Revisiting the prefix/suffix asymmetry: Experimental evidence from Kîîtharaka

(…and English and Mandarin…)

Workshop on prefixes versus suffixes in Afroasiatic

Alexander Martin, 12/03/2022

Université Paris Cité

cnrs

Laboratoire de linguistique formelle

Talk outline

Introduction

1. Testing the ‘suffixing preference' in English and Kĩĩtharaka
2. Testing the ‘suffixing preference’ in Mandarin
3. Pitting processing accounts against each other

Discussion

Explaining typological regularities

Typology is shaped by a multitude of factors:

- Linguistic system (e.g., domain-specific representations)
- Cognition (e.g., domain-general biases)
- Cognition-external factors (e.g., history, geography)

Cognitive hypotheses make **testable predictions**!

Crucially, predictions should be borne out **across linguistic populations**

The ‘suffixing preference’

Classification	Nb. of languages
Little affixation	141
Strongly suffixing	406
Weakly suffixing	123
Equal prefixing and suffixing	147
Weakly prefixing	94
Strongly prefixing	58
Total	969

Preference for suffixes = 55%

Preference for prefixes = 16%

(Dryer 2013; Hawkins & Cutler 1988; Hupp et al. 2009)

Importance of word beginnings

(Nooteboom 1981)

Importance of word beginnings

passagier

(Nooteboom 1981)

Importance of word beginnings

passagier

p ɑ s aː ʒ i ɹ

(Nooteboom 1981)

Importance of word beginnings

passagier

p ɑ s aː ʒ i ɹ

#pɑsaː

(Nooteboom 1981)

Importance of word beginnings

passagier

p ɑ s aː ʒ i ɹ

#pɑsaː aːʒiɹ#

(Nooteboom 1981)

Importance of word beginnings

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p ɑ s aː ʒ i ɹ

#pɑsaː aːʒiɹ#

Both are totally unique sequences in Dutch…

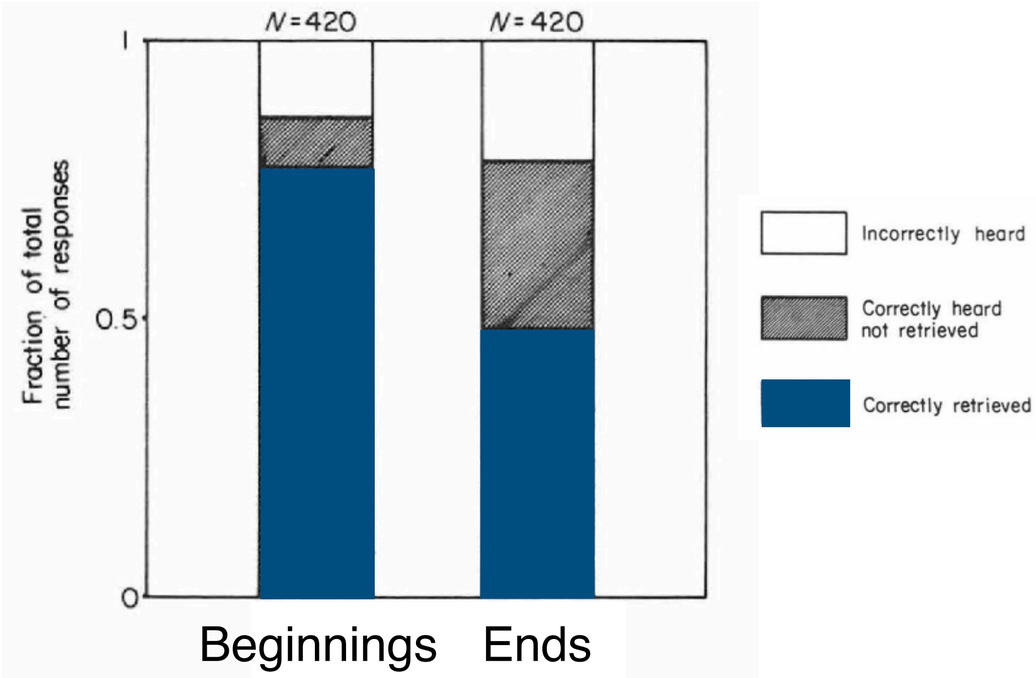
(Nooteboom 1981)

Importance of word beginnings

passagier

p ɑ s aː ʒ i ɹ

#pɑsaː aːʒiɹ#



Both are totally unique sequences in Dutch…

(Nooteboom 1981)

k	æ	p	t	ə	n	*CAPTAIN*
k	æ	p	t	ɪ	v	*CAPTIVE*
k	æ	p	ʃ	ə	n	*CAPTION*
k	æ	f	t	æ	n	*CAFTAN*

(e.g., Grosjean 1980; Marslen-Wilson 1987)

k	æ	p	t	ə	n	*CAPTAIN*
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(e.g., Grosjean 1980; Marslen-Wilson 1987)

k æ p t ə | n *CAPTAIN*

(e.g., Grosjean 1980; Marslen-Wilson 1987)

p	o	s	t	ə	p	*POSTAPOCALYPTIC*
p	o	s	t	m	ɑ	*POSTMODERN*
p	o	k				*POKE*
p	e	p	ɚ			*PAPER*

(e.g., Grosjean 1980; Marslen-Wilson 1987)

p	o	s	t	ə	p	*POSTAPOCALYPTIC*
p	o	s	t	m	ɑ	*POSTMODERN*
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p	o	s	t	ə	p	*POSTAPOCALYPTIC*
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(e.g., Grosjean 1980; Marslen-Wilson 1987)

p o s t ə | p *POSTAPOCALYPTIC*

(e.g., Grosjean 1980; Marslen-Wilson 1987)

postapocalyptic
postmodern
postmortem
postsurgical
…

happi**ness**
respectful**ness**
forgetful**ness**
friendli**ness**
…

(e.g., Hawkins & Cutler 1988)

postapocalyptic
postmodern
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…

happi**ness**
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forgetful**ness**
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…

Suffixes allow for earlier disambiguation amongst lexical competitors.

(e.g., Hawkins & Cutler 1988)

postapocalyptic
postmodern
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Suffixes allow for earlier disambiguation amongst lexical competitors.

They also preserve crucial word beginnings.

(e.g., Hawkins & Cutler 1988)

(i.a., Hupp et al. 2009; Murdock 1960; Neath 1993; Wright et al. 1985)

pear
tractor
book
telephone
building

(i.a., Hupp et al. 2009; Murdock 1960; Neath 1993; Wright et al. 1985)

pear	pear
tractor	tractor
book	book
telephone	?
building	building

(i.a., Hupp et al. 2009; Murdock 1960; Neath 1993; Wright et al. 1985)

pear	pear	pear
tractor	tractor	?
book	book	?
telephone	?	?
building	building	building

(i.a., Hupp et al. 2009; Murdock 1960; Neath 1993; Wright et al. 1985)

pear	pear	pear	pear
tractor	tractor	?	?
book	book	?	?
telephone	?	?	?
building	building	building	?

(i.a., Hupp et al. 2009; Murdock 1960; Neath 1993; Wright et al. 1985)

pear	pear	pear	pear
tractor	tractor	?	?
book	book	?	?
telephone	?	?	?
building	building	building	?

The first element of a sequence is perceptually salient.

(i.a., Hupp et al. 2009; Murdock 1960; Neath 1993; Wright et al. 1985)

pear	pear	pear	pear
tractor	tractor	?	?
book	book	?	?
telephone	?	?	?
building	building	building	?

The first element of a sequence is perceptually salient.

This domain-general bias influences word recognition.

(i.a., Hupp et al. 2009; Murdock 1960; Neath 1993; Wright et al. 1985)

1. Testing the ‘suffixing preference’ in English and Kĩĩtharaka

Work done in collaboration with:

Jennifer Culbertson

Which sequence is most similar to the base sequence?

ta - ba

base sequence

ta - ba - ra

‘suffixed’ sequence

ta - ba

identical sequence

(Hupp et al. 2009)

Which sequence is most similar to the base sequence?

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‘prefixed’ sequence

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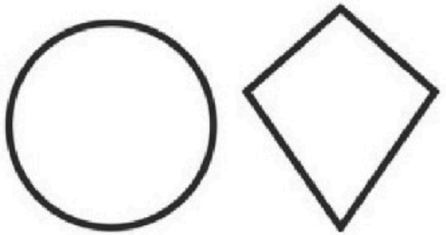
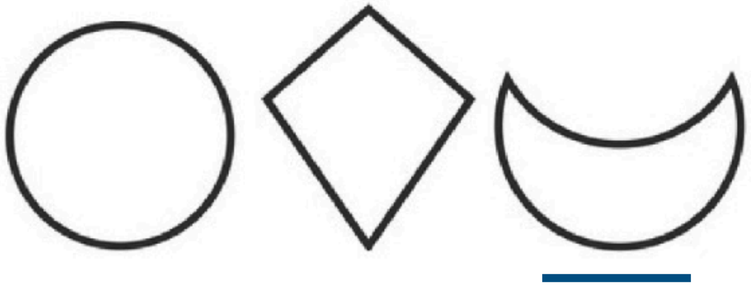
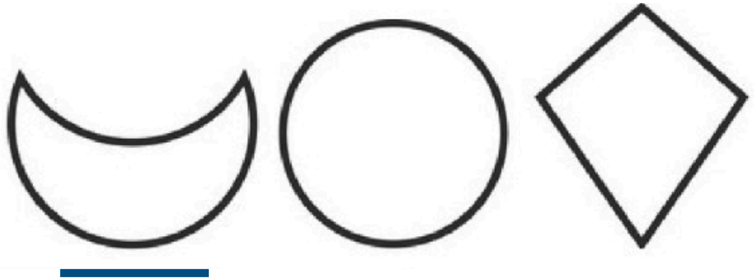


base sequence



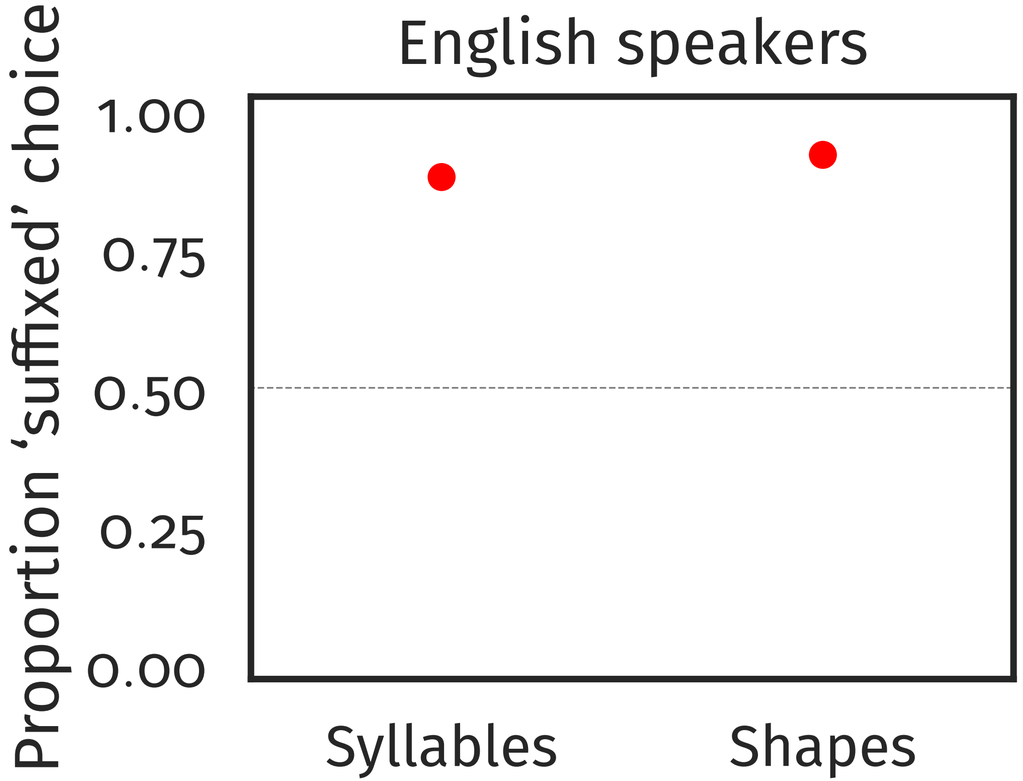
‘suffixed’ sequence

?



‘prefixed’ sequence

(Hupp et al. 2009)



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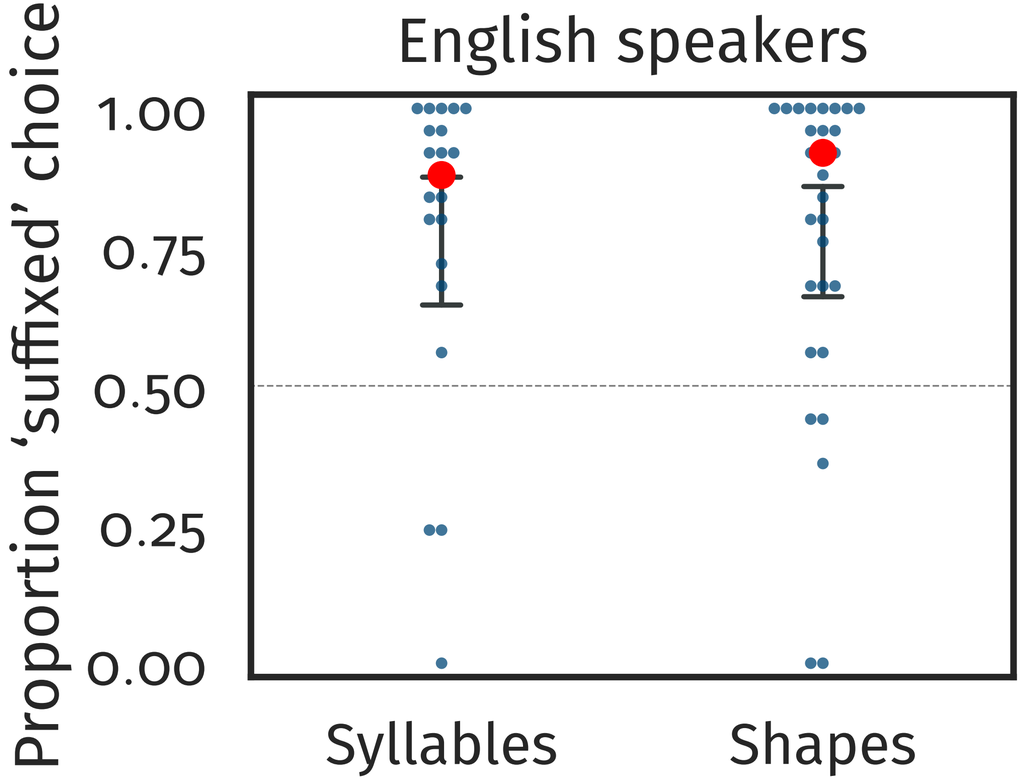

(Martin & Culbertson 2020)

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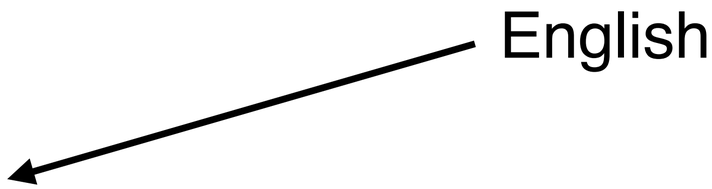

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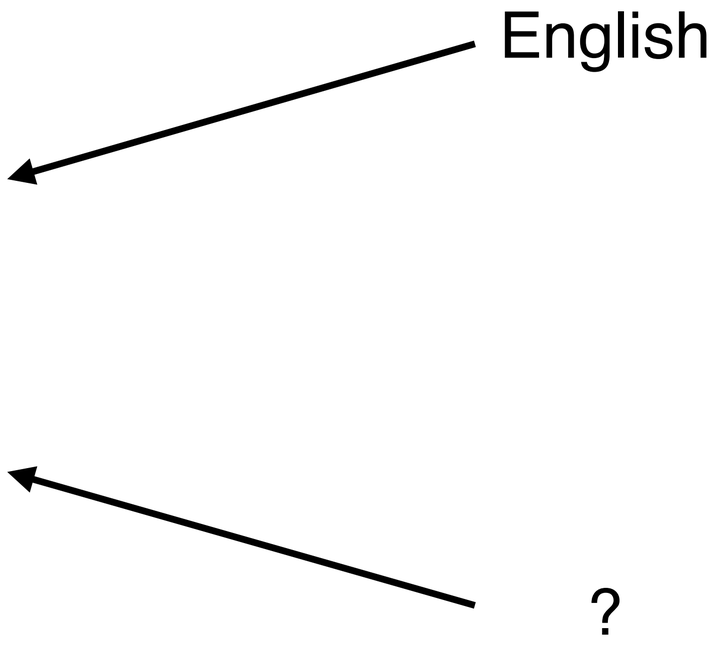
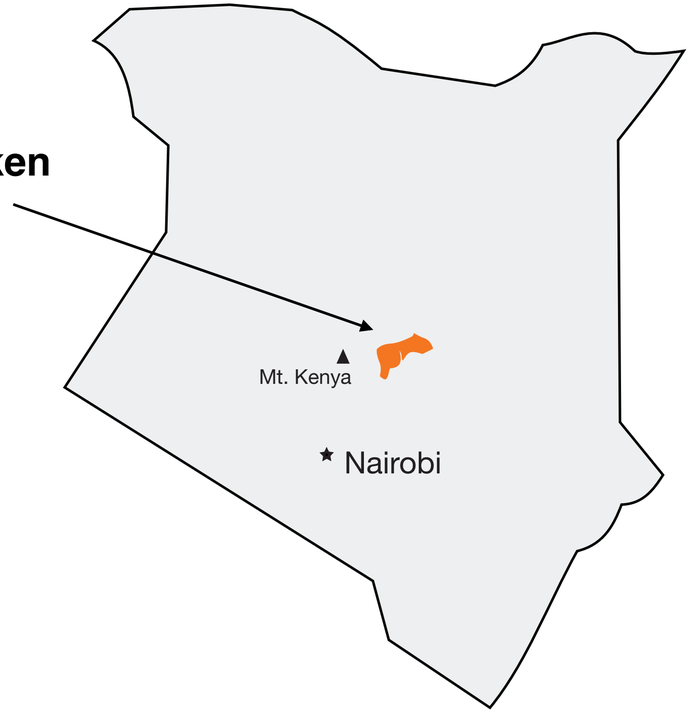


region where Kĩĩtharaka is spoken

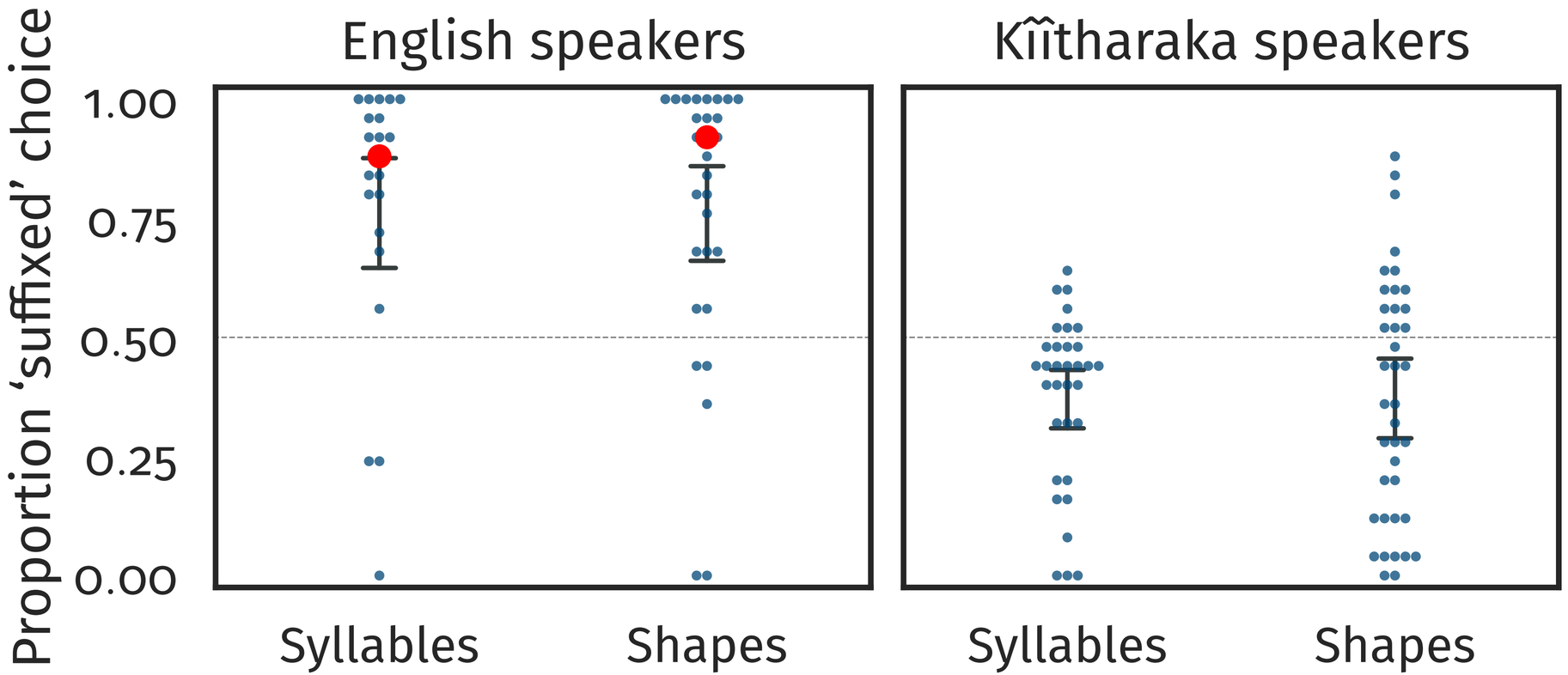


Kĩĩtharaka

(1) **tû-bûri** **tû-ra** **tû-îrî** **itû-thi-re**

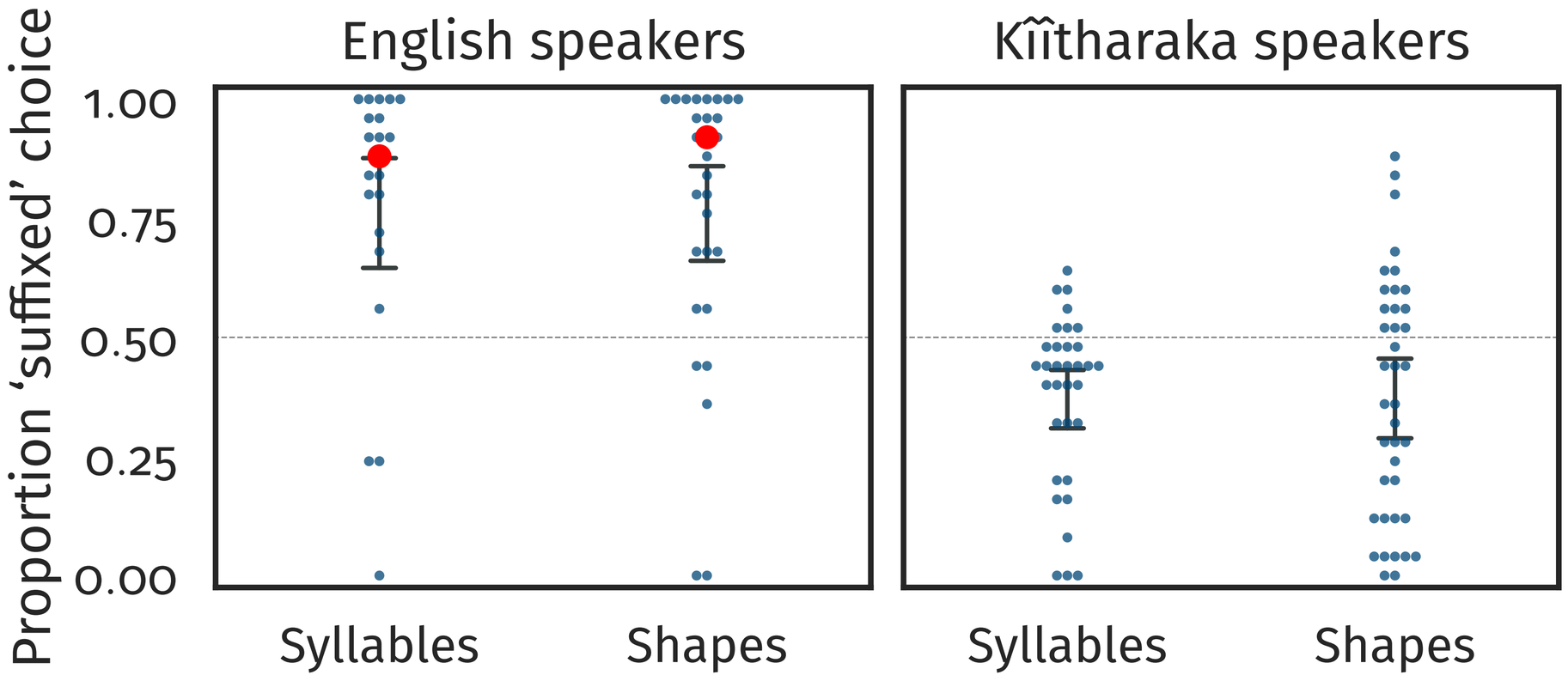
CL_{13}-goat CL_{13}-DIST CL_{13}-two AGR_{13}-leave-PFV

those two small goats left



(Martin & Culbertson 2020)

Preferences in our task seem to track native language affixation patterns!

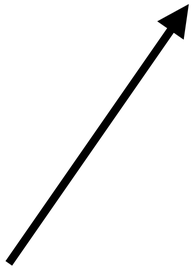


(Martin & Culbertson 2020)

happi**ness**
respectful**ness**
forgetful**ness**
friendli**ness**
…

magûna
matanka
makome
marandû
…

happi**ness**
respectful**ness**
forgetful**ness**
friendli**ness**
…



magûna
matanka
makome
marandû
…

The *beginning* is informative;
pay attention to that!

The *ending* is informative; pay attention to that!

happi**ness**
respectful**ness**
forgetful**ness**
friendli**ness**
…

magûna
matanka
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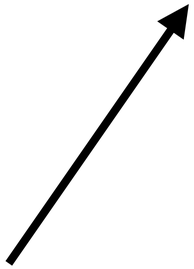

The *beginning* is informative; pay attention to that!

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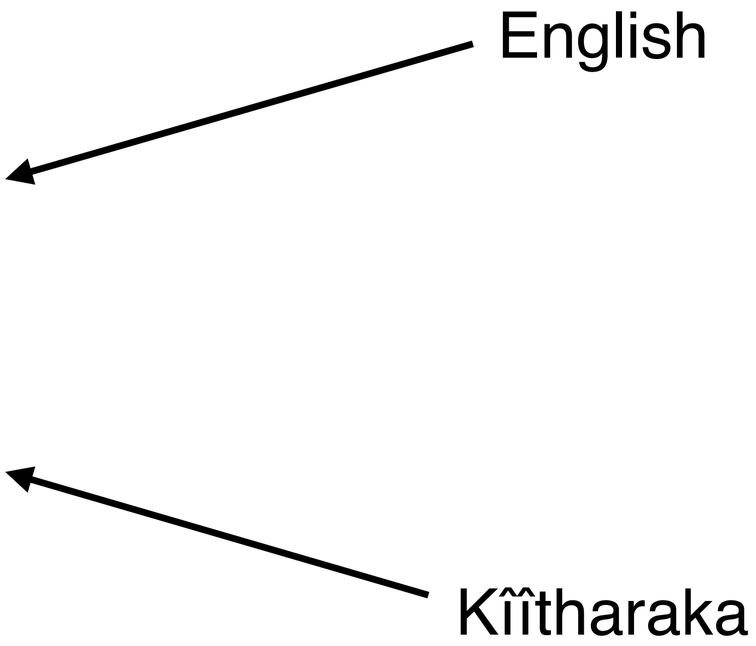

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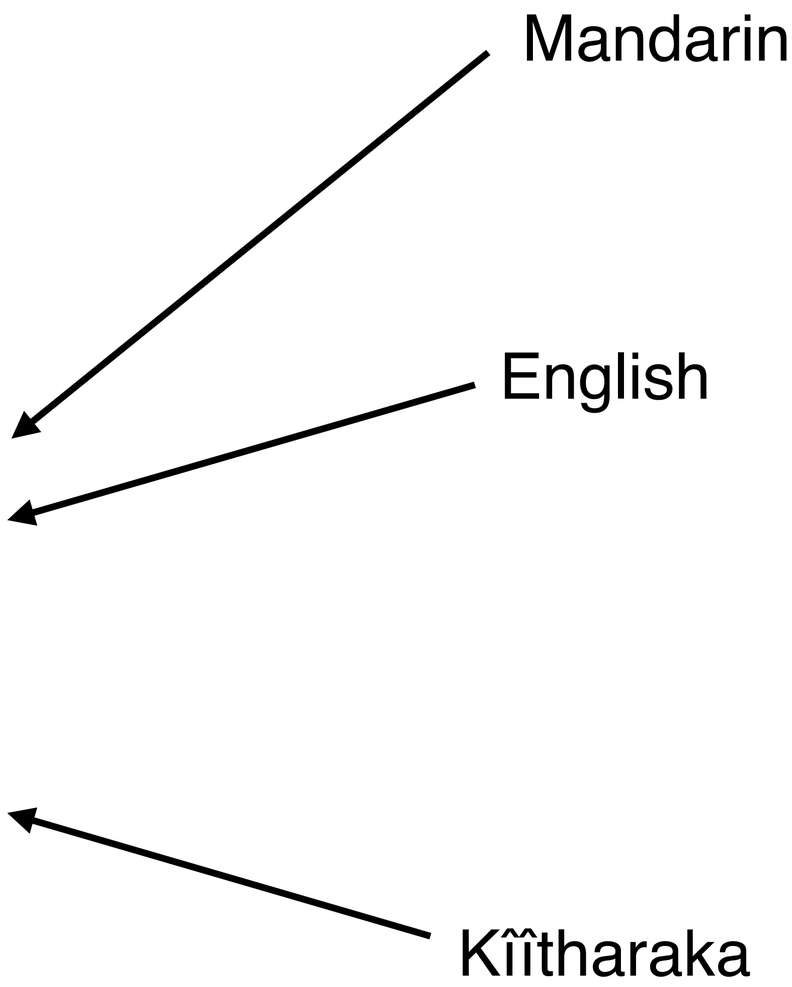


2. Testing the ‘suffixing preference’ in Mandarin

Work done by:

Xinyi Wang

Itamar Kastner

Label extension task (Bruening et al. 2012)

This is a *manse*:

Which one of these is a {*ko-manse*, *manse-ko*}?

Label extension task (Bruening et al. 2012)

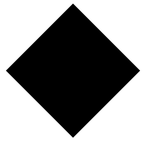
This is a *manse*:

Which one of these is a {*ko-manse*, *manse-ko*}?

English-speaking children *and* adults more readily extended labels with suffixes than those with prefixes.

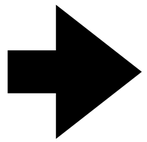
This is a *pefi.*

这是*pefi.*



Here are two items. Which one is a {*pefizo, zopefi*}?

下面 有两个图形, 哪一个是{*pefizo, zopefi*}?



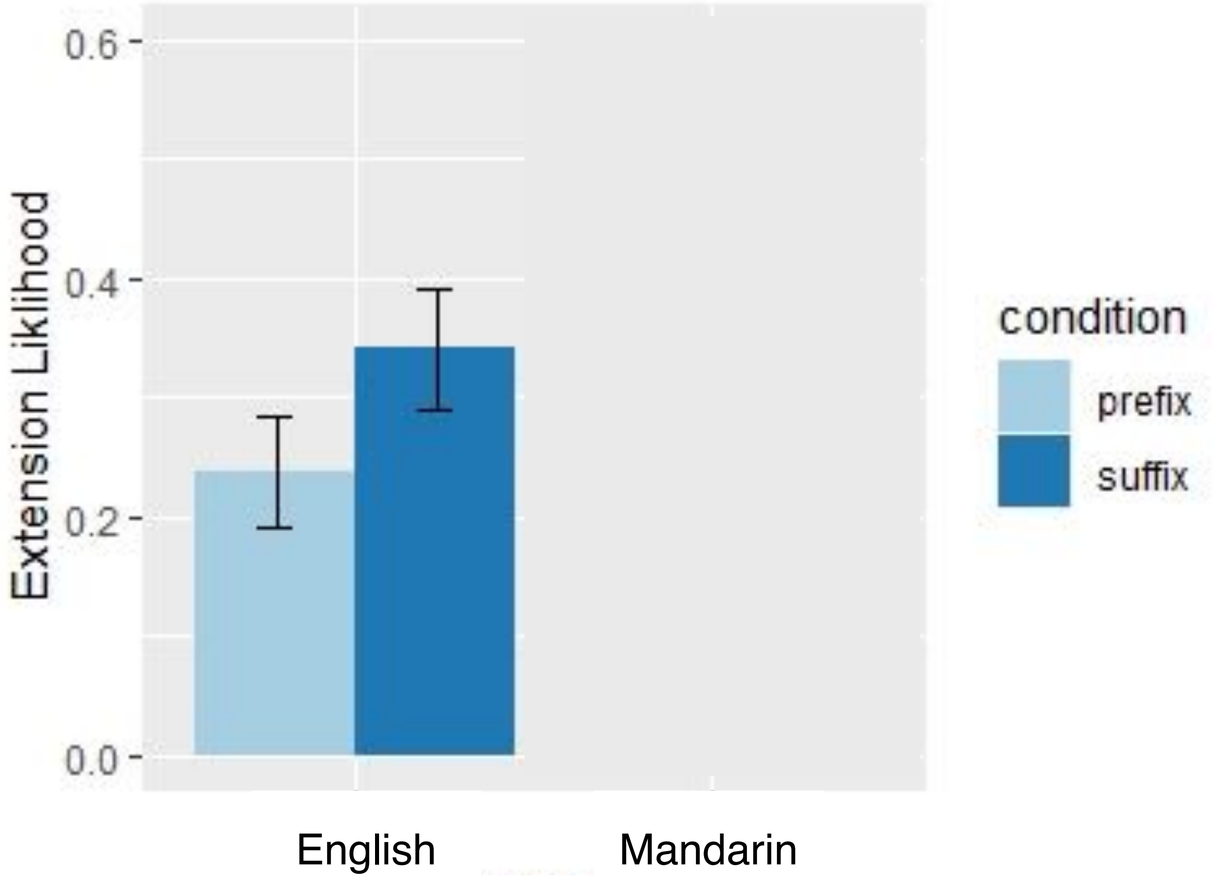
(Wang & Kastner 2020)

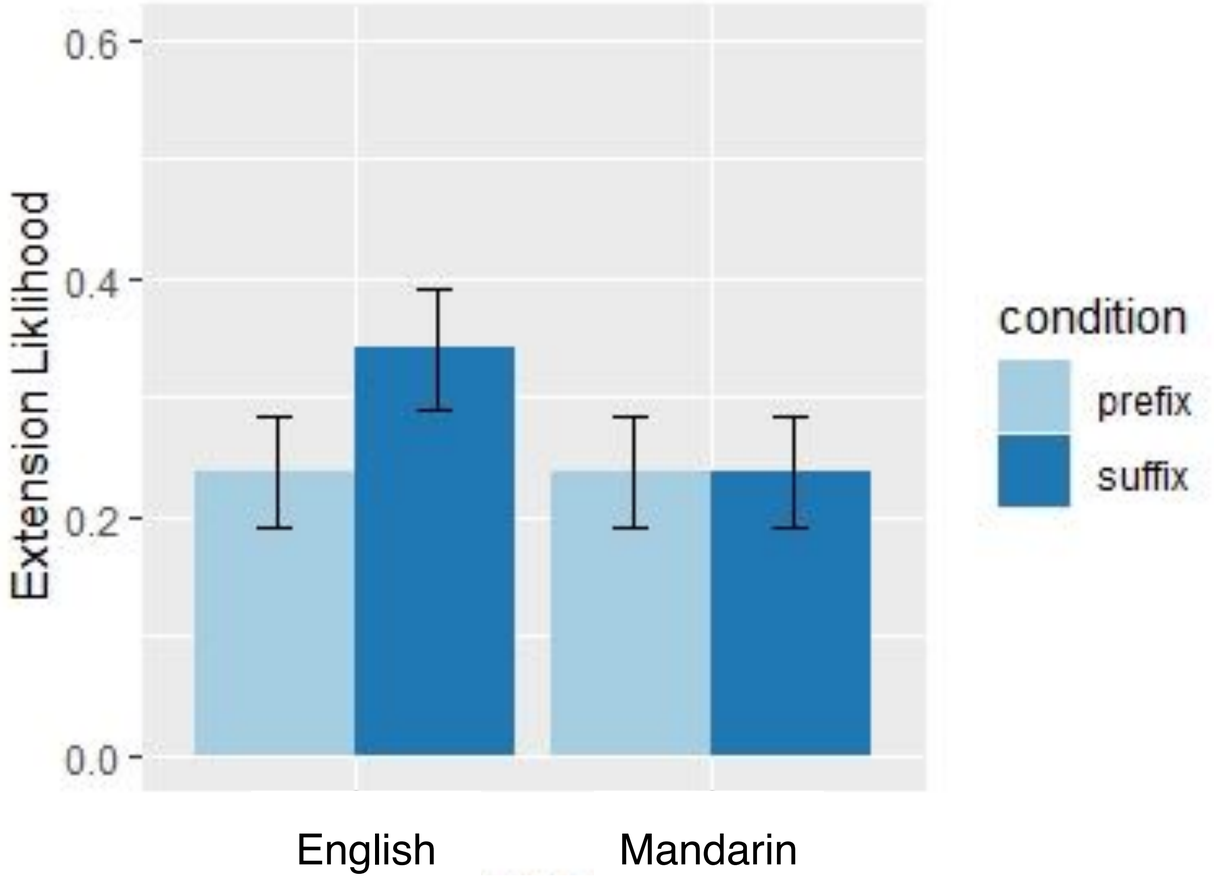
This is a *pefi.*

这是*pefi.*

How often do participants extend the label (i.e., choose the same shape)?

(Wang & Kastner 2020)


0.6
0.4
0.2
0.0
Extension Liklihood
English
Mandarin
condition
prefix
suffix


Extension Liklihood
0.6
0.4
0.2
0.0
English
Mandarin
condition
prefix
suffix

So English-, Kĩĩtharaka-, and Mandarin-speaking participants' responses are in line with the affixation patterns of their native language…

Are prefixes so detrimental to word recognition?

l	a	s	u	ʁ	i	*LA SOURIS*
l	a	s	u	ʁ	s	*LA SOURCE*
l	a	s	u	d		*LA SOUDE*
l	ə	ʃ	a			*LE CHAT*

(e.g., Van Heugten & Shi 2009)

l	a	s	u	ʁ	i	*LA SOURIS*
l	a	s	u	ʁ	s	*LA SOURCE*
l	a	s	u	d		*LA SOUDE*
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l	ə	ʃ	a			*LE CHAT*

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l	a	s	u	ʁ	i	*LA SOURIS*
l	a	s	u	ʁ	s	*LA SOURCE*
l	a	s	u	d		*LA SOUDE*

(e.g., Van Heugten & Shi 2009)

Is this a word?

(Taft et al. 1986)

Is this a word?

dejoice ***tejoice*** ***dejouse*** ***tejouse***

(Taft et al. 1986)

Is this a word?

dejoice	***tejoice***	***dejouse***	***tejouse***
823	669	794	712

(Taft et al. 1986)

Is this a word?

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(Taft et al. 1986)

‘listeners might actually ignore the acoustic information contained in the prefix while waiting for the acoustic information contained in the [stem]’ (Pycha 2015:56)

Is this a word?

dejoice	***tejoice***	***dejouse***	***tejouse***
823	669	794	712

(Taft et al. 1986)

‘listeners might actually ignore the acoustic information contained in the prefix while waiting for the acoustic information contained in the [stem]’ (Pycha 2015:56)

Listeners cannot use prefixes to predict upcoming information!

‘…do listeners experience spoken prefix material differently than [stems] and suffixes?’ (Pycha 2015:62)

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midquad ***moatward***

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midquad ***moatward***

Prediction

LTR: prefix noise = stem noise

Discont.: prefix noise > stem noise

‘…do listeners experience spoken prefix material differently than [stems] and suffixes?’ (Pycha 2015:62)

midquad ***moatward***

Prediction

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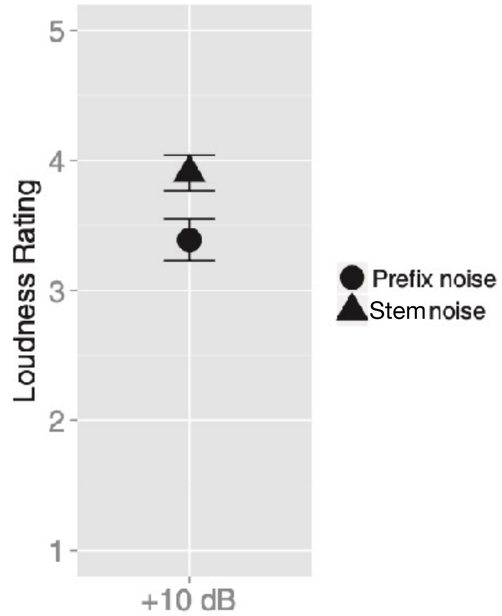

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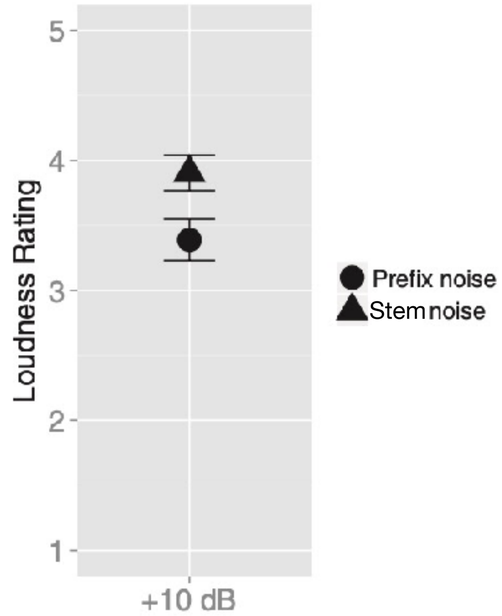

No such effect on control words:

middle ***awkward***

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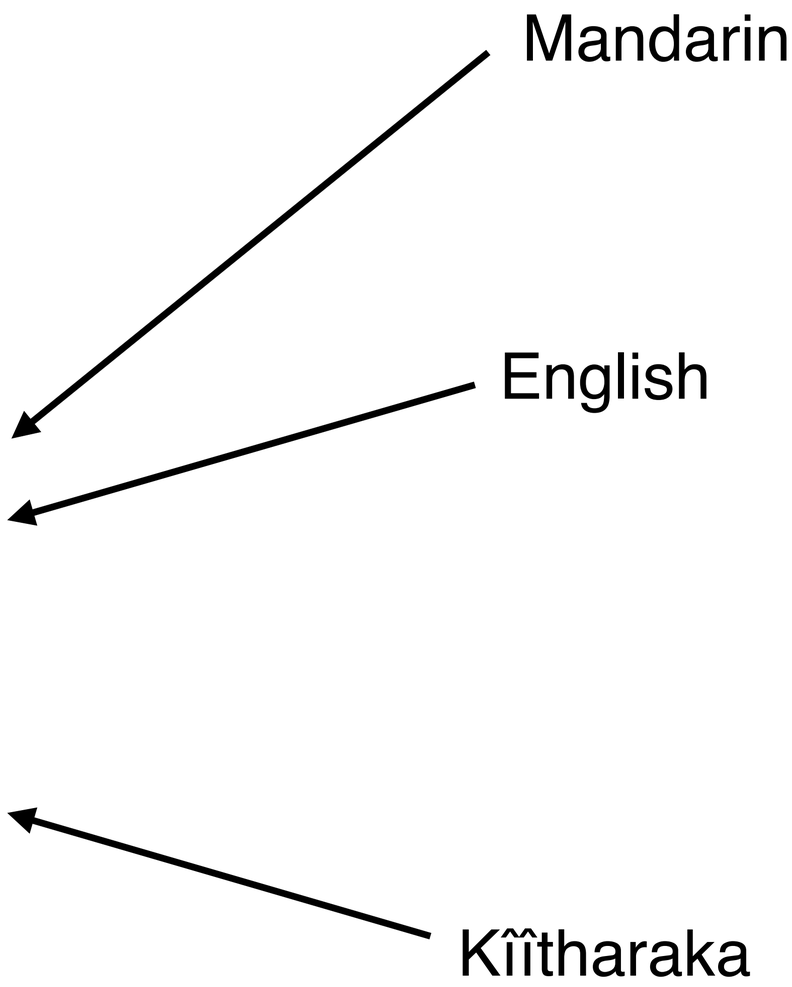


3. Pitting processing accounts against each other

Work (to be) done in collaboration with:

Jennifer Culbertson

John Hotson

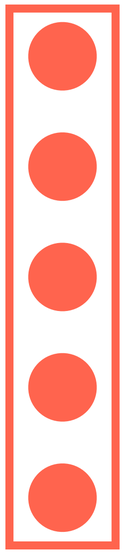
Itamar Kastner

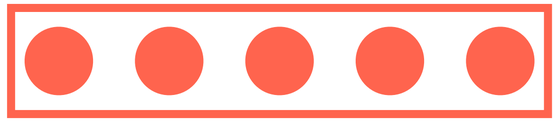
wʌgəmɛk

lɛʃəfɪp

a

o





wʌgəmɛk-a

wʌgəmɛk-o

lɛʃəfɪp-a

lɛʃəfɪp-o

a-wʌgəmɛk

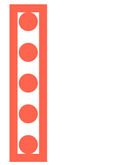
o-wʌgəmɛk

a-lɛʃəfɪp

o-lɛʃəfɪp

wʌgəmɛk
lɛʃəfɪp
a
o

wʌgəmɛk
lɛʃəfɪp
a
o



wʌgəmɛk

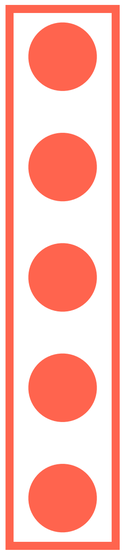
lɛʃəfɪp

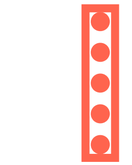
a

o

wʌgəmɛk-a

a-wʌgəmɛk

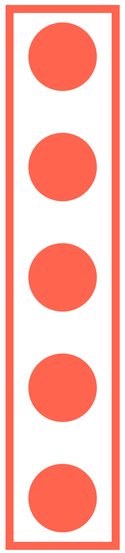




wʌgəmɛk lɛʃəfɪp a o

wʌgəmɛk-a

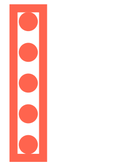
a-wʌgəmɛk



Predicted RT

LTR: prefixing = suffixing

Discont.: prefixing > suffixing



wʌgəmɛk

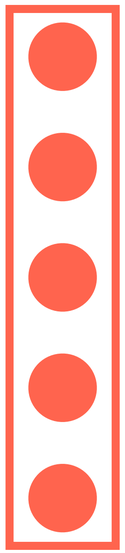
lɛʃəfɪp

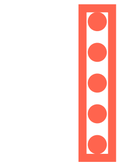
a

o

wʌgəmɛk-a

a-wʌgəmɛk

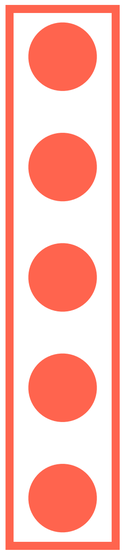




wʌgəmɛk lɛʃəfɪp a o

wʌgəmɛk-a

a-wʌgəmɛk



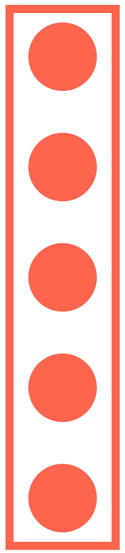
Predicted RT

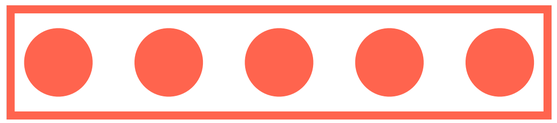
LTR: prefixing > suffixing

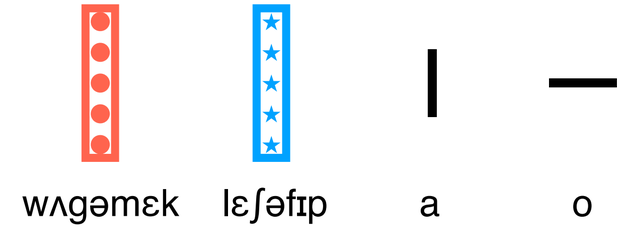
Discont.: prefixing > suffixing

wʌgəmɛk-a

a-wʌgəmɛk

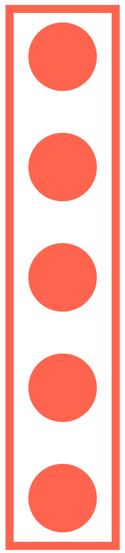


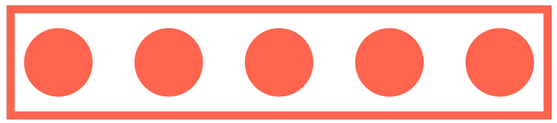




wʌgəmɛk-a

a-wʌgəmɛk





Predicted RT

LTR: prefixing << suffixing

Discont.: prefixing ≥ suffixing

Discussion

- **English**, **Kîîtharaka**, and **Mandarin** speakers' preferences align with L1 affixation patterns:

  Suffixes preferred for English speakers
  Prefixes preferred for Kîîtharaka speakers
  No preference for Mandarin speakers

- Prefixes might be helpful too: preceding grammatical information is useful [LTR] (Van Heugten & Shi 2009)

  …Unless listeners hold prefixes in memory and wait for the stem [discontinuous]
  Stay tuned for our next study!

- Alternative accounts:

  Constraints on prosodic phrasing (Himmelmann 2014)
  Contact (Guzmán Naranjo & Becker 2020)

Returning to typological regularities…

Typology is shaped by cognitive *and* non-cognitive factors…

Cognitive hypotheses make **testable predictions** that can be explored experimentally.

Crucially, **cross-linguistic** studies are necessary to make any claims about universality!

Thank you

More details in our paper:

Martin, A. & Culbertson, J. (2020). Revisiting the suffixing preference: Native language affixation patterns influence perception of sequences, *Psychological Science 31*(9), 1107–1116.

Design and analysis pre-registered at: https://osf.io/3z6kw

And in:

Wang, X. (2020). The suffix preference: Native languages and information load influence preference in word acquisition. University of Edinburgh MSc thesis.