

Issues in Third Language Acquisition and Development

Megan M. Brown

Boston University

Linguistic Theory and Second and Third Language Acquisition in Children and Adults

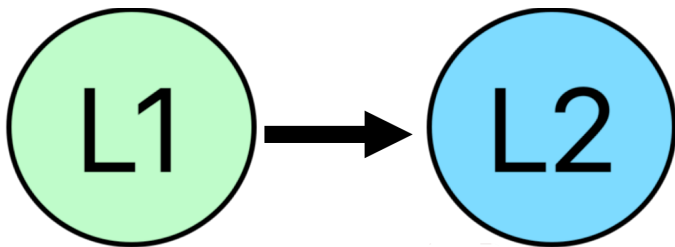
MIT Linguistics Department, March 28th, 2022



Outline

- ① L3 Grammatical Gender Acquisition
- ② L3 "Beginners" vs. L3 Initial State
- ③ L3 Phonology
- ④ Summary

L3 and Trilingualism Research



L3
Grammatical
Gender
Acquisition

Models of L3
Acquisition

Procedures

Results

Key Findings

L3
"Beginners"
vs. L3 Initial
State

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Procedures

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Key Findings

L3 Phonology

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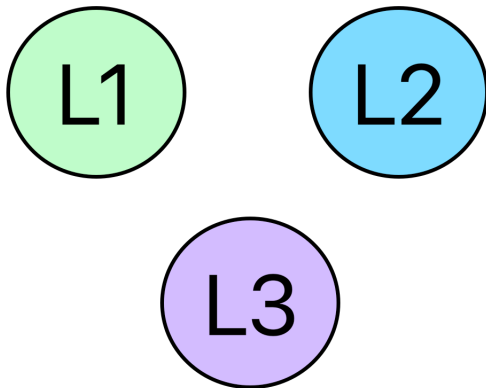
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L3 and Trilingualism Research



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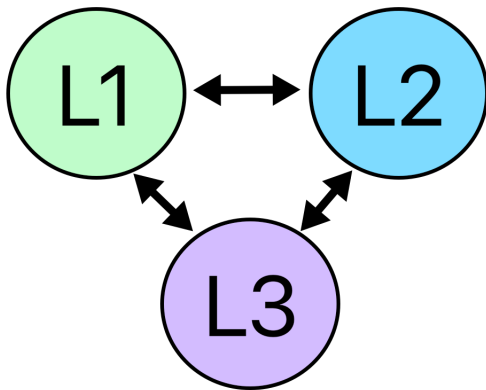
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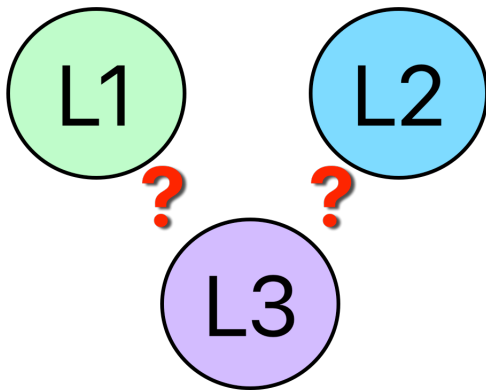
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Models of L3 Initial Transfer

Whole-Transfer Models

L1 Transfer

Hermas, 2010

L2 Status Factor

Bardel & Falk, 2007

Typological Primacy

Rothman, 2010

Language of Community

Fallah et al, 2016

Piecemeal-Transfer Models

Cumulative Enhancement

Flynn et al., 2004

Linguistic Proximity

Westergaard et al., 2017

Scalpel Model

Slabakova, 2017

Wholesale Transfer Models

L1 Transfer

L2 Status Factor Model

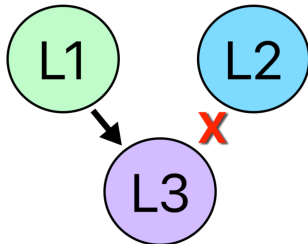
Typological Primacy Model

Language of Community

The L1 Transfer Proposal

Hermas (2010)

L1 grammar serves the
initial state for **all** new
languages.

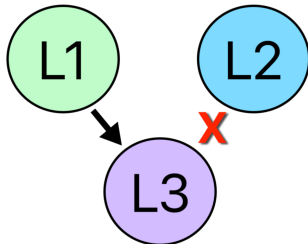


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TLA is the same process as SLA



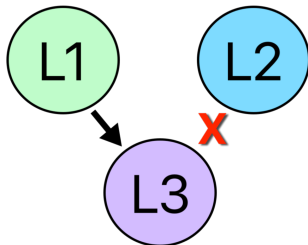
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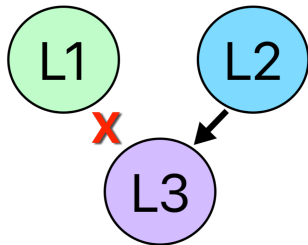
Transfer can be facilitative or non-facilitative.



L2 Status Factor Model

Bardel & Falk (2007)

L2 and L3 are
neurologically more similar

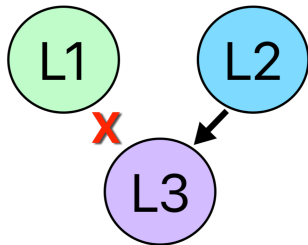


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Exclusive L2 Transfer



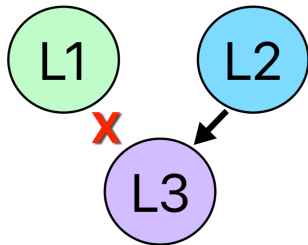
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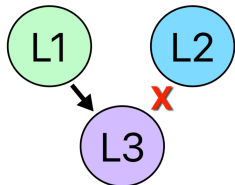
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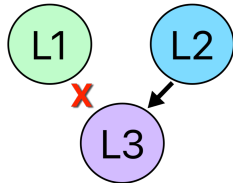
Typological Primacy Model

Rothman (2010)

The most **typologically similar** language transfers



OR

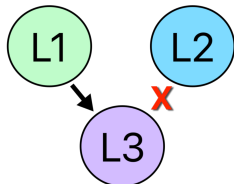


Typological Primacy Model

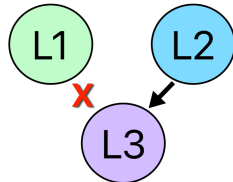
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The most **typologically similar** language transfers

Lexicon



OR



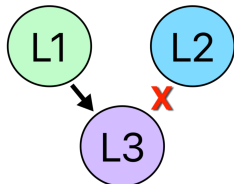
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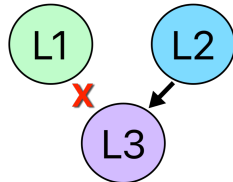
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Phonology



OR



Typological Primacy Model

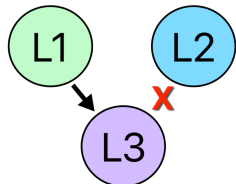
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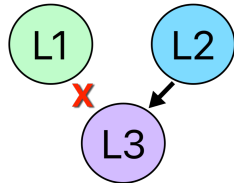
Lexicon

Phonology

Morphology



OR



Typological Primacy Model

Rothman (2010)

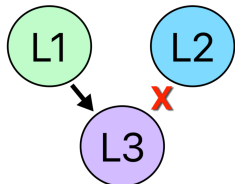
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Lexicon

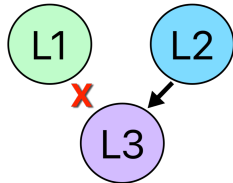
Phonology

Morphology

Syntax



OR

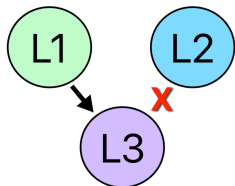


Language of Community

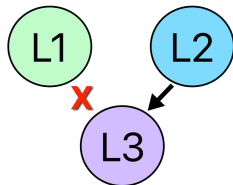
Hypothesis

Fallah et al. (2016)

The language using the
surrounding **community**
transfers



OR



Piecemeal Transfer Models

Cumulative Enhancement Model

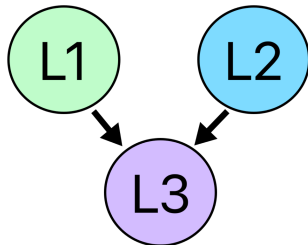
Linguistic Proximity Model

Scalpel Model

Cumulative Enhancement Model

Flynn et al. (2004)

Both languages can
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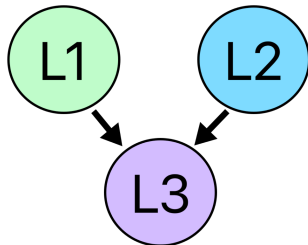


Cumulative Enhancement Model

Flynn et al. (2004)

Both languages can
transfer features.

Facilitative features will
transfer.



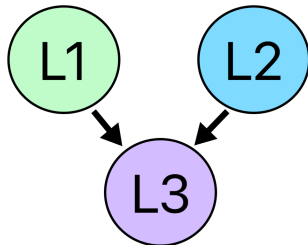
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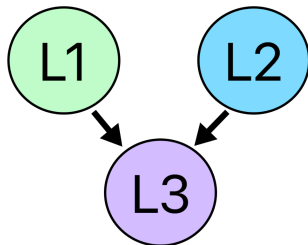
TLA is **cumulative**: the
grammar transfers and
develops features over
time.



Linguistic Proximity Model

Westergaard et al., (2017)

Similar to CEM, except...

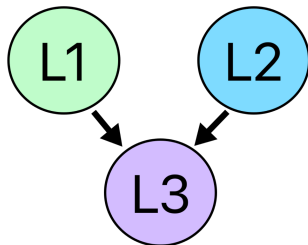


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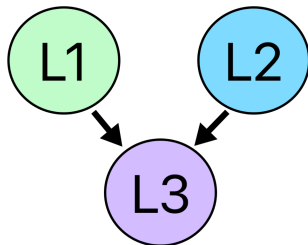
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Facilitative **and non-facilitative** features will transfer.

Typology influences transfer.

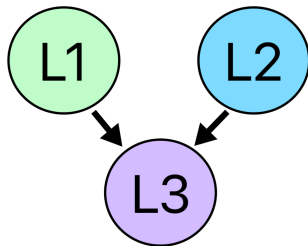


Scalpel Model

Slabakova, (2017)

Similar to CEM and LPM,
except...

**Cognitive and
experiential** factors can
also influence transfer.



Models of L3 Initial Transfer

Whole-Transfer Models

L1 Transfer

Hermas, 2010

L2 Status Factor

Bardel & Falk, 2007

Typological Primacy

Rothman, 2010

Language of Community

Fallah et al, 2016

Piecemeal-Transfer Models

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Scalpel Model

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Factors in L3 Initial Transfer

Factors in L3 Initial Transfer

Naive vs. non-native status/Age of acquisition/Order of acquisition.

Linguistic similarity between languages.

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Grammatical Gender

Grammatical Gender

Der Mann	Die Frau	Das Mädchen
The man Masculine	The woman Feminine	The girl Neuter

Grammatical Gender

Der Mann	Die Frau	Das Mädchen
The man	The woman	The girl
Masculine	Feminine	Neuter

L1 gender can transfer to L2 (Franceschina, 2005)

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Even between typologically different languages
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L1 gender can transfer to L2 (Franceschina, 2005)
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L2ers without gender in their L1 are able to develop a
gender system

(White et al., 2004; Sagarra and Herschensohn, 2010)

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How do L1 vs L2 gender systems transfer to L3?

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Language Triad

Language Triad

English

Spanish

L3 German

Language Triad

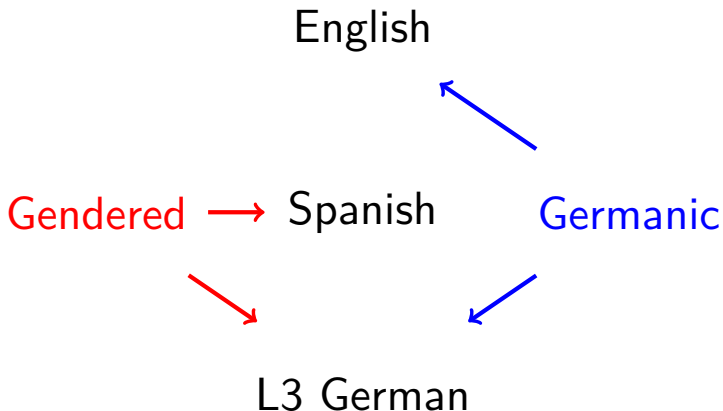
English

Gendered → Spanish



L3 German

Language Triad



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Predictions of L3 Models

Predictions of L3 Models

Will L3 learners transfer their Spanish grammatical gender knowledge to L3 German?

Predictions of L3 Models

Will L3 learners transfer their Spanish grammatical gender knowledge to L3 German?

	L1 English L2 Spanish	L1 Spanish L2 English
Piecemeal Transfer Models	Yes	Yes
L1 Transfer	No	Yes
L2 Status	Yes	No
Typological Primacy	No	No

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Participants

Participants

Sequential Spanish/English bilinguals

Participants

Sequential Spanish/English bilinguals

L3 German was being learned as a foreign language

Participants

Sequential Spanish/English bilinguals

L3 German was being learned as a foreign language

Intermediate or higher L2 proficiency

Participants

Sequential Spanish/English bilinguals

L3 German was being learned as a foreign language

Intermediate or higher L2 proficiency

Language Background	Number of Participants
L1 English L2 Spanish L3 German	11
L1 Spanish L2 English L3 German	10
L1 English L2 German	11

German Grammaticality Judgement Task

Gender Mismatch

*Das Baum ist groß

The_[N] tree_[M] is tall

German Grammaticality Judgement Task

Gender Mismatch

*Das Baum ist groß

The_[N] tree_[M] is tall

Words reflecting biological gender were not included

German Grammaticality Judgement Task

Gender Mismatch

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Error questions were balanced in terms of:

German Grammaticality Judgement Task

Gender Mismatch

*Das Baum ist groß

The_[N] tree_[M] is tall

Words reflecting biological gender were not included

Error questions were balanced in terms of:

German Gender

Error Direction (M → F, M → N ect.)

Spanish Gender

Gender Assignment vs. Gender Concord

Gender Assignment vs. Gender Concord

Grammatical Gender Task

Gender Assignment vs. Gender Concord

Grammatical Gender Task

Tür (Door_F)

Gender Assignment vs. Gender Concord

Grammatical Gender Task

Tür (Door_F)

Der_M

Die_F

Das_N

Gender Assignment vs. Gender Concord

Grammatical Gender Task

Tür (Door_F)

Der_M

Die_F

Das_N

Grammaticality judgment tasks were graded based on participants' perceived gender of individual lexical items.

Gender Assignment vs. Gender Concord

Grammatical Gender Task

Tür (Door_F)

Der_M

Die_F

Das_N

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Brown (2020)

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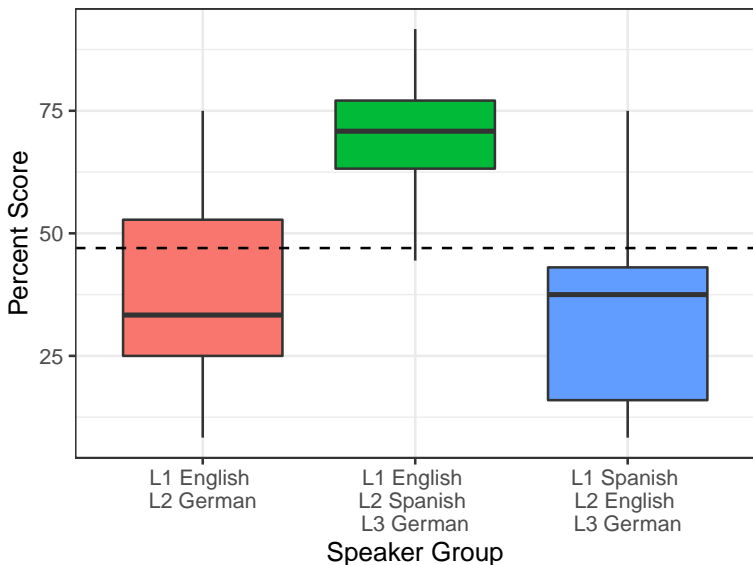
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Brown (2020)



Findings

Experiment 1

Trilinguals with L2 Spanish were better at identifying gender errors in L3 German.

Findings

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L2 Status Factor Model

Findings

Experiment 1

Trilinguals with L2 Spanish were better at identifying gender errors in L3 German.

L2 Status Factor Model

Scalpel Model (Experiential/Cognitive Factors)

Findings

Experiment 1

BUT...

Findings

Experiment 1

BUT...

No interference was found from nouns with different Spanish genders.

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No interference was found from nouns with different Spanish genders.

Many participants were beginners but not "initial state" learners

BUT...

No interference was found from nouns with different Spanish genders.

Many participants were beginners but not "initial state" learners

Are these results from initial transfer or some sort of learning advantage!?

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Experiment 2

Experiment 2

True initial state L3 learners

Experiment 2

True initial state L3 learners

Grammatical **gender**

Experiment 2

True initial state L3 learners

Grammatical **gender**

Artificial Germanic Language

Experiment 2

True initial state L3 learners

Grammatical **gender**

Artificial Germanic Language

Avoids intertwinement of German DP features
(i.e. gender, number, case, and definiteness)

Experiment 2

True initial state L3 learners

Grammatical **gender**

Artificial Germanic Language

Avoids intertwinement of German DP features
(i.e. gender, number, case, and definiteness)

Precedent in the L2 acquisition literature

Brooks et al. (1993), Siegelman & Arnon (2015)
Wonnacott, Brown & Nation (2017), Culbertson,
Gagliardi & Smith (2017)

Artificial Language

9 nouns

3 masculine, 3 feminine, 3 neuter

Artificial Language

9 nouns

3 masculine, 3 feminine, 3 neuter

4 determiners

1 masculine, 1 feminine, 1 neuter, 1 plural

5 adjectives

suffixes: 1 masculine, 1 feminine, 1 neuter, 1
plural

Artificial Language

9 nouns

3 masculine, 3 feminine, 3 neuter

4 determiners

1 masculine, 1 feminine, 1 neuter, 1 plural

5 adjectives

suffixes: 1 masculine, 1 feminine, 1 neuter, 1
plural

1 carrier phrase

Artificial Language

- (1) Erblicken ern-e rot-e Tür.
Behold Det_[Fem/Sing] red_[Fem/Sing] door_[Fem/Sing]
'Behold a red door'

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L3 Grammatical Gender Acquisition

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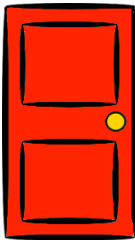
L3 "Beginners" vs. L3 Initial State

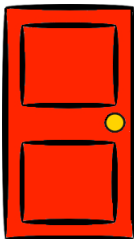
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L3 Phonology

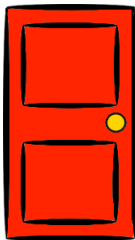
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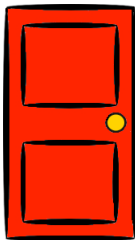
“Erblicken ern-e rot-e Tür”



“Erblicken ern rot-e Tür”



A



Choose



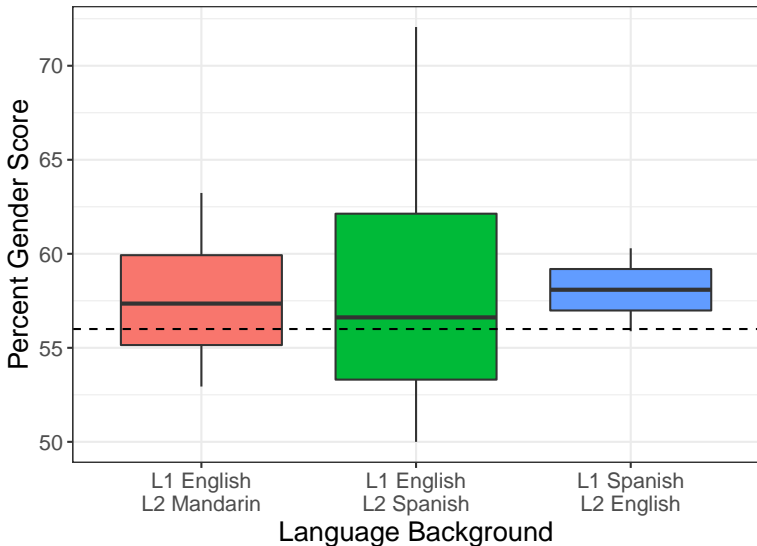
L

Participants

Language Background	Number of Participants
L1 English L2 Spanish	7
L1 Spanish L2 English	4
L1 English L2 Mandarin	4

Experiment 2 Results

Grammatical Gender



Results

No group differences for grammatical gender
(TPM, Piecemeal Transfer/Developmental Models)

Results

No group differences for grammatical gender
(TPM, Piecemeal Transfer/Developmental Models)

Overall poor performance across all groups on
grammatical questions
(Piecemeal Transfer Models)

Experiment 1:

L3 Grammatical Gender Acquisition

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Experiment 1:

Beginner L3 German learners (< 1 year)

L2 Spanish advantage in L3 German gender

L3 Grammatical Gender Acquisition

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Experiment 1:

Beginner L3 German learners (< 1 year)

L2 Spanish advantage in L3 German gender

Experiment 2:

Initial State L3 German learners

No L2 Spanish advantage in L3 German gender or number

Experiment 1:

Beginner L3 German learners (< 1 year)

L2 Spanish advantage in L3 German gender

Experiment 2:

Initial State L3 German learners

No L2 Spanish advantage in L3 German gender or number

Perhaps an L3 **developmental** difference?

Transfer vs. Development

Whole-Transfer Models

L1 Transfer

Hermas, 2010

L2 Status Factor

Bardel & Falk, 2007

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Transfer vs. Development

Transfer vs. Development

What exactly are the "initial stages"?

Transfer vs. Development

What exactly are the "initial stages"?

How might post-initial state development differ?

Transfer vs. Development

What exactly are the "initial stages"?

How might post-initial state development differ?

Transfer vs. Cross-linguistic influence (CLI)

There is still much exiting work to do in L3 acquisition!

Experiment 3

rCLI in L3 Phonology

L3 Phonology

Regressive Cross-Linguistic Influence

Experiment 3

rCLI in L3 Phonology

L3 Phonology

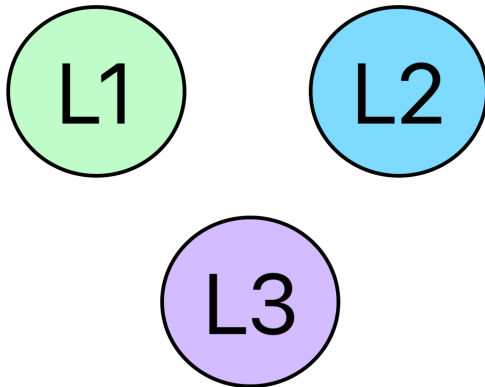
Regressive Cross-Linguistic Influence



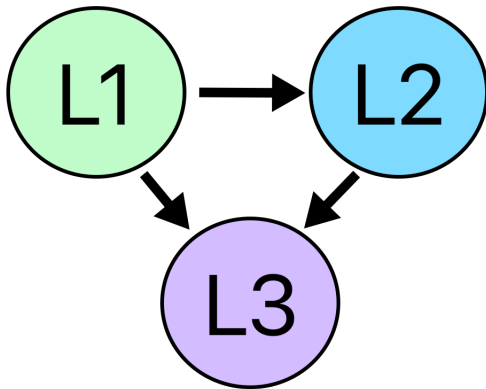
Dr. Charles Chang
Boston University

Experiment 3

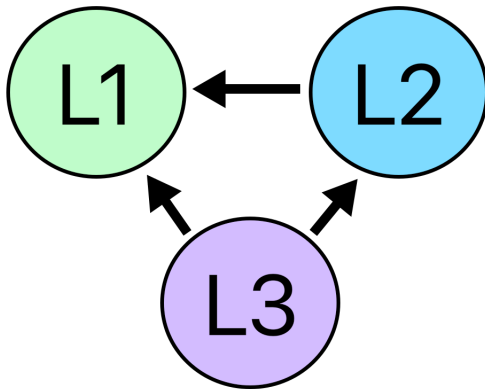
rCLI in L3 Phonology



Progressive Cross-Linguistic Influence (pCLI)



Regressive Cross-Linguistic Influence (rCLI)



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Models of Trilingual rCLI

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Phonological Permeability Hypothesis (PPH: Cabrelli Amaro and Rothman, 2010)

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Phonological systems developed in childhood vs.
adulthood are fundamentally different

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Models of Trilingual rCLI

Phonological Permeability Hypothesis (PPH: Cabrelli Amaro and Rothman, 2010)

Phonological systems developed in childhood vs. adulthood are fundamentally different

Systems developed in childhood are more stable

rCLI from an L3 is more likely to impact the L2 than the L1

Typological Similarity in Trilingual rCLI

The overall similarity between a speakers languages has been found to significantly impact **bilingual rCLI**

Schmid and Köpke (2017)

Typological Similarity in Trilingual rCLI

The overall similarity between a speakers languages has been found to significantly impact **bilingual rCLI**

Schmid and Köpke (2017)

as well as **trilingual pCLI**

Rothman (2010 et seq), Westergaard et al., (2017)

Research Questions

Does typological similarity play a role in rCLI
from L3 to L1/L2?

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from L3 to L1/L2?

This project examines this in regards to **speech rhythm**.

Speech Rhythm

Rhythm is the sense of movement in speech

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Syllable-timed (Spanish, French)

Stress-timed (English, German)

Mora-timed (Japanese)

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Speech Rhythm

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Adult learners are unlikely to develop an L2 rhythmic system that is comparable to that of a native speaker, **BUT...**

Speech Rhythm

Rhythm is the sense of movement in speech

Syllable-timed (Spanish, French)

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Mora-timed (Japanese)

Adult learners are unlikely to develop an L2 rhythmic system that is comparable to that of a native speaker,

BUT...

They are able to develop an L2 rhythmic system which is distinct from the L1

(Guilbault, 2002; Ordin & Polyanskaya, 2015)

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Research Questions

Research Questions

English

German

Spanish

Research Questions

English (Stress-timed)

German (Stress-timed)

Spanish (Syllable-timed)

Research Questions

English (Stress-timed)

German (Stress-timed)

Spanish (Syllable-timed)

Research Questions

English (Stress-timed)

German (Stress-timed)

Spanish (Syllable-timed)

Research Question

Which language is more susceptible to
rCLI?

Research Question

Which language is more susceptible to
rCLI?

Does **similarity** play a role?

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Research Question

L1 English, L2 German, L3 Spanish

Research Question

L1 English, L2 German, L3 Spanish

L1 German, L2 English, L3 Spanish

Research Question

L1 English, L2 German, L3 Spanish

L1 German, L2 English, L3 Spanish

L1 English, L2 German

L1 German, L2 English

Research Question

L1 English, L2 German, L3 Spanish

L1 German, L2 English, L3 Spanish

L1 English, L2 German

L1 German, L2 English

Do linguistic similarity and/or order of acquisition influence the degree of rCLI to each language?

Procedure

For each language (English, German, and Spanish)...

Procedure

For each language (English, German, and Spanish)...

Recorded reading task

Procedure

For each language (English, German, and Spanish)...

Recorded reading task

Written LexTALE Vocabulary Task (Lemhöfer and Broersma, 2012; Izura, Cuetos, and Brysbaert, 2014)

Procedure

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Recorded reading task

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Picture description task

Picture Description Task

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Picture Description Task



4 images per language

5-20 minutes of speech per language

Participants

73 participants completed the study

Participants

73 participants completed the study

Inclusion requirements:

Sequential trilinguals with L2/L3 AoA > 5

Sufficient proficiency and fluency in all of the target languages

No knowledge of other non-target languages

Participants

73 participants completed the study

Inclusion requirements:

Sequential trilinguals with L2/L3 AoA > 5

Sufficient proficiency and fluency in all of the target languages

No knowledge of other non-target languages

20 participants met all requirements

12 female, mean age = 35, age range = 18-58

Participants

Language Background	Number of Participants
L1 English L2 German L3 Spanish	5
L1 German L2 English L3 Spanish	5
L1 English L2 German	6
L1 German L2 English	4

Analysis

Recordings annotated in TextGrids via Praat (Boersma & Weenink, 2009).

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Duration of all vowels and consonants marked.

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Recordings annotated in TextGrids via Praat (Boersma & Weenink, 2009).

Duration of all vowels and consonants marked.

≈ 1 minute of recorded speech per participant per language.

Speech Rhythm Measurements

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Speech Rhythm Measurements

$$\%V = \frac{\text{sum of all vocalic interval durations}}{\text{total duration of vocalic and consonantal intervals}} \times 100$$

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White and Mattys (2007)

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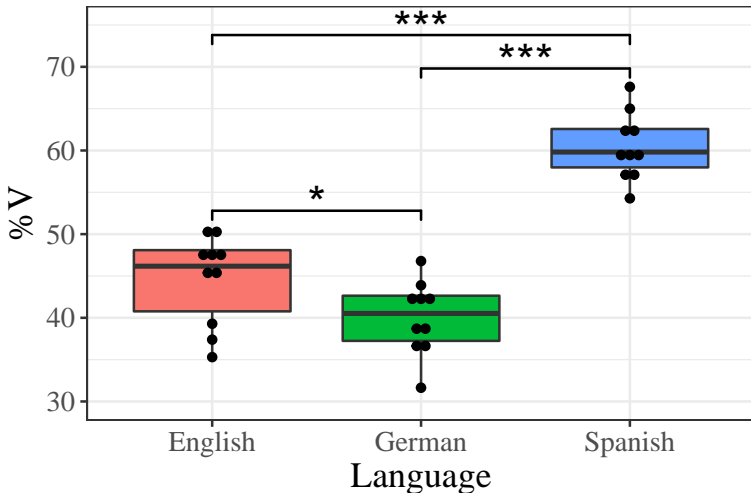
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L3 Spanish Rhythm

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L3 Spanish Rhythm



%V in L3 Spanish

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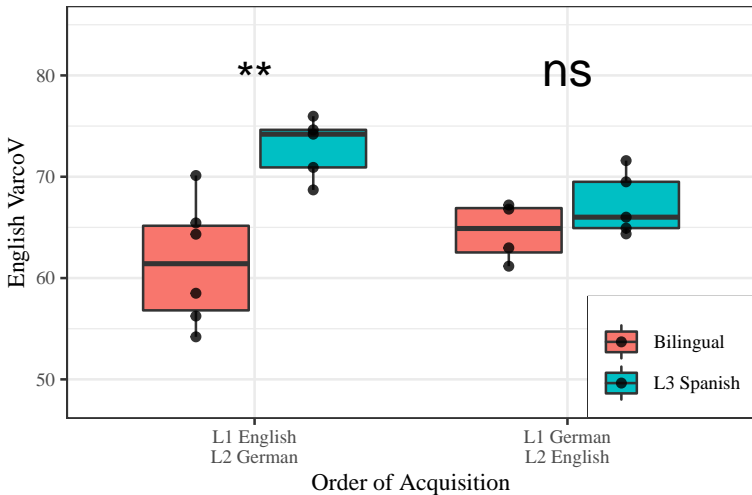
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Regressive CLI

English VarcoV

Regressive CLI

English VarcoV



English VarcoV Values

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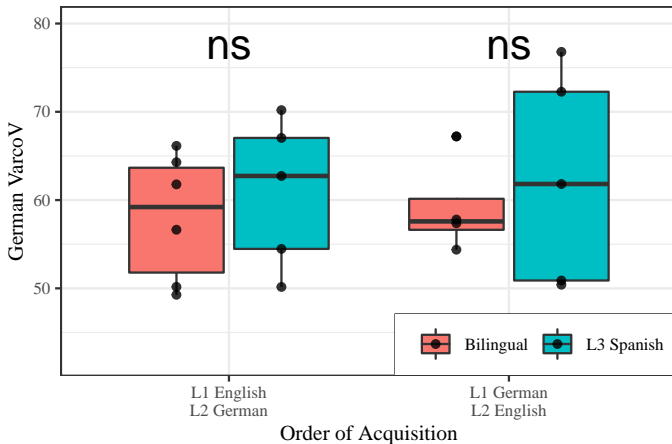
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Regressive CLI

German VarcoV

Regressive CLI

German VarcoV



German VarcoV Values

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Summary of Findings

Summary of Findings

Trilinguals developed a distinct rhythm in L3 Spanish.

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Trilinguals had a higher VarcoV in **English** than bilinguals, suggesting rCLI from L3

This is not the case in German

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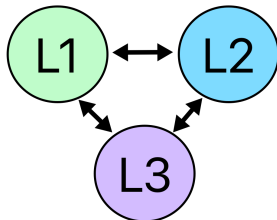
Early trends suggest that L1 is more susceptible to rCLI than L2 in English.

Overall Takeaways

L3 acquisition, development, and maintenance is a complex process!

CLI can potentially occur in any direction

A variety of factors such as **native/non-native status** and **language similarity** can influence the degree of CLI that occurs

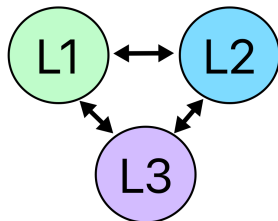


Overall Takeaways

L3 acquisition, development, and maintenance is a complex process!

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Additional research is needed at all levels of linguistic research!

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Thank You!