Morphological Errors in L2 Learners and Heritage Language Learners

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Errors in Language Acquisition

- Errors are part of the developmental process of language learning.
- L1-acquiring children typically overcome developmental errors.
- Many L2 learners never do.
- Heritage language learners also make systematic errors.

Psycholinguistically, the study of errors is crucial to understand the systematic nature of the underlying grammatical representation in the mind of individuals, and how such representation is accessed and used during production and comprehension.
Tapping Grammatical Knowledge

- It is impossible to test grammatical knowledge directly.
- We can only study competence through performance. Performance is a window into competence.
- Comprehension and production are indirect ways of measuring grammatical knowledge, one more implicitly, the other more explicitly.
Inflectional Morphology

L2 learners have persistent problems with nominal and verbal inflectional morphology despite abundant evidence and frequency in the input and instruction, especially in oral production.

- nominal domain (gender, case)
- verbal domain (agreement, tense, aspect, mood)
Example form two English-speaking L2 learners of Spanish

(context: talking about her ideal job)
Tal vez ser . . será . . sería una profesor de español o matemáticas . . . Necesito tener una apartamento pero yo creo que vas a vivir con mi mamá.

(context: retelling Little Red Riding Hood)
Y algún día fue su cumpleaños de su abuela y la Caperucita Roja le encantó su abuela mucha y siempre le visitó porque se divierten cuando están juntos. Entonces la Caperucita Roja salió su casa y fue a visitar su abuela visitar.
Morphological Variability

The inconsistent use of target and non-target inflectional morphology in interlanguage (L2) grammars.

Questions
Why does morphological variability arise?
What does it mean?
Theories of L2 acquisition


Variability may be symptomatic of underlying syntactic deficits. L2 learners make errors because they lack the relevant abstract morphosyntactic knowledge.

Prediction:

L2 learners should have the same problems with inflectional morphology in production and comprehension, in oral and written modalities.
Theories of L2 Acquisition

The Missing Surface Inflection Hypothesis (Prévost & White 2000, and others)

L2 learners have the relevant abstract morphosyntactic knowledge, but since problems arise mainly in oral production, the problem lies in the overt manifestation of surface morphological and phonological forms. Morphological variability is a performance, not a competence problem.

Prediction

L2 learners should only have problems with inflectional morphology in oral production, under communicative pressure, but not in comprehension or in untimed written tasks.
How about Heritage Language Speakers and Learners?

Inflectional morphology is also problematic for child and adult heritage speakers and learners (Polinsky 2006, 2007, O’Grady et al. 2001).

Examples from two Spanish Heritage speakers

(context: talking about her ideal job)
Amigo, yo sé que tienes una problema de alcohol. Te aconsejo que necesitas a ver alguien. Es necesario que vas, que vas a alguien. Hasta que vas a la hospital con su problema no quiero hablar contigo.

(context: retelling Little Red Riding Hood)
La niña está camina y ve una perro que quiere comer la niña pero lo hombre con la ax mata el perro.
Research Questions

1. Is the morphological variability exhibited by L2 learners and heritage speakers similar?  
   **EMPIRICAL QUESTION**

2. Can the theoretical accounts developed for L2 acquisition be extended to heritage language speakers and learners?  
   **YES**
Implications

If L2 learners and heritage speakers show similar patterns of competence and performance

Theoretically, this will suggest that acquiring a language early in childhood or later in adolescence plays a minor role in the eventual grammatical representation.

Pedagogically, same teaching methods may be used to address morphological gaps in these two types of learners.
Implications

If **differences** between L2 learners and heritage language learners are found **Theoretically**, it may mean that linguistic experience and age of acquisition play a significant role in language development.

**Pedagogically**, different techniques may be required to make these two types of learners develop their grammatical knowledge.
Experimental Evidence

1. Overview of Montrul, Foote & Perpiñán (in press) on gender agreement
2. More experimental evidence from case, aspect and mood (same participants as above).
Participants

Baseline or control group
- 22 monolingually raised native speakers

Experimental Groups
- 72 L2 learners of Spanish
- 69 Spanish heritage speakers

All participants took a written Spanish proficiency test and completed a language background questionnaire (6-page long for the heritage speakers)
L2 learners

- **Age** 21.91 (18-25)
- **L1 English**, raised in English-speaking families
- **Age of first exposure/acquisition** of Spanish as a second language between the ages of 12-25 (high school, college)
- **Enrolled in Spanish language classes** at the University of Illinois at Urbana-Champaign
Heritage speakers

- Age 22.64 (18-30)
- Born in the US to Mexican parents
- Exposed to Spanish and English before age 6
- At least one of the parents had to be a first generation immigrant
- Schooled in the US
- Graduate and undergraduate students at UIUC, some of them enrolled in the same classes as the L2 learners
Heritage Speakers: Some Descriptive Stats

First language: Spanish (57%), English (35%), both (8%)

Parents: both parents from Mexico (88%)
         one parent from Mexico (12%)

Language used at home
         Only Spanish (44%), Spanish and English (56%)

Languages parents spoke to participants
         Spanish (80%), English (5%), both (15%)

All participants had between 1-9 siblings and 20% lived with a Spanish-speaking grandparent

Language spoken with siblings
         Spanish (20%), English (48%), both (38%)

Relative strength of the languages
        48% felt Spanish was like a native language, 52% like a second language

Self rated proficiency: mean Spanish (3.9, range 1-5)
                      mean English (4.88, range 4-5).

100% wanted to improve their ability in Spanish for both professional and personal reasons
Spanish Proficiency Test

- Cloze part (fill in the blanks by selecting one of four possible responses) (DELE test) = 30 points
- Multiple choice vocabulary test (MLA) = 20 points
- Maximum 50 points
- Has been widely used in many L2 acquisition studies.
- Reliability statistics was very good (Cronbach alpha = .82) for the two groups.
Proficiency Scores

No significant differences between L2 learners and heritage speakers
Gender Agreement
(Montrul, Foote & Perpiñán, in press)

- Written Picture Identification Task
- Written Gender Morphology Recognition Task
- Oral Picture Description Task
General Results: Linguistic Patterns

- Both L2 learners and heritage speakers make gender agreement errors in the oral and written tasks
- Native speakers hardly ever made errors
- More errors with feminine than with masculine (default)
- More errors with adjectives than with determiners
- More errors with non-canonical than with canonical ending nouns
Written Picture Identification Task

L2 learners statistically more accurate than heritage speakers.
Correlation between proficiency scores and WPIT

Correlation stronger for heritage speakers

$r = .319$

$r = .614$
Written Gender Morphology Recognition Task

L2 learners statistically more accurate than heritage speakers
Correlation between Proficiency scores and WGMRT

L2 Learners

Heritage Speakers

Correlation stronger for heritage speakers
Oral Picture Description Task

Heritage speakers statistically more accurate than L2 learners

Overall Accuracy

Groups

Native Speakers  L2 Learners  Heritage Speakers

M = 99.9
M = 85.5
M = 74.9
Correlation b/Proficiency scores and OPDT

$r = .416$

Correlation weaker for heritage speakers

$r = .371$
Overall Results

<table>
<thead>
<tr>
<th>Control</th>
<th>Heritage Speakers</th>
<th>L2 Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIJT (w)</td>
<td>GRT (w)</td>
<td>PNT (o)</td>
</tr>
<tr>
<td>98.8</td>
<td>80.2</td>
<td>89.7</td>
</tr>
<tr>
<td>97.5</td>
<td>79.9</td>
<td>89.3</td>
</tr>
<tr>
<td>99.9</td>
<td>85.5</td>
<td>74.9</td>
</tr>
</tbody>
</table>
Findings

- The L2 learners were better in written tasks than in oral production. These results of the L2 learners are consistent with the *Missing Surface Inflection Hypothesis*.

- The heritage speakers were better in oral production than in written tasks. The *Missing Surface Inflection Hypothesis* *does not apply* to the heritage speakers.
Present Study

Will the same pattern of oral production and written comprehension hold for other inflectional domains in the same participants?

1. Differential object marking with animate/specific direct objects
2. Tense and Aspect (preterit/imperfect)
3. Mood (subjunctive/indicative)
1. Differential Object Marking

In Spanish, animate and specific direct objects are obligatorily marked with the preposition \textit{a}. Other objects are unmarked.

(1)  \begin{tabular}{l} El lobo comió \textit{a} Caperucita Roja  \\ *El lobo comió Caperucita Roja  \\ “The wolf ate Little Red Riding Hood.” \end{tabular}

(2)  \begin{tabular}{l} El cazador tenía una escopeta  \\ *El cazador tenía a una escopeta.  \\ “The hunter had a rifle.” \end{tabular}

Both L2 learners and heritage speakers omit obligatory “\textit{a}” with animate objects.
Results from a Written Grammaticality Judgment Task

<table>
<thead>
<tr>
<th></th>
<th>Heritage Speakers</th>
<th>L2 Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Advanced</td>
<td>2.92</td>
<td>2.4</td>
</tr>
<tr>
<td>Intermediate</td>
<td>3.58</td>
<td>3.0</td>
</tr>
<tr>
<td>Low</td>
<td>4.14</td>
<td>2.92</td>
</tr>
</tbody>
</table>

Heritage speakers accepted ungrammatical sentences without DOM significantly more than the L2 learners.
Oral Task (same as in Montrul 2004)
Percentage Accuracy on a-marked (animate) and unmarked (inanimate) NP objects

Heritage speakers omit the DOM marker significantly less than the L2 learners.
Findings

- L2 learners made more errors than the heritage speakers in the oral production task than in the written task.
  These findings are consistent with the *Missing Surface Inflection Hypothesis*.

- The Heritage speakers were more accurate than the L2 learners in the oral production task but not in the written grammaticality judgment task.
  The *Missing Surface Inflection Hypothesis does not apply* to heritage language learners.
2. Tense and Aspect

- Spanish distinguishes between **preterit** and **imperfect** in the past
- **Preterit** (perfective) expresses that an event culminated in the past
- **Imperfect** (imperfective) has a number of meanings: progressive, habitual, generic, intention.
- Both aspectual forms can appear with states, activities, accomplishment and achievement predicates.
Examples

(5) El año pasado visité Europa.  
the year past I visited (pret) Europe.  
“Last year I visited Europe.”

(6) Juan vendía la casa pero la sacó del mercado.  
Juan sold (imperf) the house but it took out of the market  
“Juan was selling the house but he took it out of the market.”

(7) Marisa caminaba por el pasillo cuando saludó a Marcos.  
Marisa walked (imperf) in the hallway when she said hi to Marcos  
“Marisa was walking in the hallway when she said hi to Marcos.”

(8) Cuando era niña me gustaba jugar con muñecas.  
when I was (imperf) a little girl I liked to play with dolls  
“When I was a little girl I liked to play with dolls.”

(9) Los dinosaurios ponían huevos.  
the dinosaurs laid (imperf) eggs  
“Dinosaurs laid eggs.”
Spanish heritage speakers have been shown to display erosion and loss of the tense-aspect system (Silva-Corvalán 1994, Montrul 2002). While they retain the preterit/imperfect difference in the past, the meanings and forms are often confused, especially with stative and achievement verbs. Similar errors are made by L2 learners.

**Imperfect for Preterite:**

(1) Yo fui el único hombre que *tenían* (Imp)

“I was the only son they had”

**Preterite for Imperfect**

(2) En la casa mi mamá era la única que *habló* (Pret) español y las demás *hablaron* (Pret) en inglés

“At home my mom was the only one who spoke Spanish and the other ones only spoke English.”
Tasks

- **Elicited Oral Production**
  same task used for DOM

- **Elicited Written Production**
  cloze-type tasks for aspect
Correlation b/Proficiency and Overall Score on Morphological Recognition Task

L2 learners
$r = .602, p < 0.0001$

Heritage Speakers
$r = .661, p < 0.0001$
Overall Accuracy on Preterit/Imperfect in the Written Task

<table>
<thead>
<tr>
<th>Group</th>
<th>Preterite</th>
<th>Imperfect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native speakers</td>
<td>95.9</td>
<td>96.4</td>
</tr>
<tr>
<td>Heritage speakers</td>
<td>71.4</td>
<td>75</td>
</tr>
<tr>
<td>L2 learners</td>
<td>87.3</td>
<td>84.9</td>
</tr>
</tbody>
</table>

Statistical advantage for L2 learners over heritage speakers.
By Proficiency Levels

Heritage speakers

<table>
<thead>
<tr>
<th>Level</th>
<th>Preterite</th>
<th>Imperfect</th>
</tr>
</thead>
<tbody>
<tr>
<td>advanced</td>
<td>92.6</td>
<td>85.2</td>
</tr>
<tr>
<td>intermediate</td>
<td>92.2</td>
<td>69.9</td>
</tr>
<tr>
<td>low</td>
<td>82.3</td>
<td>60.4</td>
</tr>
</tbody>
</table>

L2 learners

<table>
<thead>
<tr>
<th>Level</th>
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<th>Imperfect</th>
</tr>
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<tbody>
<tr>
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<td>95.3</td>
</tr>
<tr>
<td>intermediate</td>
<td>87.4</td>
<td>85.7</td>
</tr>
<tr>
<td>low</td>
<td>81.9</td>
<td>77.7</td>
</tr>
</tbody>
</table>
Oral Production Task: Types of inflectional endings used and frequency

Rates are similar, but heritage speakers show more verbal inflection variety.
Error Rates in the Oral Production Task: Preterit for imperfect and imperfect for preterit

L2 learners produce significantly more errors than the heritage speakers.
Findings

- L2 learners are more accurate than the heritage speakers in the written task.
- Heritage speakers are more accurate than L2 learners in the oral task.

Results of the L2 learners are consistent with the *Missing Surface Inflection Hypothesis*, while the results of the heritage speakers are not.
3. Mood

Spanish expresses modality in the grammar by means of inflectional morphology for mood (indicative vs. subjunctive).

The syntactic, semantic and pragmatic rules that govern the use of indicative vs. subjunctive mood selection in Spanish are complex.

Obligatory versus optional (pragmatically, semantically conditioned) uses of subjunctive.
Examples of obligatory uses

(1) Quiero que vengas/*vienes. subjunctive
want that you come-subj/*come-indic
‘I want you to come.’

(2) Es importante que tengas/*tienes cuidado subjunctive
it is important that you have-subj/*have-indic care
‘It is important that you be careful.’

(3) Creo que *sea/es verdad. indicative
believe that it *is-subj/is-indic true
‘I believe it is true.’
Examples of variable uses

*indicative-presupposition*

(4) Busco un estudiante que *habla* japonés.

I am looking for a student that speak-indic Japanese

‘I am looking for a student that speaks Japanese.’

*subjunctive-no presupposition*

(5) Busco un estudiante que *hable* japonés.

I am looking for a student that speak-subj Japanese

‘I am looking for a student that may speak Japanese.’
Subjunctive morphology is highly affected in heritage speakers, to the extent of extinction in some speakers (Silva-Corvalán 1994, Montrul 2007). Some speakers also use indicative exclusively in non-obligatory and in variable contexts.

Silva-Corvalán (1994, p. 42)

(6) *I hope que no me toca (PI) la misma problema (= toque PS)
   ‘I hope I don’t run into the same problem.’

(7) Quizás vengo mañana (= venga (PS))
   ‘Maybe I come tomorrow.’
Tasks

- Elicited Oral Production
desires, opinions and advise

- Elicited Written Production
cloze-type tasks for mood
Correlation b/Proficiency and Overall Score on Morphological Recognition Task

L2 learners
r = .684, p < 0.0001

Heritage speakers
r = .748, p < 0.0001
Overall Accuracy on Indicative/Subjunctive in the Written Task

- Native speakers: 99.1%, 97.3%
- Heritage speakers: 93%, 59%
- L2 learners: 87.7%, 72.5%

Statistical advantage for L2 learners over heritage speakers with subjunctive.
By Proficiency Levels

Heritage speakers

<table>
<thead>
<tr>
<th>Level</th>
<th>Advanced</th>
<th>Intermediate</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicative</td>
<td>97.6</td>
<td>96.1</td>
<td>76.2</td>
</tr>
<tr>
<td>Subjunctive</td>
<td>77.2</td>
<td>60.9</td>
<td>38.6</td>
</tr>
</tbody>
</table>

L2 learners

<table>
<thead>
<tr>
<th>Level</th>
<th>Advanced</th>
<th>Intermediate</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicative</td>
<td>97.8</td>
<td>94.3</td>
<td>84</td>
</tr>
<tr>
<td>Subjunctive</td>
<td>77.2</td>
<td>77.2</td>
<td>52.2</td>
</tr>
</tbody>
</table>
Oral Task: Rate of Subjunctive and Indicative verbs by group

- **Native Speakers**: 58.4%
  - Conditional: 12.4%
  - Future: 29.40%
  - Infinitive: 5.60%
  - Subjunctive: 12.00%
- **Heritage Speakers**: 37.83%
  - Conditional: 29.40%
  - Future: 5.60%
  - Infinitive: 5.60%
  - Subjunctive: 7.23%
- **L2 Learners**: 36.73%
  - Conditional: 29.40%
  - Future: 5.60%
  - Infinitive: 5.60%
  - Subjunctive: 7.23%
Error Rates in the Oral Production Task: Subjunctive for indicative and indicative for subjunctive

L2 learners made more errors than heritage speakers

Heritage Speakers: 41.4 (Indicative) vs. 6.7 (Subjunctive)
L2 learners: 57.4 (Indicative) vs. 10.7 (Subjunctive)
Findings

- L2 learners are more accurate than the heritage speakers with subjunctive morphology in the written task.
- Heritage speakers are more accurate than L2 learners with subjunctive morphology in the oral task.

Results of the L2 learners are consistent with the *Missing Surface Inflection Hypothesis*, while the results of the heritage speakers are not.
Both L2 learners and heritage speakers differ from fully fluent native speakers in the percentage rates of morphological errors in oral production and written tasks.

Both L2 learners and heritage speakers exhibit morphological variability.

They both have gaps in their linguistic knowledge and make the same types of errors, even with aspects of grammar that are highly frequent in the input (gender, aspect, mood, DOM).
Theories of L2 acquisition

The Representational Deficit View

Variability may be symptomatic of underlying syntactic deficits. L2 learners make errors because they lack the relevant abstract morphosyntactic knowledge

Prediction:

IL2 learners should have the same problems with inflectional morphology in production and comprehension, both oral and written modalities.
Theories of L2 Acquisition

The Missing Surface Inflection Hypothesis

L2 learners have the relevant abstract morphosyntactic knowledge, but since problems arise mainly in oral production, the problem lies in the overt manifestation of surface morphological and phonological forms. Morphological variability is a performance, not a competence problem.

Prediction

L2 learners should only have problems with inflectional morphology in oral production, under communicative pressure, but not in comprehension or in untimed written tasks.
Findings

- Results of the L2 Learners on all grammatical areas tested are very consistent with the predictions of the *Missing Surface Inflection Hypothesis*

- L2 learners exhibited higher error rates with gender, DOM, aspect and mood in oral production than in written production/judgment tasks

- This hypothesis *does not apply* to the heritage speakers
Are the results of the heritage speakers compatible with the Representational Deficit view?

Not entirely

The Representational Deficit View predicted equal performance on oral and written tasks, and the heritage speakers are better in oral than in written tasks, the opposite of the pattern predicted by the *Missing Surface Inflection Hypothesis*. 
A Key Factor: Experience

- L2 learners typically learn the language in an instructed setting.
- They are hyperliterate
- They are very good with tasks that rely on highly analyzed and controlled metalinguistic knowledge (fill in the blanks, provide the correct form of the verb, article, etc.)
● Heritage speakers learned the heritage language in childhood, in a naturalistic setting, through interactions with family members.
● They have poorer literacy skills in the heritage language than in the majority language.
● They do not have highly developed metalinguistic awareness in the heritage language.
● They typically use the language rather than talk about the language.
Manifestation of Linguistic knowledge

Direct relationship between mode of acquisition, type of task, and task modality.

- **L2 learners**
  better at written tasks and tasks that are more explicit and metalinguistic

- **HL learners**
  better at oral tasks and at tasks that minimize metalinguistic knowledge and tap “implicit”, “automatic” linguistic knowledge (DeKeyser 2003, Paradis 2004)
• Both types of learners have some sort of representational problem with inflectional morphology, because they produce and fail to recognize a significant number of errors in both oral and written modalities, more so than fluent native speakers.

• Yet, the extent of the errors in one skill or the other depends on their experience with their language, and probably on how that knowledge is stored in memory (implicitly or explicitly).
Remaining questions

- How do we capture theoretically the relationship between implicit grammatical knowledge, explicitly acquired knowledge and use of linguistic knowledge in these two types of learners, regardless of how they come to be acquired?
- How do we explain the comprehension and production dissociations as a function of linguistic experience in these two types of learners?
Possible solution

Integration of UG-type theory with processing and usage-based type theory, which are already available for L1 and L2 acquisition. Integration of Input and Output Hypotheses.

We do not have to reinvent the wheel to understand Heritage Language Acquisition
Pedagogical Implications

- Both L2 learners and heritage language learners will benefit from form-focused instruction in the classroom to achieve better grammatical accuracy.

- L2 learners should be given more opportunities to use the language in oral production.

- Heritage language learners should continue to engage more in written activities, so that they can make a connection between how the language is used in oral production and in written texts.
Thank you very much!
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