

CLI and Language Control in the L3 Initial State

Background

Multilingual CLI
Models of L3
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Research Question

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Grammatical Gender
and Number
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Summary

Megan M. Brown

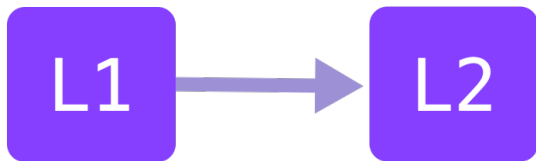
Boston University

Arizona Linguistics Circle 14
Language Technology and Media
October 17, 2020



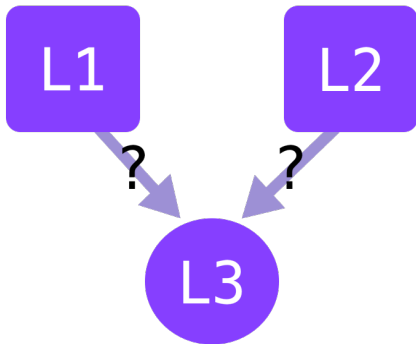
Bilingual Cross-Linguistic Influence (CLI)

In L2 acquisition, the L1 is the only source of transfer.



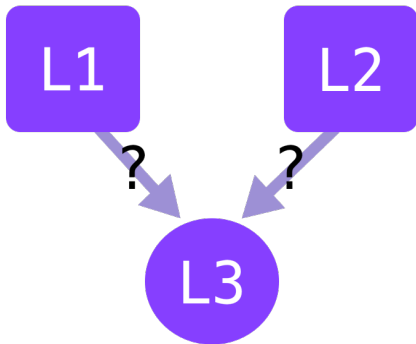
Trilingual CLI

L3 learners have 2 potential transfer sources, the L1 and the L2.



Trilingual CLI

L3 learners have 2 potential transfer sources, the L1 and the L2.



Which language or language(s) transfer and why?

Models of L3 Acquisition

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Models of L3 Acquisition

Whole-Transfer Models

L1 Transfer

Hermas, 2010

L2 Status

Bardel & Falk, 2007

Typological Primacy

Rothman, 2010

Language of Community

Fallah et al, 2016

Partial-Transfer Models

Cumulative Enhancement

Flynn et. al, 2004

Linguistic Proximity

Westergaard et al, 2017

Scalpel Model

Slabakova, 2017

Control Process Model

Green, 2017

Factors in L3 Initial Transfer Research

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Order of acquisition (L1T, L2S)

Typological similarity (TPM, LPM)

Social status of languages (LC, SM)

Beneficial vs non-beneficial features (CEM, LPM)

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Typological similarity (TPM, LPM)

Social status of languages (LC, SM)

Beneficial vs non-beneficial features (CEM, LPM)

Individual cognitive variation (SM, Green, 2017)

The Scalpel Model (Westergard et al, 2017)

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The Scalpel Model (Westergard et al, 2017)

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Linguistic, cognitive and experiential/social factors.

The Scalpel Model (Westergard et al, 2017)

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Linguistic, cognitive and experiential/social factors.

Extracts linguistic features for transfer with “scalpel-like precision”.

The Scalpel Model (Westergard et al, 2017)

Linguistic, cognitive and experiential/social factors.

Extracts linguistic features for transfer with “scalpel-like precision”.

Not particularly helpful in making individual predictions.

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Green (2017)

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Individual cognitive differences determine a learner's
cognitive inhibition.

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Individual cognitive differences determine a learner's
cognitive inhibition.

Emphasis on **individual variation in extra-linguistic
cognitive ability.**

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Individual cognitive differences determine a learner's **cognitive inhibition**.

Emphasis on **individual variation in extra-linguistic cognitive ability**.

To date, limited investigation in the experimental literature.

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Can a trilingual's cognitive inhibition abilities
serve as a predictor of early L3 success?

L3 German Gender and Number Acquisition

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Grammatical Gender

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

L3 German Gender and Number Acquisition

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Grammatical Gender

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

Grammatical Number

Der Mann	Die Männer
The man Singular	The men Plural

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Artificial Language

Precedent in the L2 acquisition literature

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

Artificial Language

Precedent in the L2 acquisition literature

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

9 nouns

3 masculine, 3 feminine, 3 neuter

Artificial Language

Precedent in the L2 acquisition literature

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

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

Precedent in the L2 acquisition literature

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

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

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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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Participants

Sequential bilinguals (n=17, data collection ongoing)
13 female, 4 male: mean age = 20.88 years,
age range = 18-28 years

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L1 English, L2 Spanish

L1 Spanish, L2 English

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L1 English, L2 Spanish

L1 Spanish, L2 English

L1 English L2 Mandarin

L1 Mandarin L2 English

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L1 English, L2 Spanish

L1 Spanish, L2 English

L1 English L2 Mandarin

L1 Mandarin L2 English

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L1 English, L2 Spanish

L1 Spanish, L2 English

L1 English L2 Mandarin

L1 Mandarin L2 English

True initial state L3 learners

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Procedure

Two main tasks:

Artificial L3 Acquisition task

Flanker Task

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Two main tasks:

Artificial L3 Acquisition task

Flanker Task

Response **inhibition** test used to assess the ability to suppress responses that are inappropriate in a particular context (Eriksen, & Eriksen, 1974).

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Two main tasks:

Artificial L3 Acquisition task

Flanker Task

Response **inhibition** test used to assess the ability to suppress responses that are inappropriate in a particular context (Eriksen, & Eriksen, 1974).

Testing the degree to which the ability to ignore irrelevant stimuli is helpful in constructing a new grammatical gender and number system.

Procedure: L3 Acquisition Task

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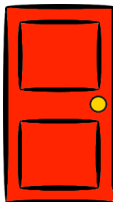
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Procedure: L3 Acquisition Task

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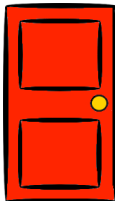
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“Erblicken ern-e rot-e Tür”

Procedure: L3 Acquisition Task

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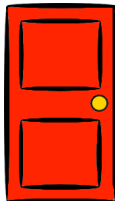
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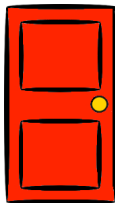
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A



Choose



L

Procedure: Flanker Task

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X X Y X X

Procedure: Flanker Task

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X X Y X X

Press **left** if X or C in center Press **right** if V or B in center

Procedure: Flanker Task

Helpful

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X X C X X

Press **left** if X or C in center

Press **right** if V or B in center

Procedure: Flanker Task

Distracting

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X X B X X

Press **left** if X or C in center

Press **right** if V or B in center

Procedure: Flanker Task

Neutral

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Z Z X Z Z

Press **left** if X or C in center

Press **right** if V or B in center

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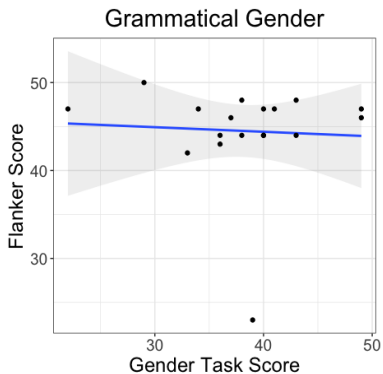
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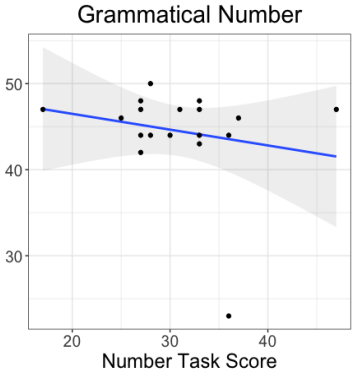
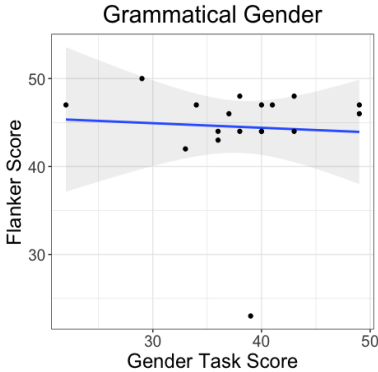
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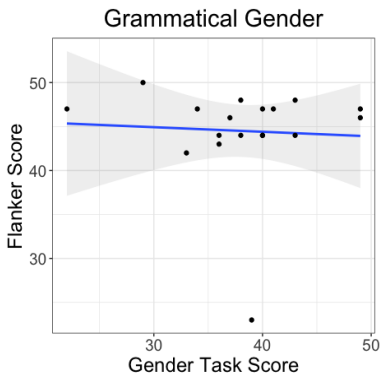
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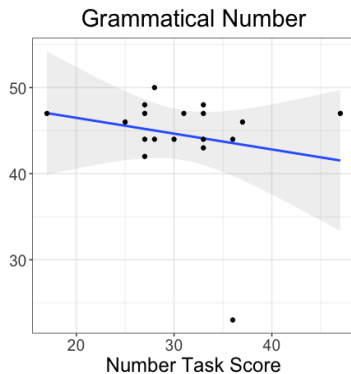
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$$r(16) = -.058, p = 0.82$$



$$r(16) = -.201, p = 0.42$$

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Implications

No significant correlation found...

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No significant correlation found... but also consider...

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Implications

No significant correlation found... but also consider...

Small sample size (Data collection paused due to
COVID-19)

Implications

No significant correlation found... but also consider...

Small sample size (Data collection paused due to
COVID-19)

Particular cognitive control test used...

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Implications

No significant correlation found... but also consider...

Small sample size (Data collection paused due to COVID-19)

Particular cognitive control test used...

Do these results truly reflect the absence of a relationship between initial state L3 acquisition and cognitive control?

Next Steps

Additional research is needed!

Other cognitive tests might be better measures include:

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Next Steps

Additional research is needed!

Other cognitive tests might be better measures include:

Interference/conflict resolution (e.g. the Simon task)

Capacity to not respond (e.g. the “go/no go” task)

Cognitive inhibition (e.g. Stroop task)

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Summary

L3 and multilingualism research to date is lacking in terms of studies testing the role of **individual cognitive differences** in L3 initial state transfer.

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Summary

L3 and multilingualism research to date is lacking in terms of studies testing the role of **individual cognitive differences** in L3 initial state transfer.

This study examined the role of **cognitive control** in the initial state of L3 grammatical **gender** and **number** acquisition, but no significant relationship was found.

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This study examined the role of **cognitive control** in the initial state of L3 grammatical **gender** and **number** acquisition, but no significant relationship was found.

Additional research is needed in this field in order to gain a better understanding of the complexities of the multilingual mind, including:

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This study examined the role of **cognitive control** in the initial state of L3 grammatical **gender** and **number** acquisition, but no significant relationship was found.

Additional research is needed in this field in order to gain a better understanding of the complexities of the multilingual mind, including:

- Additional linguistic features
- Additional language combinations
- Additional cognitive tasks

Thank You!

Questions?

Contact:

mbrown14@bu.edu

Slides available at
meganmbrown.com

Works Cited

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