

Characterizing heritage Spanish speakers' bilingualism: *The role of objective, subjective, and language experience measures*

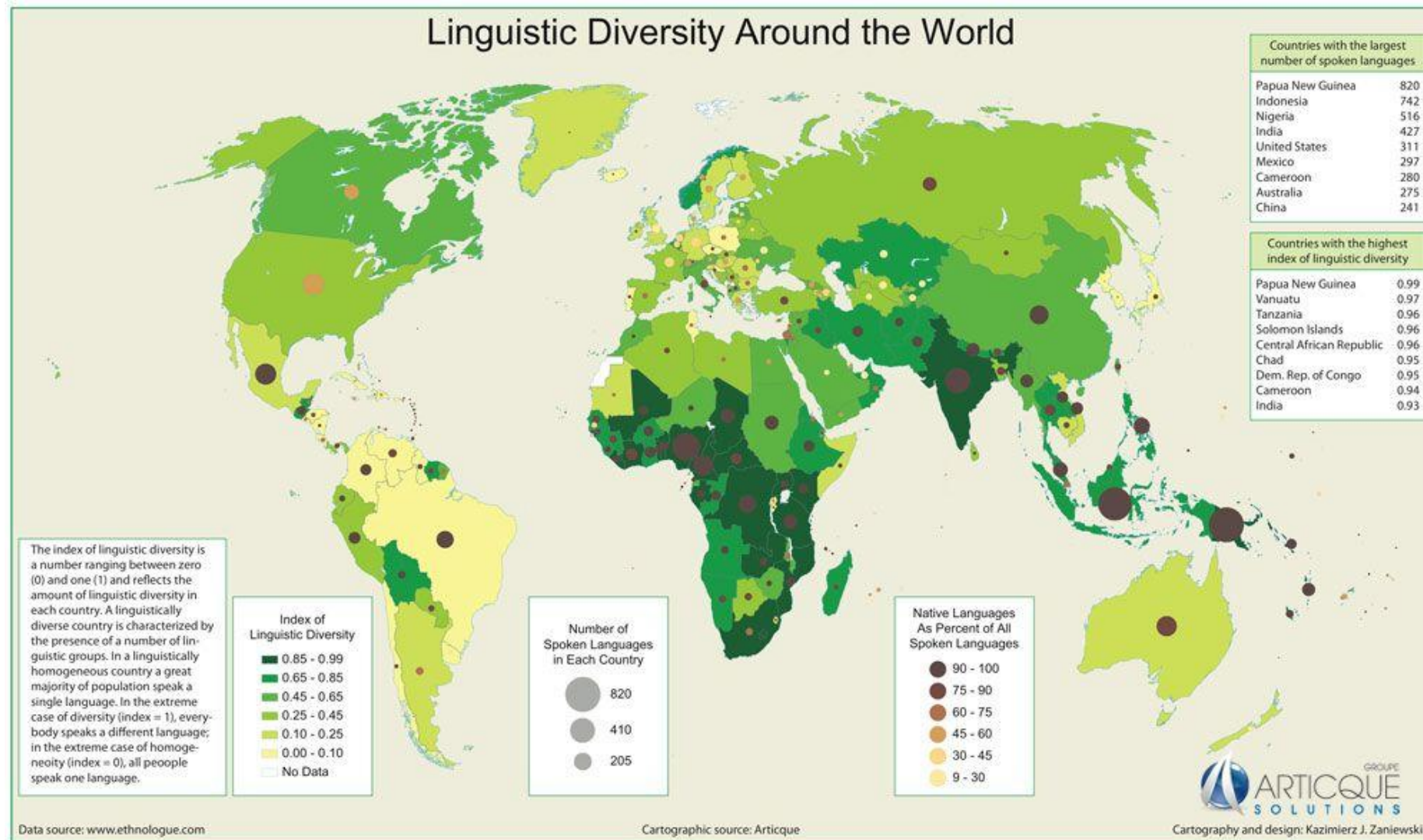
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Bryan Koronkiewicz

**Heritage Languages at
the Crossroads**

Istanbul Medeniyet
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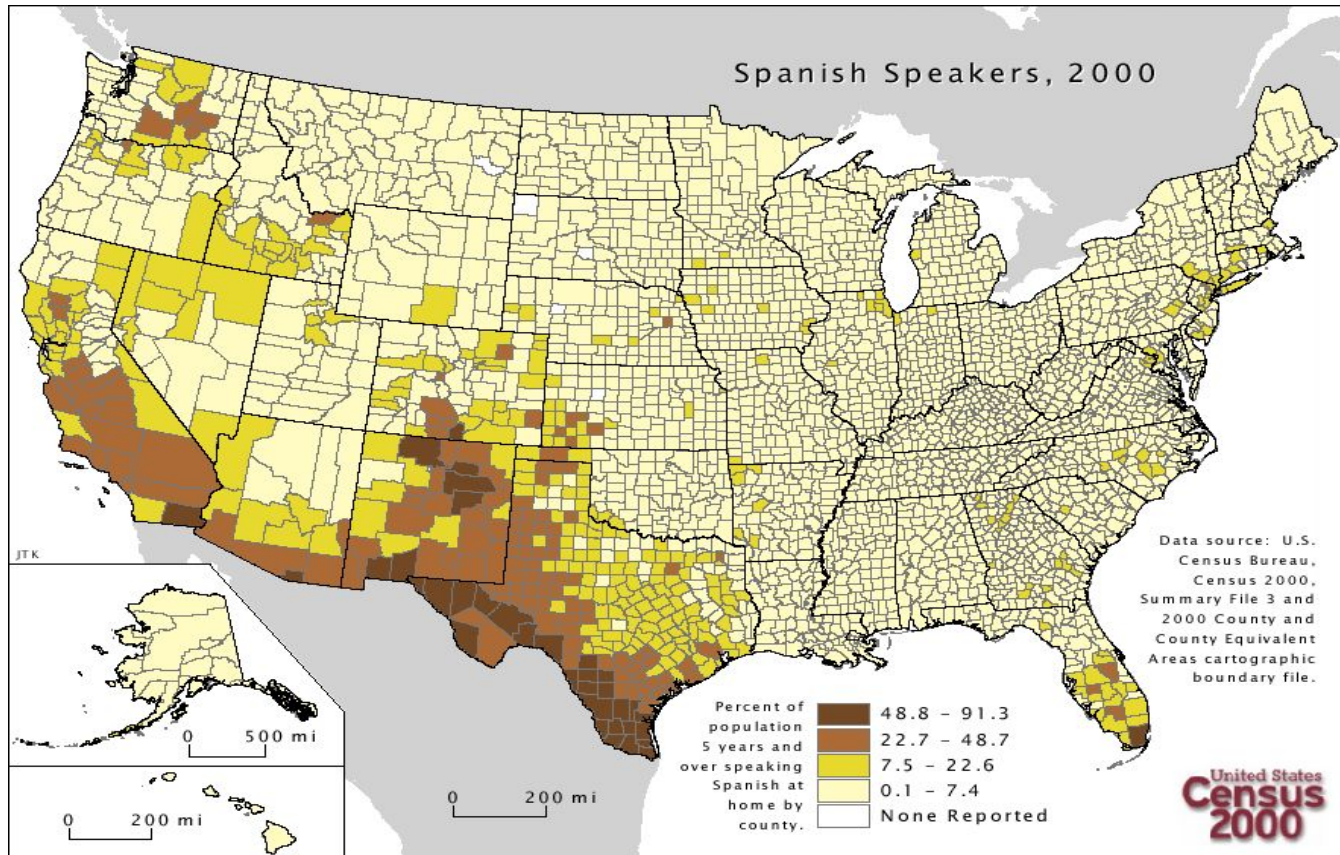


Introduction | Linguistic diversity



Introduction | Span/Eng Bilingualism in U.S.

Around 22% of the US population (**67.8 million**) reported speaking a language other than English at home (US Census Bureau, 2019):
More than 40M Latinxs in the US speak Spanish at home (Pew Research Center, 2020)



Introduction | Spanish HLs in the US

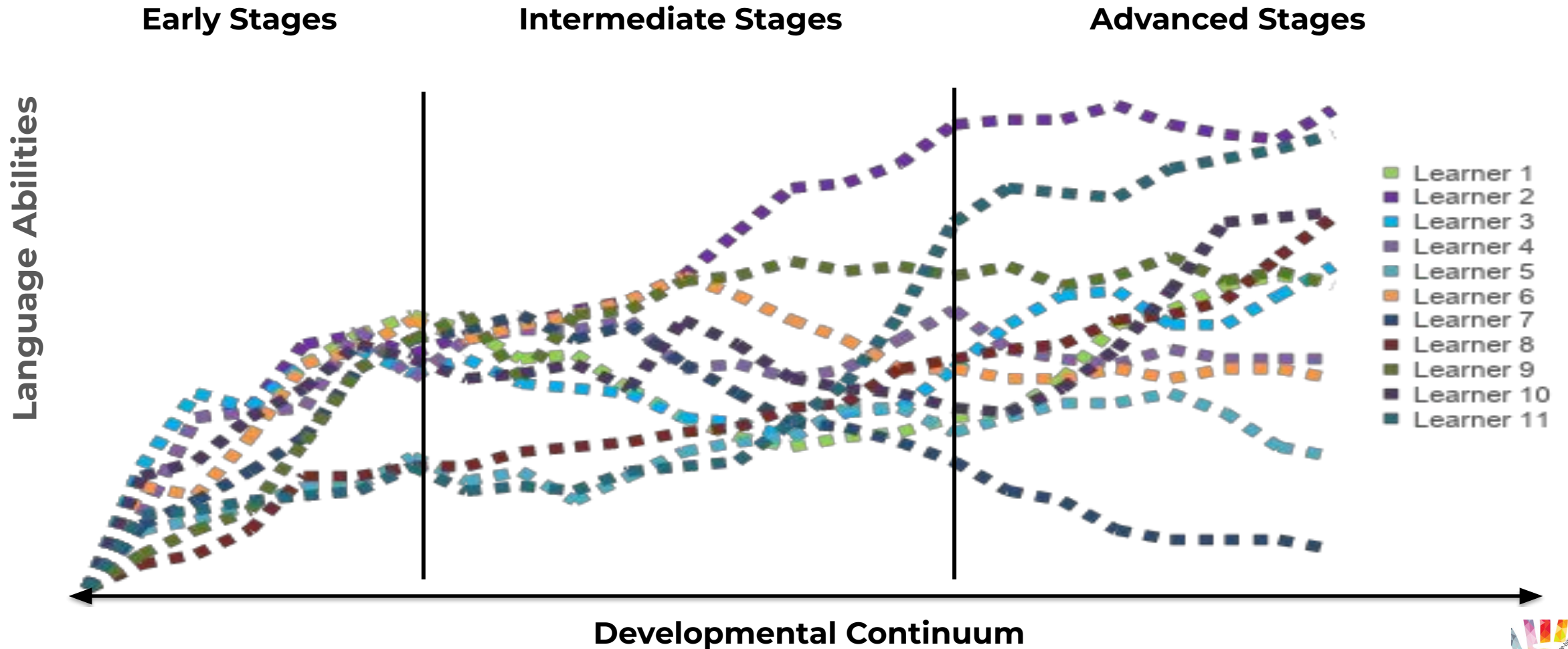
Reconnecting with your HL in a formal context also poses certain challenges...

- In the US, linguistic support for heritage language (HL) speakers in formal educational settings varies significantly by region.
- Despite the existence of HL classes and a strong motivation among HSs to (re)connect with their HL, current programs oftentimes lack the necessary resources to support their diverse needs & to empower the varied language experiences and profiles that HSs bring to their HL learning journey.



Introduction |

Simulated Typical Developmental Trajectory for Adult Language Learning (adapted from Montrul et al., 2012)



Thanks to Dr. Jason Rothman for sharing this slide with us :)

Introduction |

No Two Bilingual Experiences Are The Exact Same

- Call to find more **valid ways** to characterize bilingualism as the inherently diverse and multidimensional experience that it is (Ortega, 2013; De Bruin, 2019; Gullifer et al., 2021; Lopez, Luque, & Piña-Watson, 2021).

Particularly Relevant for Heritage Bilingualism

- Failure to explicitly embrace the dynamic nature of language and the intrinsic heterogeneity of bilingual experiences in the past has resulted in:
 - Dissemination of inaccurate and harmful information
 - Often contributing to the perpetuation of prescriptive and hegemonic views within bilingualism research (Pascual y Cabo & Rothman, 2012; Flores & Rosa, 2015; Ortega, 2020, Bayram, Kubota, Luque, Pascual y Cabo, & Rothman, 2021).

What can we do?

- Promote the use of **multi-dimensional measures** as proxies to capture the diversity of learning trajectories and outcomes along the continuum of (heritage) bilingualism.
- Approach our open questions from an **individual-difference framework** (ie., Experience-to-Outcome Hypothesis [E->OH] (Rothman-HeLPiNG Grant, 2019).
- Advance language and cognitive science research, theory building, and educational practices in the most **valid, inclusive, and equitable** way possible.

The Present Study | Motivation



- This work is a specifically a conceptual replication of Luque, Issa, Faretta-Stutenberg, & Bowden (in progress):
 - Found high internal reliability for different Spanish proficiency measures with HL speakers, as well as significant, positive correlations across different objective and subjective measures and language experience factors (e.g., years of exposure to Spanish, years of formal education in Spanish, & language entropy)
- Today's presentation:
 - Similar framework with additional objective measures and a distinct HL speaker population by joining forces with Koronkiewicz (in progress)...

The Present Study | Motivation



	Luque et al.	Present Study
Objective Measure 1	Grammar & Vocabulary Test (i.e., “modified DELE”)	
Objective Measure 2	Elicited Imitation Task	Lexical Decision Task (i.e., Lextale-Esp)
Subjective Measures	Self-Reported Skills (Speaking, Listening, Reading & Writing)	
HL Experience Factor 1	Years of Exposure to Spanish	
HL Experience Factor 2	Years of Spanish Classes	Years of Schooling in Spanish
HL Experience Factor 3	Language Entropy	

The Present Study | Motivation

	Luque et al.	Present Study
Data Collection Location	Texas ($N = 59$)	Mostly Illinois ($N = 31$); also Alabama ($N = 5$), New Jersey ($N = 3$), New York ($N = 2$) and others ($N = 4$)
Education	Current undergraduate students (enrolled in a Spanish program for HL speakers) ($N = 59$)	Mixture of current undergrads ($N = 28$) and college graduates ($N = 17$)



Research Questions

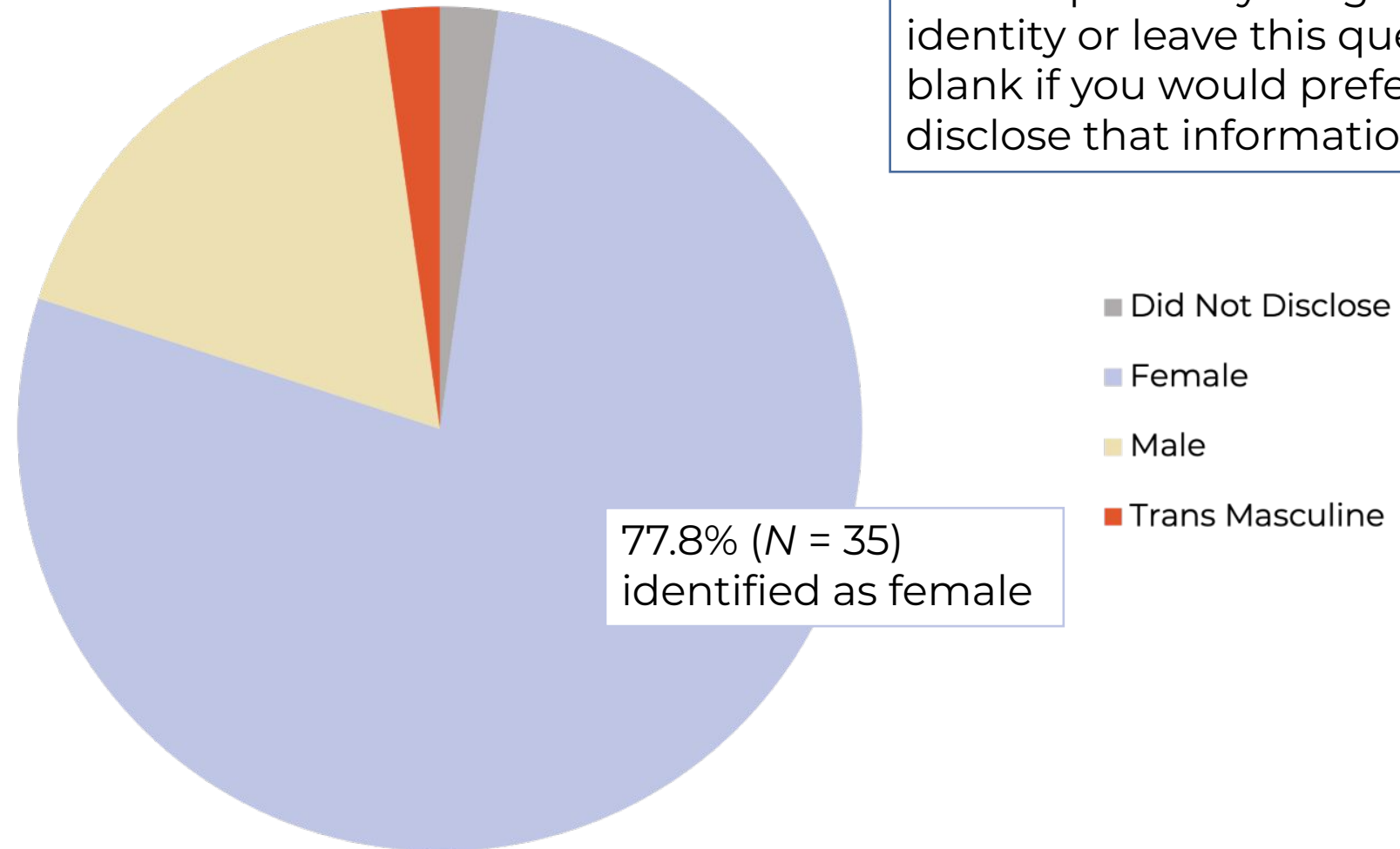
- **RQ1:** What is the internal consistency of these objective proficiency measures in HL speakers of Spanish?
- **RQ2:** How do these widely used proficiency measures relate to one another in HL speakers of Spanish?
- **RQ3:** What is the relationship between HL-experience factors and HL/learning outcomes as assessed by these proficiency measures?

Methods: Participants

Total (N = 45)	<i>M</i>	<i>SD</i>	Range
Age	23.5	5.1	18 to 38 years
Age of Exposure to Spanish	0.3	0.9	0 to 4 years
Age of Exposure to English	2.6	2.4	0 to 7 years
Feel Like Myself in Spanish	5.7	0.6	4 to 6 *
Feel Like Myself in English	5.7	0.5	4 to 6 *
Language Dominance	31.7	32.7	-48 to 87 †

* 0 = disagree / 6 = agree
† -218 = completely Spanish-dominant / 218 = completely English-dominant (Birdsong et al., 2012)

Methods: Participants



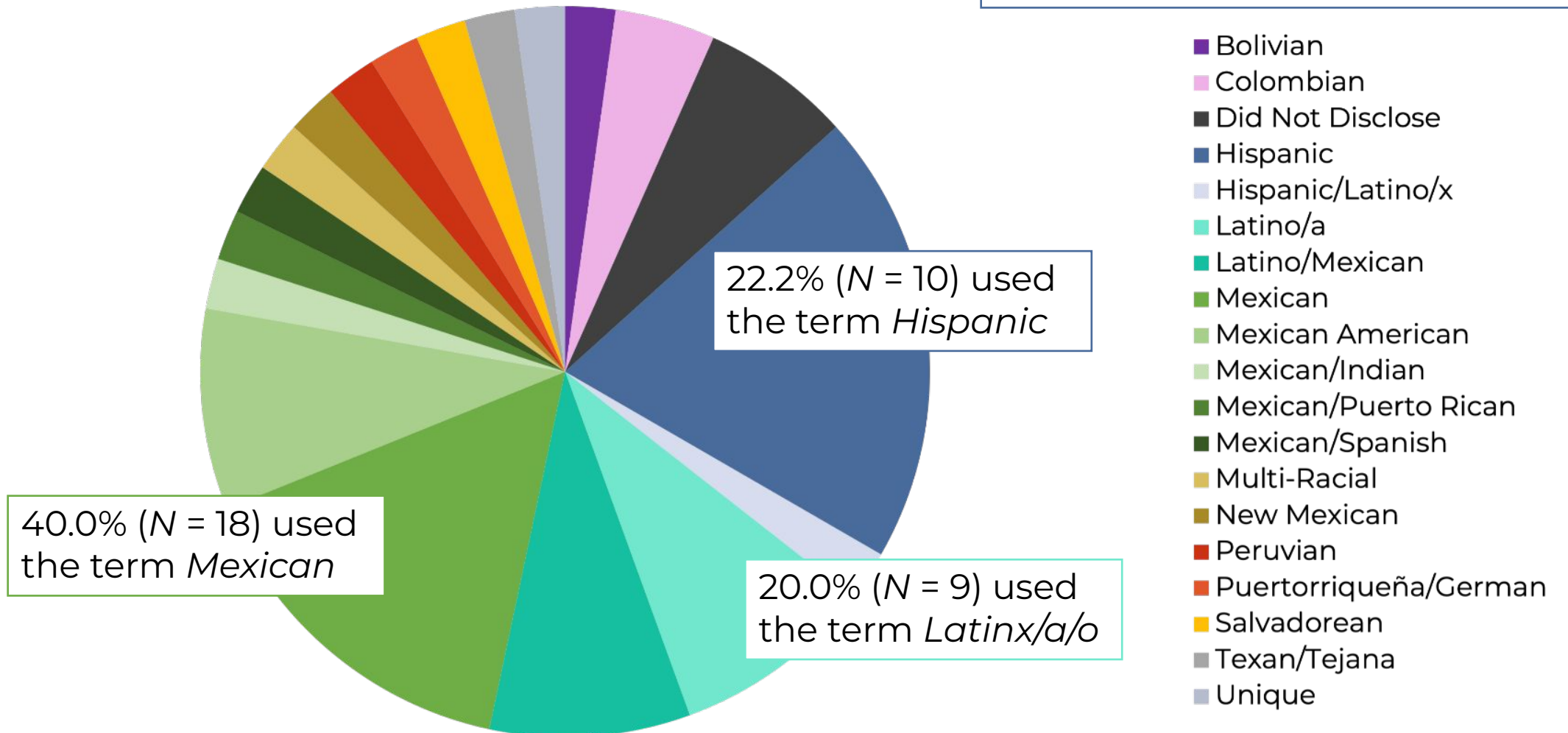
“Please provide your gender identity or leave this question blank if you would prefer not to disclose that information.”

77.8% (N = 35)
identified as female

- Did Not Disclose
- Female
- Male
- Trans Masculine

Methods: Participants

“Describe your cultural/ethnic identity or leave this question blank if you would prefer not to disclose that information.”



Methods: HL Abilities (Objective)



Al oír del accidente de su buen amigo, Paco se puso _____ .

alegre

fatigado

desconsolado

hambriento

Grammar & Vocab Test
(GVT) Sample Items

terzo

Sí

No

Lexical Decision Task
(LDT) Sample Item

El sueño de Joan Miró

Hoy se inaugura en Palma de Mallorca la Fundación y Joan Miró, en el el artista vivió sus últimos treinta y cinco años. El sueño de Joan Miró se ha (**cumplido / completado / terminado**). Los fondos donados a la ciudad por el pintor y su esposa en 1981 permitieron que el sueño se (**inició / iniciara / iniciaba**); más tarde, en 1986, el Ayuntamiento de Palma de Mallorca decidió (**encargar / pedir / mandar**) al arquitecto Rafael Moneo un edificio que (**hubiera servido / haya servido / sirviera**) a la vez como sede

Methods: HL Abilities (Objective)



- Grammar and vocabulary test (GVT) (Montrul & Slabakova, 2003)
 - Originally adapted from a portion of the *Diploma de Español como Lengua Extranjera* (DELE)
 - Commonly used in prior research and referred to as “modified DELE”
 - Designed to assess prescriptive grammar knowledge (representative of Peninsular Spanish) to assess proficiency
 - 2 written, multiple-choice sections
 - 1 sentence-level and 1 multi-paragraph cloze passage
 - Analysis includes 3 different calculations:
 - **GVT Score 1:** Total of correct responses (from 0 to 50)
 - **GVT Score 2:** Sentence-level responses only (from 0 to 30)
 - **GVT Score 3:** Cloze-passage responses only (from 0 to 20)

Methods: HL Abilities (Objective)



- Lexical decision task (LDT) (Izura et al., 2014)
 - Lextale-Esp was created in response to and in line with the English LexTALE (Lemhöfer & Broersma, 2012)
 - Designed to assess vocab size in a fast way as a proxy for proficiency
 - 90 items (60 Spanish words + 30 Spanish-like non-words)
 - Participants selected *Sí* or *No* for each item to indicate if it is a word or not
 - Analysis includes 3 different calculations:
 - **LDT Score 1:** Total of correct answers (from 0 to 90)
 - **LDT Score 2:** Total with penalty for “guessing behavior” (from -60 to +60)
 - Total correct words – 2x total of incorrect non-words
 - **LDT Score 3:** d-prime (d’) score (from -4.65 to 4.65)
 - Standardized measure following signal detection theory (Macmillan & Creelman, 1991)
 - ~0 → chance-level sensitivity (i.e., an inability to discriminate)
 - ~1.0 → 69% accuracy for both
 - ~2.5 → roughly 90% accuracy for both
 - 4.65 → effectively perfect discrimination

Methods: HL Abilities (Subjective)



- Self-reported language skills
 - Collected as part of the Bilingual Language Profile (Birdsong et al., 2012)
 - 1 question per skill for both English and Spanish (8 questions)
 - Analysis includes 3 different calculations:
 - **Self-report Score 1:** Average for all 4 Spanish questions (from 0 to 6)
 - **Self-report Score 2:** Average for Spanish speaking and listening (S&L) (from 0 to 6)
 - **Self-report Score 3:** Average for Spanish reading and writing (R&W) (from 0 to 6)

“How well do you ... the following languages?
(not well = 0; very well = 6)”

...speak
...understand
...read
...write



Methods: HL Experience Factors



- Self-reported language experience
 - Collected as part the Bilingual Language Profile (Birdsong et al., 2012)
 - Specific factors collected from this questionnaire:
 - Years of Exposure to Spanish
 - Years of Spanish Schooling
 - Analysis includes 2 different calculations:
 - **Exposure Score:** Current Age – Age of Exposure of Spanish
 - **Schooling Score:** Years of Schooling in Spanish

“At what age did you start learning the following languages?”

“How many years of classes (grammar, history, math, etc.) have you had in the following languages (primary school through university)?”

Methods: HL Experience Factors



- Language Entropy Score (following Gullifer & Titone, 2020)
 - Also collected via the Bilingual Language Profile (Birdsong et al., 2012)
 - Participants asked to self-report % of each language used in different contexts
 - Calculated measure of integration/ compartmentalization of use of their languages
 - **Score of 0:** Fully compartmentalized
 - **Score of 1:** Fully integrated

“In an average week, what percentage of the time to you use the following languages ... ?”

...with friends?
...with family?
...at school/work?

“When you ... , how often do you ... in the following languages?”

...talk to yourself
...count

Descriptive Results



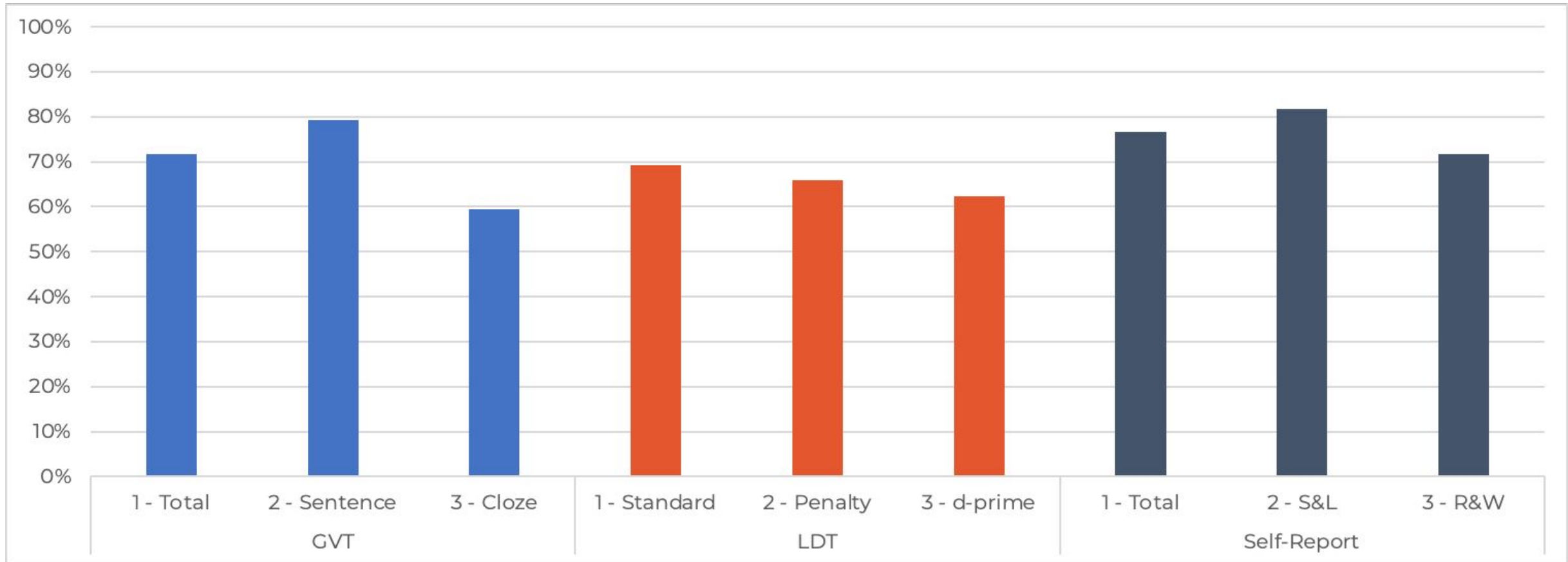
- Overall, how did the participants perform on the tasks?

	GVT 1 Total Score (0 to 50)	GVT 2 Sentence- level Score (0 to 30)	GVT 3 Cloze Score (0 to 20)	LDT 1 Standard Score (0 to 90)	LDT 2 Penalty Score (-60 to 60)	LDT 3 d-prime Score (-4.65 to 4.65)	Self Report 1 Total Score (0 to 6)	Self Report 2 S&L Score (0 to 6)	Self Report 3 R&W Score (0 to 6)
<i>M</i> (<i>SD</i>)	35.8 (8.0)	23.8 (4.9)	11.9 (3.7)	62.3 (10.5)	19.0 (15.9)	0.98 (0.92)	4.6 (1.0)	4.9 (0.9)	4.3 (1.3)
Range	11 to 47	6 to 29	5 to 19	37 to 88	-2 to 57	-0.1 to 4.0	2.8 to 6	2.5 to 6	0.5 to 6

Descriptive Results



- Overall, how did the participants perform/rate on the tasks?



RQ1 Results: Internal consistency



- Cronbach's Alpha for objective proficiency measures

	GVT 2 Sentence-level Score	GVT 3 Cloze Score	LDT
alpha	.87	.68	.88
95% CI	.82 - .92	.55 - .82	.82 - .93

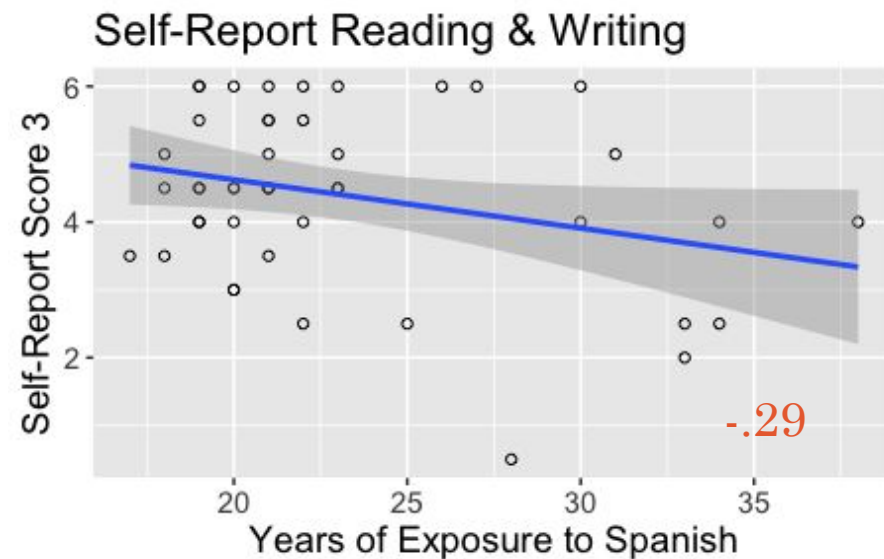
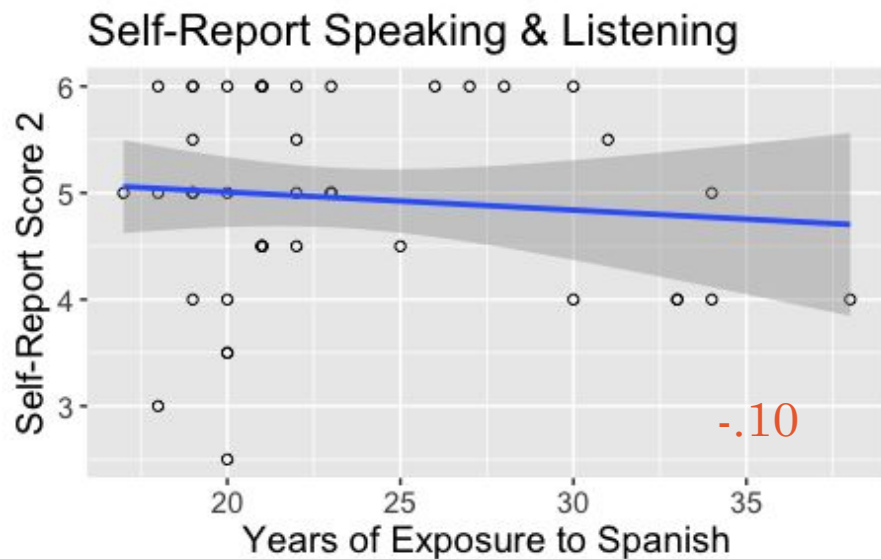
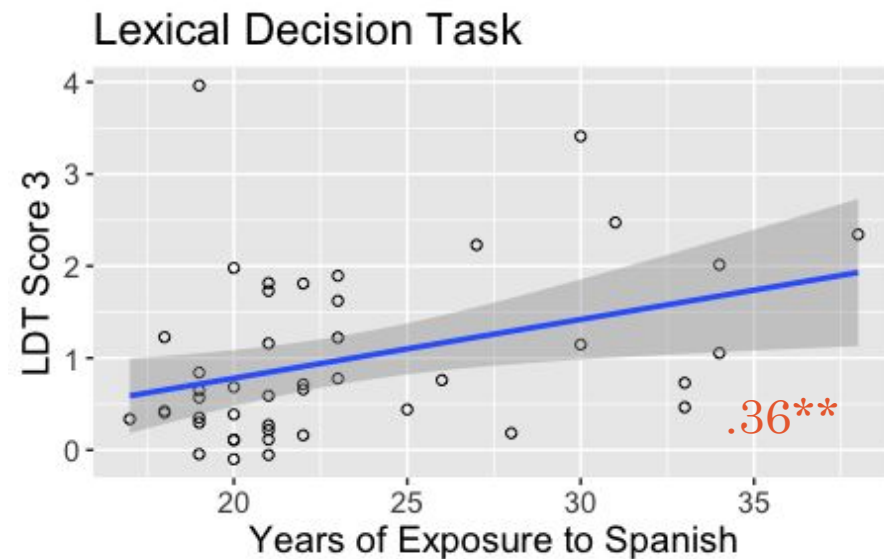
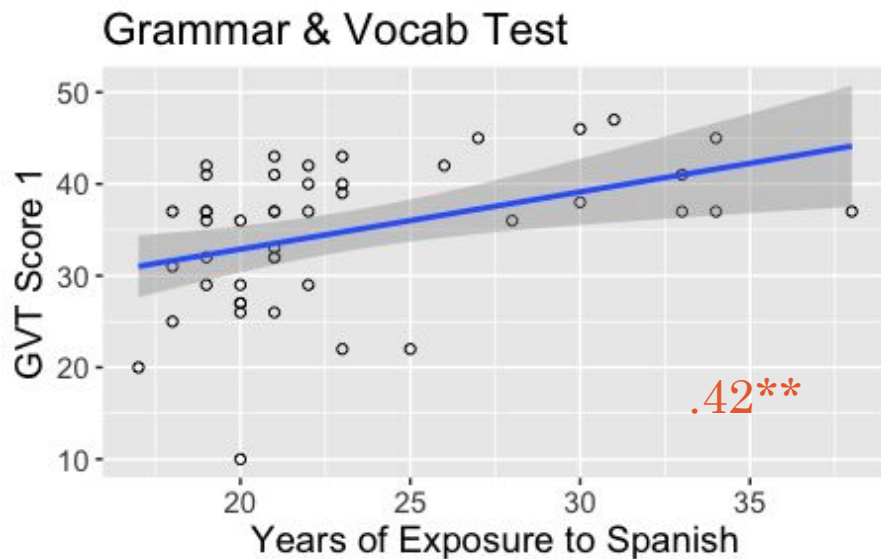
RQ2 Results: Correlations b/t measures



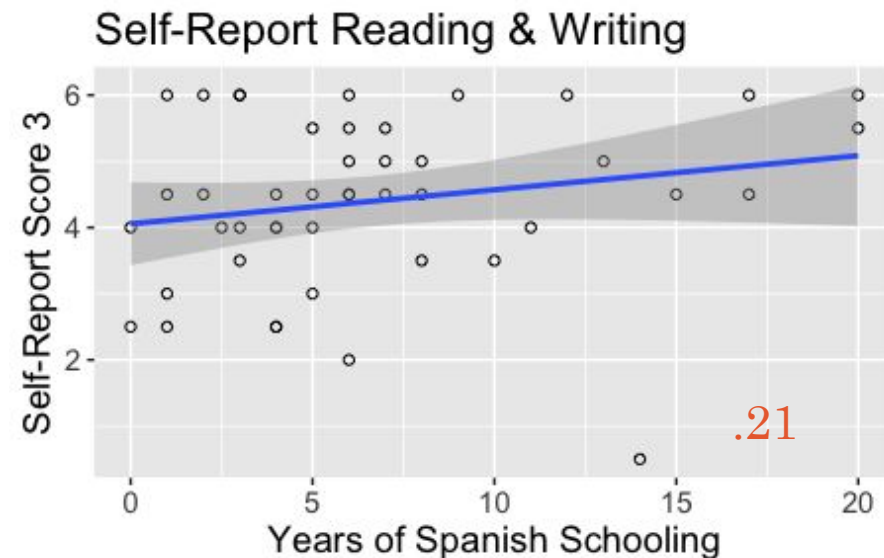
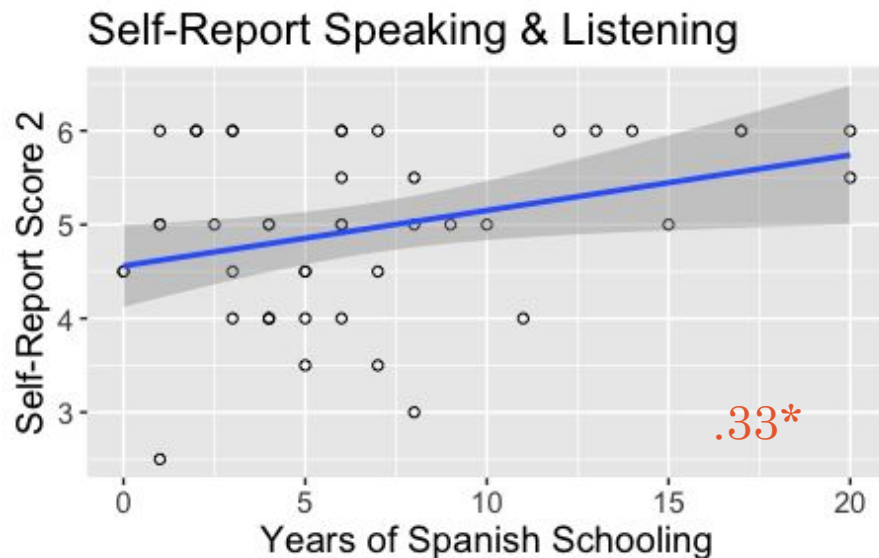
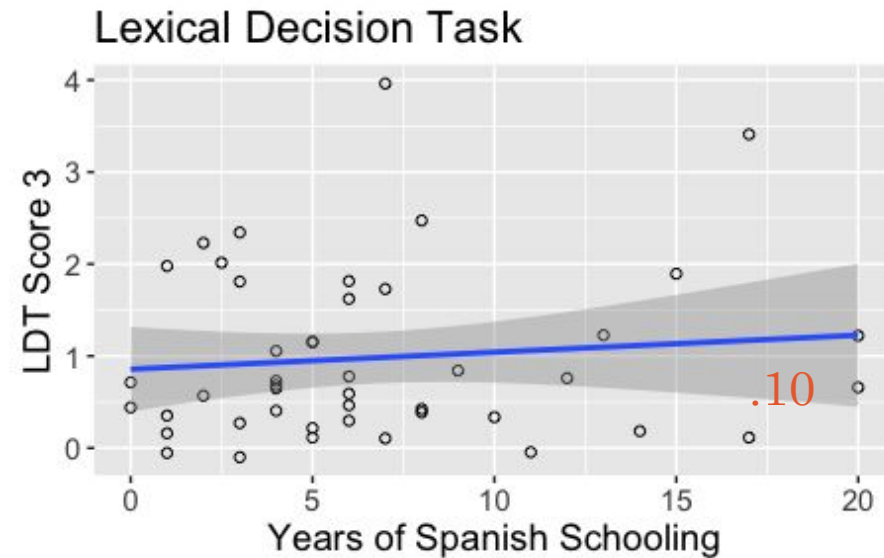
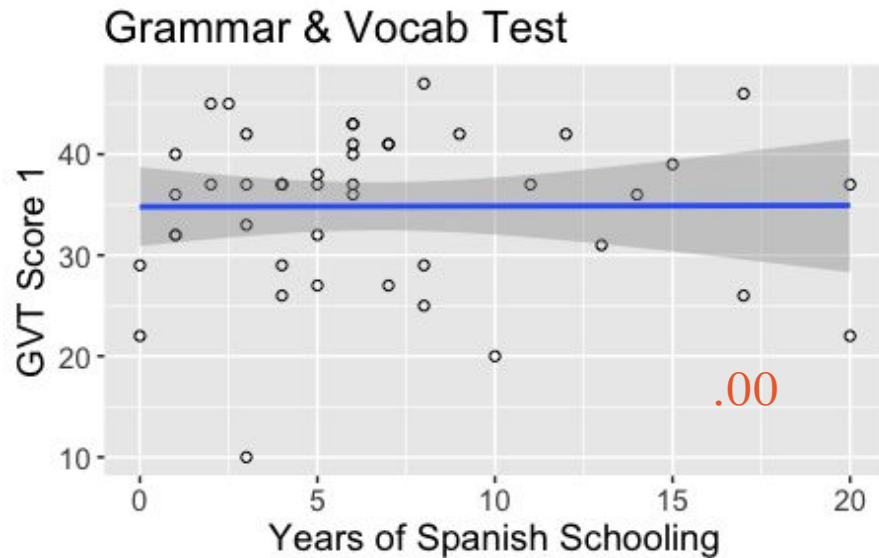
	A	B	C	D	E	F	G	H	I
A. GVT 1: Total	--	--	--	.62**	.55**	.54**	.16	.15	.14
B. GVT 2: Sentence	--	--	.71**	.58**	.48**	.48**	.18	.12	.14
C. GVT 3: Cloze	--	--	--	.63**	.60**	.60**	.25	.22	.21
D. LDT 1: Standard	--	--	--	--	--	--	.32*	.18	.18
E. LDT 2: Penalty	--	--	--	--	--	--	.28	.13	.33*
F. LDT 3: d-prime	--	--	--	--	--	--	.32*	.18	.35*
G. Self-Report 1: Total	--	--	--	--	--	--	--	--	--
H. Self-Report 2: S&L	--	--	--	--	--	--	--	--	.52**
I. Self-Report 3: R&W	--	--	--	--	--	--	--	--	--

* $p < .05$, ** $p < .01$

RQ3 Results: Exposure to Spanish



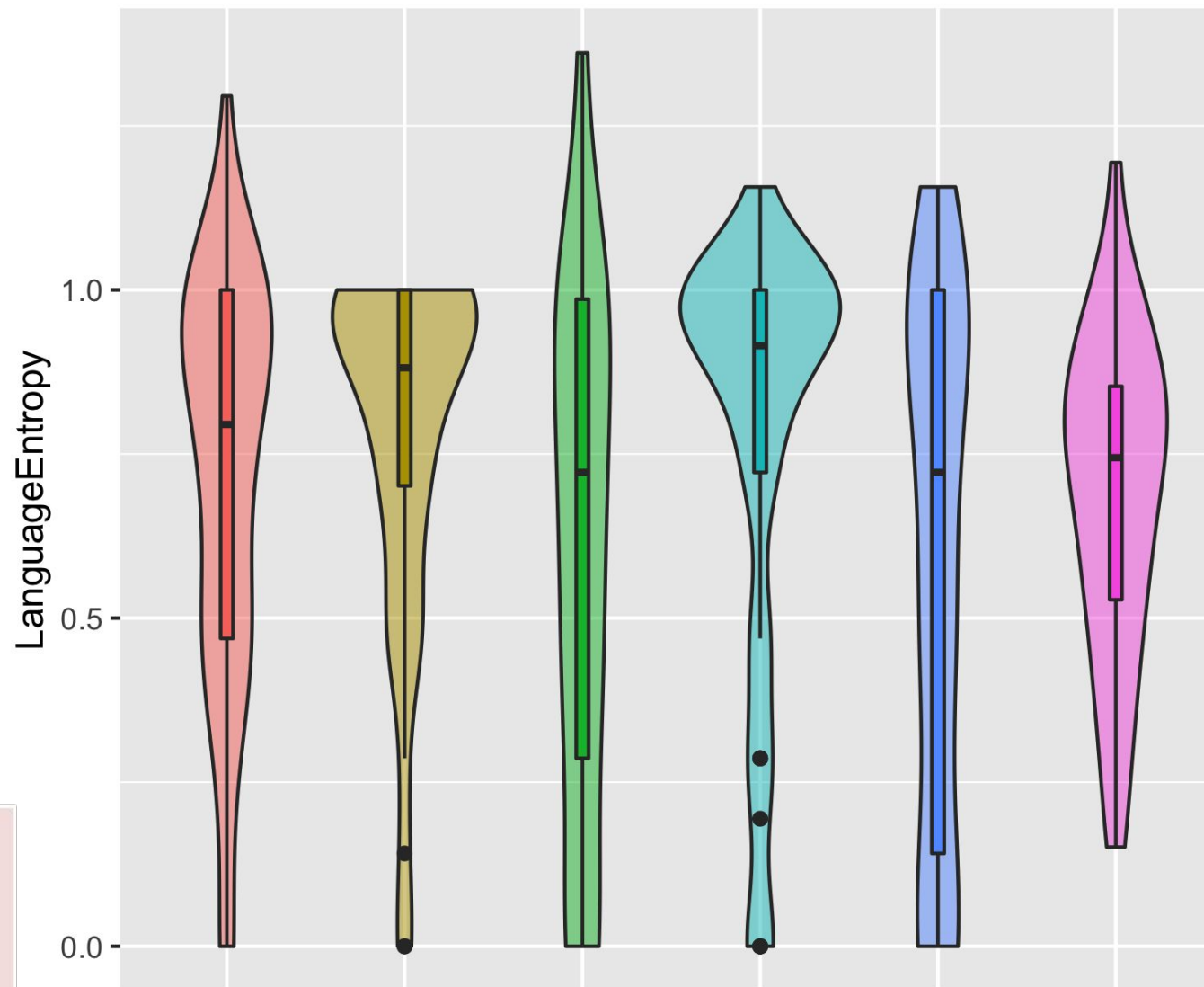
RQ3 Results: Spanish Schooling



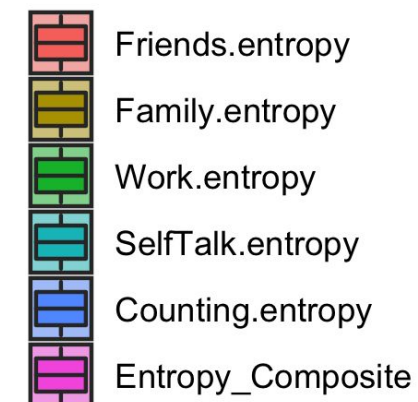
Language Entropy Violin Plots



Fully Integrated
(Both Languages in
Multiple Contexts)



variable

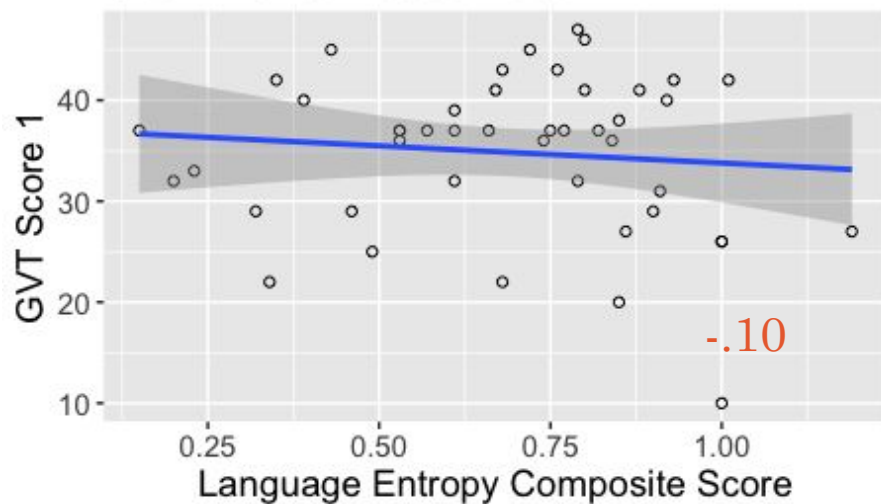


Compartmentalized
(Specific Languages in
Specific Contexts)

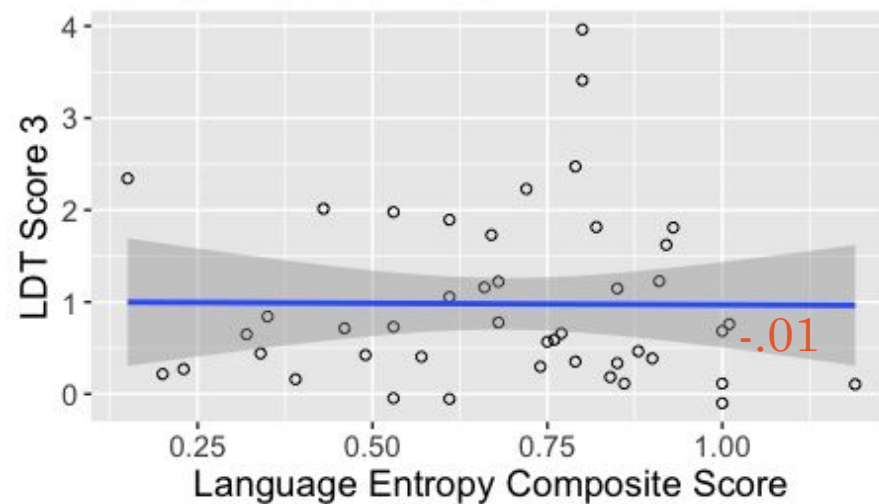
RQ3 Results: Language Entropy



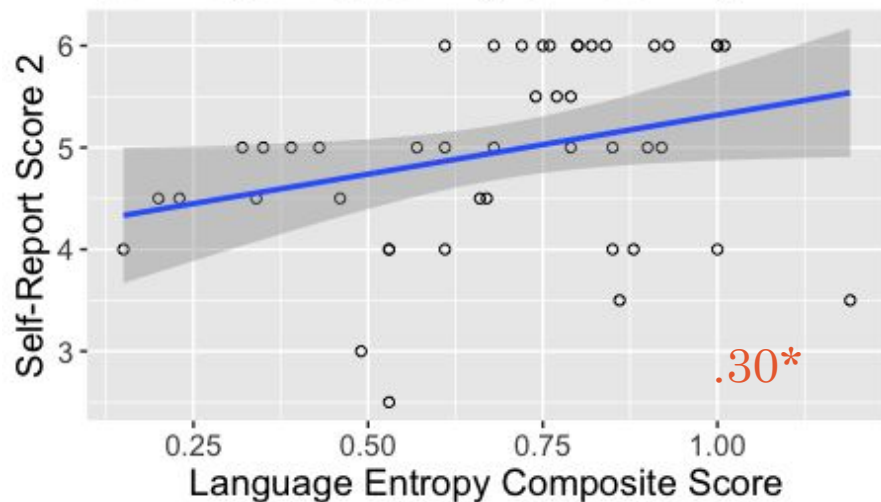
Grammar & Vocab Test



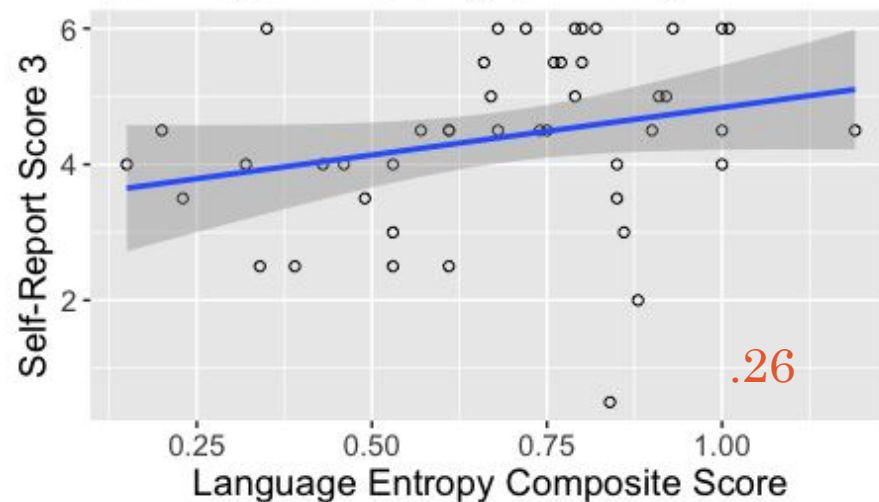
Lexical Decision Task



Self-Report Speaking & Listening



Self-Report Reading & Writing



Discussion

RQ1: What is the internal consistency of these objective proficiency measures in HL speakers of Spanish?

- Internal consistency of objective measures (following George & Mallery, 2003)
 - LDT (Lextale-Esp): “Good” internal consistency
 - GVT sentence-level: “Good” internal consistency
 - GVT cloze: “Questionable” internal consistency
- GVT:
 - Has been widely criticized as too prescriptive, vague, dialect-dependent
 - However, researchers continue to employ because the task is easy to administer and score, widely available, and facilitates comparability with previous work
 - Present study and previous suggest that GVT may not be most suitable or relevant measure of proficiency .

Discussion

RQ2: How do these widely used proficiency measures relate to one another in HL speakers of Spanish?

- Highest significant positive correlation **between the objective measures** (and among those, between LDT and cloze portion of GVT, $r \sim .6$)
 - Not surprising considering both are heavily focused on vocabulary knowledge
- Similar significant positive correlation **between the subjective measures** (self-ratings for S&L and R&W; $r = .52$)
 - Self-assessed abilities across language skills increase together in this group of speakers
- The only significant correlation between objective measures and subjective measures: LDT and self-reported total/R&W $r \sim .3$
 - Contrasts with Luque et al., (2022)
 - GVT correlated at .51-.59 with self reported measures, which was a surprising finding
 - Difference in results may be related to contextual differences during time of data collection
 - LDT might be better at detecting relationships for speakers who are not actively enrolled in HL classes

Discussion

RQ3: What is the relationship between HL-experience factors and HL/learning outcomes as assessed by these proficiency measures?

- For years of exposure to Spanish, significant correlations with **both objective measures**.
 - Aligns with Luque et al., (2022)'s results., where years of exposure was significantly correlated with both objective measures (GVT and EIT).
- For years of Spanish schooling, only significant correlation with **self-reported R&W score**.
 - Contrasts with Luque et al., where the GVT was positively related to years of schooling
- For language entropy, **self reported S&L skills** were positively correlated with our **entropy composite**, indicating that higher self-reported proficiency scores were associated with more integrated language use
 - Similar to Luque et al., (2022) where higher self-reported scores in S&L were also associated with more integrated language use. Additionally, Luque et al., (2022) found a similar relationship with R&W self-reported skills
 - It could be that more integrated use of both languages allows for greater self-efficacy in the heritage language, especially in S&L, skills that traditionally have been shown to be favored for HLs
 - Interestingly, the LDT is not related to language Entropy - which contrasts with the EIT reported in Luque et al., 2022.

Conclusions & Future Directions

Conclusions:

- Overall, this conceptual replication showed that **the LDT has good internal consistency and provided some evidence of ecological validity via relationships with self-reports.**
- We **extended previous work to a new context and speaker profile** and **by including an additional measure.**
- Potential to play part in ongoing discussion about:
 - Ecological validity of language proficiency measures among heritage bilingual speakers of Spanish.
 - Role of language experience factors in understanding variability in HL trajectories and outcomes.
 - Valid multi-dimensional ways to characterize the inherent diversity of the bilingual experience
 - Help rethink proficiency measures as limited proxies to tap into tiny aspects of (the many) heritage bilingual abilities
 - Bye, Deficit-accounts ! Hello, Individual-Difference Approaches!

What's next?

- **Investigate the relative contribution of additional language experience factors**
- **Conduct additional analyses (GLMMs) to examine relationships between all these measures at a more fine-grained level.**

¡Gracias!



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We welcome your thoughts and questions!



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References

- Bayram, F., Kubota, M., Luque, A., Pascual y Cabo, D., & Rothman, J. (2021). You can't fix what is not broken: Contextualizing the imbalance of perceptions about heritage language bilingualism. *Frontiers in Education*, 6. <https://doi.org/10.3389/educ.2021.628311>
- Birdsong, D., Gertken, L. M., & Amengual, M. (2012, January 20). *Bilingual Language Profile: An easy-to-use instrument to assess bilingualism*. COERLL, University of Texas at Austin. <https://sites.la.utexas.edu/bilingual/>
- de Bruin, A. (2019). Not all bilinguals are the same: A call for more detailed assessments and descriptions of bilingual experiences. *Behavioral Sciences*, 9(3), 33. <https://doi.org/10.3390/bs9030033>
- Flores, N., & Rosa, J. (2015). Undoing appropriateness: Raciolinguistic ideologies and language diversity in education. *Harvard Educational Review*, 85(2), 149-171. <https://doi.org/10.17763/0017-8055.85.2.149>
- GEORGE & MALLERY (2023)
- Grosjean, F. (2010). *Bilingual: Life and reality*. Harvard University Press. <https://doi.org/10.4159/9780674056459>
- Gullifer, J. W., Kousaie, S., Gilbert, A. C., Grant, A., Giroud, N., Coulter, K., Klein, D., Baum, S., Phillips, N., & Titone, D. (2021). Bilingual language experience as a multidimensional spectrum: Associations with objective and subjective language proficiency. *Applied Psycholinguistics*, 42(2), 245-278. <https://doi.org/10.1017/S0142716420000521>
- Izura, C., Cuetos, F., & Brysbaert, M. (2014). Lextale-Esp: A test to rapidly and efficiently assess the Spanish vocabulary size. *Psicológica*, 35(1), 49-66.
- Lemhöfer, K., & Broersma, M. (2012). Introducing LexTALE: A quick and valid lexical test for advanced learners of English. *Behavior Research Methods*, 44(2), 325-343. <https://doi.org/10.3758/s13428-011-0146-0>
- López, B. G., Luque, A., & Piña-Watson, B. (2023). Context, intersectionality, and resilience: Moving toward a more holistic study of bilingualism in cognitive science. *Cultural diversity and ethnic minority psychology*, 29(1), 24–33. <https://doi.org/10.1037/cdp0000472>
- Luque, A., Issa, B., Faretta-Stutenberg, M., & Bowden, H. (2022, October). *Capturing the diversity in Spanish heritage bilingual language experiences and learning outcomes: Assessing the assessments*. Paper presented at the UIC Bilingualism Forum, Chicago, IL.
- Macmillan, N. A., & Creelman, C. D. (1991). *Detection theory: A user's guide*. Cambridge University Press. <https://doi.org/10.4324/9781003203636>
- Montrul, S., & Slabakova, R. (2003). Competence similarities between native and near-native speakers: An investigation of the preterite-imperfect contrast in Spanish. *Studies in Second Language Acquisition*, 25(3), 351-398. <https://doi.org/10.1017/S0272263103000159>
- Montrul, S. A. (2012). Is the heritage language like a second language? *EUROSLA Yearbook*, 12(1), 1-29. <https://doi.org/10.1075/eurosla.12.03mon>
- Ortega, L. (2013). SLA for the 21st Century: Disciplinary progress, transdisciplinary relevance, and the bi/multilingual turn. *Language Learning*, 63(1), 1-24. <https://doi.org/10.1111/j.1467-9922.2012.00735.x>
- Ortega, L. (2020). The study of heritage language development from a bilingualism and social justice perspective. *Language Learning*, 70(1), 15-53. <https://doi.org/10.1111/lang.12347>
- Pascual y Cabo, D., & Rothman, J. (2012). The (il)logical problem of heritage Speaker bilingualism and incomplete acquisition. *Applied Linguistics*, 33(4), 450-455. <https://doi.org/10.1093/applin/ams037>
- Rothman, J. (2019) Heritage-bilingual Linguistic Proficiency in their Native Grammar (HeLPiNG) Grant. Funding Period (2019-2023). Funding Agency: Tromsø Research Foundation (TFS).
- US Census Bureau (2019). *2019 American Community Survey, 1-year estimates*. Retrieved from: <https://www.census.gov/content/dam/Census/library/publications/2022/acs/acs-50.pdf>