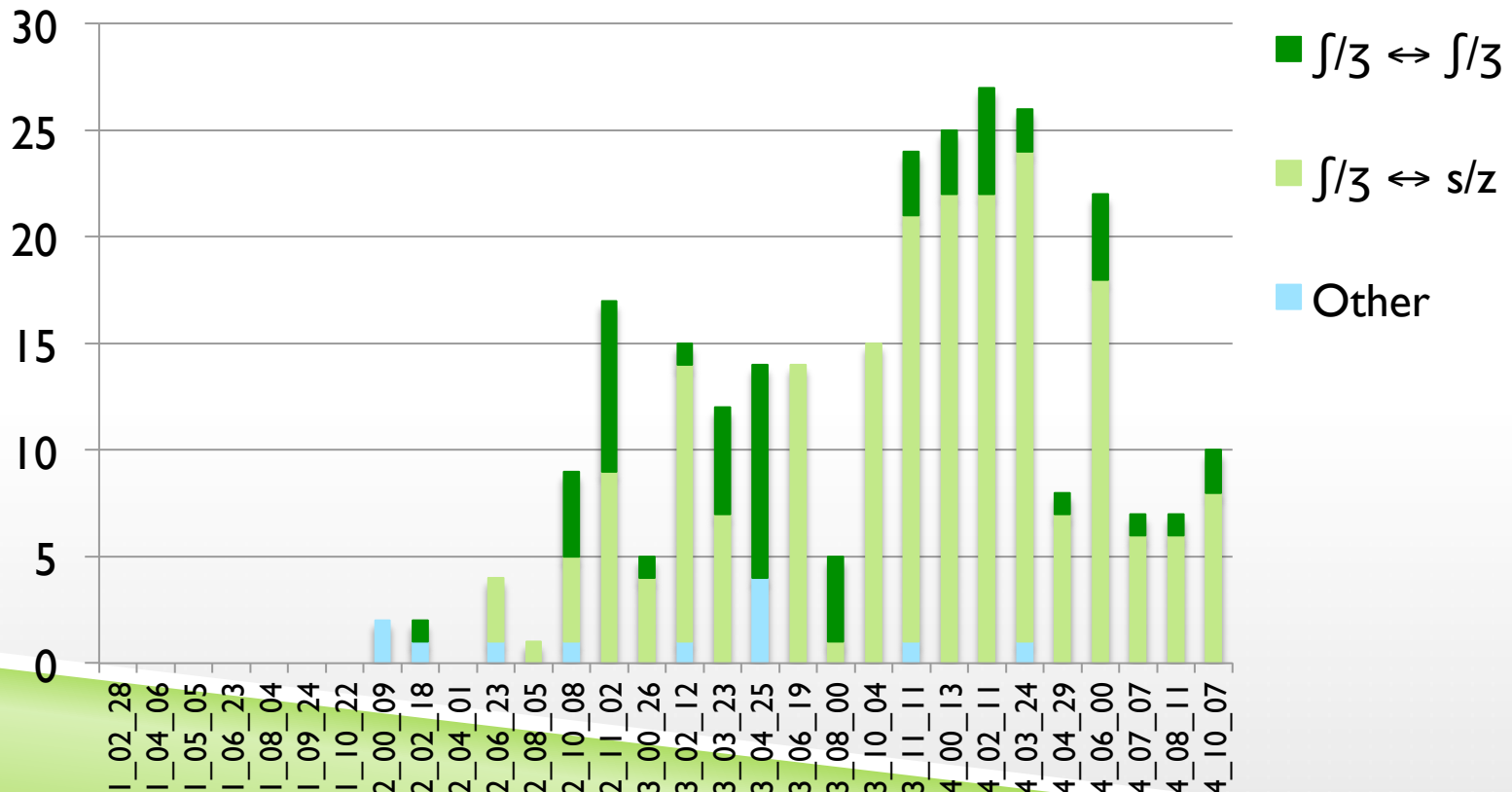
Joana's Development

► /ʃ/ in utterance final codas



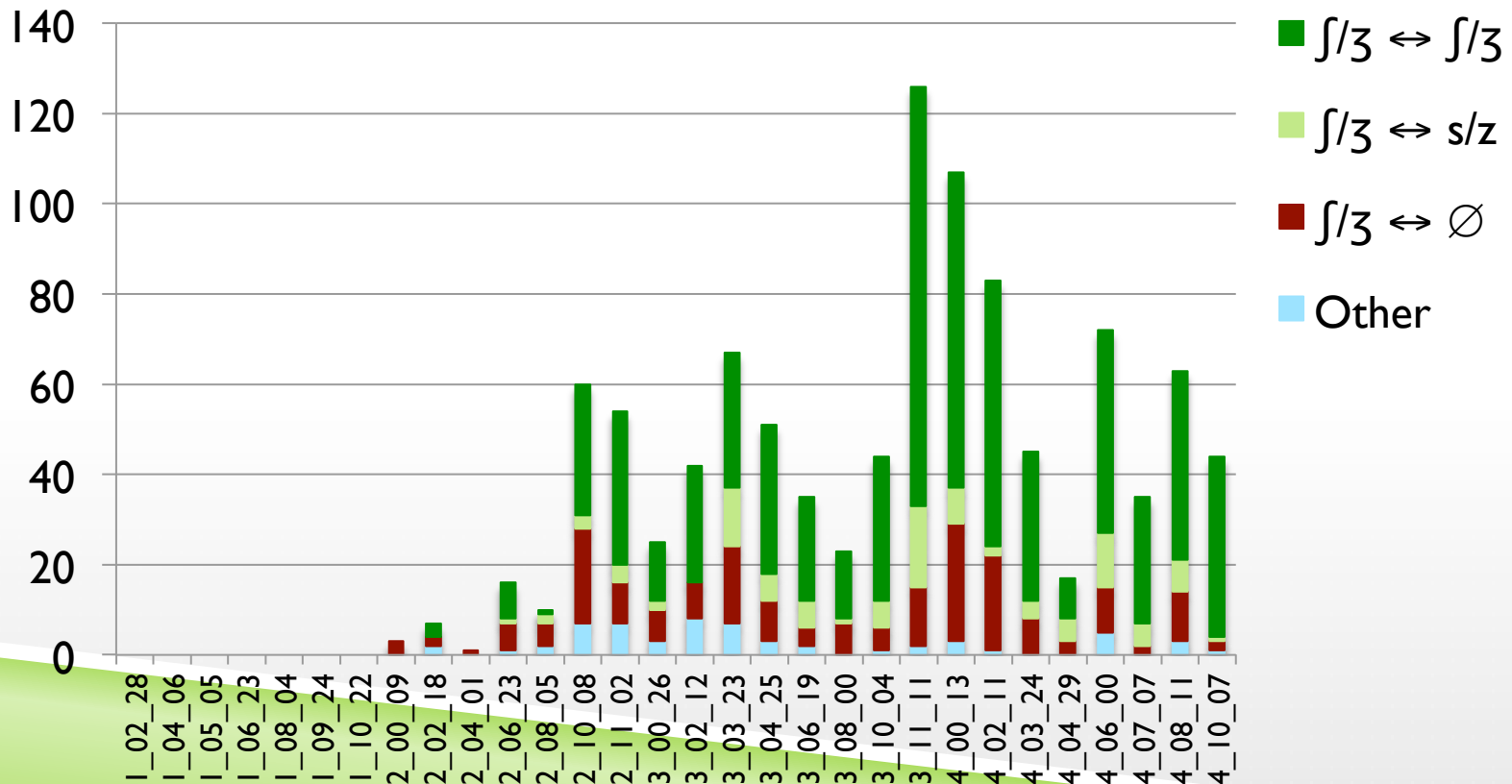
Joana's Development

- ▶ /ʃ/ in utterance medial word final codas (resyllabified)



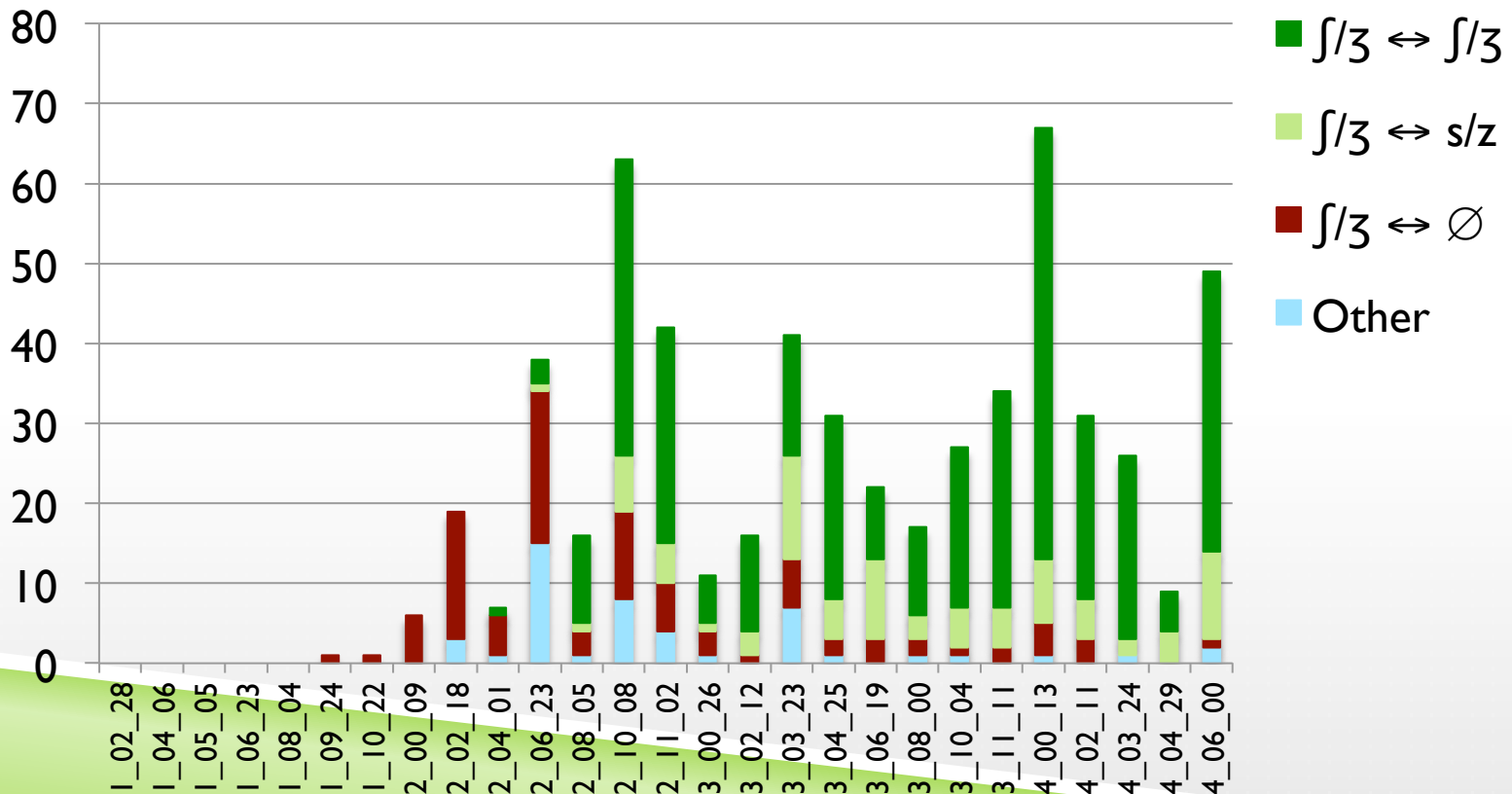
Joana's Development

► /ʃ/ in ... word final codas (non-resyllabified)



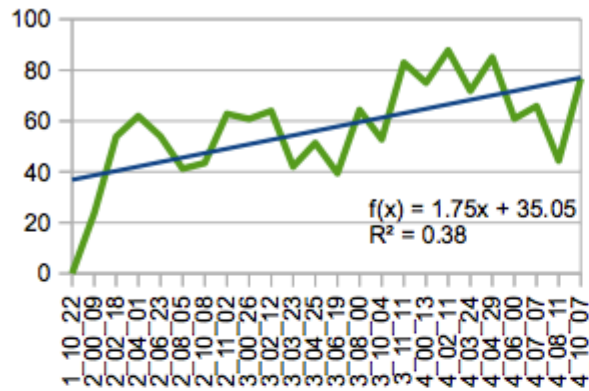
Joana's Development

► /ʃ/ in word medial codas

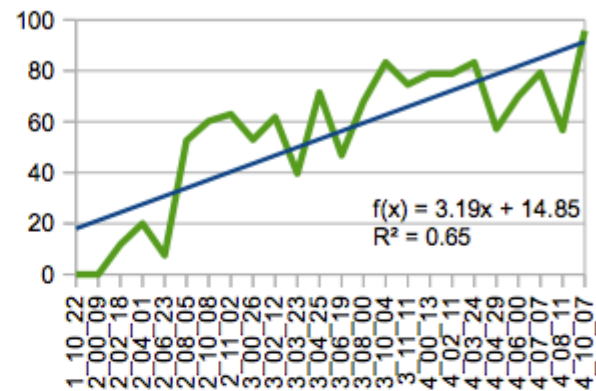


Joana's Development

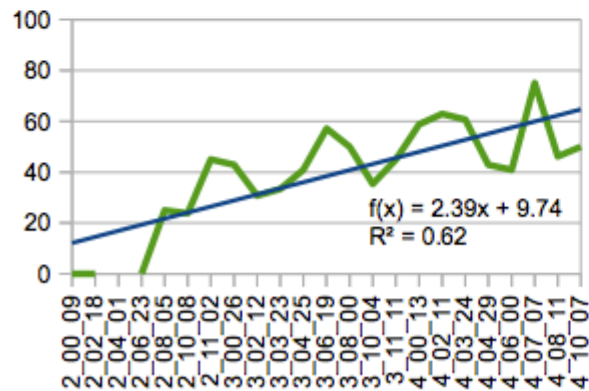
Utterance-final



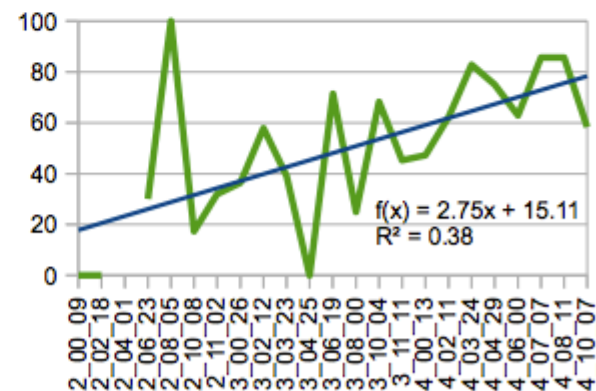
Before voiceless consonants



Before voiced consonants



Before vowels




Summary

- ▶ Inês was influenced by different prosodic contexts; her data also showed cases where grammatical understanding was preceded by stages of across-the-board deletion. This indicates structural awareness on Inês's part: in the face of structural elements for which she had no analysis, she produced no segment.

Summary

- ▶ Joana showed no stages of deletion on an equivalent scale, and no evidence of sweeping changes in production, which indicates a relative lack of awareness of the target conditioning environments: she generally attempted each target sound, irrespective of its structural position.

Conclusion

- ▶ Across-the-board segmental issues, with slow improvement, can be attributed to statistical learners (e.g. Joana).
 - ▶ However, some learners may display stages of development quite clearly in their productions (e.g. Ines), and in these cases it is important to understand where and why those stages occur, as they may be indicators of developments in understanding of a grammatical system.
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Thank you!

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