



Multilingual Phonology Lab
@UIC

Leveraging Existing Languages For Further Language Acquisition: Evidence from Portuguese as a Third Language

Jennifer Cabrelli
University of Illinois at Chicago
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Roadmap

- What is a third language (L3) learner and why are they different from second language learners?
- The role of existing languages in subsequent language learning
- Curricular implications

What is an L3 learner? Who qualifies?

--Sandra is from Colombia and her mother is as well, but her father is from England and she is a naturalistic bilingual (seemingly balanced) from childhood. Now, as an adult, she is learning German.

--Paulina is from (little town) Pennsylvania. She started learning Spanish at age 14 and was very successful, later in college she majored in Spanish where she began to take Portuguese although this was a long, long time ago.

--Tammer lives in Ottawa and although his first languages were Tamil and English, his parents being from India, he has taken French since she was 6. Now as an adult, he is taking German in school.

-- Pau was raised in Andalucia, but his family is from Valencia. He learned Spanish as a first language and was exposed to Valenciano in his home at a very early age. He understands Valenciano and can get by in speaking it. He is now a teenager and learning English in school.

See Rothman, Cabrelli Amaro, & de Bot, 2013)

What is an L3 learner? Who qualifies?

-Ana Lúcia is from Portugal, a native of European Portuguese. She took English since she was in the second grade and turned out to be very successful. At 22, she moved to Brazil and is being confronted with what seems to her like a new language, although she already understands it (MOSTLY)!

-Tihana is from Rijeka, Croatia. In her family everyone speaks Croatian and Italian. She is taking English at school this year at the age of 11.

-Manny is from Jamaica. He speaks Jamaican English as his native language, but also speaks standard English equally well. He was not exposed to Patois as a child, but is now learning it in college.

Ping is a native Cantonese speaker from Hong Kong. He moved to Austria when he was 9 and became dominant in German. At the age of 14, in anticipation of moving back to Hong Kong, his parents enrolled him in an intensive Mandarin bilingual school so he would learn Mandarin before moving back home.

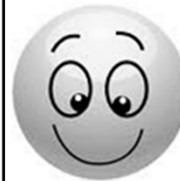
Things to agree (to disagree?) on

- There is no concrete, objective (concept) definition of what an L3 learner is.
- Research thus far has not addressed all the possible questions that should be asked about adult multilingualism.



■ **But**, we do agree that **previous language experience** is deterministic in multilingualism, even if we do not agree on exactly how.

- We also agree that examining how learners use this experience can inform proposals on language and cognition as well as curriculum development.



Third language (L3) acquisition

- L3: Historically an extension of L2
 - L2 as an umbrella term for non-primary adult language acquisition (see e.g., De Angelis 2007 for discussion)
 - A fair assessment or a *comparative fallacy*?

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Before I get into an overview of what I'm going to talk about today, I just want to briefly discuss why third language acquisition is considered an area of study in its own right.

Third language acquisition

- L3 learners vs. L2 learners
 - Superior metalinguistic knowledge (see e.g., Cenoz, 2003)
 - Cognitive benefits to executive function and attention (see e.g., Bialystok, 2009; Kroll, 2013)
- L3 learners have access to more linguistic options (see e.g., Flynn et al., 2004)
 - Drives majority of current L3 research

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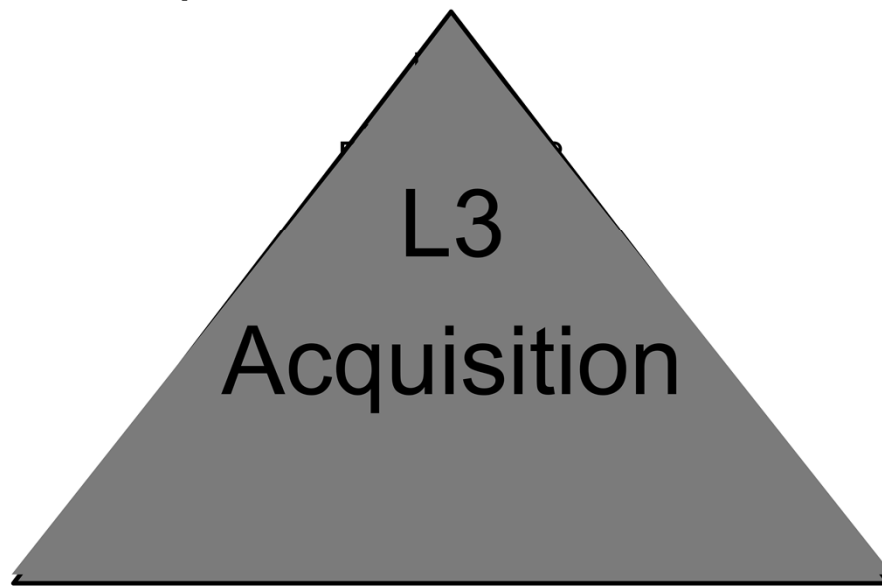
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- Dependent on context: whether learners have been formally educated in the L1/L2)
- The fact that these learners start out with two systems means that there are a number of questions we can examine which inform the nature of cross-linguistic influence more generally. I'm going to talk about three of them today.

Moving forward (and backward) in L3 acquisition

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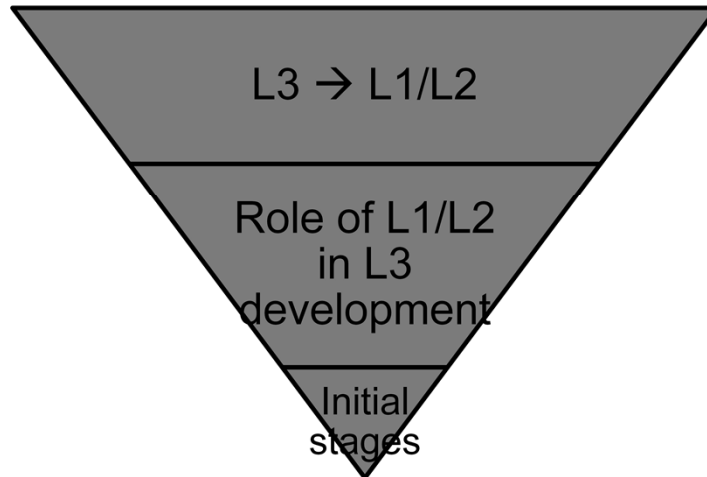


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- Let's say this pyramid represents L3 acquisition research
- CLICK: The majority of recent research has focused on the L3 initial stages. We've established over the last decade that looking at the very early stages of L3 acquisition provides information we can't get from looking at L2 acquisition alone.
 - Example: End state of L2, what drives transfer when there are multiple systems available
- While initial stages research continues to develop, we also recognize: **L3 developmental processes that are valuable to analyze beyond initial transfer**
- **We can take what we know about the initial stages and make testable predictions for development**
- I'm going to talk about two new sets of developmental questions:
 - CLICK: Effects of IS transfer in development. Most agree that non-facilitative transfer is a reality.
 - Question: What happens in development after this transfer occurs? Roles of L1 and L2 in dev't.?
 - CLICK: Smaller subset of L3 research: Effects of L3 development on existing linguistic systems.
 - As an example, we can compare effects on L1 vs. L2 to inform debates on age effects in language acquisition

Moving forward (and backward) in L3 acquisition



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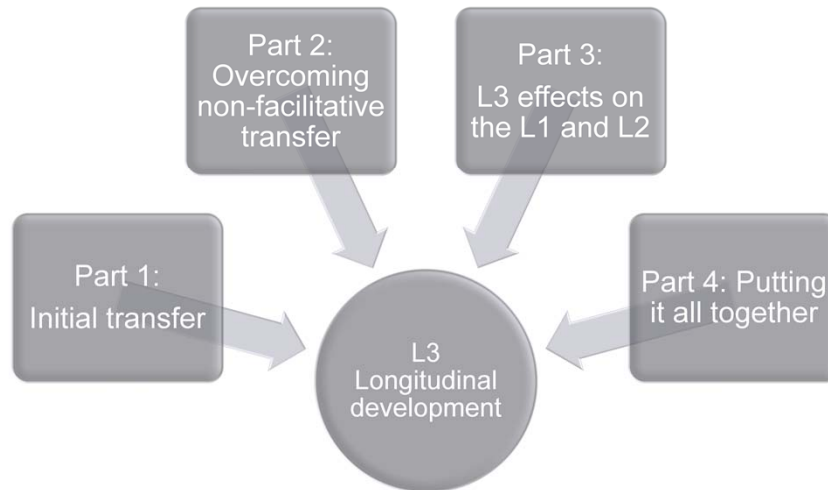
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I'm going to essentially invert this pyramid today, talking briefly about the initial stages but focusing primarily on these developmental questions.

Third language development

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- If we want to recognize L3 devt as a dynamic process, and do so in a holistic manner:
 - All three lines of inquiry on the previous slide are relevant and necessary.
- I will walk through some of the process of L3 development
 - Address parts by reviewing projects – L3 BP (Spanish/English bilinguals)
- Then, I'll talk about some ideas for step 4 (putting it all together).

Participants

- English/Spanish bilinguals acquiring L3 Brazilian Portuguese (BP)
 1. L1 English/L2 Spanish
 2. L1 Spanish/L2 English
- L3 Portuguese Proficiency
 - L3 Portuguese proficiency
 - Initial stages
 - \geq advanced

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Before getting started, I want to go over the groups I'm talking about and where the data come from.

Throughout, I'll be talking about several groups of participants, but they all fit the same profiles.

Linguistic phenomenon: Raising across a dative experiencer

English	✓
Spanish	✗
Portuguese	✓

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- While I work primarily in phonology, I'm going to focus today on syntax data for the most part. I'll touch on some phonology data towards the end when I take you through a case study.
- All of the syntax data is based on the phenomenon of raising across a dative experiencer, which is acceptable in English and Brazilian Portuguese, but crucially not in Spanish.
- **Working with a property that patterns like this, in conjunction with mirror-image groups, allows us to identify the source language of transfer as well as evidence of what might be driving transfer**

Linguistic phenomenon: Raising across a dative experiencer

English	Pedro seems to me [to know English]
Spanish	*Pedro me parece [saber inglés]
Portuguese	O Pedro me parece [saber inglês]

1-----	2 -----	3 -----	4 -----	5	?
strange				natural	not sure

Raising across a dative experiencer

- Control data
 - Spanish (n = 15)
 - English (n = 18)
 - BP (n = 19)
- Prediction:
 - Spanish native speakers will **not** accept this linguistic construction
 - BP and English native speakers will accept it

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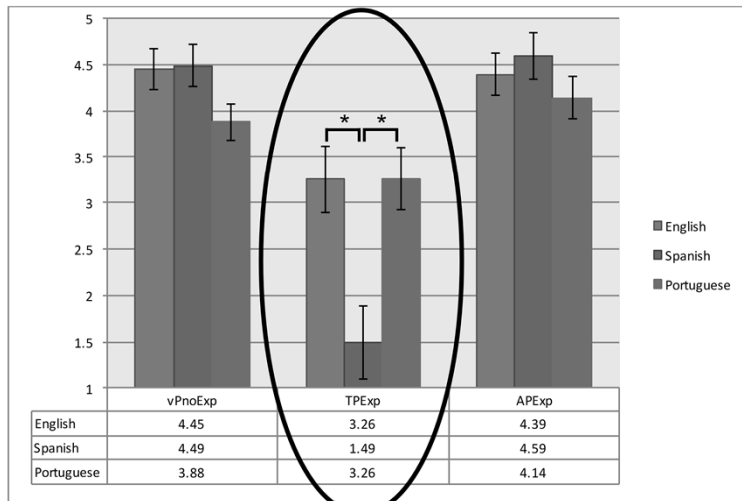
As mentioned, I tested native speakers of all of these languages to test acceptability of the three conditions to confirm the analysis, which didn't have experimental support for BP.

Raising across a dative experiencer

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L3 initial stages transfer:
 • English = facilitative
 • Spanish = non-facilitative

- Control data



Cabrelli Amaro, Amaro, & Rothman (2015)

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English=blue, Spanish=red, BP=purple

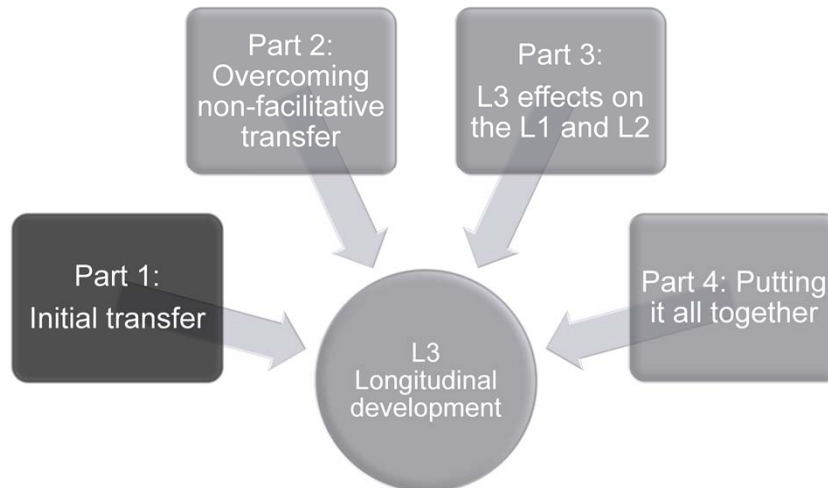
For the critical condition (TPExp), the groups judge this exactly as predicted.

That is, the Spanish speakers disprefer TPExp while BP and English both accept it (although they don't necessarily love it).

As for the other two conditions, we can see that they are acceptable in all three languages, again as predicted.

We can see that, with regards to transfer to Portuguese, English will be the facilitative choice.

Moving forward (and backward) in L3 acquisition



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Now that I've established who we are talking about and where the data are coming from, we can move on to Part 1, initial stages transfer.

This is important because, to make developmental predictions, we have to understand what happens at the beginning of acquisition.

Part 1: Initial transfer

- Variables proposed to determine initial transfer
 - **Facilitation** (Flynn et al., 2004)
 - **L2** (Bardel & Falk, 2007; Falk & Bardel, 2012)
 - **Similarity** (Rothman, 2010, 2011, 2013, 2015)
 - **L1** (e.g., Hermas, 2014)

Part 1: Initial transfer

- Predictions

	Facilitation	L2	Similarity	L1
L1 English- L2 Spanish	English	Spanish	Spanish	English
L1 Spanish- L2 English	English	English	Spanish	Spanish

Since we are using mirror image groups and a property that is different when we compare the two more similar languages, we can test all four of the models.

L3 initial transfer

- Experimental groups
 - L1 English/L2 Spanish (n = 18)
 - L1 Spanish/L2 English (n = 15)
- Control groups
 - Spanish (n = 15)
 - English (n = 18)
 - BP (n = 19)

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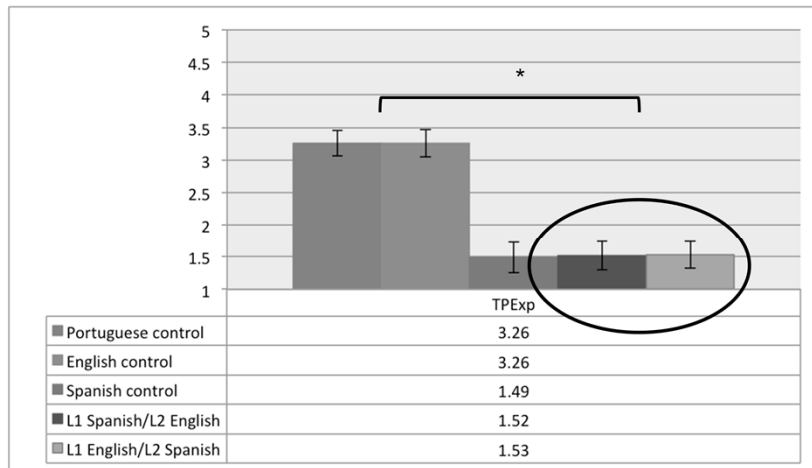
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Now that we've established what the controls do, we can compare them with the initial stages consecutive bilinguals and see what language is being transferred at the L3 initial stages.

We will focus just on the (critical) TPEp condition from here on, since we have seen that the groups pattern together in both of the other conditions.

L3 initial transfer



(Cabrelli Amaro, Amaro, & Rothman, 2015)

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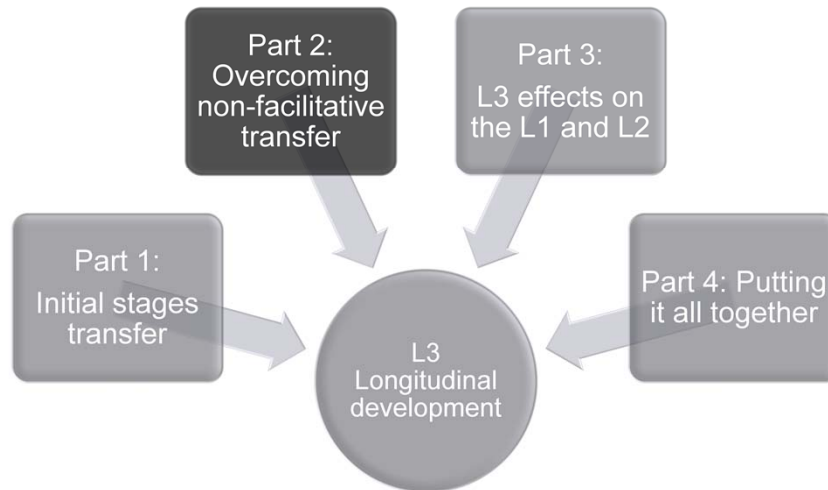
We see the controls on the left, and the two experimental groups on the right. Both experimental groups rate TPExp similarly to the Spanish native speakers, **even though the English configuration would have been facilitative.**

Part 1: Initial transfer

- Revisiting predictions

	Facilitation	L2	Similarity	L1
L1 English- L2 Spanish	English	Spanish	Spanish	English
L1 Spanish- L2 English	English	English	Spanish	Spanish

Moving forward (and backward) in L3 acquisition



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Now that we know what is happening at the initial stages, we can make some predictions for development.

Part 2: Overcoming non-facilitative transfer

- If...
 - L1 and L2 Spanish speakers initially transfer Spanish
- And...
 - These groups are assumed to have the same grammar
 - Then...
 - path/rate of L3 development should be the same across groups

However, is it possible that variables associated with **age of acquisition** yield developmental differences?

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With that said, we know very little about how the rate of acquisition and developmental path compares for different bilingual profiles in L3 acquisition.

Assuming non-facilitative transfer can be overcome in development...If L1 Spanish speakers and L2 Spanish speakers both transfer Spanish at the onset of L3 acquisition, and both groups are assumed to have the same grammar (at least for the domain under investigation), the null hypothesis is that both groups' path and rate of L3 development will look the same. However, is it possible that variables associated with age of acquisition and language experience (which are the variables that distinguish these three bilingual profiles) yield differences in L3 development?

Part 2: Overcoming non-facilitative transfer

- Hypothesis
 - The rate of L3 acquisition depends on whether the language transferred is the learner's L1 or L2
 - (Non-facilitative) transfer of the **L2** is overcome faster

Group	Portuguese
L1 English/L2 Spanish	Accept (higher ratings)
L1 Spanish /L2 English	Reject (lower ratings)

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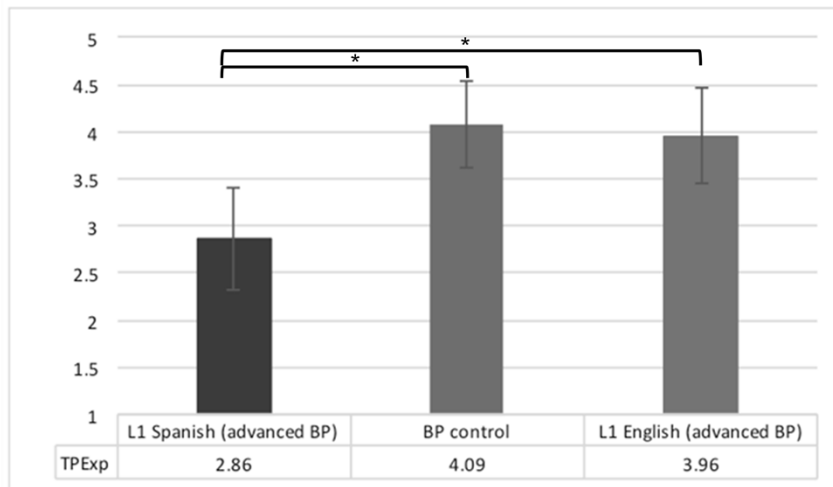


- **L1 English/L2 Spanish** speakers will be more likely to **reject** Spanish-like DOM and accept unmarked objects
- **L1 Spanish/L2 English** speakers will be more likely to accept Spanish-like DOM and reject unmarked objects
- **Heritage Spanish** speakers will pattern with L1 English/L2 Spanish speakers

Part 2: Overcoming non-facilitative transfer

- Participants: Advanced L3 BP
 - Groups
 - L1 English/L2 Spanish (n = 15)
 - L1 Spanish/L2 English (n = 19)
 - BP control (n = 14)
 - Data: Portuguese

Part 2: Group results



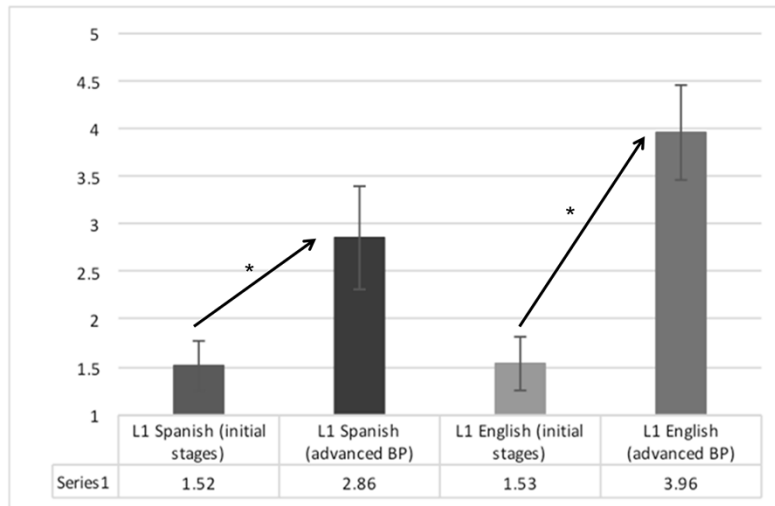
(Cabrelli Amaro & Iverson, in prep)

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- Once again, we're focusing here on the TPEp condition.
 - Portuguese control in the middle
 - L1 Spanish/L2 English on the left
 - L1 English/L2 Spanish on the right
- Only the L1 Eng/L2 Span group does not differ from the Portuguese control.
 - CLICK TWICE The L1 Span/L2 Eng group rates the condition lower than both the control and L1 Eng/L2 Span group
- The L2 Spanish group has converged on the target, the L1 Spanish group has not. However, that doesn't mean that they're not on their way.

Part 2: Group results



L3 Portuguese: Initial stages vs. advanced (Cabrelli Amaro & Iverson, in prep)

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- Both groups' ratings have significantly increased between the initial stages and advanced proficiency, it's just that the L1 Spanish group's rating is still significantly different from the control

Part 2: Discussion

- L1 English/L2 Spanish group has reached L3 target
- L1 Spanish/L2 English group has not reached the target (but they're doing better)

Data align with the hypothesis that the language transferred to the L3 (your L1 or L2) affects rate of acquisition

Kiyono & Tsujii (1994): When the mechanism fails to parse a sentence, a set of hypotheses of defects are generated. Then, a corpus-based component chooses the plausible hypotheses from among them. The procedure is used for adapting or re-using existing linguistic resources for new application domains.

Part 2: Discussion

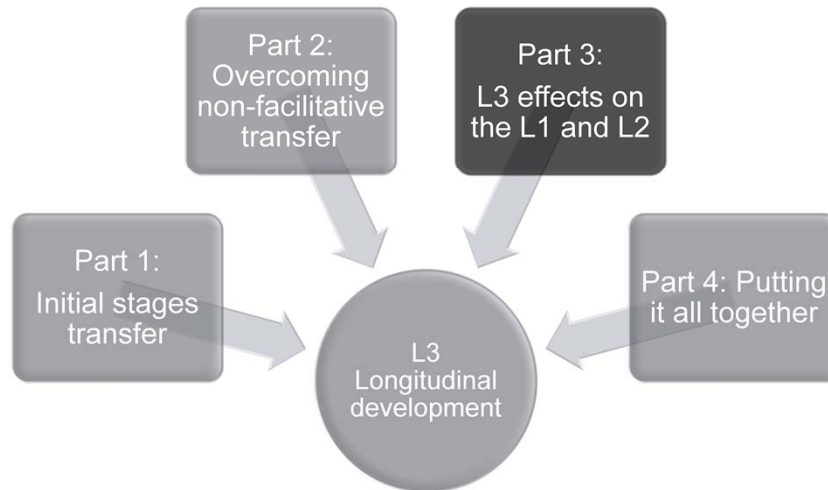
- Why?
 - Dominance versus age of acquisition
 - English-dominant heritage speakers pattern with L1 Spanish speakers in a related study, so it's not dominance (Cabrelli Amaro & Iverson, in prep)
 - So, if it's not dominance, what is it?

Part 2: Discussion

3. L1 Spanish/L2 Spanish and heritage speakers have greater **cumulative experience** in Spanish (or greater density of input early on) than the L1 English/L2 Spanish speakers
 - Regardless of dominance, cumulative experience with the **early-acquired** language is greater
 - More L3 input is required for the **L1 Spanish** (and heritage) **Spanish** speakers to override Spanish transfer
 - L1 Spanish > heritage Spanish > L2 Spanish

So, this is what we have been thinking about a lot lately. Mike and I are currently working on formalizing a hypothesis based on **cumulative experience** as an explanatory variable.

Moving forward (and backward) in L3 acquisition



Part 3: L3 effects on the L1 and L2

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- An L3 can affect an L2 positively or negatively
 - **Positive**
 - Hui (2010), Matthews, Cheung, & Tsang (2014)
 - **Negative**
 - Cheung, Matthews, & Tsang (2011)
- How does an L3 affect an L1?
- How does an L3 affect an L1 versus an L2?

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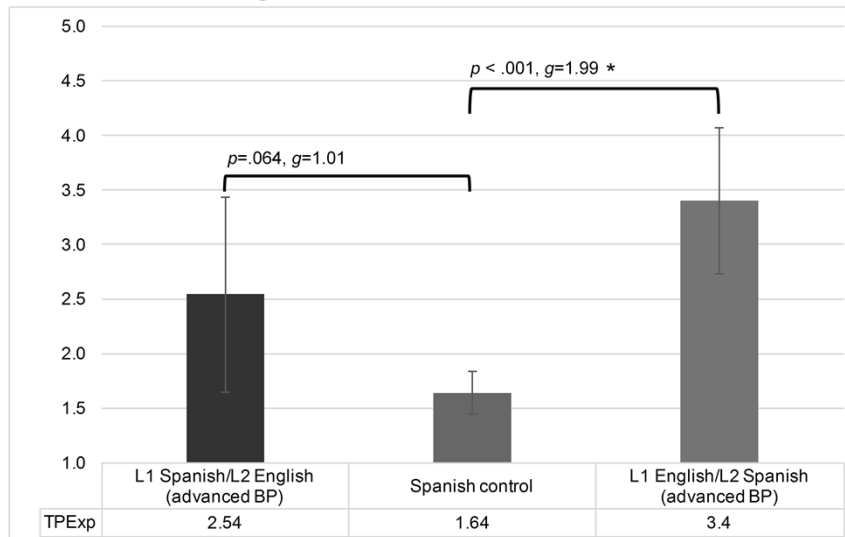
- The work that has been done on this in syntax has looked specifically at L3→L2 transfer, both facilitative and non-facilitative.
- It has been suggested that L3 acquisition can help override L1 → L2 negative transfer, which supports the idea of a cumulative effect first proposed by Flynn et al. (2004).
- Cheung et al also found non-facilitative transfer effects on L2 English, but what we don't know is how these effects would compare with effects on L1 English. That's what I'm going to be talking about now.

Part 3: L3 effects on the L1 and L2

- The Differential Stability Hypothesis (Cabrelli Amaro, 2017)
 - A language system acquired in adulthood is *more* vulnerable to L3 influence than a system acquired in childhood.

Part 3: Syntax results

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Spanish ratings (advanced L3 BP learners) (Cabrelli Amaro, 2017)

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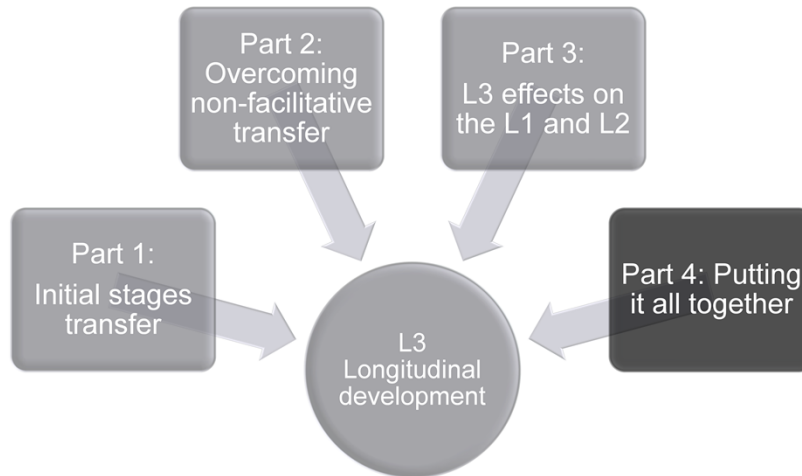
- Recall that at the initial stages, both groups looked just like the Spanish control. However at this level of BP proficiency, the L2 Spanish group rates TPExp significantly higher than the control group does, with a very large effect size ($p < .001$, $g = 1.99$).
- The difference between the L1 Spanish advanced BP group and the control group only approaches significance ($p = .064$, $g = 1.01$), but the L1 Spanish mean does not fall within the control's CI and the effect size of the between-group difference is large.
- That said, when we compare the L1 Spanish-control and L2 Spanish-control differences, the L1 Spanish-control effect size is approximately one standard deviation smaller than that of the L2 Spanish-control effect size. Thus, while both groups rate TPExp higher than the Spanish control, the degree of difference between the L2 Spanish group and the control group is higher.
- As the CI error bars show, there is quite a bit of variation, so let's take a look at some individual data on the next slide.

If asked about the L1 SP-L2SP comparison: In a direct comparison of the TPExp condition between the experimental groups, we find that while the groups' ratings do not differ significantly, the difference yields a medium effect size ($p = .106$, $g = -.71$).

Part 3: Discussion

- L2 Spanish ratings deviate from the control to a greater degree than the L1 Spanish ratings
- If these differences are thought to reflect L3 BP influence, the degree of influence on L2 Spanish is larger
- Data align with the Differential Stability Hypothesis

Moving forward (and backward) in L3 acquisition



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We've seen several pieces of the puzzle, but it's a challenge to put together these pieces that are often disjointed.

Part 4: Putting it all together

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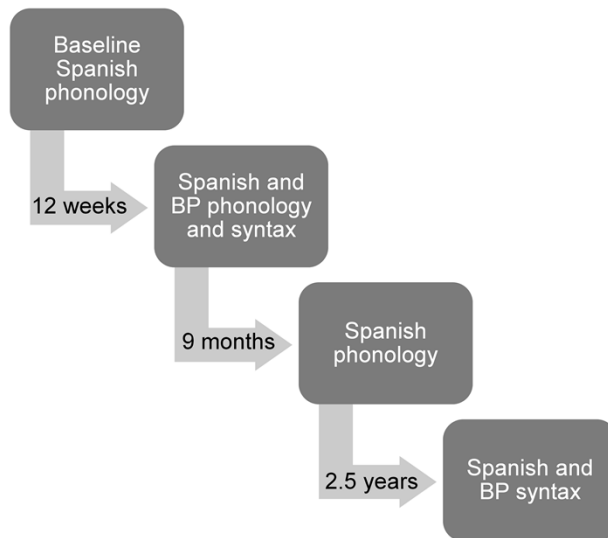
- Cross-sectional studies
 - Variation cannot easily be controlled
- Longitudinal studies
 - A need for more longitudinal studies (e.g., Cabrelli Amaro, 2013; Cenoz & Gorter, 2003; García-Mayo, 2012; González Alonso, 2017)
 - Learners act as their own control

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- These cross-sectional studies are just the tip of the iceberg. We are only starting to understand what the process of L3 acquisition looks like.
- **So, I want to go over a sample of what a longitudinal study can tell us with regards to the questions I've discussed thus far.**

Part 4: A case study



Part 4: A case study

- L1 English/L2 near-native Spanish
 - Baseline Spanish
 - 6.06/7.00 foreign accent rating
 - 46/50 written proficiency measurement
- Portuguese (After 12 weeks of intensive exposure)
 - 4.75/7.00 foreign accent rating
 - 45/100 written proficiency measurement
- Spanish (after 12 weeks of intensive Portuguese)
- Spanish (9 months later)

Part 4: A case study

- What about an L1 Spanish/L2 English speaker?
- What about a heritage speaker?

Will we replicate the cross-sectional group results if we follow these learner types over time?

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When we saw the initial stages versus advanced syntax data, there was a suggestion that both groups had undergone L3 influence. This was the case for phonology too – do these results replicate if we follow the same learners over time rather than using cross-sectional data?

Part 4: Putting it all together

- A (further) call for longitudinal L3 studies to complement cross-sectional research

*If we are interested in grand sweep effects that may be generalizable to large populations of learners, we will have to carry out group studies with representative samples that can be analyzed using Gaussian statistics based on the normal distribution. **But if we are interested in how an individual learner progresses over time as a result of changing variables in a changing context, we will have to conduct longitudinal studies** and use nonlinear methods of analysis (Lowie & Verspoor, 2015, p. 63)*

- Currently: 2-semester longitudinal study
- 2019-2021: Compare L3 development in classroom vs. immersion contexts

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Incorporate aspects from other paradigms:

Cenoz and Gorter discuss it in their focus on multilingualism approach, and of course, de Bot, Larsen-Freeman, Lowie, etc. talk about this with respect to Dynamic Systems Theory. There are components of these ideas that can apply across paradigms and are potentially very fruitful.

And, it's not like generative approaches do not accommodate variation like what we saw in the case study. In fact, stochastic Optimality Theory is ideal for modeling fluctuation of the type we saw with the case study (and can even be used for syntax, if you're into that sort of thing).

Part 4: Putting it all together

- Curricular implications
 - Portuguese is an L3 for 45% (or more?) of students
 - We can be relatively confident that learners will rely on the more similar of their two background languages (typically Spanish)
 - More broadly: Learners with a home language other than English
 - Do we need differentiated instruction for different bilingual profiles?
 - Heritage Spanish
 - L1 Spanish/adult L2 English
 - L1 English/adult L2 Spanish
 - How can we minimize effects on the learners' L1 and L2?

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Do we need differentiated instruction for different bilingual profiles?
Answer: I think so! We can also pair them together

Acknowledgements

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