



# Development of a Language Impairment Screener for Spanish Speaking Children (SSLIC): Phase 1 – Task Development

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## Problem/Need

- Current measures available to screen Spanish speakers are very limited and of poor quality
  - Spanish Preschool Language Scale – 4<sup>th</sup> Ed
  - Developmental Indicators for the Assessment of Learning – 3<sup>rd</sup> Ed Spanish
- Under identification of LI of pre-schoolers and kindergarteners in minority language contexts
- Over identification of LI of school age children in minority language contexts

## Purpose

- To develop a measure to screen Spanish speakers ages 4 to 8 years that:
  - Is valid and reliable for the purpose of identifying children at risk for LI across different Spanish dialects, socioeconomic groups and ethnicities
  - Uses a Spanish LI model rather than an English language developmental model
  - Is easy to administer and score by paraprofessionals in schools in the US
  - Can be used as a universal screening instrument in pre-kindergarten and kindergarten
  - Can be used as a screening tool for speech-language pathologists for 1<sup>st</sup> and 2<sup>nd</sup> graders

## Time Frame for Development

### Year 1 – Phase I (n=400)

- Develop tasks 1, 2 and 3 (Rapid naming, morphology, sentence repetition)
- Analyses - Descriptive Statistics (Mean, Std. Dev.); Item-total correlations; Contingency tables; and Cognitive task analysis

### Year 2 – Phase I (n=400)

- Develop tasks 4, 5, and 6 (nonword repetition, word learning, word association)
- Analyses - Descriptive Statistics (Means, SDs); Item-total correlations; Contingency tables; and Cognitive task analysis

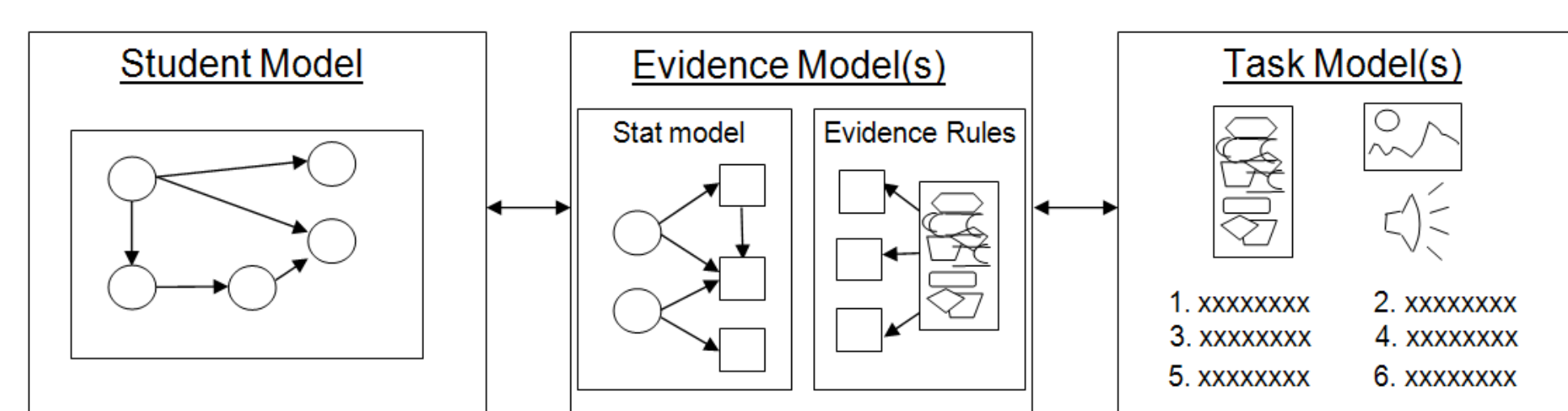
### Year 3 – Phase II (n=1700)

- Generate and validate tasks
- Analyses - Descriptive Statistics (Means, SDs); SEM/CFA; Coefficient Alpha; Correlation & Regression; ROC & Classification Analysis; Logistic Regression; t-tests

### Year 4 – Phase III (n=2000)

- Validate screener, develop decision rules
- Analyses - Descriptive Statistics (Means, SDs); SEM/CFA; Coefficient Alpha; Correlation & Regression; ROC & Classification Analysis; Logistic Regression; t-tests

## Evidence Centered Design Model

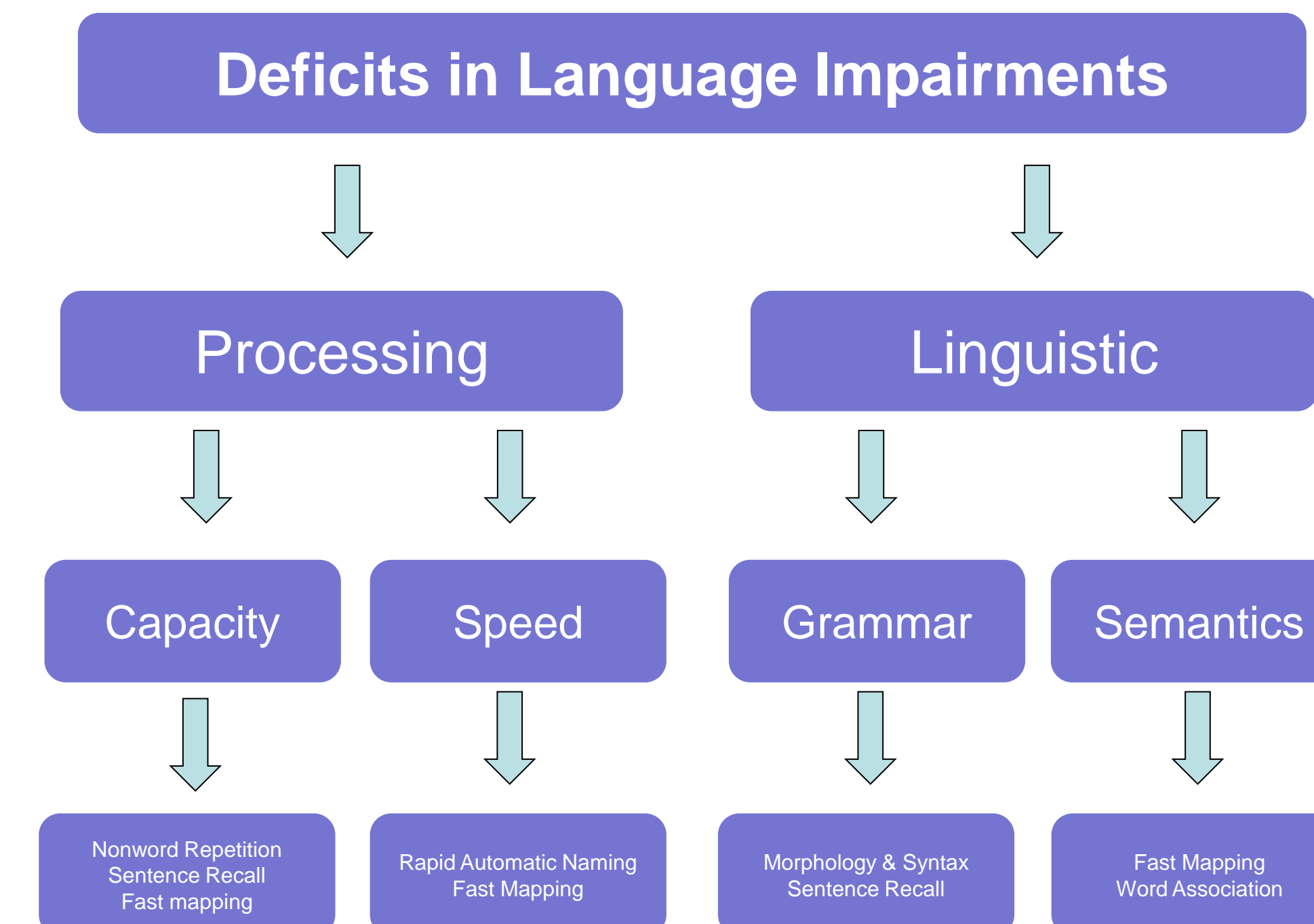


- ECD frames an assessment in terms of an evidentiary argument, connecting what we observe of individuals' behavior to what we know about their abilities (Mislevy, Steinberg, & Almond, 2003)

### Steps of ECD

- Student Model - defines a "proficient" child
- Evidence Model - specifies potential observable sources of evidence, the internal state of mastery/non-mastery of these abilities
- Task Model - designs tasks with features that elicit the sources of evidence desired (Mislevy 1994, 1995)

## Language Impairment Model



## Participant Criteria

### All Children

- Speak Spanish at home at least 50% of the time
- Teachers rates English as non-native
- Rated ELL in a language proficiency measure
- Attending English Language Development program
- Nonverbal IQ > 75 on the Kaufman Assessment Battery for Children – Second Edition
- Pass a hearing screening

### Children with Typical Language Development

- Score > 85 on the CELF-4 Spanish Edition

### Children with Language Impairments

- Score ≤ 85 on the CELF-4 Spanish Edition

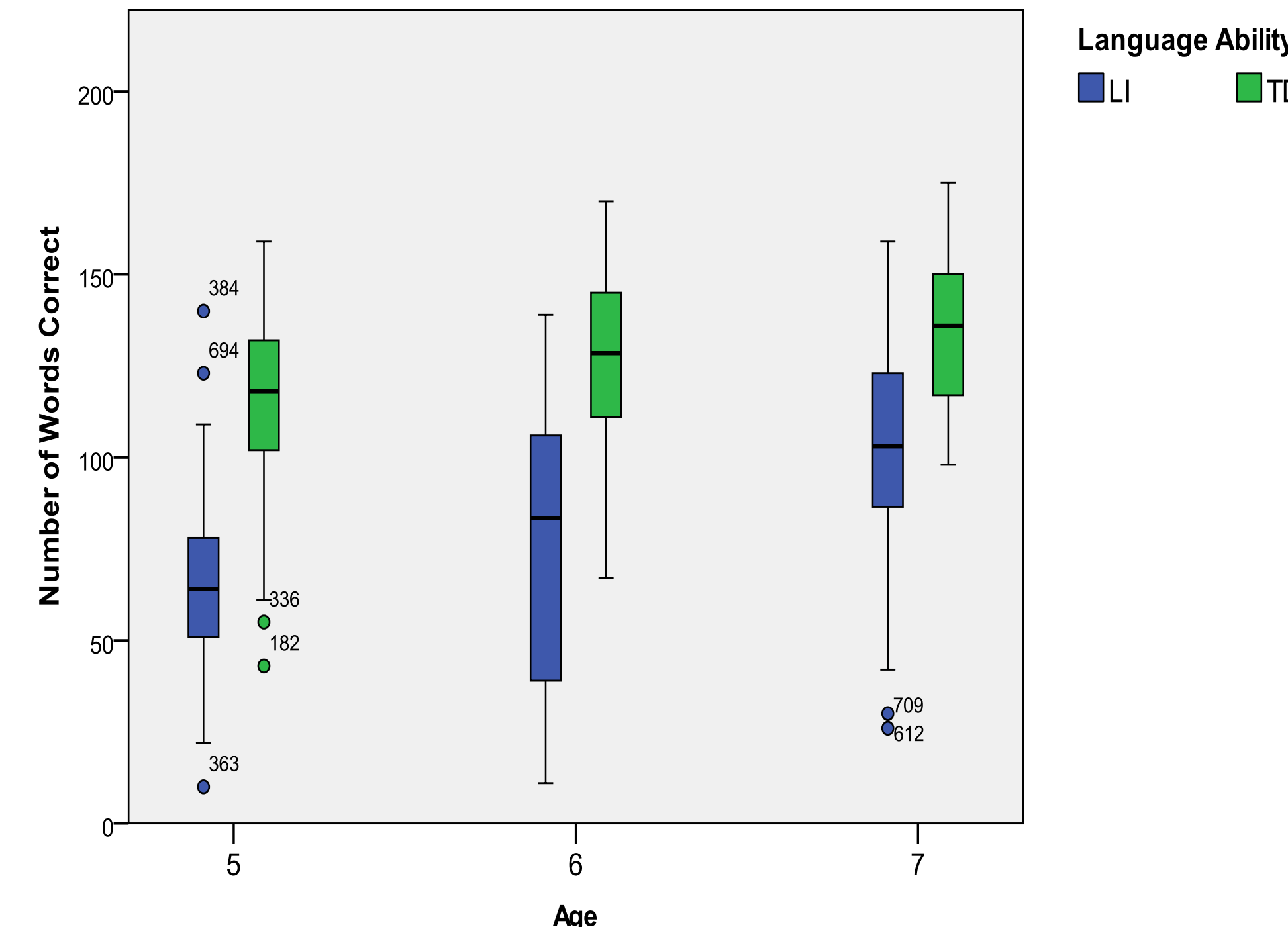
## Sentence Repetition

- Task Description** - Ability to imitate sentences with more than one complement and complex sentences (e.g., Stokes, Wong, Fletcher, & Leonard, 2006; Conti-Ramsden, Botting, & Faragher, 2001)

### Item Map

- Type of sentences: simple, complex, conditional
- Number of adjuncts: 2, 3
- Type of adjunct: temporal, locative, causal, relative
- Number of words
- Type of scoring: correct/incorrect, number of words correct, number of omissions, number of substitutions
- Verb tense

Distribution of Sentence Repetition Scores Across Age and Language Ability - Words Correct



## Morphology Task

### Task Descriptions

- Cloze task
- Verb number & tense controlled across all items

### Item Map

- Clitics – gender, number, animation, transitivity
- Articles – gender, number, semantic function
- Subjunctives – temporal, exception, intention, nominal
- Prepositions – locative, temporal, agentive, path, instrument
- Derivational morphemes – occupation (ador, ora) adjective (ado, ido)

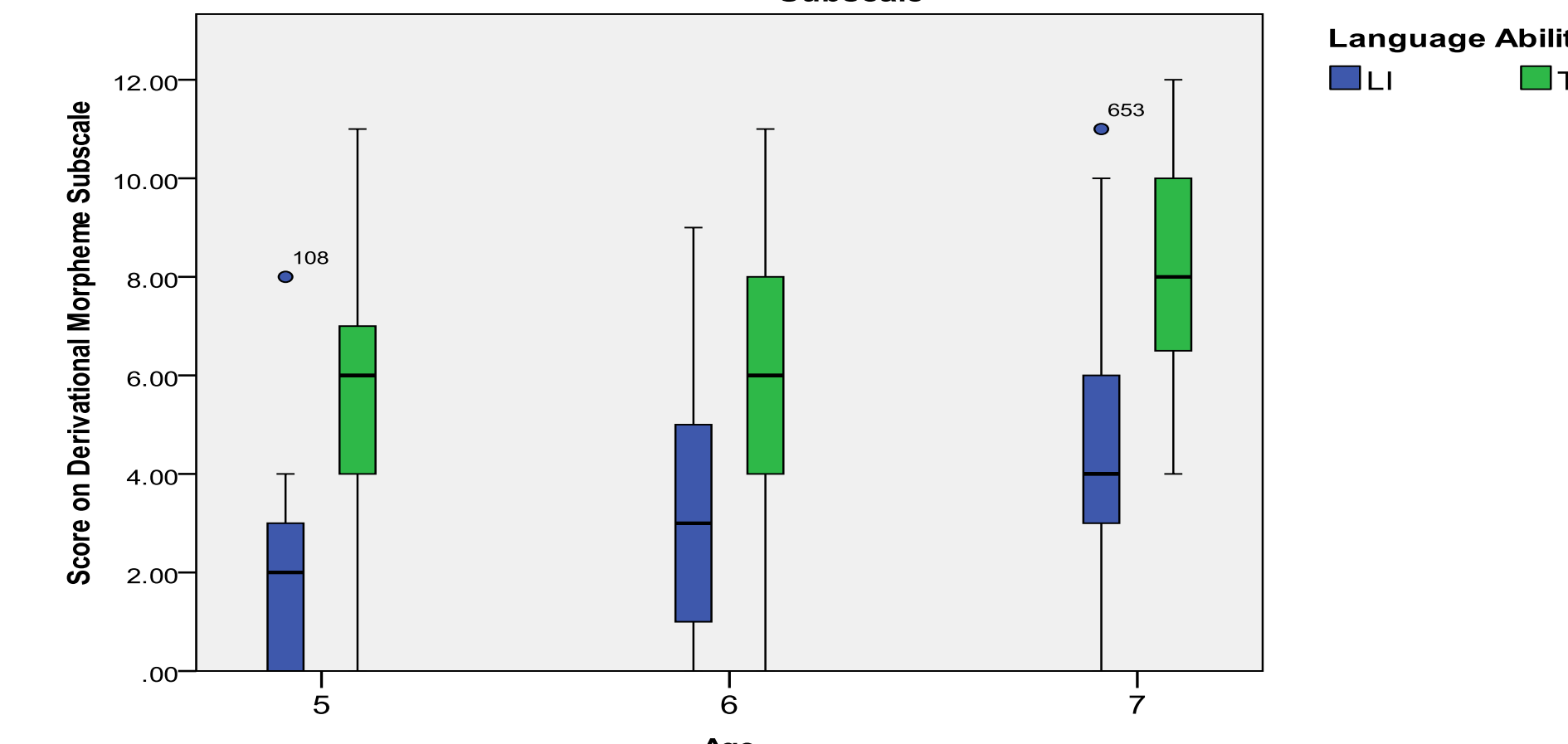
(e.g., Anderson & Souto, 2005; Bosch & Serra, 1997; Eng & O'Conner, 2000; Restrepo, 1998, 2003; Gutierrez-Clellen et al., 2006; Jacobson & Schwartz, 2002)

## Acknowledgements

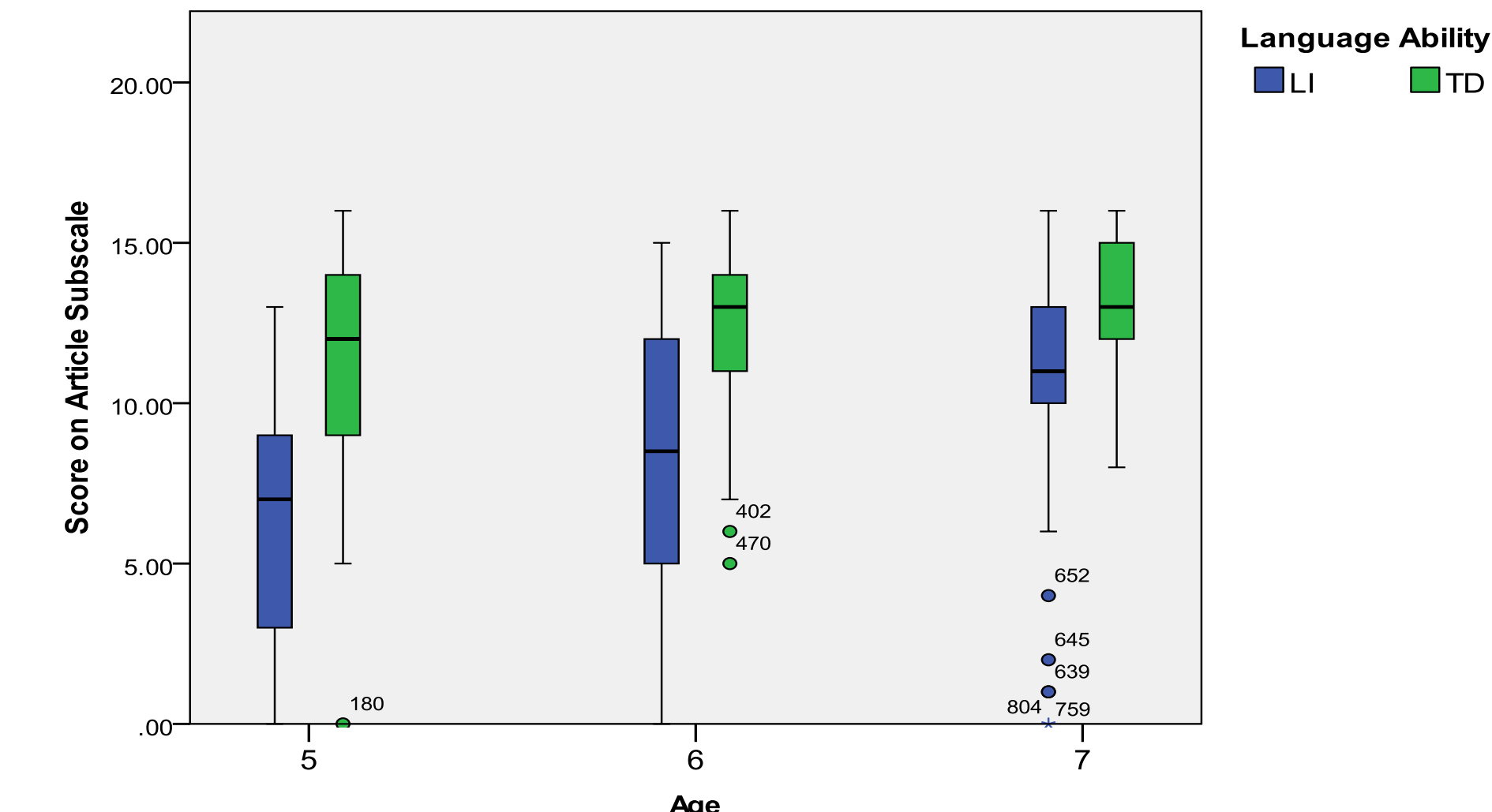
We thank the children and families who participated in the study. Grant funded by IES #R324A080024, for scale development.

## Morphology Results

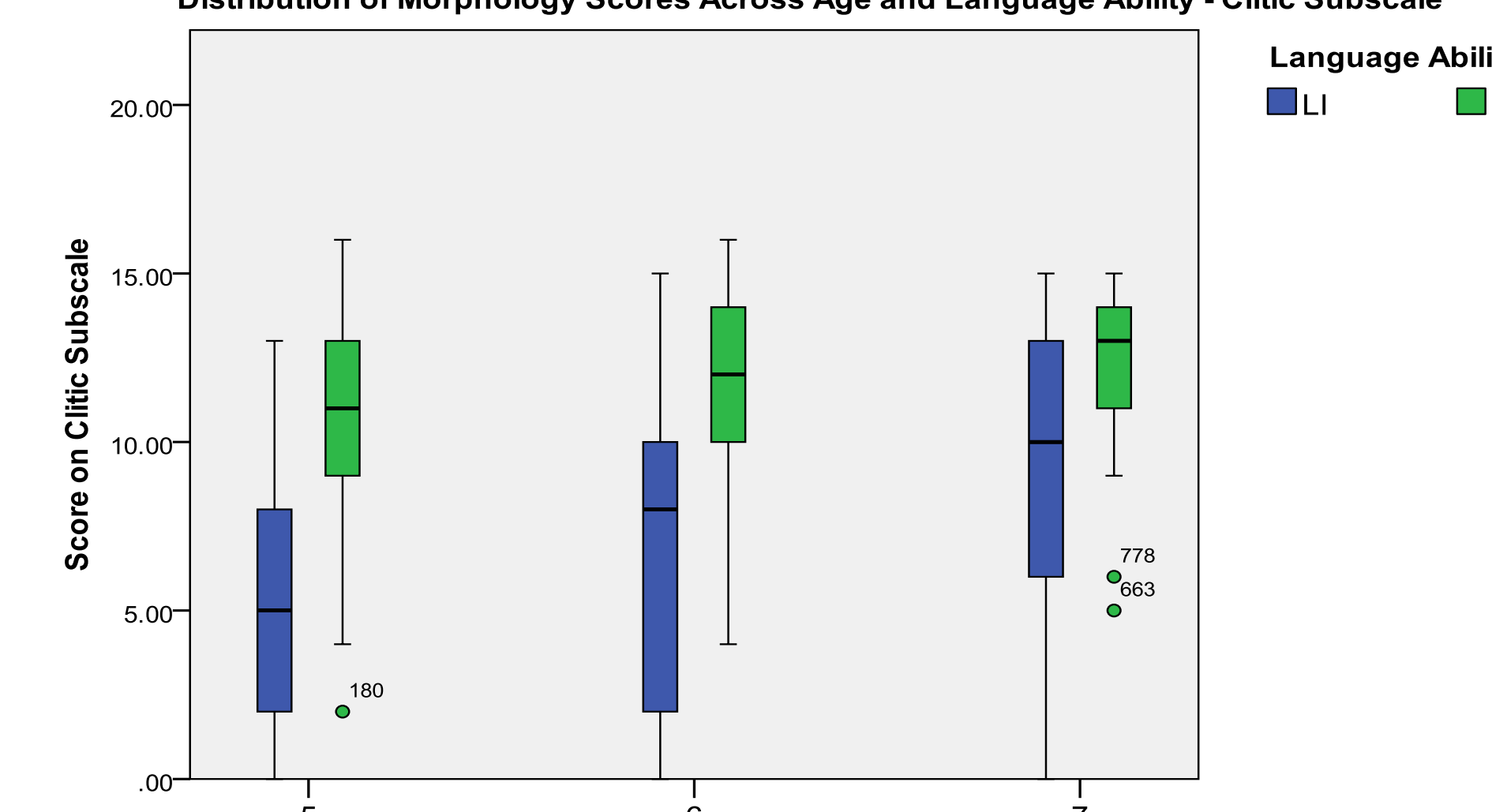
Distribution of Morphology Scores Across Age and Language Ability - Derivational Morpheme Subscale



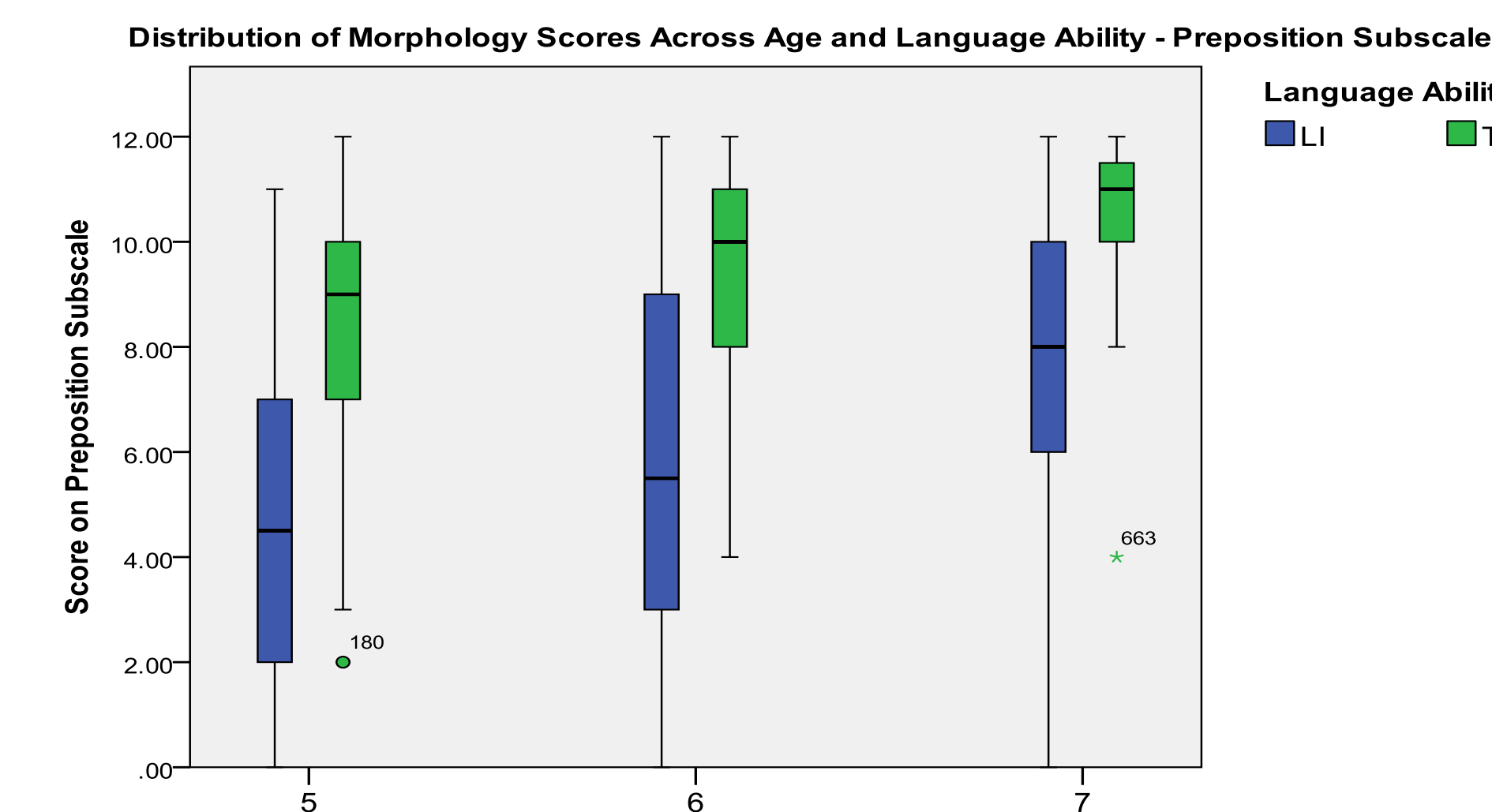
Distribution of Morphology Scores Across Age and Language Ability - Article Subscale



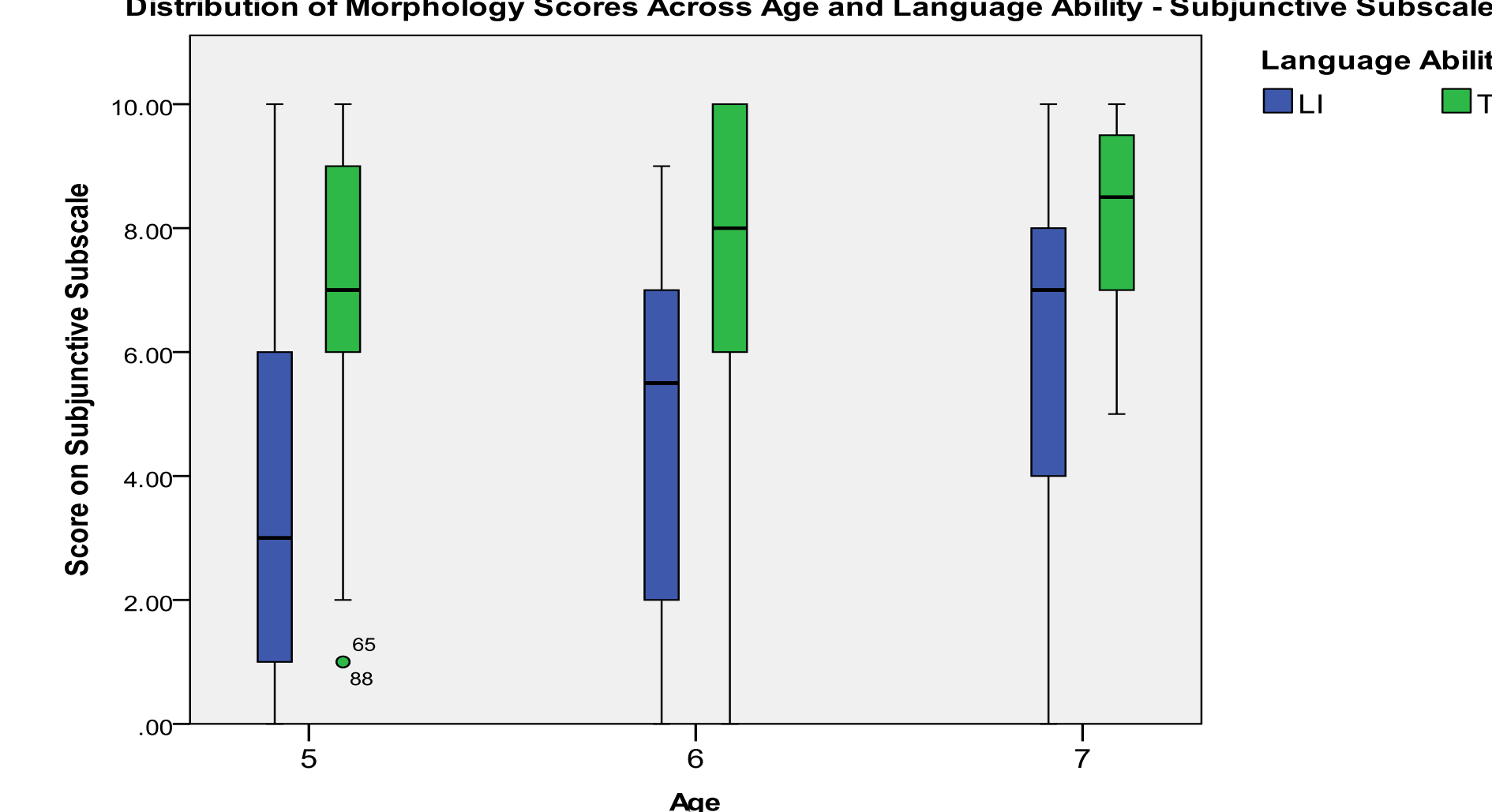
Distribution of Morphology Scores Across Age and Language Ability - Clitic Subscale



Distribution of Morphology Scores Across Age and Language Ability - Preposition Subscale

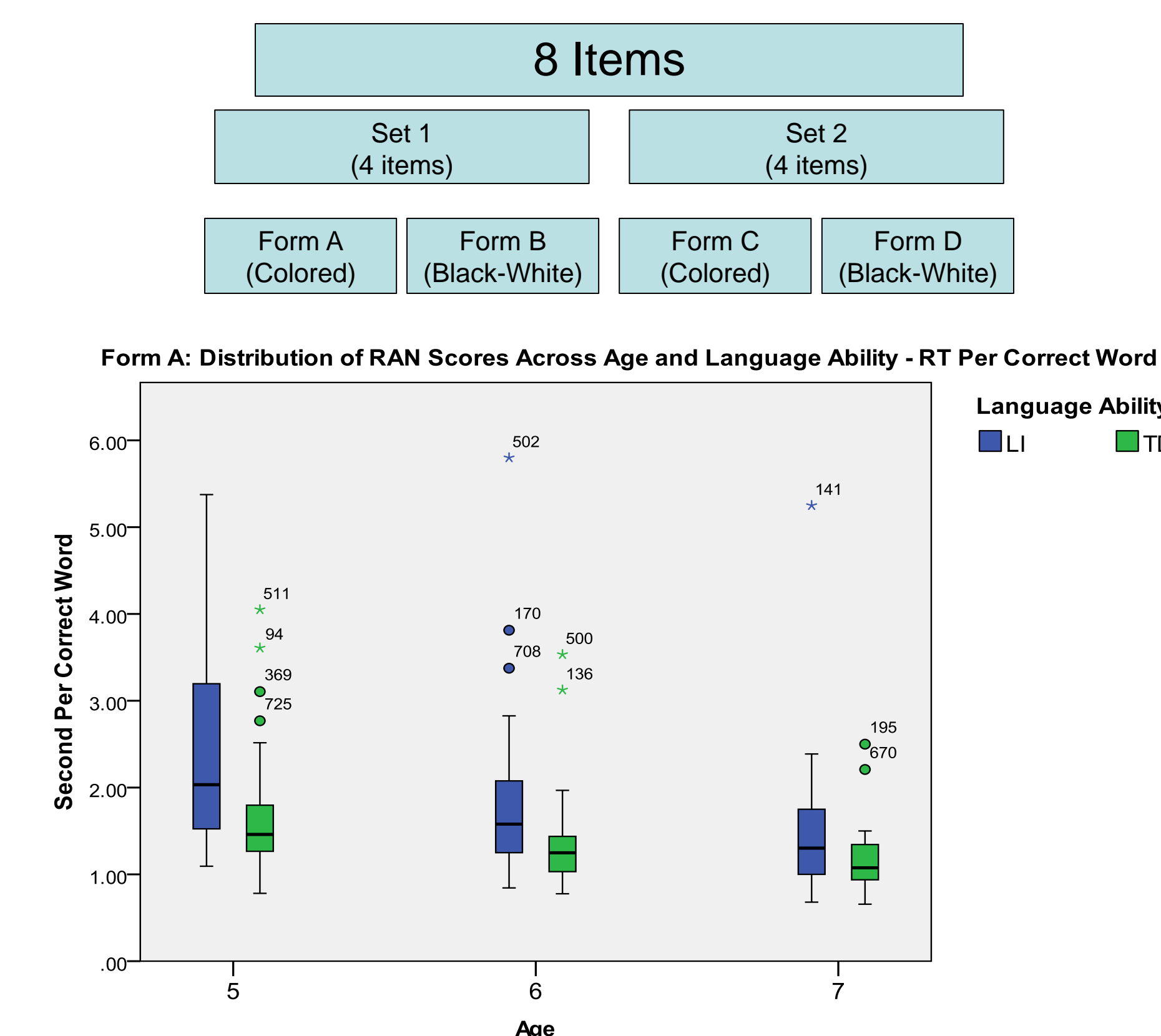


Distribution of Morphology Scores Across Age and Language Ability - Subjunctive Subscale



## RAN Task

- RAN** – Rapid automatic naming of 8 common objects in color and black and white (e.g., Denkla & Rudel, 1976; Manis, et al., 1999; Catts et al., 2006)



Note: One outlier for an LI student (Age 7) with a score of 10 Seconds Per Correct Word is not displayed.

Descriptive Statistics and Effect Sizes for All Subscales

		TD			LI			r <sup>2</sup>
		Mean	N	SD	Mean	N	SD	
Morphology	<b>5 Years Old</b>							
	Articles	11.31	89	3.02	6.10	40	3.66	.36
	Clitics	10.79	89	2.99	5.40	40	3.87	.37
	Prepositions	8.52	89	2.44	4.78	40	3.11	.30
	Subjunctives	7.00	89	2.16	3.43	40	3.02	.32
Sentence Repetition	Derivational Morphemes	5.47	89	2.47	1.98	40	1.76	.34
	Words Correct	114.89	89	24.49	65.37	38	27.28	.45
	Form A	.68	65	.23	.50	32	.22	.12
	Form B	.66	65	.28	.58	31	.17	.02
	<b>6 Years Old</b>							
Morphology	Articles	12.18	50	2.69	8.46	50	4.45	.21
	Clitics	11.44	50	3.05	6.92	50	4.58	.26
	Prepositions	9.72	50	2.17	5.46	50	3.59	.34
	Subjunctives	7.64	50	2.39	4.56	50	3.01	.25
	Derivational Morphemes	5.66	50	2.67	3.14	50	2.38	.20
Sentence Repetition	Words Correct	126.44	50	23.51	77.18	50	35.98	.40
	Form A: Error Ratio	.83	37	.24	.63	42	.22	.17
	Form B: Error Ratio	.82	37	.34	.65	43	.23	.08
	<b>7 Years Old</b>							
	Morphology	Articles	13.11	36	2.17	10.60	45	3.91
Clitics		12.50	36	2.50	8.76	45	4.61	.20
Prepositions		10.33	36	1.64	7.58	45	3.35	.20
Subjunctives		8.14	36	1.66	6.07	45	2.59	.18
Derivational Morphemes		7.89	36	2.31	4.60	45	2.73	.30
Sentence Repetition	Words Correct	134.09	34	20.09	102.88	43	33.57	.23
	Form A	.93	29	.24	.77	38	.28	.09
	Form B	.90	29	.20	.74	38	.25	.10

## Discussion

- Speed and accuracy of automatic lexical retrieval in typically developing monolingual and bilingual children is not differentiating groups, possibly due to the influence of second language
- Sentence repetition scored using words correct is working well in differentiating groups, especially at 5 and 6 years of age
- All morphology tasks are working well, especially at 5 and 6 years of age
  - Specific item type patterns are not clear, indicating that SLI in Spanish reflects more of a performance than linguistic deficit (Morgan et al, 2009)