Models of L3 Acquisition in Grammatical Gender Learning: Initial Transfer and Ongoing Development

Megan M. Brown

Third Langauge (L3 Acquisition

Theories and Model

Grammatical Gende

Experiment 1: Cross-Sectional Grammaticality Judgement

Task
Experiment 1:

Cross-Sectional Grammaticality Judgement Task

Procedure Results

Key Finding

Experiment 13

vs. L3 Initi

Models of L3 Acquisition in Grammatical Gender Learning: Initial Transfer and Ongoing Development

Megan M. Brown

Boston University

March 20th, 2023



Outline

- 1 Third Langauge (L3) Acquisition
- 2 Experiment 1: Cross-Sectional Grammaticality Judgement Task
- 3 Experiment 2: L3 "Beginners" vs. L3 Initial State
- 4 Experiment 3: Longitudinal Gender Development
- **5** Summary

Models of L3 Acquisition in Grammatical Gender Learning:

Initial Transfer and Ongoing Development

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Third Langauge (L3) Acquisition

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Theories and Models

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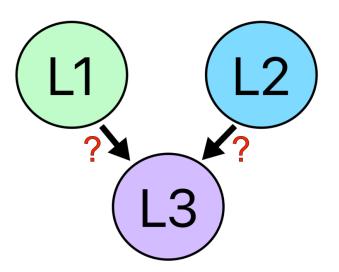
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Theories and Models of L3 CLI and Transfer

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Experiment 1 Cross-Sectional Grammaticality Judgement

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Key Findings

"Beginners vs. L3 Init State

Theories and Models of L3 CLI and Transfer

- Cumulative Enhancement (Flynn et al., 2004)
- L2 Status Factor (Bardel & Falk, 2007)
- L1 Transfer (Hermas, 2010)
- Typological Primacy (Rothman, 2010)
- Language of Community (Fallah et al, 2016)
- Linguistic Proximity (Westergaard et al., 2017)
- Scalpel Model (Slabakova, 2017)
- Top-Down Cognitive Control (Green, 2017)
- Full Transfer Potential (Westergaard, 2021)
- Grammatical Mapping (Fernández-Berkes & Flynn, in press)
- Cumulative Input Threshold Hypothesis (Cabrelli & Iverson, in press)

Theories and Models in 13

Theories and Models of L3 CLI and Transfer

L3 models differ in terms of:

Initial state/stages transfer vs. longer-term development

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Theories and Models of L3 CLI and Transfer

L3 models differ in terms of:

- Initial state/stages transfer vs. longer-term development
- Wholesale vs piecemeal initial transfer

Theories and Models

Theories and Models of L3 CLI and Transfer

1.3 models differ in terms of:

- Initial state/stages transfer vs. longer-term development
- Wholesale vs piecemeal initial transfer
- Role of additional factors
 - Typological similarity
 - Age/order of acquisition

 - L2/L3 proficiency
 - Language status
 - Cognitive factors

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Experiment : L3 "Reginners"

Theories and Models of L3 CLI and Transfer

L3 models differ in terms of:

- Initial state/stages transfer vs. longer-term development
- Wholesale vs piecemeal initial transfer
- Role of additional factors
 - Typological similarity
 - Age/order of acquisition
 - L2/L3 proficiency
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Models of L3 Transfer

Wholesale Transfer Models Piecemeal Transfer Models

L2 Transfer

Cumulative Enhancement

L1 Status Factor

Linguistic Proximity

Typological Primacy

Scalpel Model

Language of Community

Full Transfer Potential

Grammatical Mapping

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Key Takeaways

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L3 Models

Key Takeaways

 Models differ in terms of the manner of transfer they propose.

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L3 Models

Key Takeaways

- Models differ in terms of the manner of transfer they propose.
- Models differ in terms of the point in L3 acquisition they are referring to.

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L3 Models

Key Takeaways

- Models differ in terms of the manner of transfer they propose.
- Models differ in terms of the point in L3 acquisition they are referring to.
- Certain L3 models may not be directly comparable to each other in an experiemntal context.

Models of L3 Acquisition in Grammatical Gender Learning: Initial Transfer and Ongoing

Development Megan M. Brown

Theories and Models in L3

Research Questions

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Research Questions

 Does previous grammatical gender knowledge from the L1 and/or L2 influence L3 grammatical gender acquisition?

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Research Questions

 Does previous grammatical gender knowledge from the L1 and/or L2 influence L3 grammatical gender acquisition?

 Does the role/influence of previous grammatical gender knowledge change throughout the L3 acquisition process?

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L3 "Beginners" vs. L3 Initial

Research Questions

- Does previous grammatical gender knowledge from the L1 and/or L2 influence L3 grammatical gender acquisition?
- Does the role/influence of previous grammatical gender knowledge change throughout the L3 acquisition process?
- How might age/order of acquisition and language similarity promote or inhibit the transfer of previous grammatical gender knowledge to the L3?

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Grammatical Gender

German:

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

Romance:

Spanish	EI chico	La chica
French	Le garçon	La fille
Italian	II ragazzo	La ragazza
Portuguese	O menino	A garota
English	The boy	The girl
	Masculine	Feminine

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Grammatical Gender in L2

• L1 gender can transfer to L2 (i.e. Franceschina, 2005)

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Grammatical Gender in L2

- L1 gender can transfer to L2 (i.e. Franceschina, 2005)
 - Even between more typologically distant languages (i.e. Sabourin, 2001)

Third Langauge (L3) Acquisition

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Grammatical Gender in L2

- L1 gender can transfer to L2 (i.e. Franceschina, 2005)
 - Even between more typologically distant languages (i.e. Sabourin, 2001)
- L2ers without gender in their L1 are able to develop a gender system (White et al., 2004; Sagarra and Herschensohn, 2010)

Grammatical Gender

Grammatical Gender in 12

- L1 gender can transfer to L2 (i.e. Franceschina, 2005)
 - Even between more typologically distant languages (i.e. Sabourin, 2001)
- L2ers without gender in their L1 are able to develop a gender system (White et al., 2004; Sagarra and Herschensohn, 2010)
- Key differences between offline vs. online experimental grammatical gender tasks (Długosz, 2021)

Third Langauge (L3 Acquisition

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Cross-Sectional Grammaticality Judgemen

Experiment 1: Cross-Sectional Grammaticality Judgement Task

Results

Experiment 2 L3 Grammatical Gender in L2

• L1 gender can transfer to L2 (i.e. Franceschina, 2005)

- Even between more typologically distant languages (i.e. Sabourin, 2001)
- L2ers without gender in their L1 are able to develop a gender system (White et al., 2004; Sagarra and Herschensohn, 2010)
- Key differences between offline vs. online experimental grammatical gender tasks (Długosz, 2021)
- How do L1 vs L2 gender systems influence L3 gender development?
 - At the onset of L3 acquisition
 - At later points in the development process

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Experiment :

L3
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- Online survey and grammaticality judgement task via Qualtrics
- Sequential Spanish/English bilinguals
- "Beginner" German learners
 - ullet <1 year (two semesters) L3 German instruction

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Experiment :

L3
"Beginners"

- Online survey and grammaticality judgement task via Qualtrics
- Sequential Spanish/English bilinguals
- "Beginner" German learners
 - ullet <1 year (two semesters) L3 German instruction
- Intermediate or higher L2 proficiency

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- Online survey and grammaticality judgement task via Qualtrics
- Sequential Spanish/English bilinguals
- "Beginner" German learners
 - ullet <1 year (two semesters) L3 German instruction
- 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

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German Grammaticality Judgement Task

Gender Mismatch

*<mark>Das</mark> Baum ist groß The_[N] tree_[M] is tall

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German Grammaticality Judgement Task

Gender Mismatch

*<mark>Das</mark> Baum ist groß The_[N] tree_[M] is tall

Words reflecting biological gender were not included

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German Grammaticality Judgement Task

Gender Mismatch

*<mark>Das</mark> Baum ist groß The_[N] tree_[M] is tall

Words reflecting biological gender were not included

Error questions were balanced in terms of:

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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 \rightarrow F, M \rightarrow N ect.)

Spanish Gender

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Tür (Door_F)

Der_M Die_F

 Das_N

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Tür (Door_F)

Der_M Die_F Das_N

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

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Tür (Door_F)

Der_M Die_F

 Das_N

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

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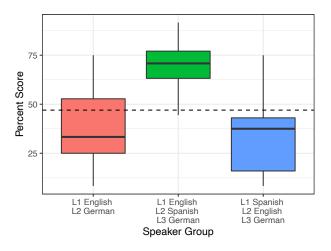
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Experiment 1 Results

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Experiment 1: Key Findings

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

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Experiment 1: Key Findings

- Beginner L3 German learners with L2 Spanish were better at identifying gender errors in L3 German.
 - L2 Status Factor Model
 - Scalpel Model

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Experiment 1: Key Findings

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Experiment 1: Key Findings

BUT...

 No interference was found from nouns with different Spanish genders.

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Experiment 2 L3 Experiment 1: Key Findings

BUT...

- No interference was found from nouns with different Spanish genders.
- These participants were beginners but not initial state learners.

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Experiment 1: Key Findings

BUT...

- No interference was found from nouns with different Spanish genders.
- These participants were beginners but not initial state learners.
- Are these results from initial transfer or some later developmental difference?

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Experiment 2

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Experiment 2

True initial state L3 learners

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- True initial state L3 learners
- Artificial Germanic Language

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Experiment L3

L3 "Beginners" Experiment 2

True initial state L3 learners

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

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Results

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Experiment 2

- True initial state L3 learners
- 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)

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Artificial Language

- 9 nouns
 - 3 masculine, 3 feminine, 3 neuter

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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

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Experiment 1 Cross-Sectional Grammatical-

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"Beginners"

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

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Artificial Language

Erblicken ern-e rot-e Tür. Behold $\mathsf{Det}_{[\mathsf{Fem/Sing}]}$ $\mathsf{red}_{[\mathsf{Fem/Sing}]}$ door $[\mathsf{Fem/Sing}]$ 'Behold a red door'

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Theories and Models

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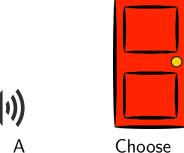


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Theories and Models

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Participants

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

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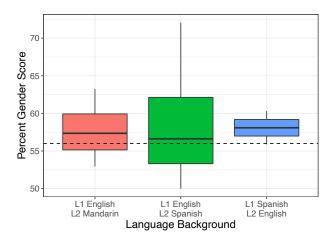
Experiment 2

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Experiment 2 Results

Grammatical Gender



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Theories and Model in L3

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Grammaticality Judgemen

Experiment 1: Cross-Sectional Grammaticality

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Results

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Experiment :

"Beginners" vs. L3 Initia

Results

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

Third Langauge (L3 Acquisition

Theories and Model in L3 Grammatical Gende

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Experiment 1: Cross-Sectional Grammaticality Judgement Tasl

Procedur Results

Key Finding

Experiment :

vs. L3 Initia State

Results

- No group differences for grammatical gender
 - (TPM, Piecemeal Transfer/Developmental Models)
- Overall poor performance across all groups on grammatical questions
 - (Piecemeal Transfer Models)

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Key Findings

Experiment 2

"Beginners" vs. L3 Initia • Experiment 1:

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Experiment 2

L3

vs. L3 Initial State

Experiment 1:

- Beginner L3 German learners (< 1 year)
- L2 Spanish advantage in L3 German gender

Third Langauge (L3 Acquisition

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Experiment 1 Cross-Sectional

Grammaticality Judgement Task

Experiment 1: Cross-Sectional Grammaticality

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Experiment :

"Beginners" vs. L3 Initia

• 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

Third Langauge (L3 Acquisition

Experiment 1: Cross-Sectional Grammaticality Judgement

Experiment 1: Cross-Sectional Grammaticality

Judgement Ta Procedures

Key Finding

Experiment :

L3
"Beginners"
vs. L3 Initial

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?

Third Langauge (L3 Acquisition

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Experiment 2

"Beginners' vs. L3 Initia State

Experiment 3

Longitudinal L3 Development

 Dissertation project aiming to tease apart the findings of Experiment 1.

Third Langauge (L3 Acquisition

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Experiment :

vs. L3 Initial State

Experiment 3

Longitudinal L3 Development

- Dissertation project aiming to tease apart the findings of Experiment 1.
- Longitudinal design participants complete the experiment within the first two weeks of beginning their first German course, and again at the end of their semester.

Third Langauge (L3 Acquisition

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Experiment 1
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Experiment 1: Cross-Sectional Grammaticality Judgement Task

Results

Key Finding

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vs. L3 Initia State

Experiment 3

Longitudinal L3 Development

- Dissertation project aiming to tease apart the findings of Experiment 1.
- Longitudinal design participants complete the experiment within the first two weeks of beginning their first German course, and again at the end of their semester.
- Examination of gender in both listening and reading contexts.

Third Langauge (L3 Acquisition

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Experiment 2

vs. L3 Initial State

Procuedure Summary

A German listening task involving virtual eye-tracking

Development Megan M. Brown

- A German listening task involving virtual eye-tracking
- A German self-paced reading task

Langauge (L3 Acquisition

In L3 Grammatical Gender

Experiment 1: Cross-Sectional Grammatical-

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Experiment 1: Cross-Sectional Grammaticality

Procedure Results

Key Finding

Experiment 2

vs. L3 Initi

- A German listening task involving virtual eye-tracking
- A German self-paced reading task
- A German gender assignment task (only at second meeting)

Langauge (L3 Acquisition

in L3 Grammatical Gender

Experiment 1 Cross-Sectional Grammatical

Grammaticality Judgement Task

Experiment 1: Cross-Sectional Grammaticality Judgement Tas

Procedure

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Experiment 13

"Beginners' vs. L3 Initia

- A German listening task involving virtual eye-tracking
- A German self-paced reading task
- A German gender assignment task (only at second meeting)
- Multilingual LEAP-Q

Langauge (L3 Acquisition

in L3 Grammatical Gender

Experiment 1 Cross-Sectional Grammatical-

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Cross-Sectional Grammaticality Judgement Task

Results

Key Findings

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State

- A German listening task involving virtual eye-tracking
- A German self-paced reading task
- A German gender assignment task (only at second meeting)
- Multilingual LEAP-Q
- Proficiency and gender knowledge assessment in other known languages

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vs. L3 Initi State

Experiment 3 Participants

- "Ab initio" German learners
 - True beginners with no previous German exposure

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Experiment 1: Cross-Sectional Grammaticality Judgement

Experiment 1: Cross-Sectional Grammaticality

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Experiment :

vs. L3 Initia State

Experiment 3 Participants

- "Ab initio" German learners
 - True beginners with no previous German exposure
- Intermediate or higher L2 proficiency
 - Spanish, French, Italian, & Portuguese

Third Langauge (L3) Acquisition

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Cross-Sectional Grammaticality Judgement

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Results

Key Findin

Experiment 2

L3
"Beginners"
vs. L3 Initial

Experiment 3 Participants

- "Ab initio" German learners
 - True beginners with no previous German exposure
- Intermediate or higher L2 proficiency
 - Spanish, French, Italian, & Portuguese

Language Background	Number of Participants
L1 English L2 Romance L3 German	16
L1 Romance L2 English L3 German	10
L1 English L2 German	12

Third Langauge (Langauge (Langauge)

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Experiment 1: Cross-Sectional Grammaticality Judgement Task

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Listening Task

Trained on 12 nouns in the target language (German)

Third Langauge (L3) Acquisition

Theories and Mode in L3

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Experiment 2

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- Trained on 12 nouns in the target language (German)
 - Nouns were balanced between target language genders and translation equivalent genders

Third Langauge (L3) Acquisition

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Cross-Sectional Grammaticality Judgement

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Experiment 1:

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Procedure Results

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Experiment :

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- Trained on 12 nouns in the target language (German)
 - Nouns were balanced between target language genders and translation equivalent genders
- Nouns reflecting biological gender were excluded

Third Langauge (L3 Acquisition

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vs. L3 Initia State

- Trained on 12 nouns in the target language (German)
 - Nouns were balanced between target language genders and translation equivalent genders
- Nouns reflecting biological gender were excluded
- Also trained on two adjectives, "Large" and "Small"

Third Langauge (L3 Acquisition

in L3 Grammatical Gender

Experiment 1 Cross-Sectional Grammatical-

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Experiment 1: Cross-Sectional Grammaticality Judgement Tasl

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Key Finding

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"Beginners" vs. L3 Initia State

- Trained on 12 nouns in the target language (German)
 - Nouns were balanced between target language genders and translation equivalent genders
- Nouns reflecting biological gender were excluded
- Also trained on two adjectives, "Large" and "Small"
- Virtual eye tracking serves as the key measure

Third Langauge (L3 Acquisition

in L3 Grammatical Gender

Experiment 1
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Experiment 1: Cross-Sectional Grammaticality

Judgement Procedures

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Experiment :

"Beginners"
vs. L3 Initial

- Trained on 12 nouns in the target language (German)
 - Nouns were balanced between target language genders and translation equivalent genders
- Nouns reflecting biological gender were excluded
- Also trained on two adjectives, "Large" and "Small"
- Virtual eye tracking serves as the key measure
- Two key experiemntal conditions, Gender Match and Gender Error

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Listening Task Gender Match













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Experiment 1: Cross-Sectional Grammaticality

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Listening Task Gender Match





(F) "Hier ist der große Stift richtig" (M) (Here, the(M) big pen (M) is correct)









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Listening Task Gender Match

















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Listening Task Gender Mismatch













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Listening Task Gender Mismatch





(F) "Hier ist das große Stift richtig" (M) (Here, the(N) big pen (M) is correct)









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Listening Task

Gender Mismatch

















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Cross-Sectional Grammaticality Judgement Task

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Experiment 2

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Listening Task

 Are learners at each data collection point point able to process gender cues in real time?

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Third Langauge (Li Acquisition

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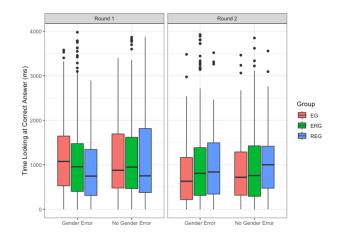
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Listening Task

Results: Noun Learning



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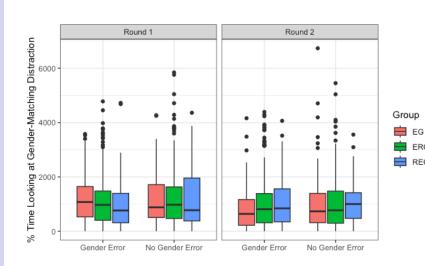
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Listening Task

Results: Gender Distractions



Langauge (L3 Acquisition

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Experiment

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Reading Task

Self-paced reading task

Third Langauge (L3 Acquisition

Theories and Mode in L3

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Experiment 1: Cross-Sectional Grammaticality Judgement Tas

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Experiment 2

"Beginners" vs. L3 Initia

Reading Task

- Self-paced reading task
- Same nouns as in the listening task

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Reading Task



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Reading Task



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Key Findings

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Reading Task



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Reading Task



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Reading Task



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Experiment 2

"Beginners" vs. L3 Initial

Reading Task



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Reading Task



(Hier ist die/der Tür gorß) (Here the(F/M) door is large)





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Experiment 1 Cross-Sectional Grammaticality Judgemen

Experiment 1: Cross-Sectional Grammaticality

Judgement Ta

Key Finding

Experiment :

L3
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Reading Task

- Are learners at each time point able to process gender cues, and are they deterred by gener errors, when processing in real time?
- Are these results different between the reading and the listening task?

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Third Langauge (L Acquisition

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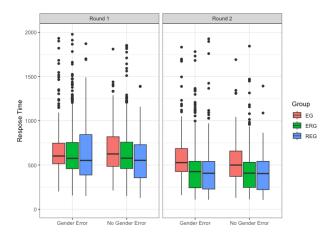
Key Finding

Experiment 13

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Reading Task Results



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Discussion and Takeaways

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Results

Key Findings

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Discussion and Takeaways

 While "beginner" learners might show evidence of CLI from L3 in their processing of written gender, this was not found in "ab initio" learners.

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Results

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L3
"Beginners"
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Discussion and Takeaways

- While "beginner" learners might show evidence of CLI from L3 in their processing of written gender, this was not found in "ab initio" learners.
- Grammatical gender acquisition in L3 is a complex process that maybe be influenced both positively and negatively by previous gender knowledge, particularly from the L2.

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Results

Experiment

L3
"Beginners"
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Discussion and Takeaways

- While "beginner" learners might show evidence of CLI from L3 in their processing of written gender, this was not found in "ab initio" learners.
- Grammatical gender acquisition in L3 is a complex process that maybe be influenced both positively and negatively by previous gender knowledge, particularly from the L2.
- Grammatical gender processing results differed between listening and speaking tasks

Overall Takeaways

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

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

Additional research is needed at all levels of linguistic research, but particularly in post-initial state L3 development!

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Third Langauge (L3 Acquisition

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Special Thanks











Thank You!

These slides can be found at https://www.meganmbrown.com

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Third Langauge (L3) Acquisition

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Questions?

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