FUNDAÇÃO BELMIRO DE AZEVEDO

Exploring Early Grade Literacy in Portugal

Key Findings from the LER Project

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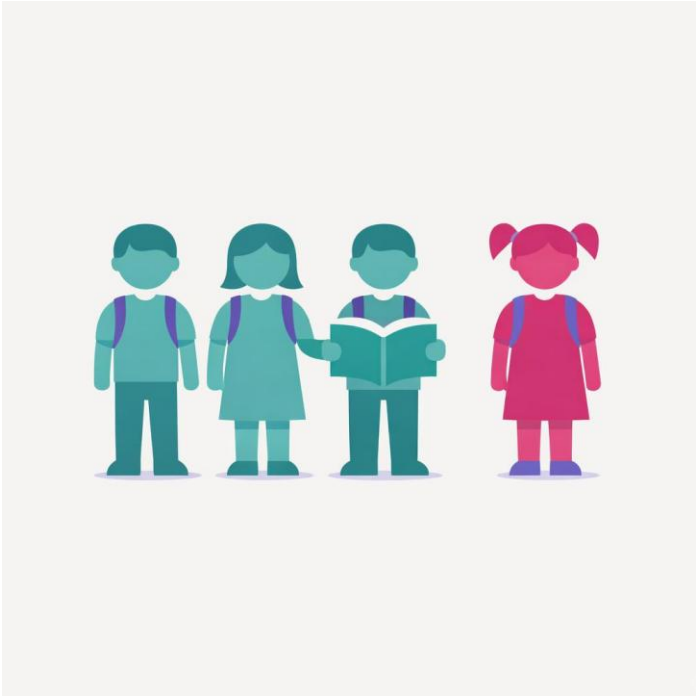
* This talk will be presented by IL and LC

BACKGROUND



- Portuguese students' reading literacy showed consistent and significant progress from 2000 until 2015; however, recent data reveal a sharp decline, with a concerningly high percentage of students falling below basic proficiency levels:
  - PIRLS 2021: **25%** did not reach an intermediate level (IEA, 2022)
  - PISA 2022: **23%** did not reach an elementary reading level (OECD, 2023)
- Improving the reading skills of underperforming students becomes increasingly difficult as they move through the education system into adulthood:
  - The correlation between reading at age 15 (PISA) and Adult Reading Age (PIACC) is high - **r=0.70** (20 countries; Gustafsson 2016); significant even when controlling for the level of education (**β = 0.55**) and the social and cultural development of the country (**β = 0.48**)
- Early Interventions are more effective (and less costly) than interventions in later school years (e.g., Catts & Hogan, 2021; Lovett, Frijters, Wolf, Steinbach, Sevcik, & Morris, 2017; Wanzek & Vaughn, 2016)

LER Project

The project was designed to align data collection for large-scale assessment with a rigorous characterization of reading and writing performance in the early years

AIM

Characterize early literacy acquisition using standardized assessments that highlight the psychollinguistic processes underlying reading and writing skills, facilitating the early identification of literacy-related difficulties.

Preschool and elementary teachers

Research assistants

Nationally representative school sample

Reception year (ages 5+), Year 1, and Year 2

Public and private schools in mainland Portugal

Exclusions:

- non-Portuguese-speaking children;
- non-Portuguese curriculum schools;
- small schools (≤5 children in RY, ≤10 in Years 1+2).

2024-2025

T1 — Out/Nov 2024

T2 — Feb/Mar 2025

T3 — May 2025

2025-2026

T4 — Feb/Mar 2026

T5 — May 2026

SAMPLING: STRATIFICATION AND WEIGHTING

The study employed a stratified cluster sampling design, with schools as the primary sampling units and children as the final units of analysis.

1. A total of 36 strata were defined, based on **school type** (Reception Year, Primary, or Combined), **sector** (Public or Private), **region** (NUTS II 2024), and **school size** (Standard or Small).
2. Sampling weights were applied to ensure population representativeness, based on Education Statistics 2022/23 - DGEEC.
3. Variance estimates reflect the complex sample design and the use of children-level sampling weights.

DATA PROCESSING

- **Multi-Criteria Matching**: Initial identification of students across phases based on name similarity, gender, date of birth, and school information.
- **Duplicate Management:** Detection and removal of duplicates by prioritizing the most consistent observation.
- **Manual & Automated Refinement:** Individual inspection of ambiguous cases and correction of erroneous longitudinal links.
- **Demographic Standardization:** Harmonization of key variables (age, gender, grade) using cross-phase consistency rules.
- **Identifier Integrity:** Unique anonymous ID assignment and exclusion of unreliable or out-of-scope (excluded stratum) observations.

SAMPLE: NUMBER OF CHILDREN ACROSS STUDY PHASES

T1	T2	T3
5478	3794	**2664**
	NEW + 799	236
		NEW + 236
		315
5478	**4593**	**3451**

-1684 (-31%)

-1130 (-30%)

-563

Common across all phases

5478 + 799 + 236 = **6513**
Total across all phases

SAMPLE: NUMBER OF CHILDREN PER STUDY PHASE AND SCHOOL YEAR

	RY	Year 1	Year 2	Total
T1	1834	1892	1752	5478
T2	1571	1520	1502	4593
T3	1049	1148	1254	3451
Total	2128	2231	2154	6513
Common	877	895	892	2664

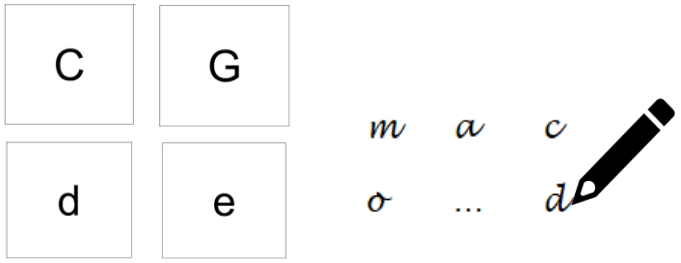
Approximately **900** children per school year completed all phases

No significant differences were found across tasks when comparing the total sample with the common subsample (those present in all three phases). The results reported are based on the total sample.

MATERIALS: MULTILANGUAGE ASSESSMENT BATTERY OF EARLY LITERACY

Letter Knowledge

Naming (Sound and Letter Name)
Writing



Reading

Word and Pseudoword Reading (1 min)

pai	mai
é	ó
cão	lão
dia	nia

Picture-Word Matching (3 min)

	pão ☐	cão ☐	osso ☐	avó ☐
	roda ☐	barro ☐	ninho ☐	carro ☐
	mágico ☐	bebé ☐	boné ☐	mamã ☐

Spelling

Basic Word Spelling

Item	Palavra
1	Nome da criança (primeiro e/ou último)
2	MÃE
3	SOL
4	CÃO

Phoneme Awareness

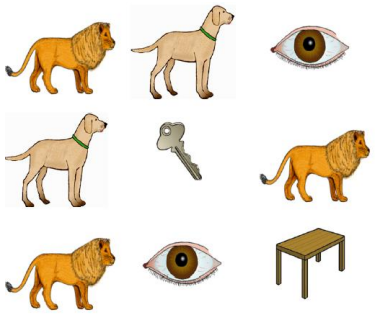
Phoneme Isolation

Phoneme Deletion

Phoneme Blending

RAN

Objects
(Colours)
Digits
Letters



Graded Word Spelling

9	AVÓ
10	GALO
11	NAVIO
12	QUERIDA

SAMPLE: NUMBER OF CHILDREN PER TASK, SCHOOL YEAR AND STUDY PHASE

	Reception			Year 1			Year 2		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
Letter Knowledge – Naming (Uppercase)	1834	1571	1049	1892	1515	1148	1747		
Letter Knowledge – Naming (Lowercase)				1888	1515	1147	1747		
Letter Knowledge – Writing	1834	1571	1049	1892	1515	1148	1747		
Phoneme Blending							643	222	
Phoneme Isolation (Onsets)	1834	1571	1049	1892	1515	1148	1747		
Phoneme Isolation (Codas)	1834	1571	1049	1892	1515	1148	1747		
Phoneme Deletion							647	226	231
RAN – Objects	1833	1571	1049	1890	1516	1148		226	
RAN – Letters							598	226	
RAN – Digits							677	226	
One Minute Reading – Words				1888	1520	1147	1752	1502	1254
One Minute Reading – Pseudowords							1752	1502	1254
Picture-Word Matching				1888	1520	1147	1752	1502	1254
Basic Word Spelling				1885	1513				
Graded Word Spelling						1146	1752	1502	1254

RESULTS: EVOLUTION ACROSS PHASES, BY GRADE LEVEL

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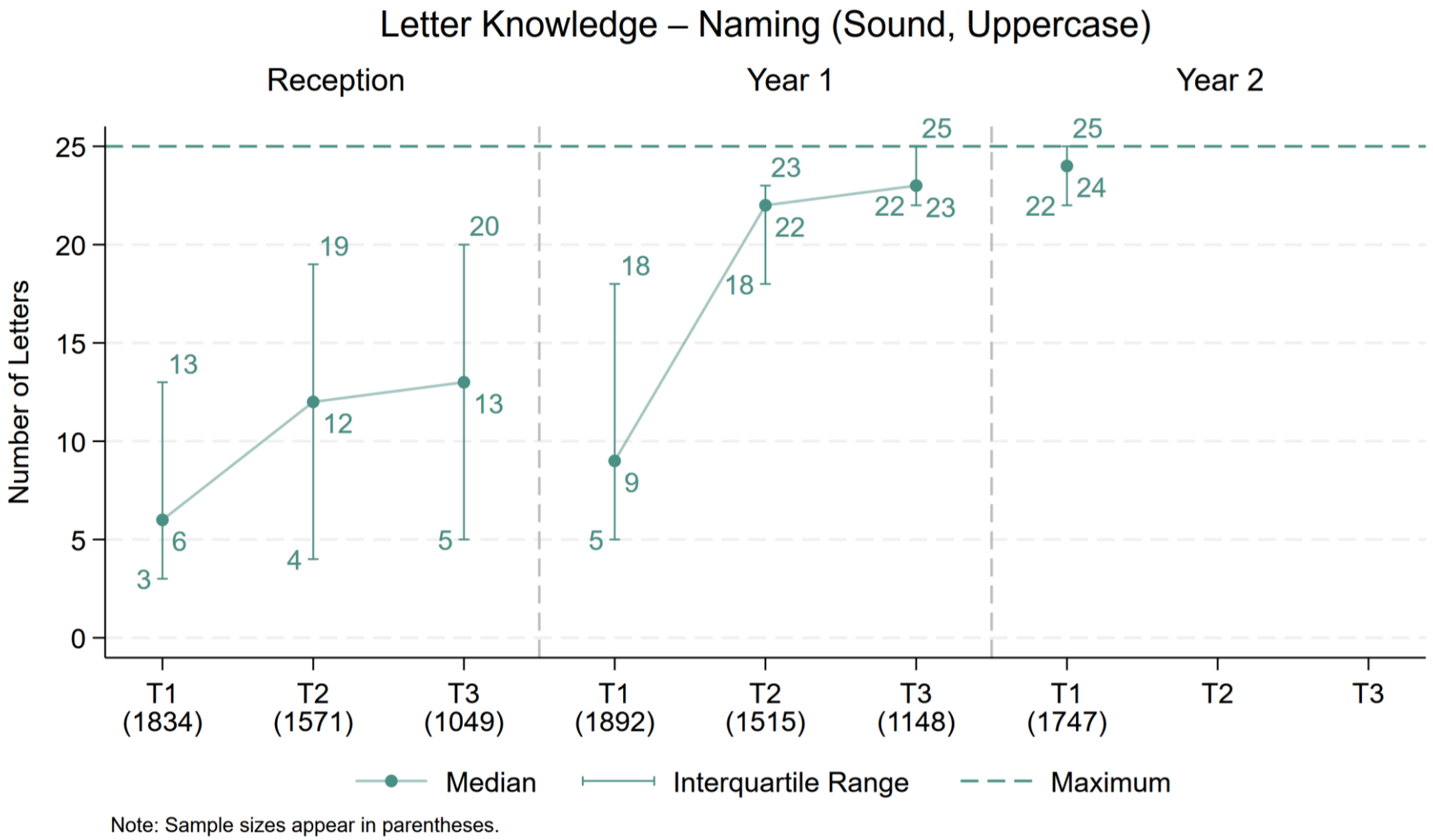

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RESULTS: EVOLUTION ACROSS PHASES, BY GRADE LEVEL

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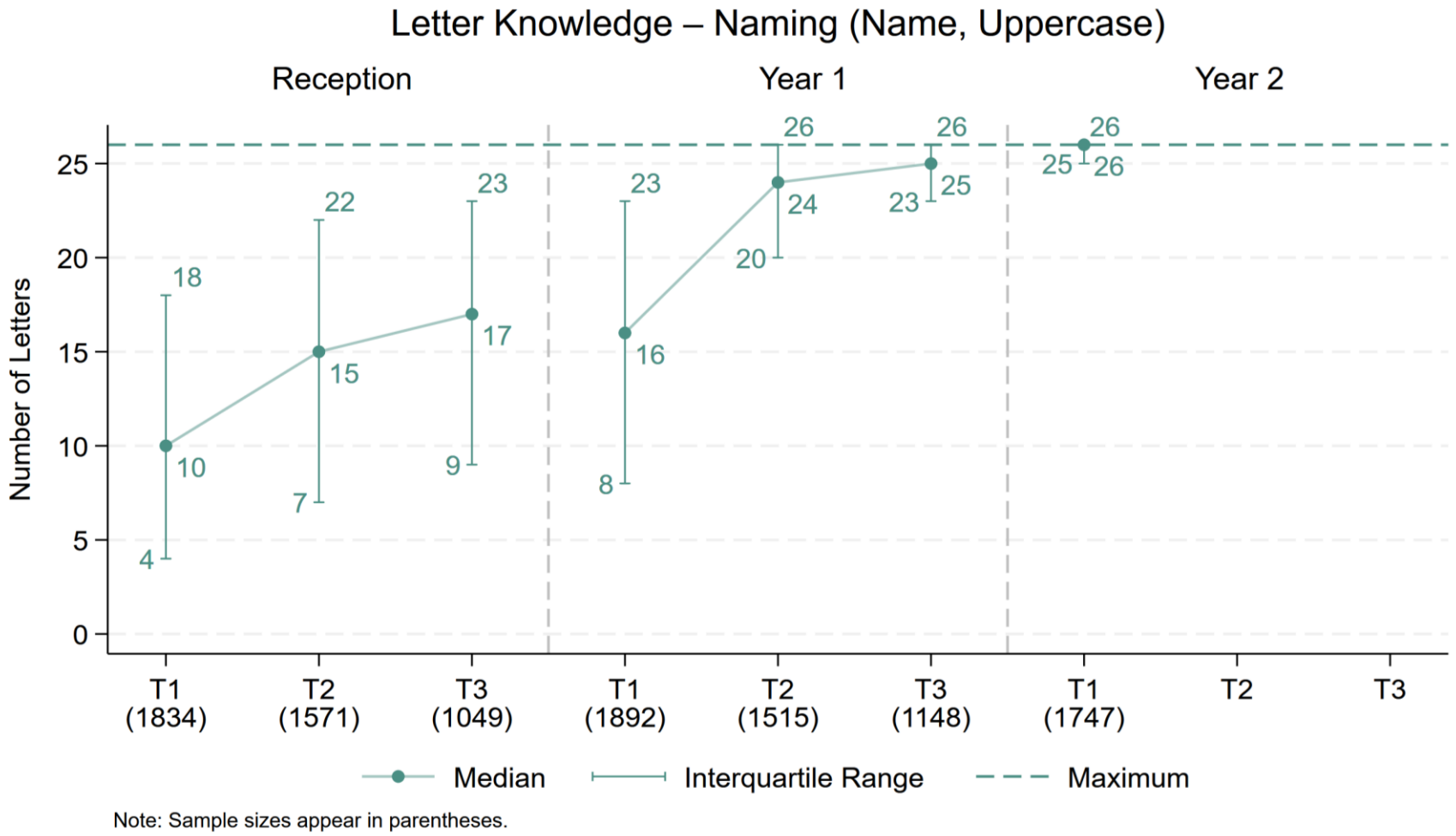

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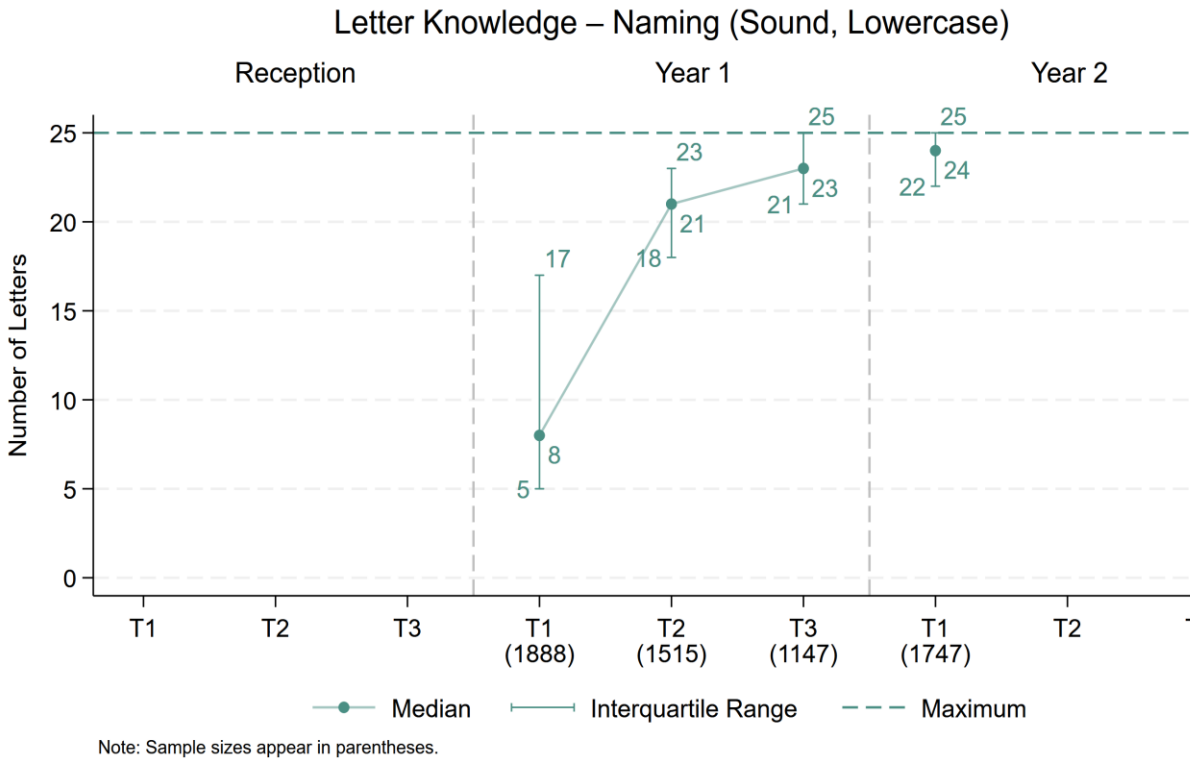

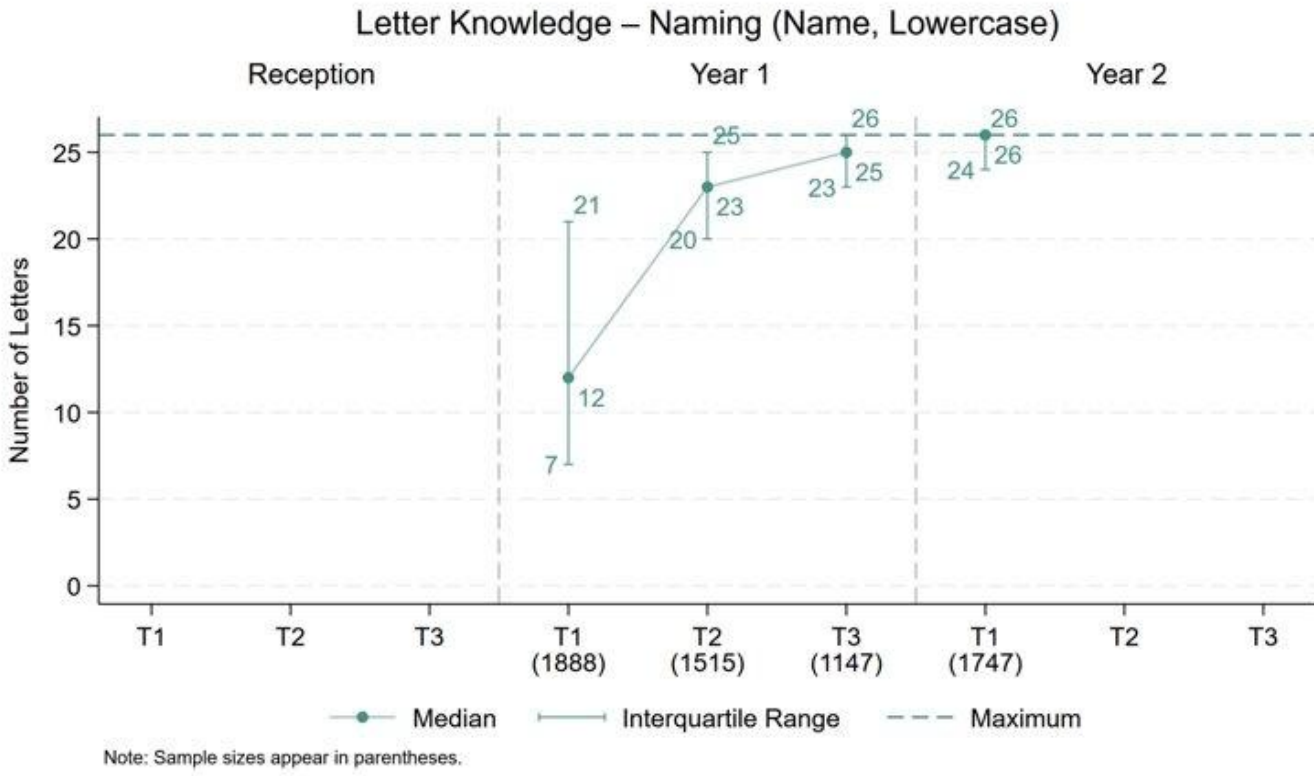

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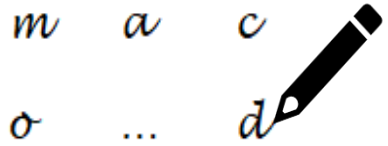

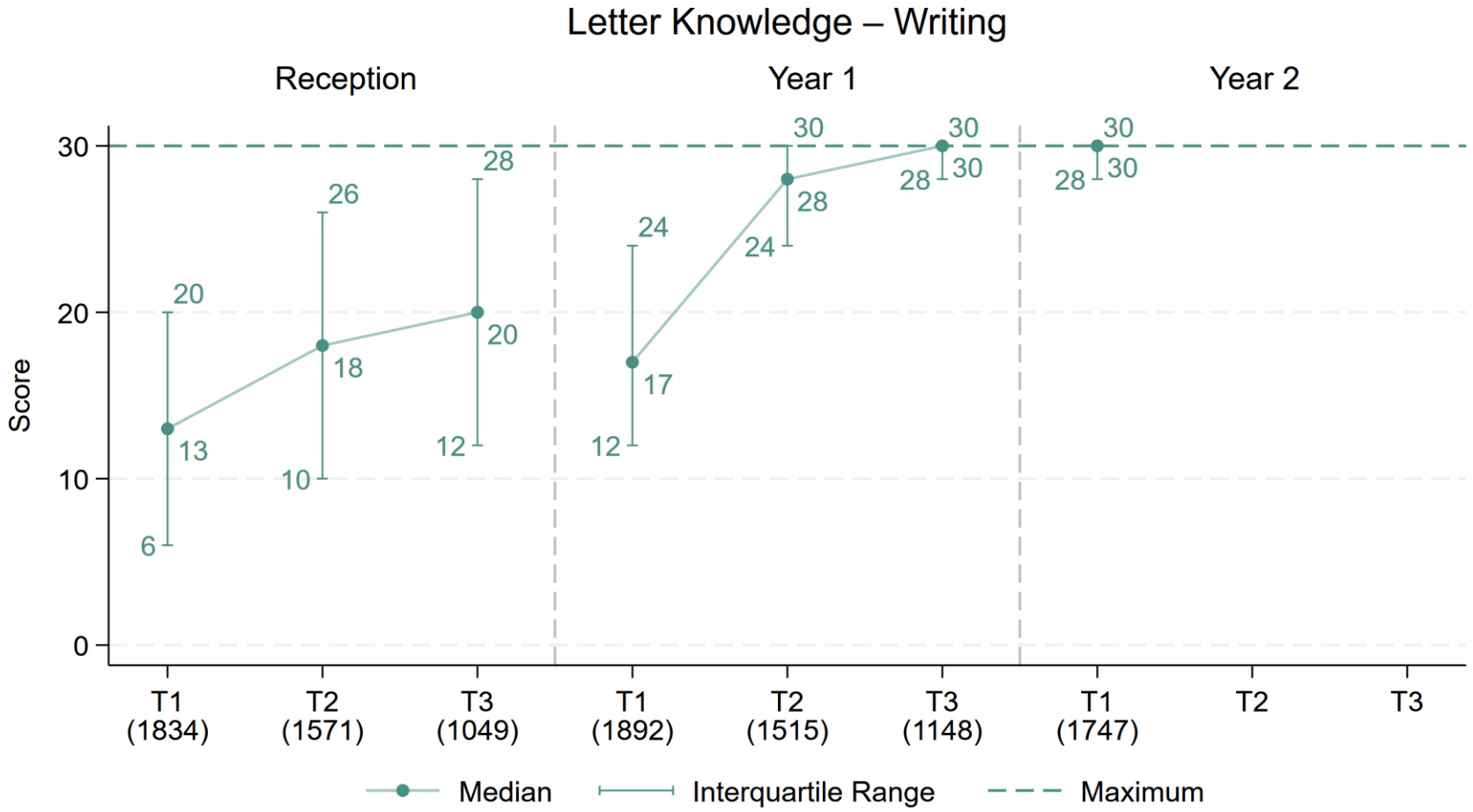

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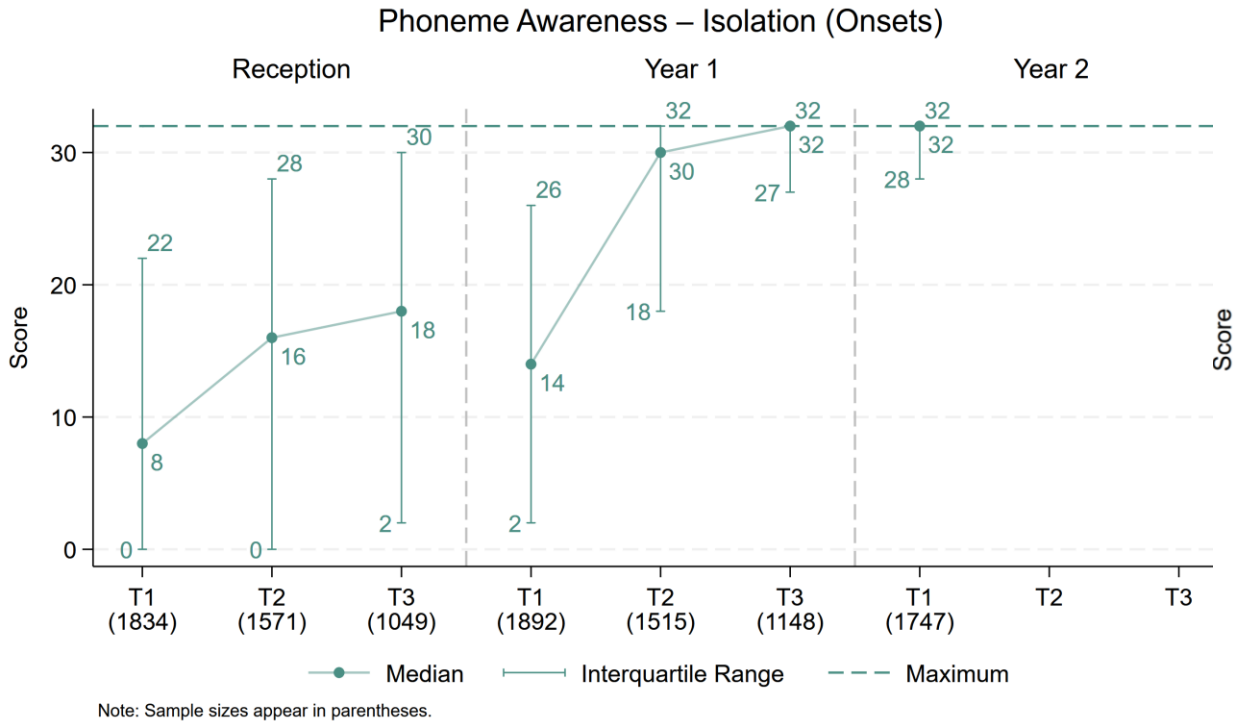

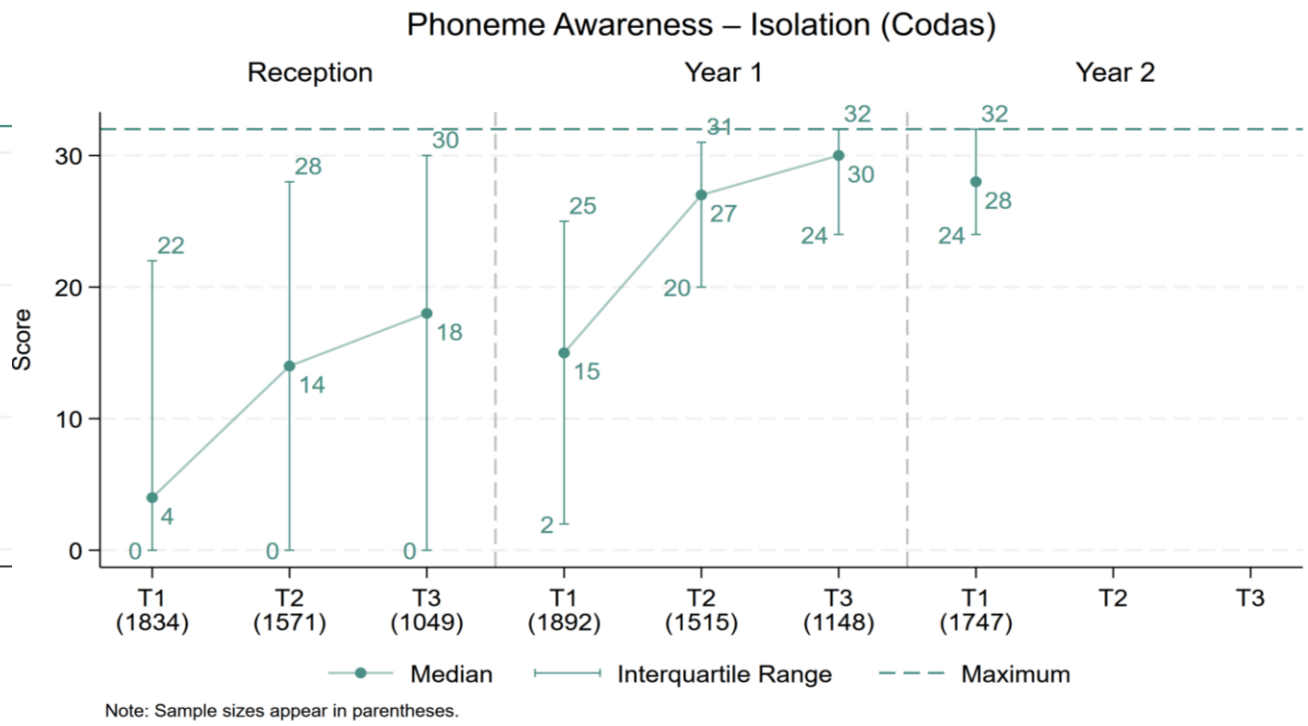

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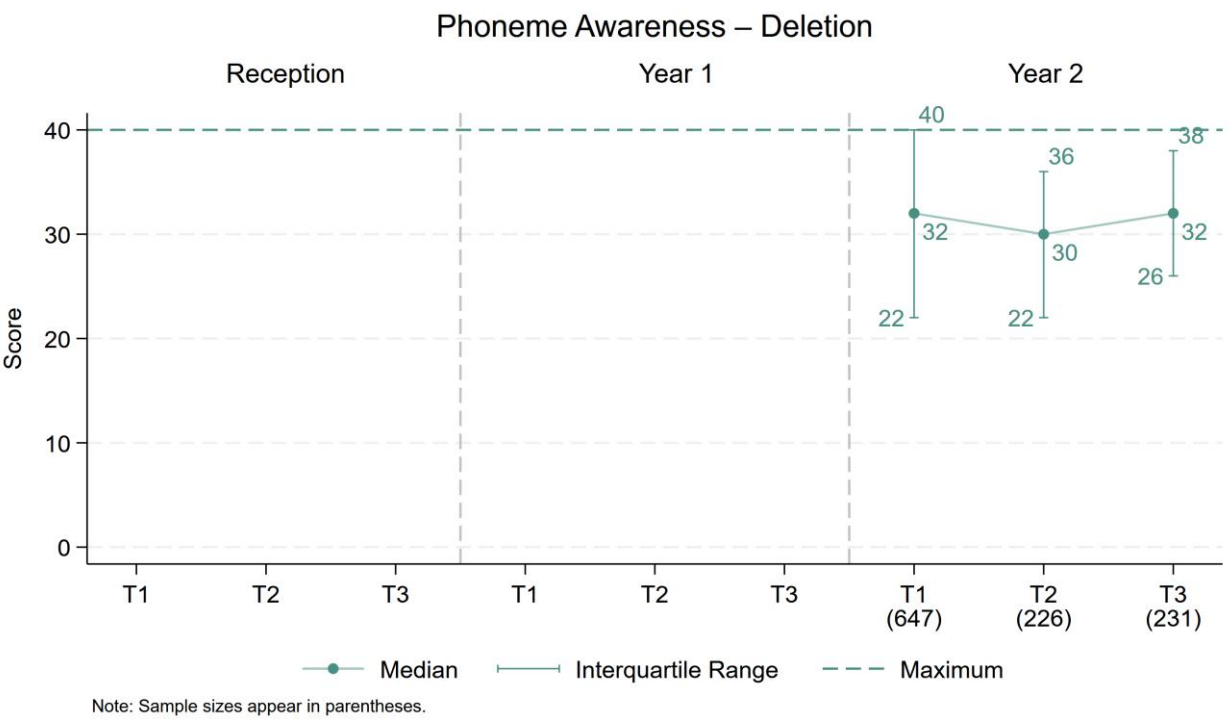

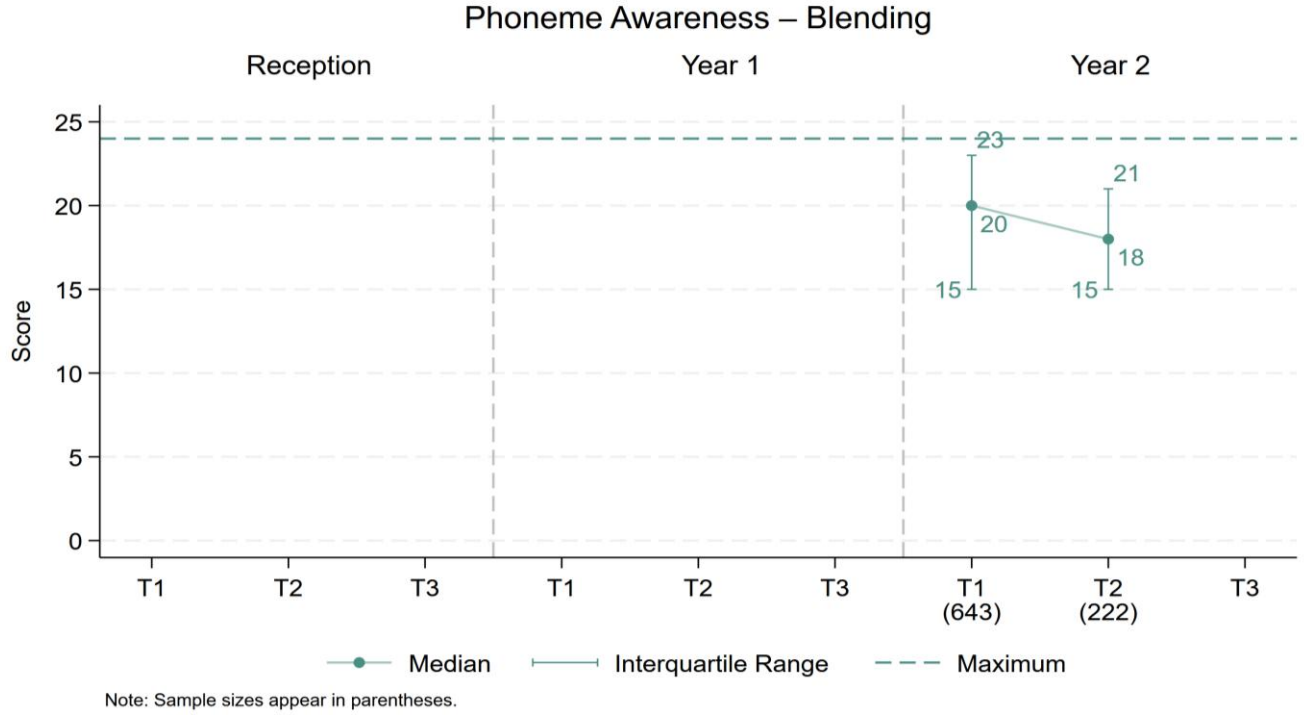

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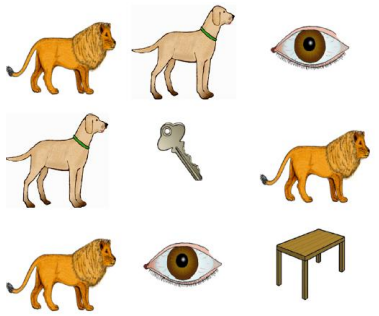

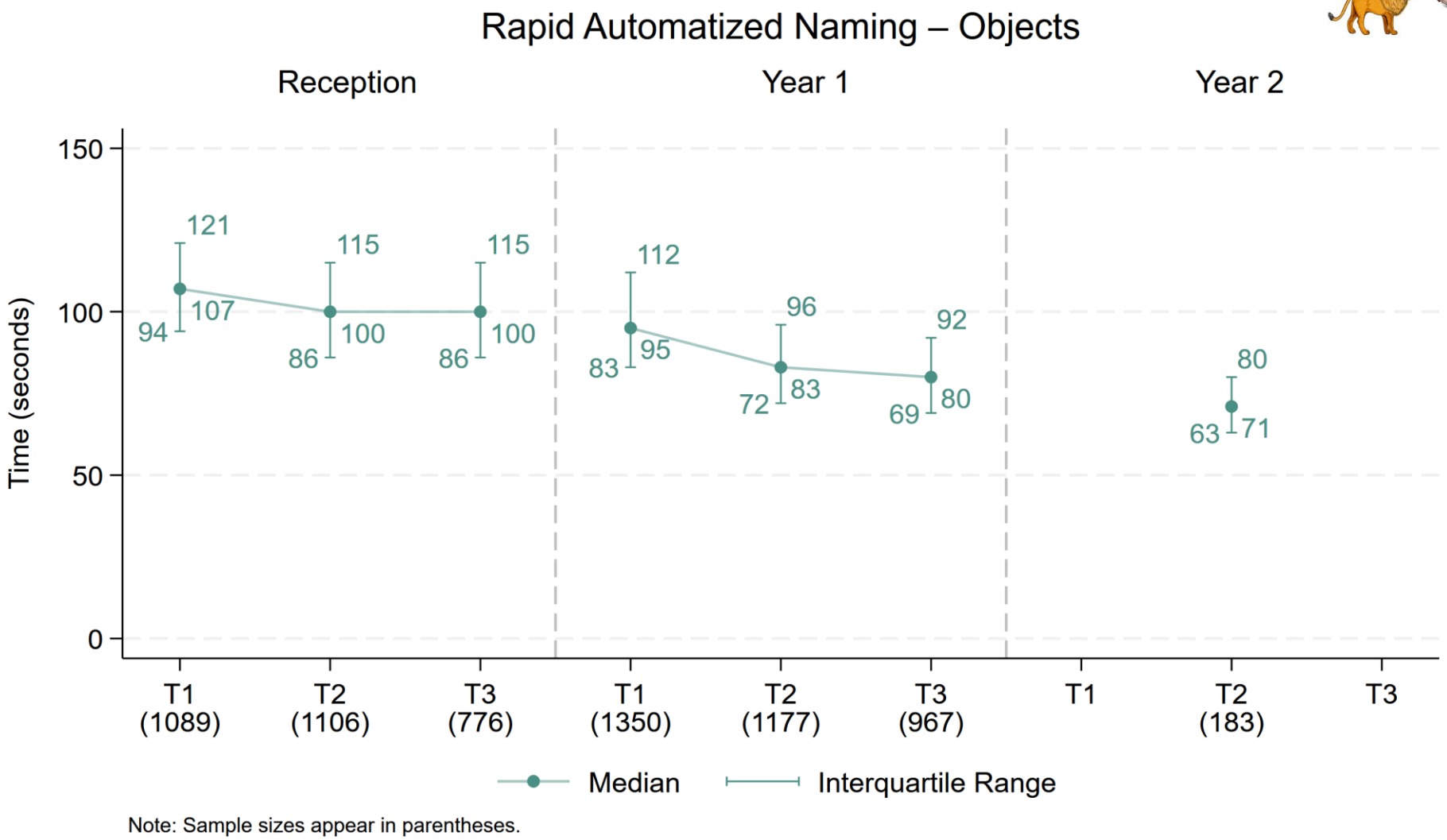

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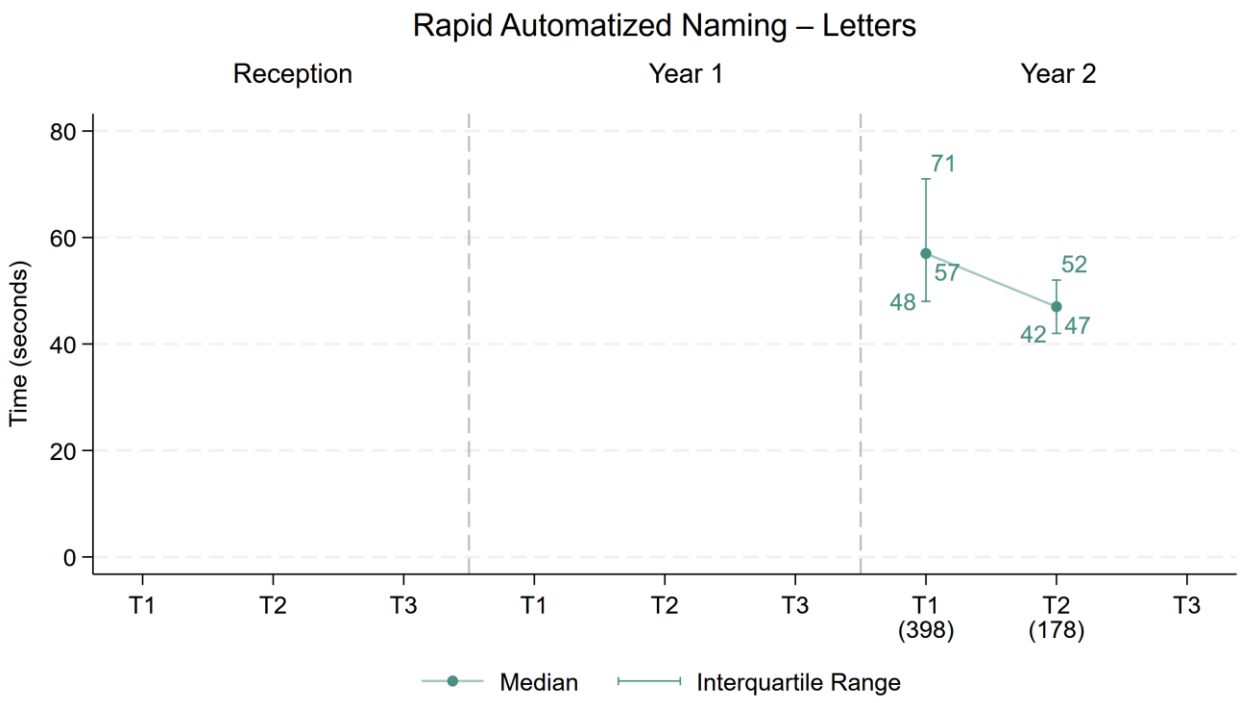

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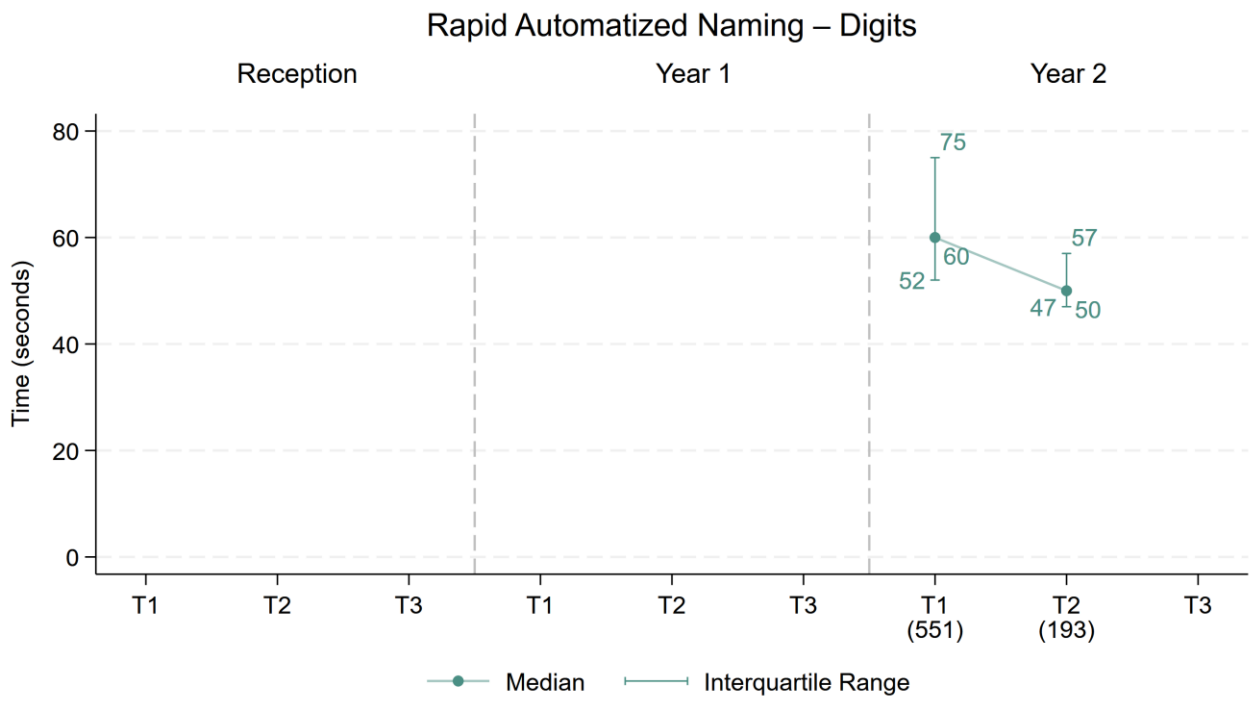

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RESULTS: EVOLUTION ACROSS PHASES, BY GRADE LEVEL

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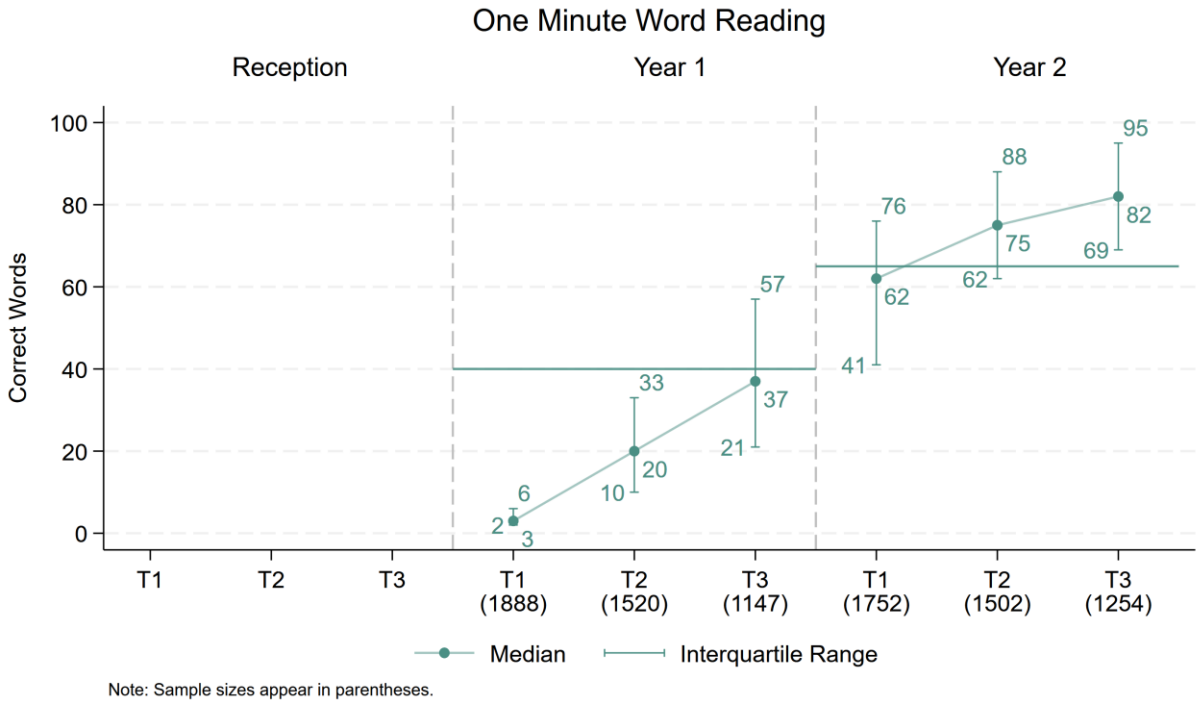

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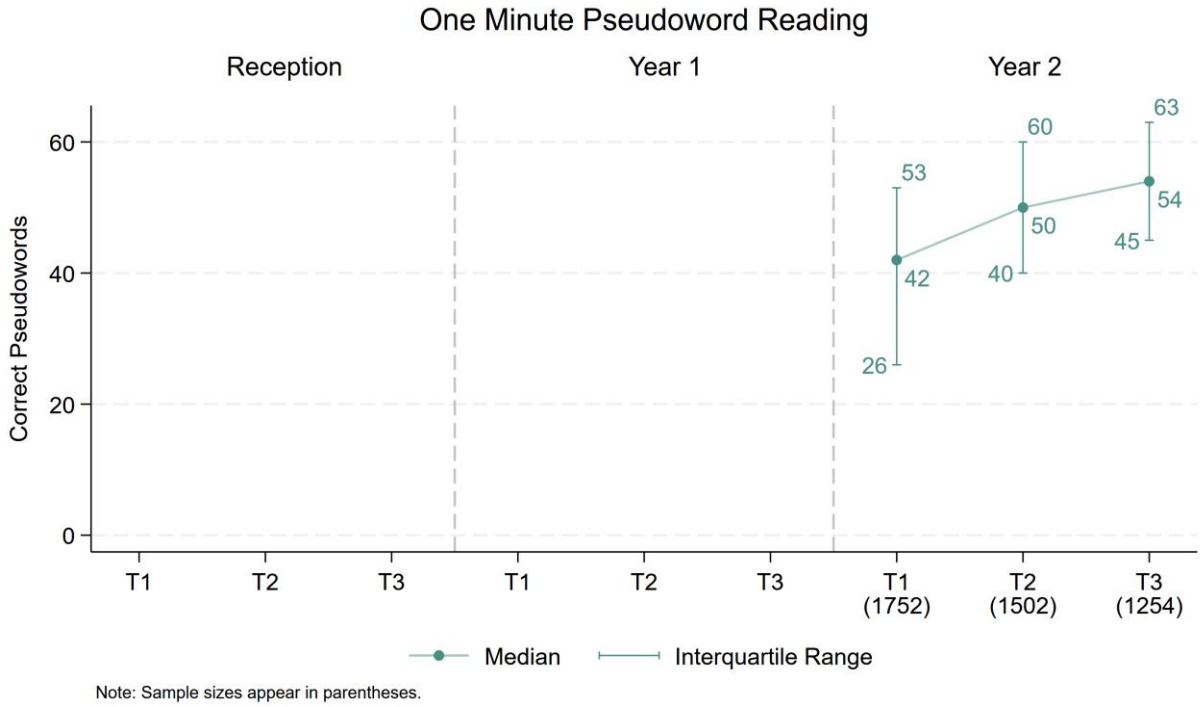

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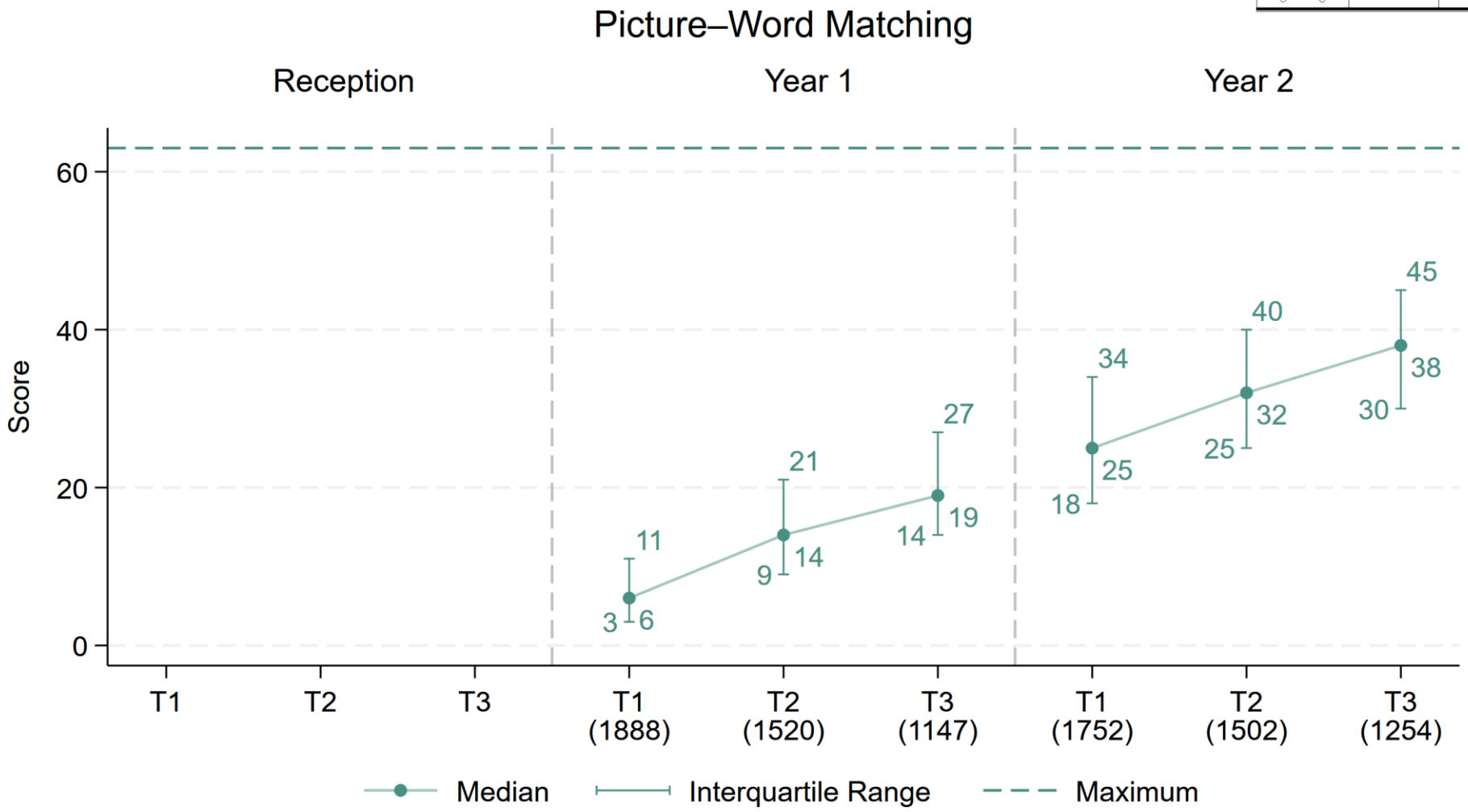

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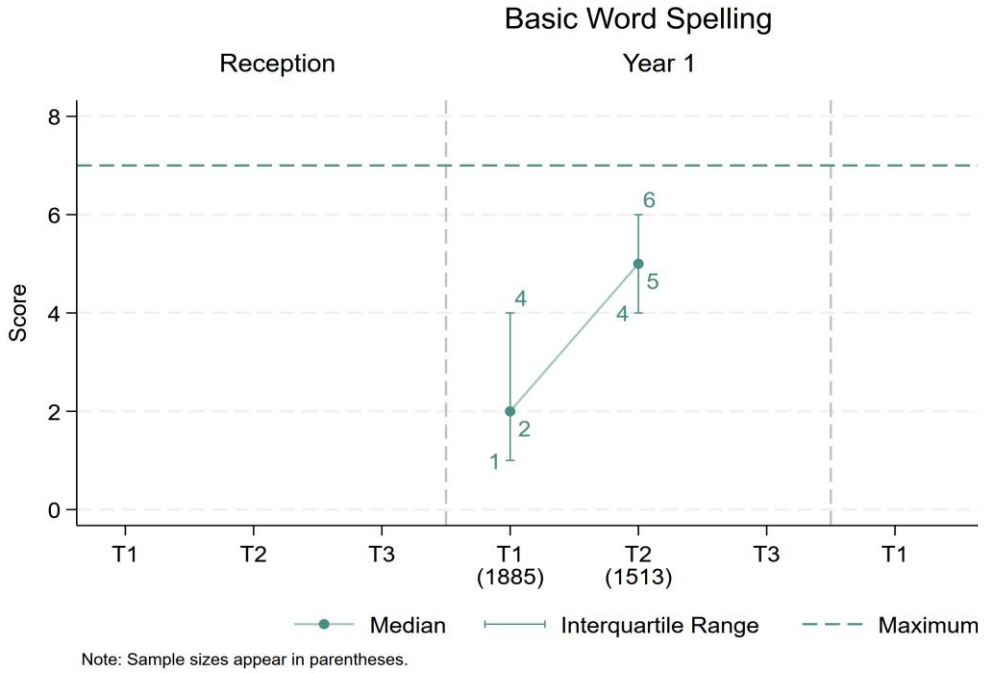
RESULTS: EVOLUTION ACROSS PHASES, BY GRADE LEVEL

Item	Palavra
1	Nome da criança (primeiro e/ou último)
2	MÃE
3	SOL
4	CÃO

9	AVÓ
10	GALO
11	NAVIO
12	QUERIDA



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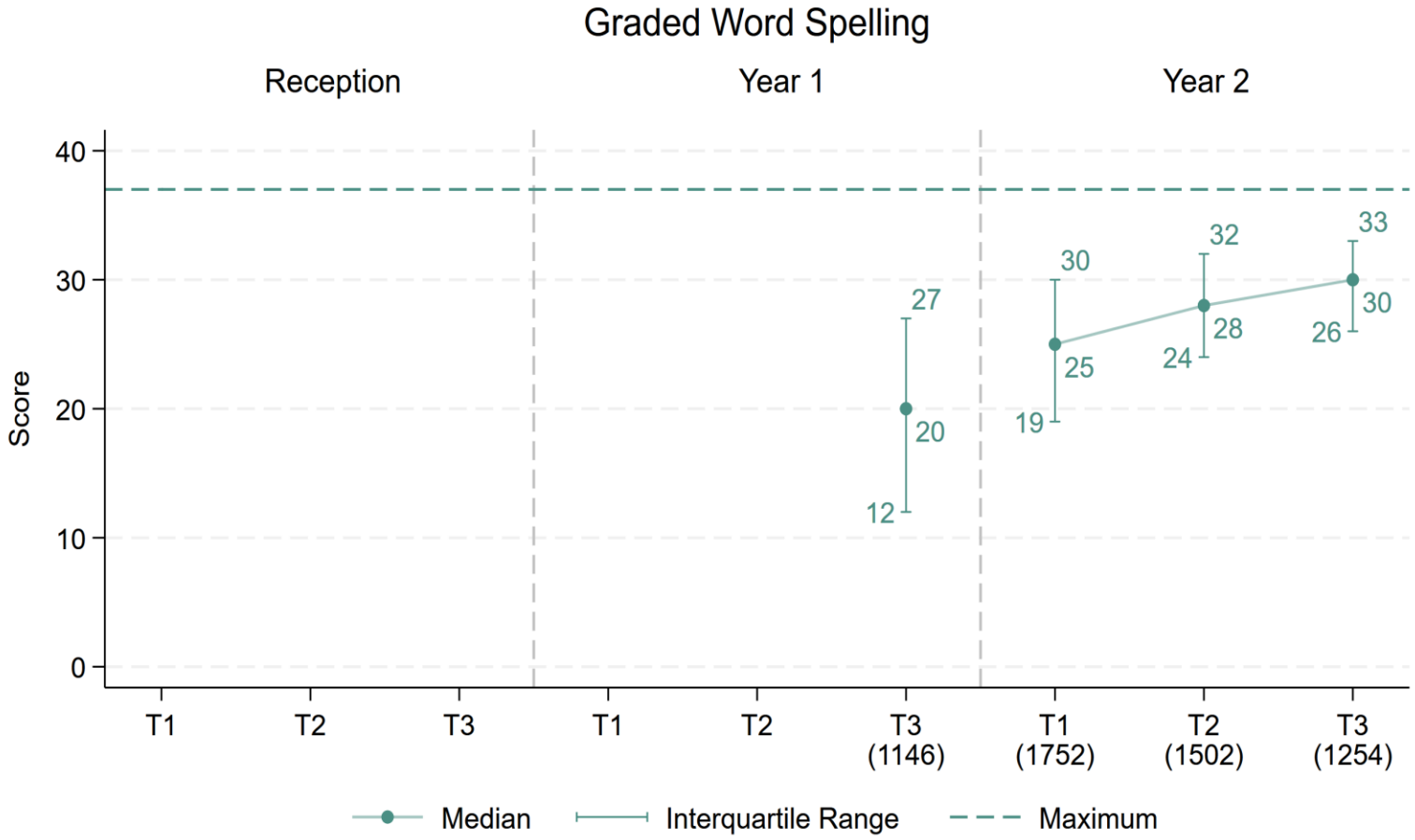

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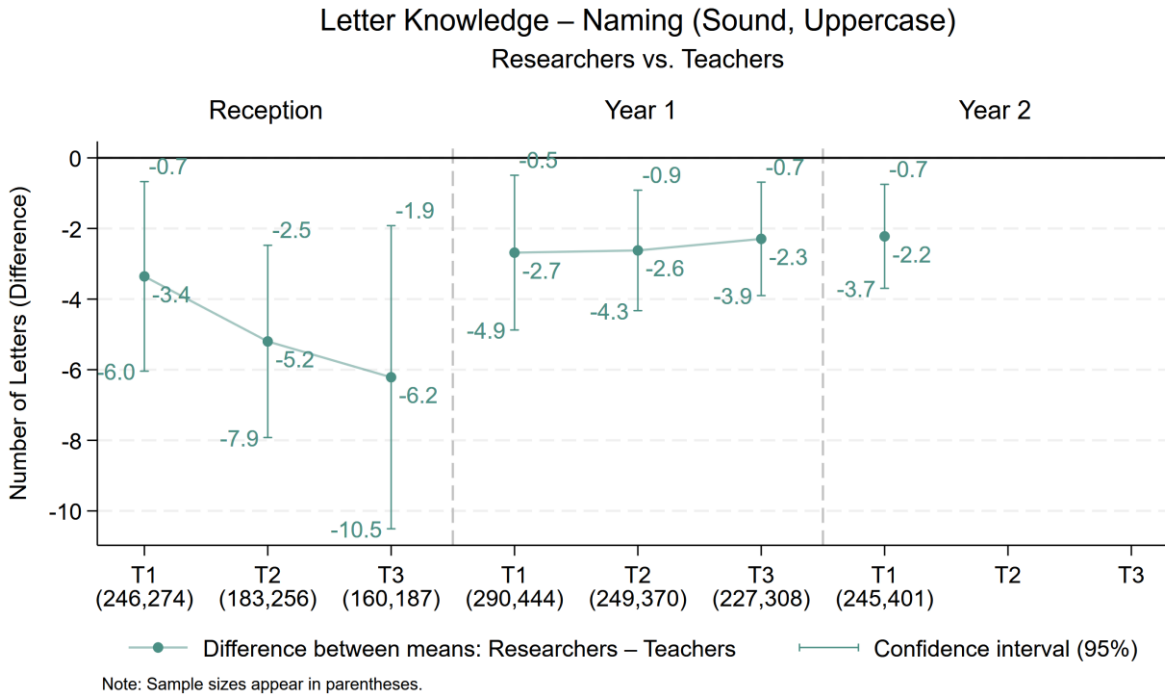
RESULTS: DISCREPANCIES BETWEEN RESEARCHER AND TEACHER ASSESSMENTS

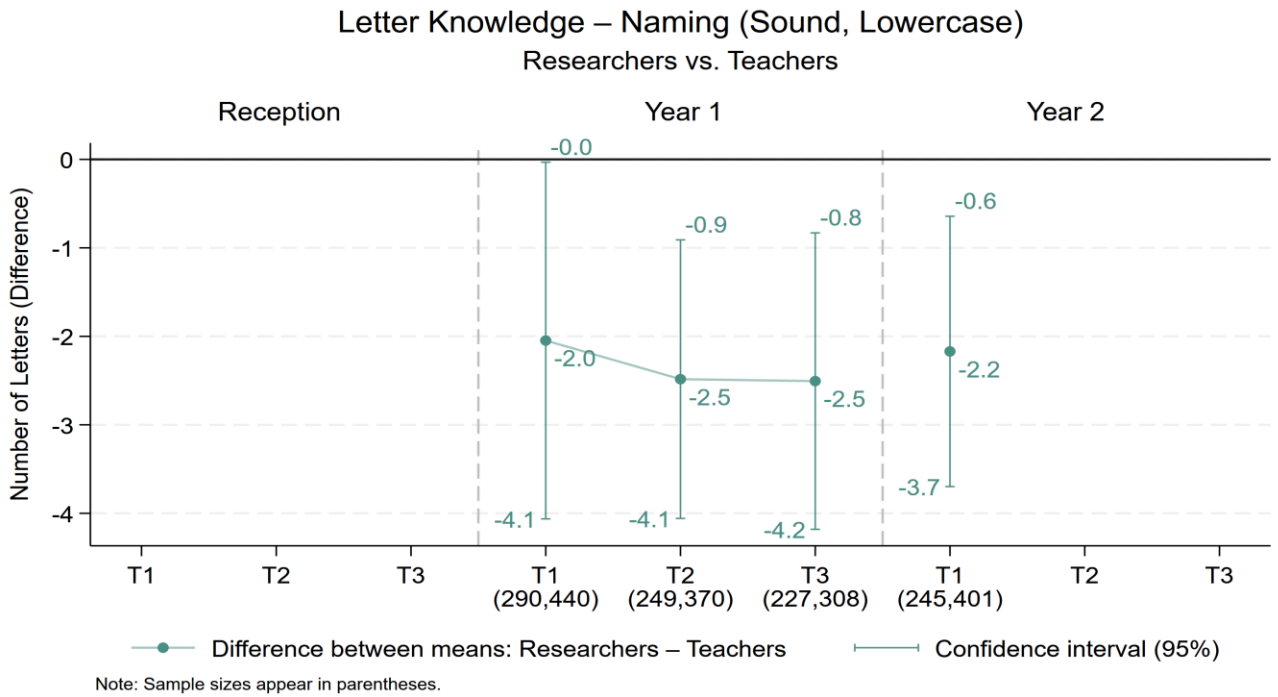
- Analysis restricted to schools with active researcher presence to ensure comparability: Half of the students were assessed by the teacher, and half were assessed by a research assistant
- Use of univariate linear regressions (equivalent to t-tests) to estimate differences.

Some tasks showed statistically significant differences between teacher and researcher evaluations.

RESULTS: DISCREPANCIES BETWEEN RESEARCHER AND TEACHER ASSESSMENTS

The coefficients (dots) show the mean difference and vertical lines show 95% confidence intervals. Intervals that do not cross the **0 line** indicate statistically significant differences ($p < 0.05$). Here, for example the negative difference means that children assessed by researchers had lower scores than children assessed by teachers





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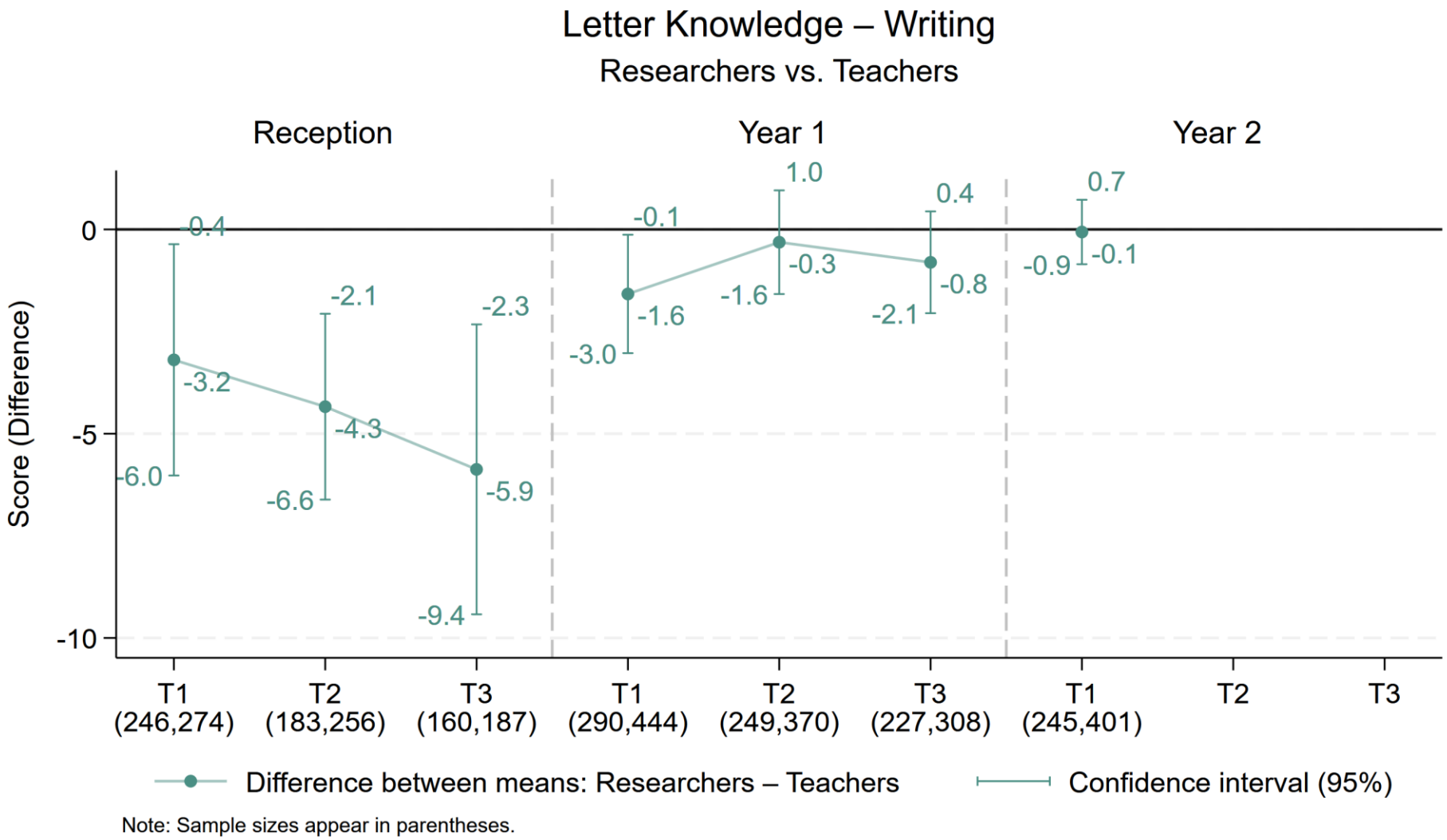

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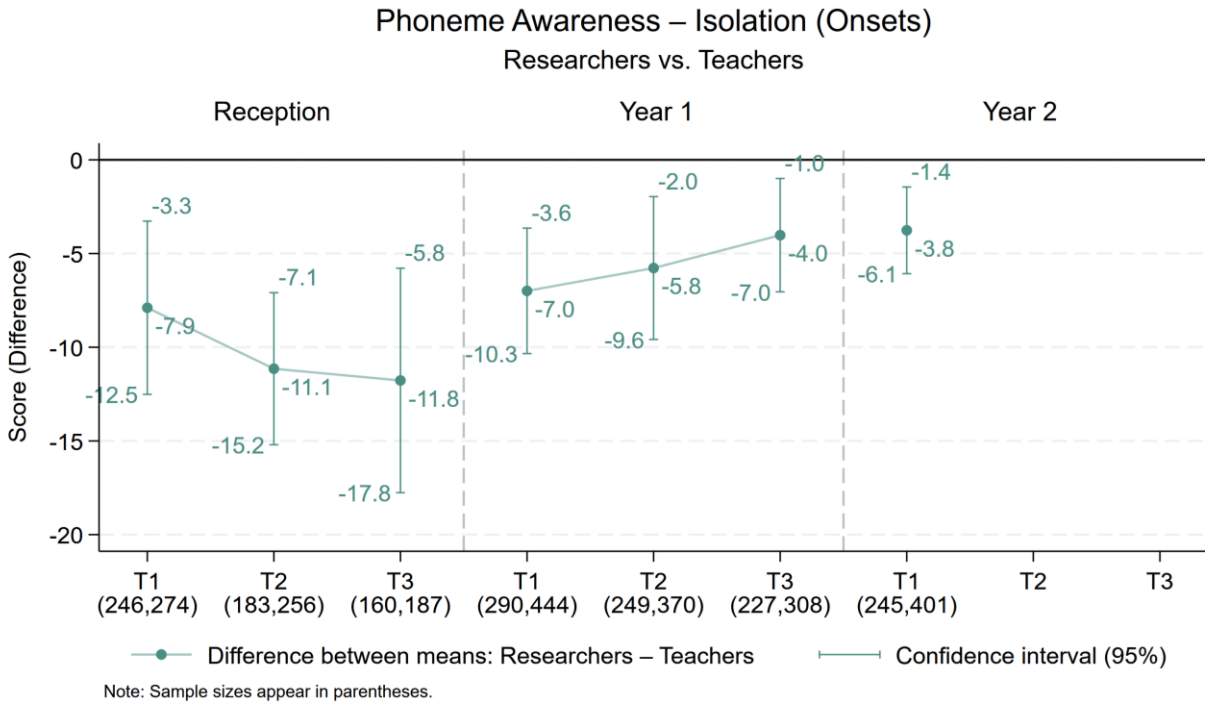
RESULTS: DISCREPANCIES BETWEEN RESEARCHER AND TEACHER ASSESSMENTS



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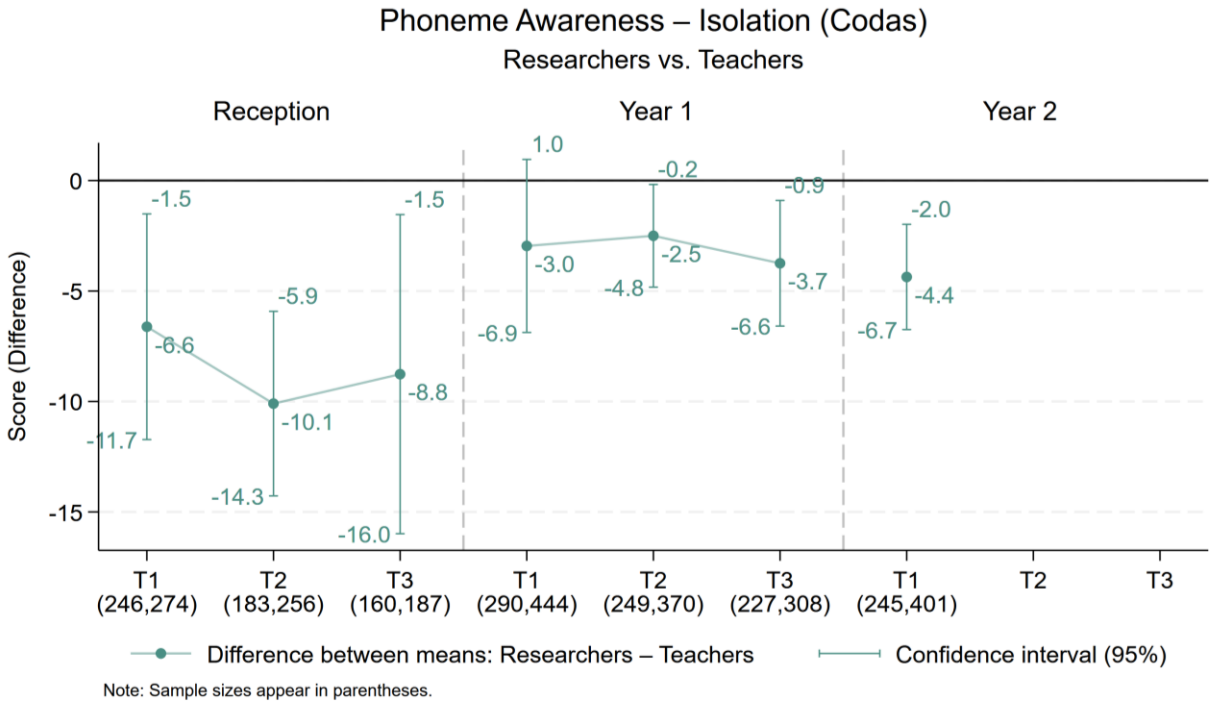


Note: Sample sizes appear in parentheses.

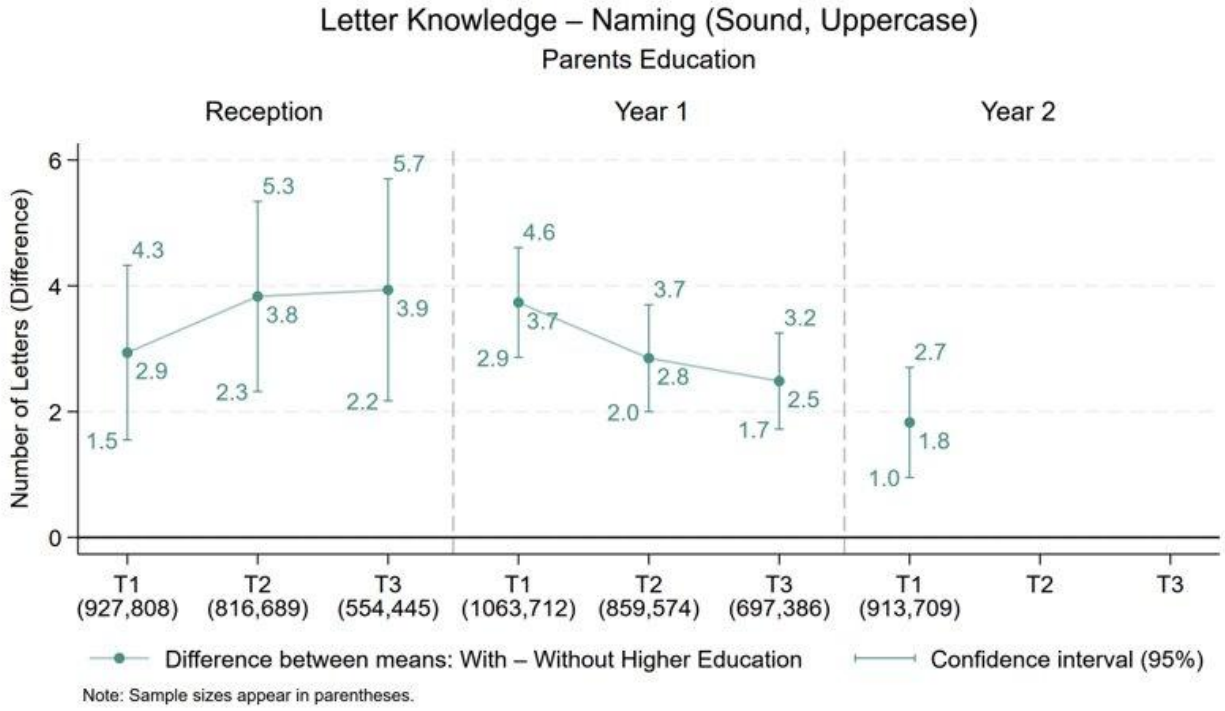
RESULTS: GAPS BY PARENTAL EDUCATION

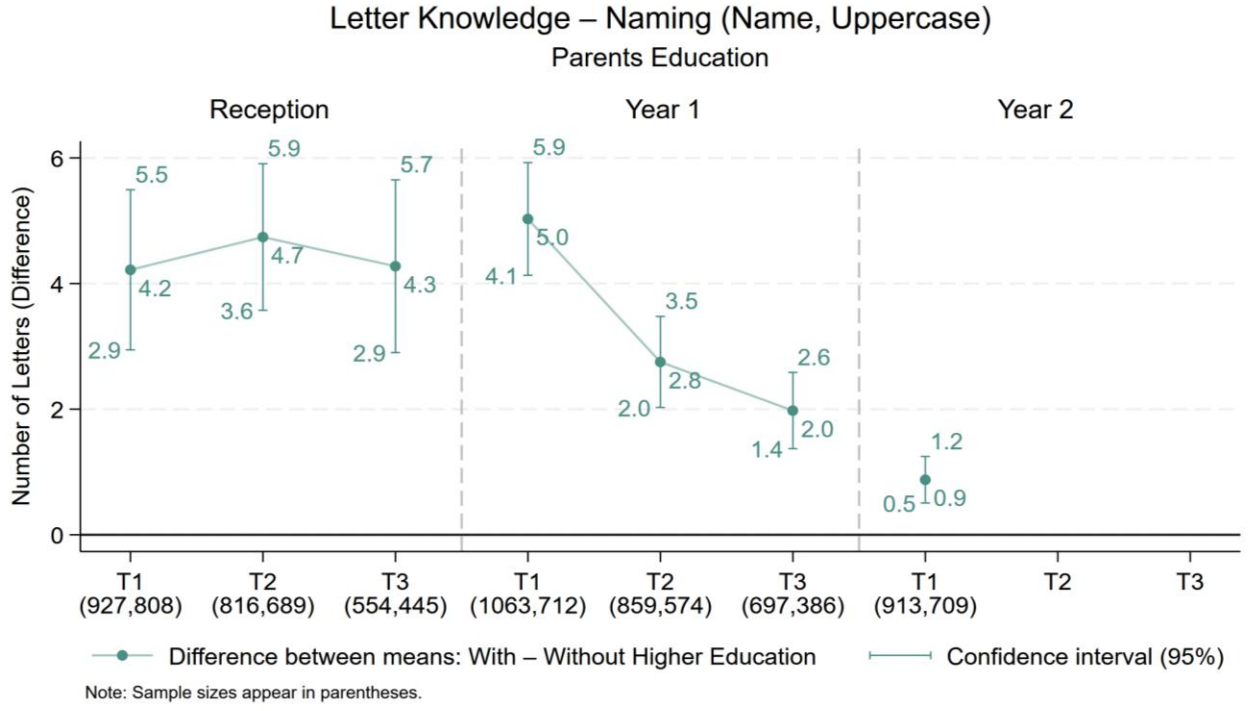
- Comparison of mean task scores between children with and without a higher-educated parent.
- Use of univariate linear regressions (equivalent to t-tests) to estimate differences.

Overall, children with at least one parent with a higher education qualification (55% of the sample) show more favourable results than the rest of the sample.

RESULTS: GAPS BY PARENTAL EDUCATION

The coefficients (dots) show the mean difference, while vertical lines show 95% confidence intervals. Intervals that do not cross the **0 line** indicate statistically significant differences ($p < 0.05$). Here, for example the positive difference means that children children with at least one parent holding a higher education degree had a better performance than all other children





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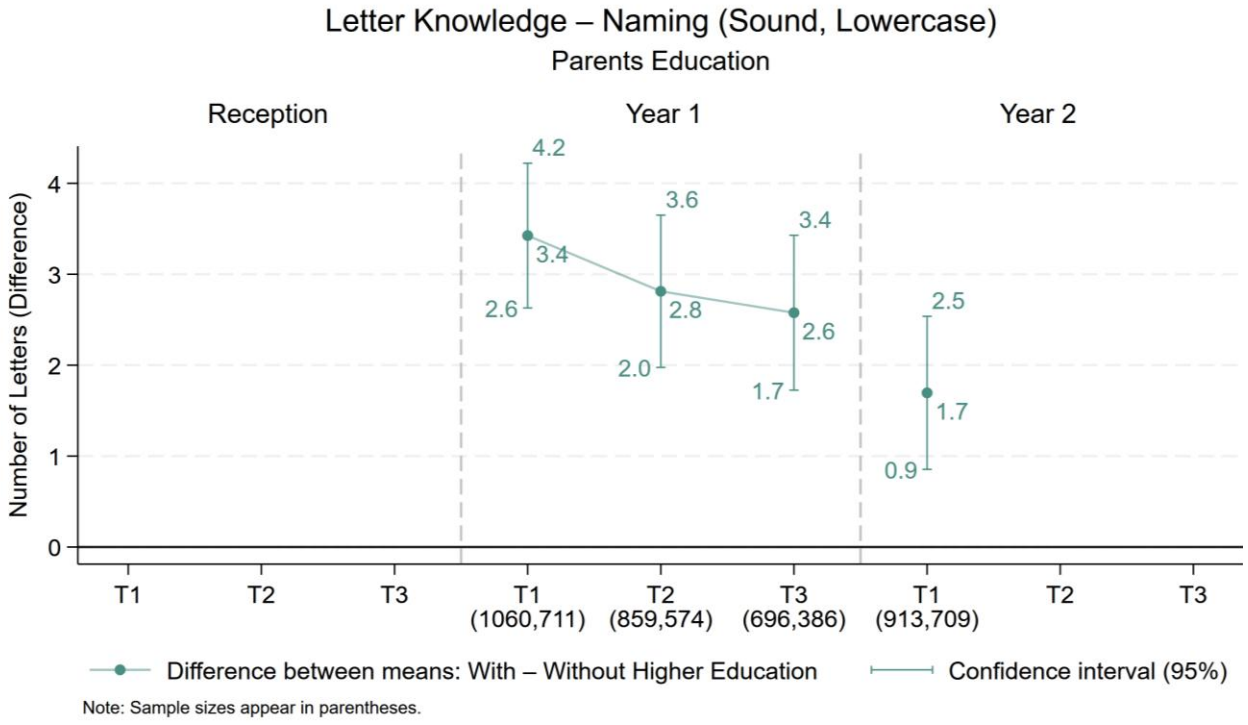

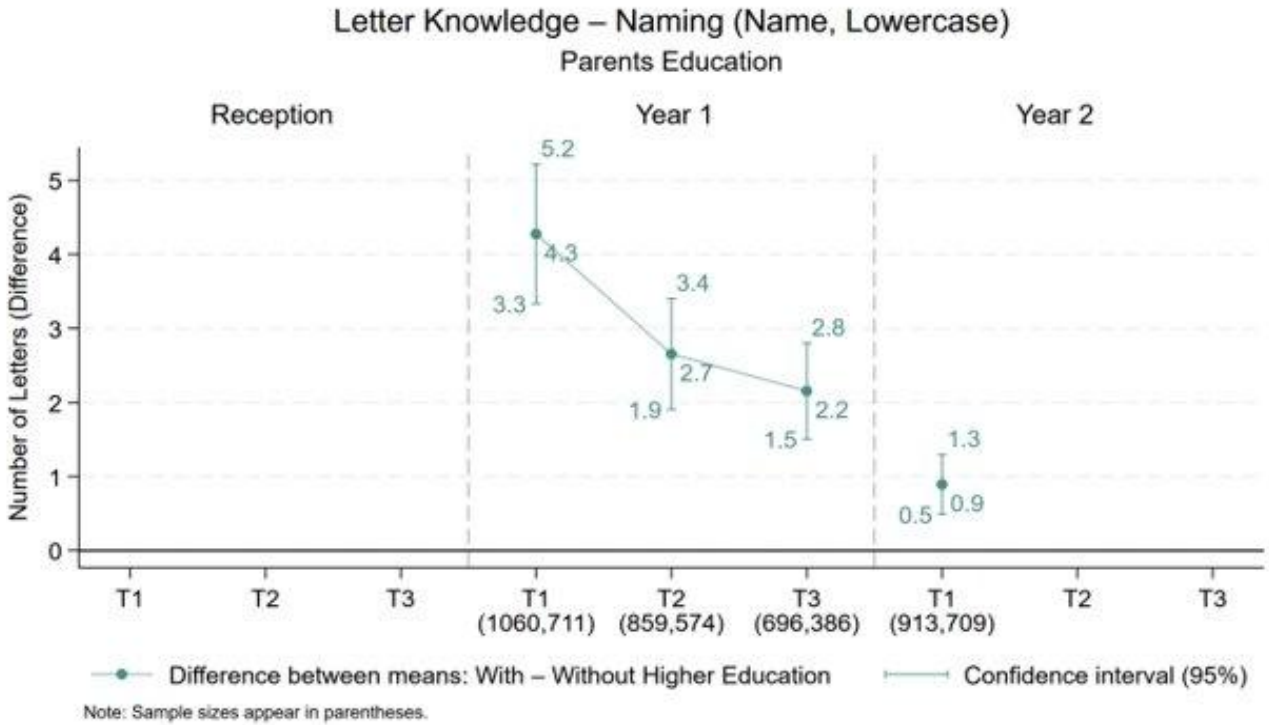

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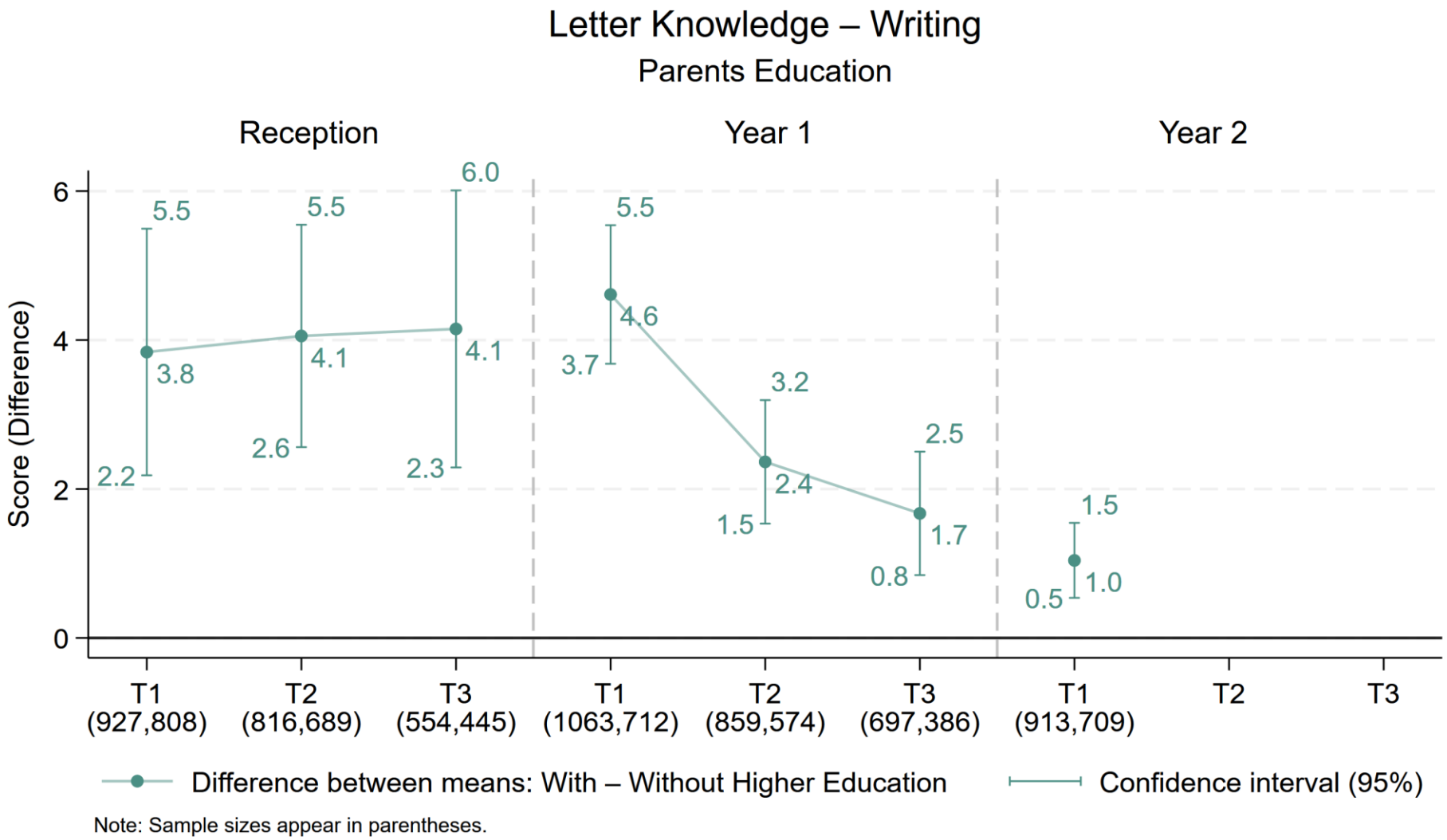

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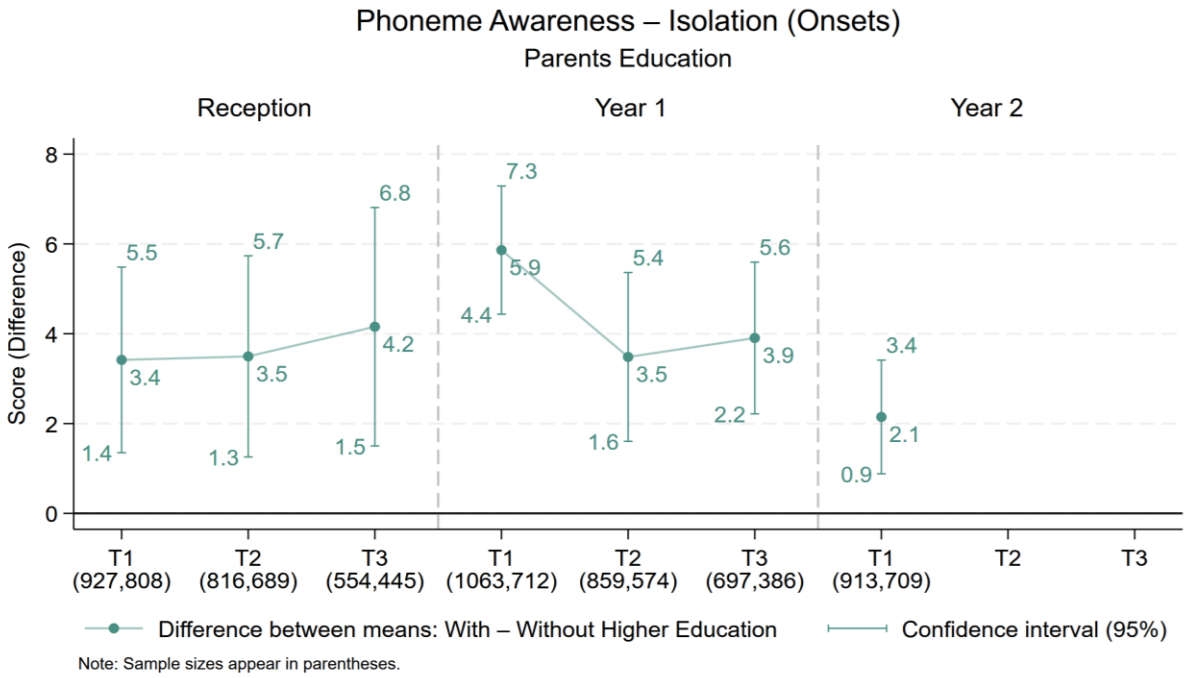

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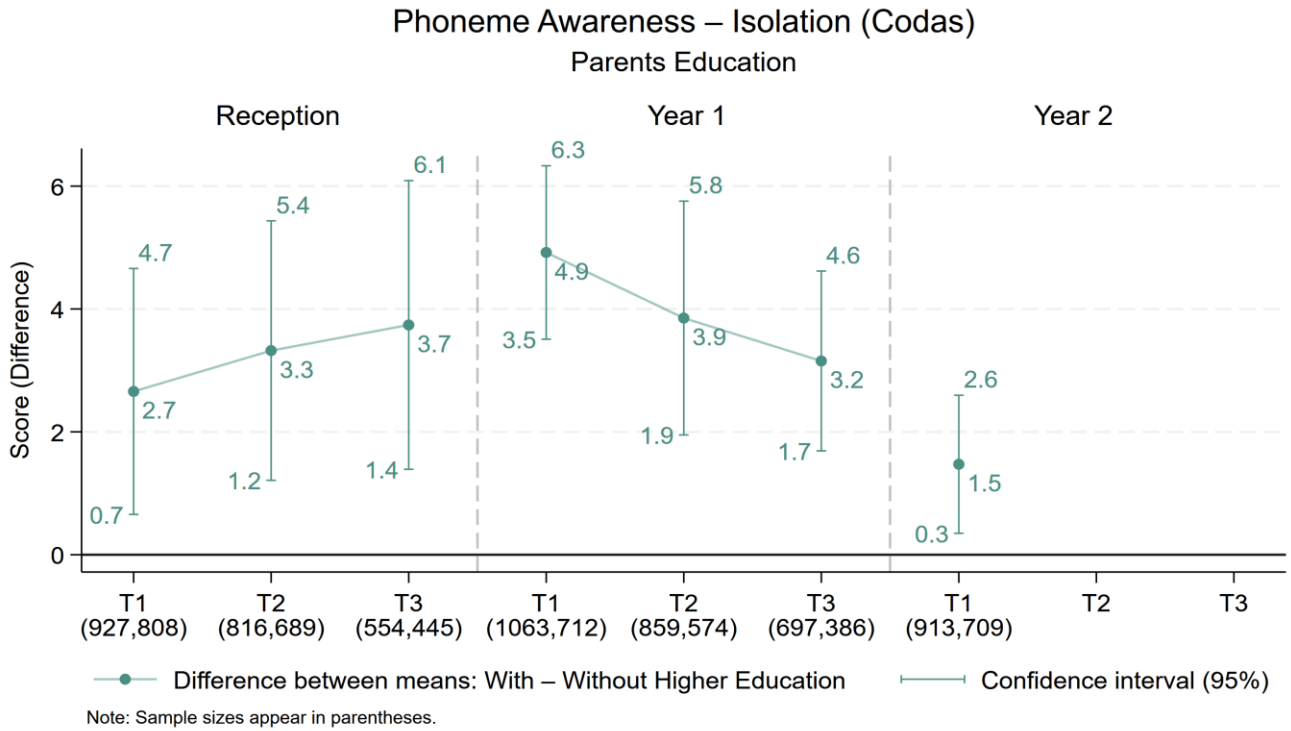

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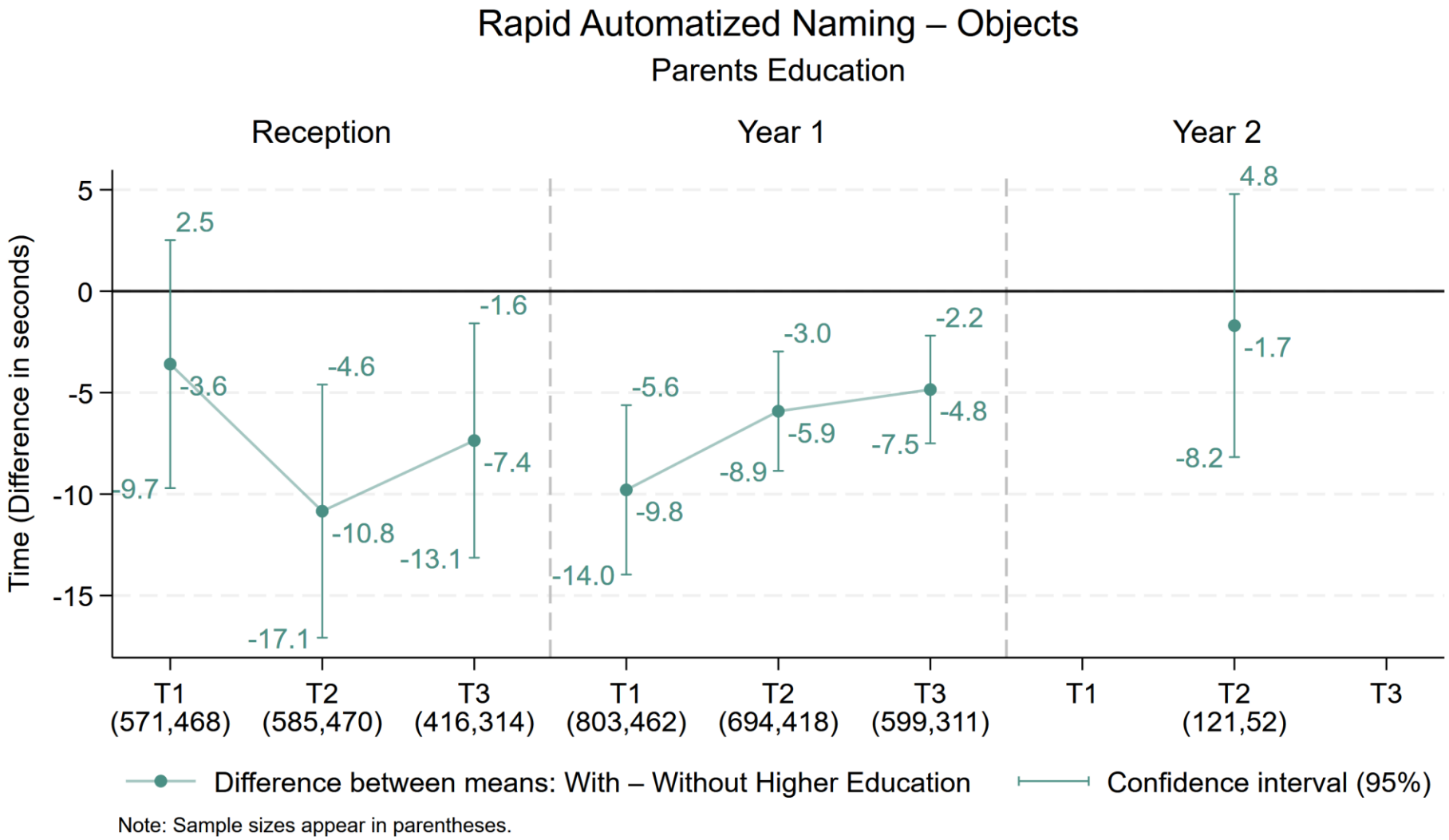

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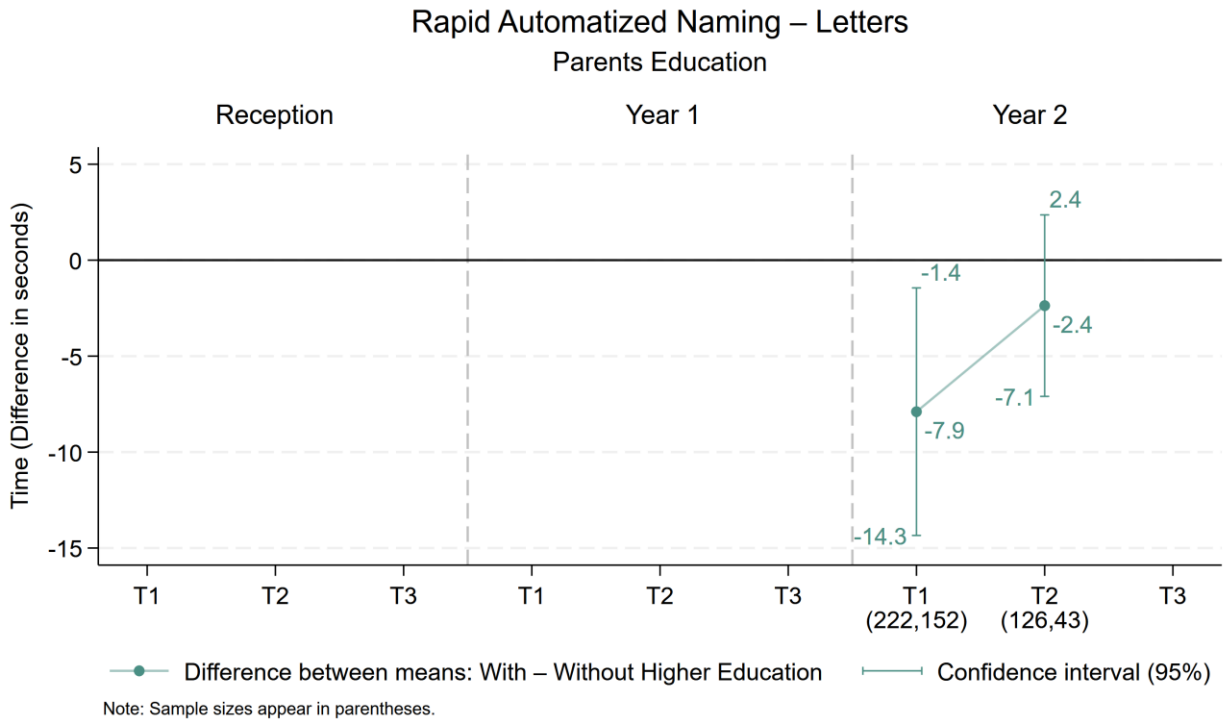

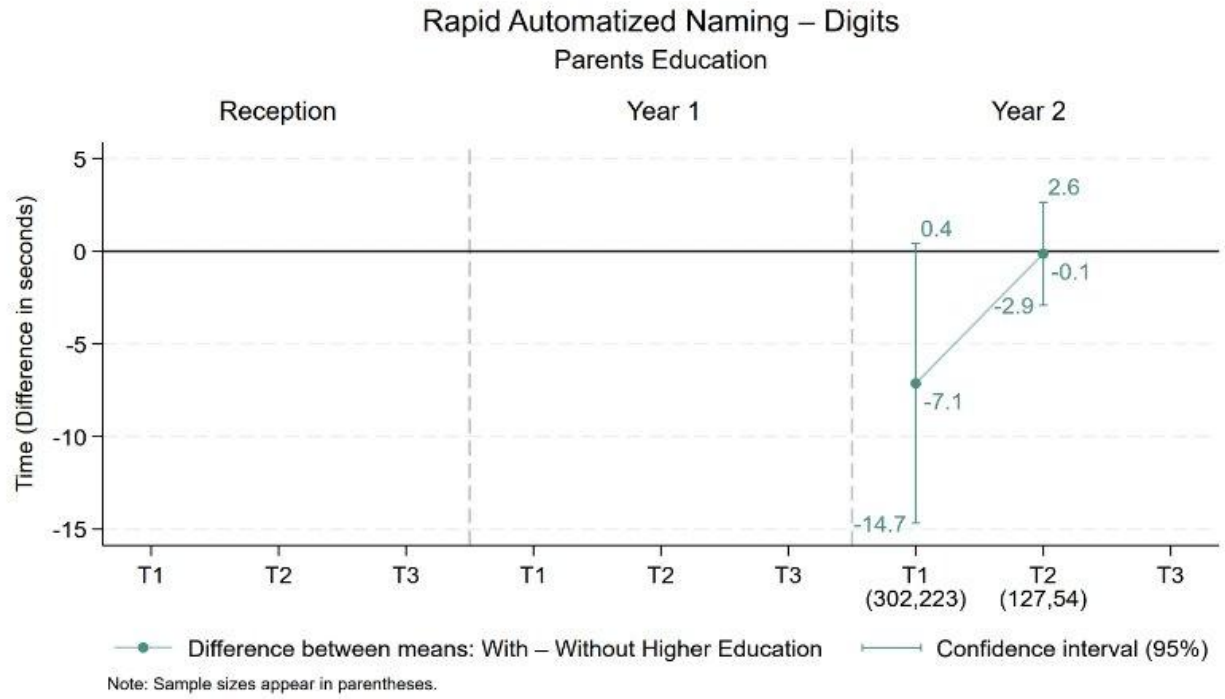

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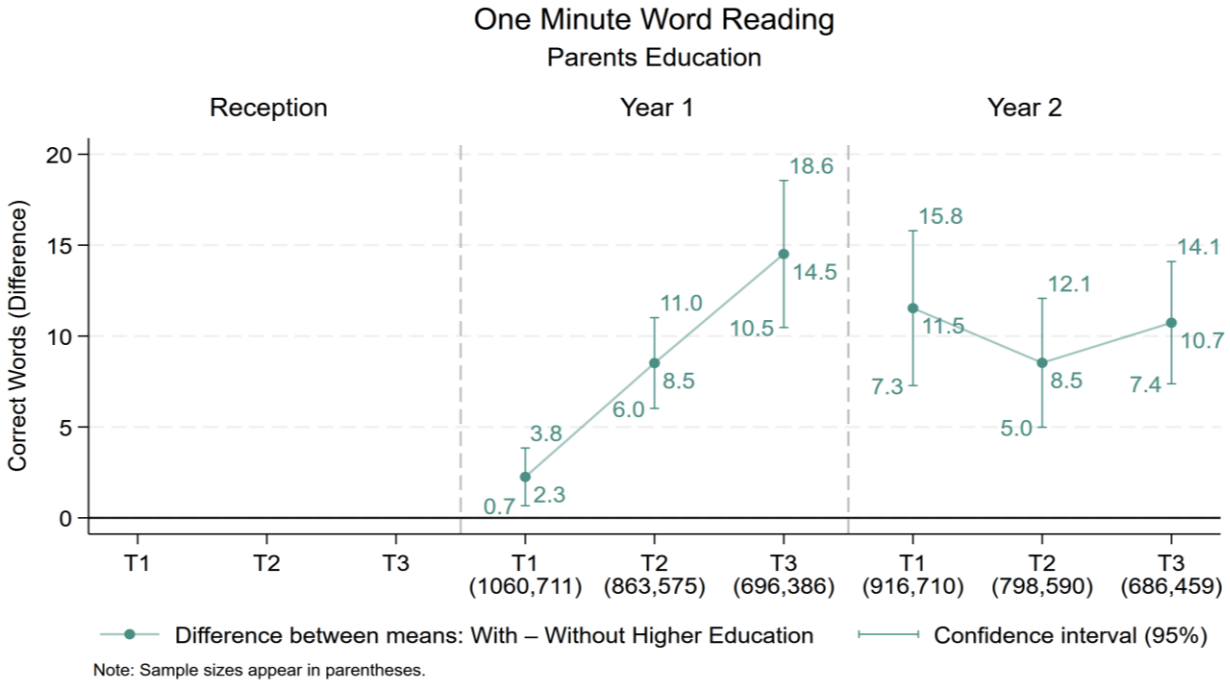

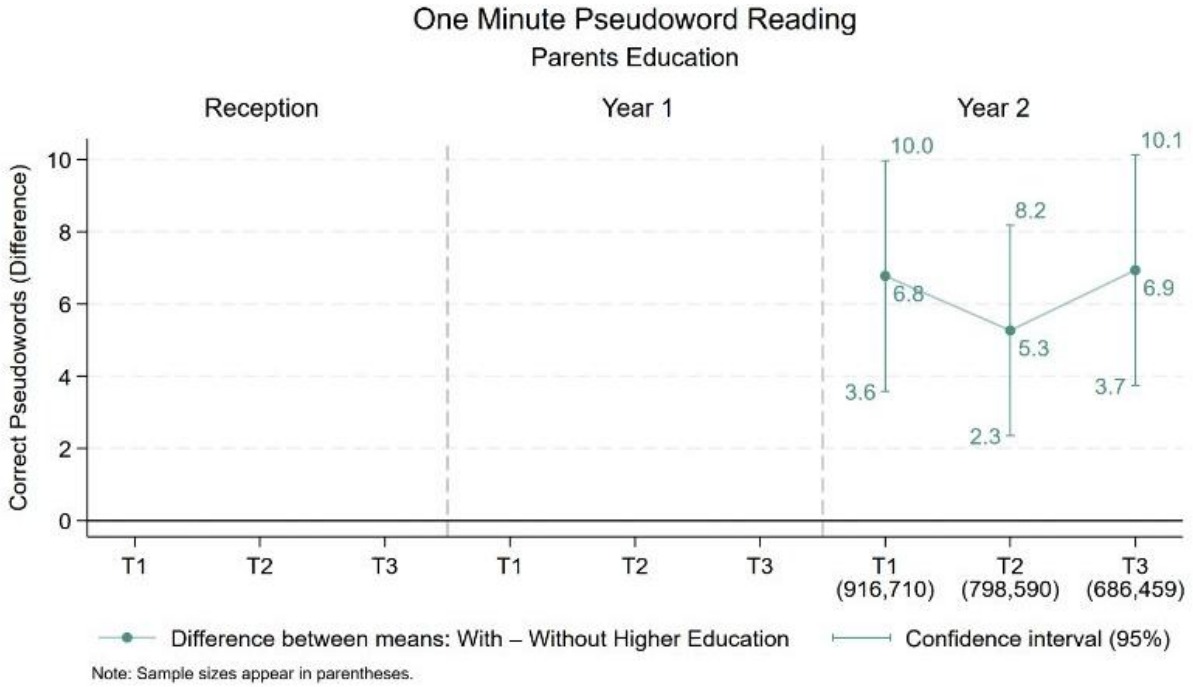

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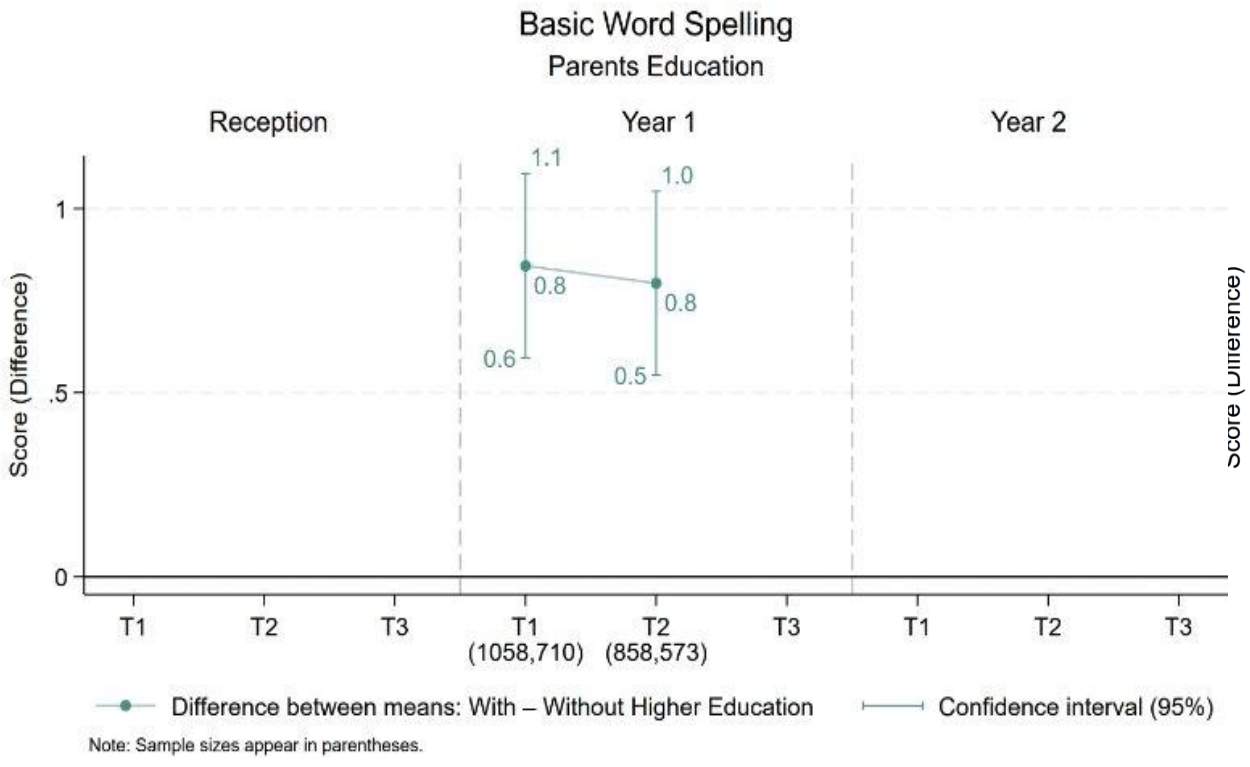

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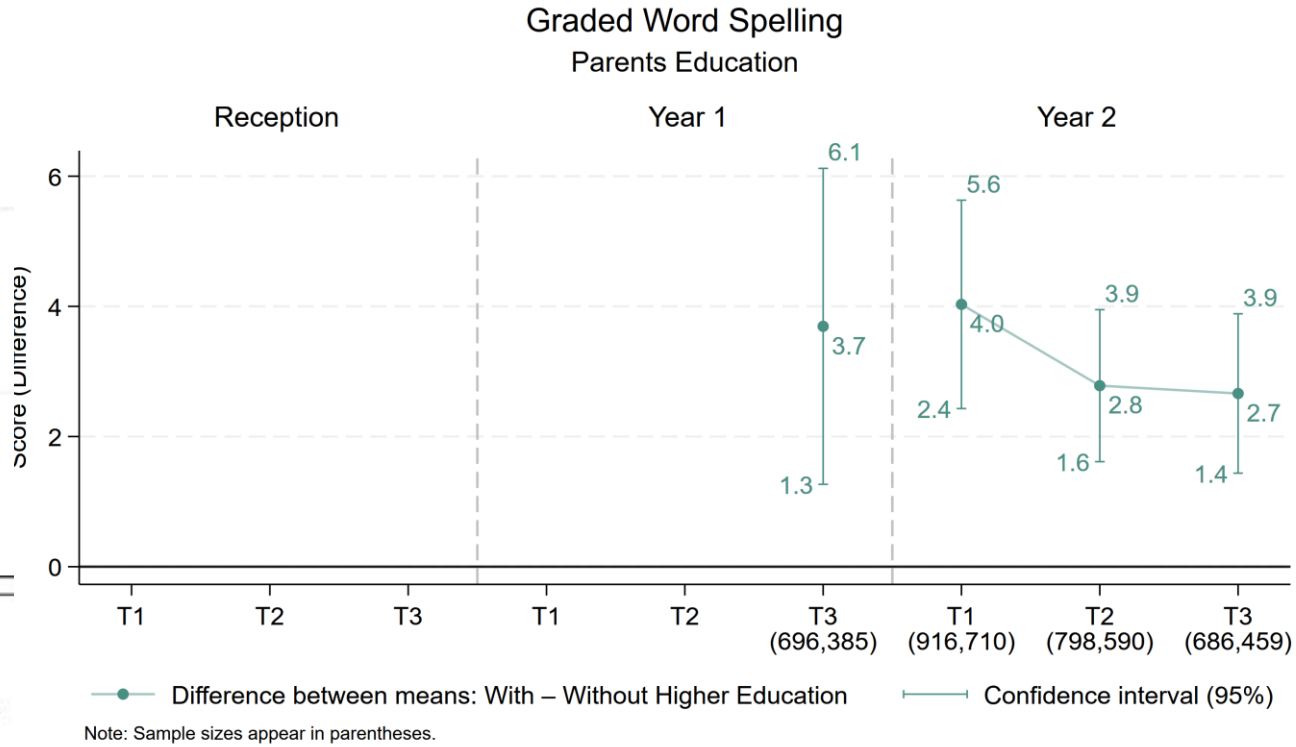


Note: Sample sizes appear in parentheses.

RESULTS: PUBLIC VS PRIVATE, CONTROLLING FOR PARENTAL EDUCATION

Two school sectors: Public and Private

- Share of children in private schools:
  - RY: 34%
  - Years 1-2: 12%

Socioeconomic profiles differ sharply between sectors

- Percentage of children with at least one parent with higher education:
  - Public schools: 46%
  - Private schools: 88%

RESULTS: PUBLIC VS PRIVATE, CONTROLLING FOR PARENTAL EDUCATION

Private schools:

- Show an overall advantage
- Largest and most persistent gap: One-Minute Word Reading

If parental education is statistically accounted for:

- The private-school advantage largely disappears
- Remaining differences are small and rarely statistically significant

Parental education accounts for much of the observed gap between private and public schools

RESULTS: EXTERNAL VALIDITY OF MABEL TESTS

Teacher Score

0 - Below Standard (Insuficiente)

1 – Satisfactory (Suficiente)

2 – Good (Bom)

3 – Outstanding (Muito Bom)

Reading Age Test Score (Portuguese version of Lobrot test) (Sucena & Castro, 2006)

- 36 sentences of increasing lenght
- where the final word is missing
- the child selects the word that completes the sentence from five options (target + 4 foils)

RESULTS: CORRELATIONS BETWEEN TASKS AND OTHER ASSESSMENTS – YEAR 1

Task	Teacher: Reading Score (0,1,2,3)	Teacher: Writing Score (0,1,2,3)	Reading Age Test Score (0-36)	Children
Letter Sound, Uppercase	0.48	0.47	0.39	260
Letter Name, Uppercase	**0.59**	**0.57**	**0.39**	260
Letter Sound, Lowercase	0.47	0.47	0.40	260
Letter Name, Lowercase	0.56	0.55	0.40	260
Letter Writing	0.48	0.46	0.34	260
Phoneme Blending	-	-	-	-
Phoneme Isolat. (Onsets)	**0.53**	**0.54**	**0.42**	260
Phoneme Isolat. (Codas)	0.43	0.42	0.29	260
Phoneme Deletion	-	-	-	-
RAN Objects	-0.38	-0.39	-0.30	260
RAN Letters	-	-	-	-
RAN Digits	-	-	-	-
OMR Words	**0.75**	**0.70**	**0.79**	260
OMR Pseudowords	-	-	-	-
Basic Word Spelling	0.54	0.50	0.38	227
Graded Word Spelling	**0.62**	**0.60**	**0.69**	260
Picture-Word Matching	**0.66**	**0.63**	**0.78**	260

In Year 1, scores in all tasks are significantly correlated both with teacher assigned scores and with the Reading Age Test score.

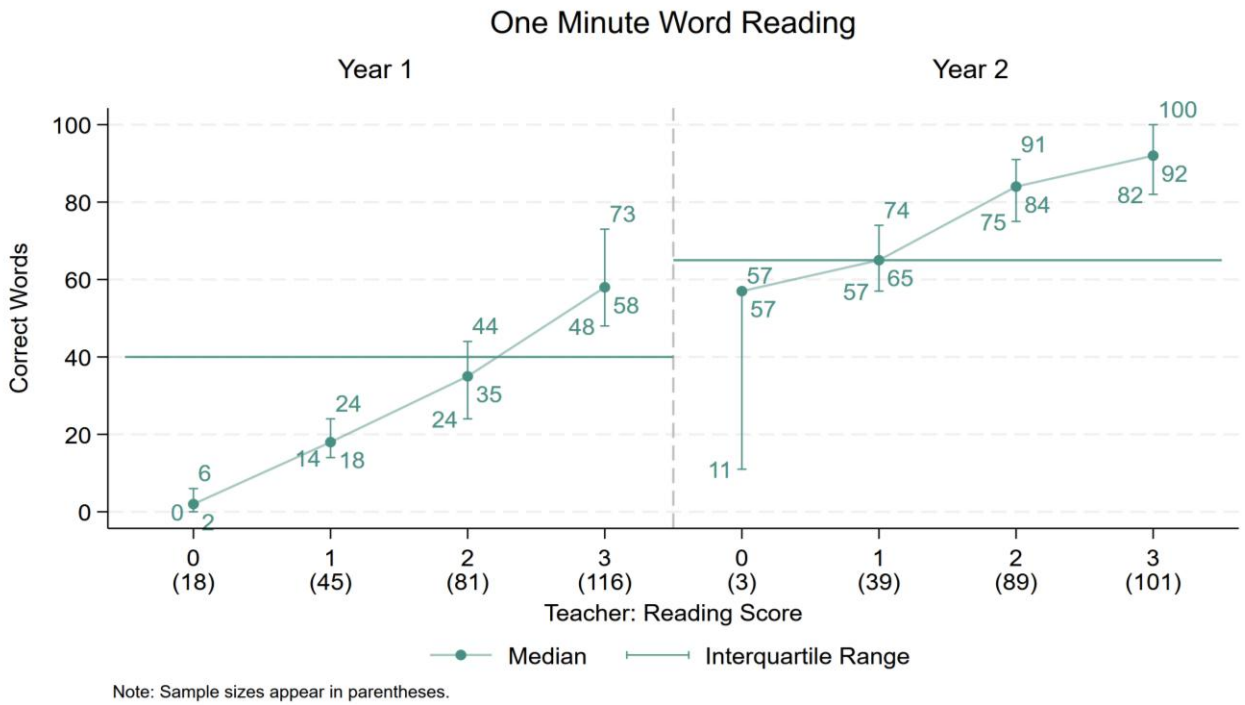
RESULTS: CORRELATIONS BETWEEN TASKS AND OTHER ASSESSMENTS – YEAR 2

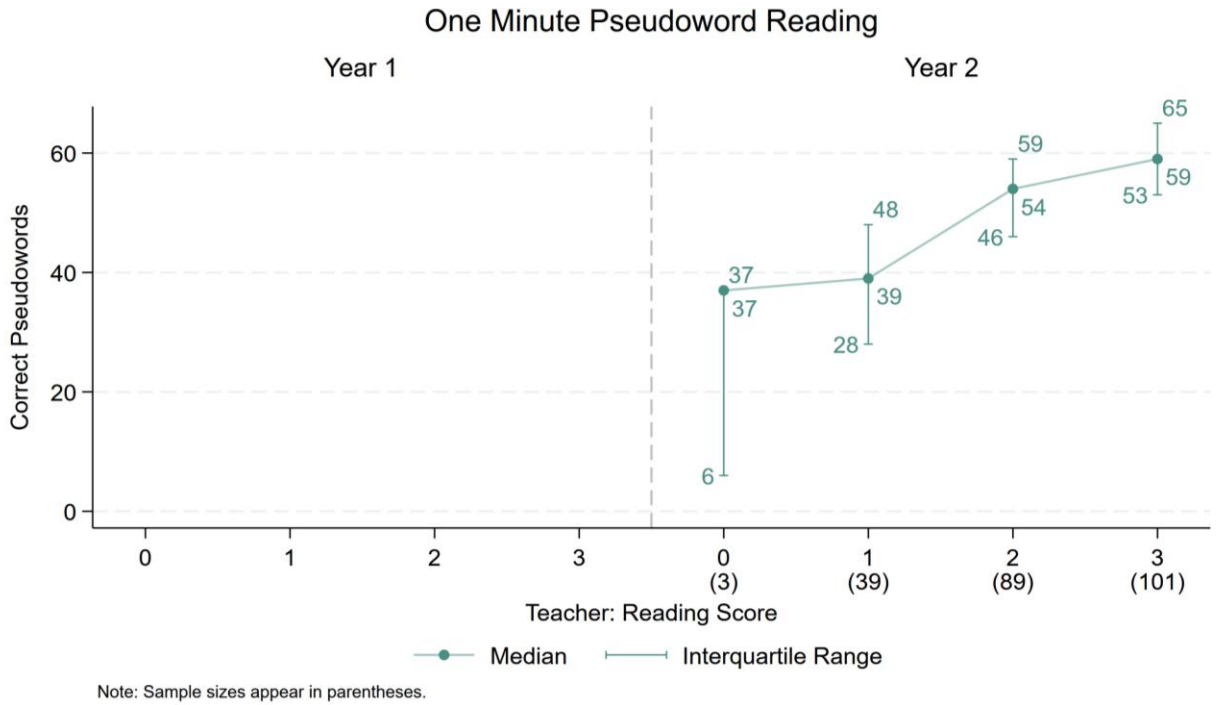
Task	Teacher: Reading Score (0,1,2,3)	Teacher: Writing Score (0,1,2,3)	Reading Age Test Score (0-36)	Children
Letter Sound, Uppercase	0.34	0.28	0.22	184
Letter Name, Uppercase	0.42	0.34	0.23	184
Letter Sound, Lowercase	0.31	0.27	0.21	184
Letter Name, Lowercase	0.42	0.34	0.23	184
Letter Writing	0.16	0.17	0.14	184
Phoneme Blending	0.32	0.28	0.20	202
Phoneme Isolat. (Onsets)	0.40	0.36	0.33	184
Phoneme Isolat. (Codas)	0.32	0.25	0.15	184
Phoneme Deletion	0.36	0.36	0.45	232
RAN Objects	-0.24	-0.18	-0.09	181
RAN Letters	-0.29	-0.26	-0.27	204
RAN Digits	-0.22	-0.19	-0.22	204
OMR Words	**0.61**	**0.56**	**0.64**	232
OMR Pseudowords	0.55	0.50	0.63	232
Basic Word Spelling	-	-	-	-
Graded Word Spelling	**0.57**	**0.56**	**0.57**	232
Picture-Word Matching	**0.55**	**0.48**	**0.61**	232

In Year 2, scores in almost all tasks are significantly correlated* both with teacher assigned scores and with the Reading Age Test score.

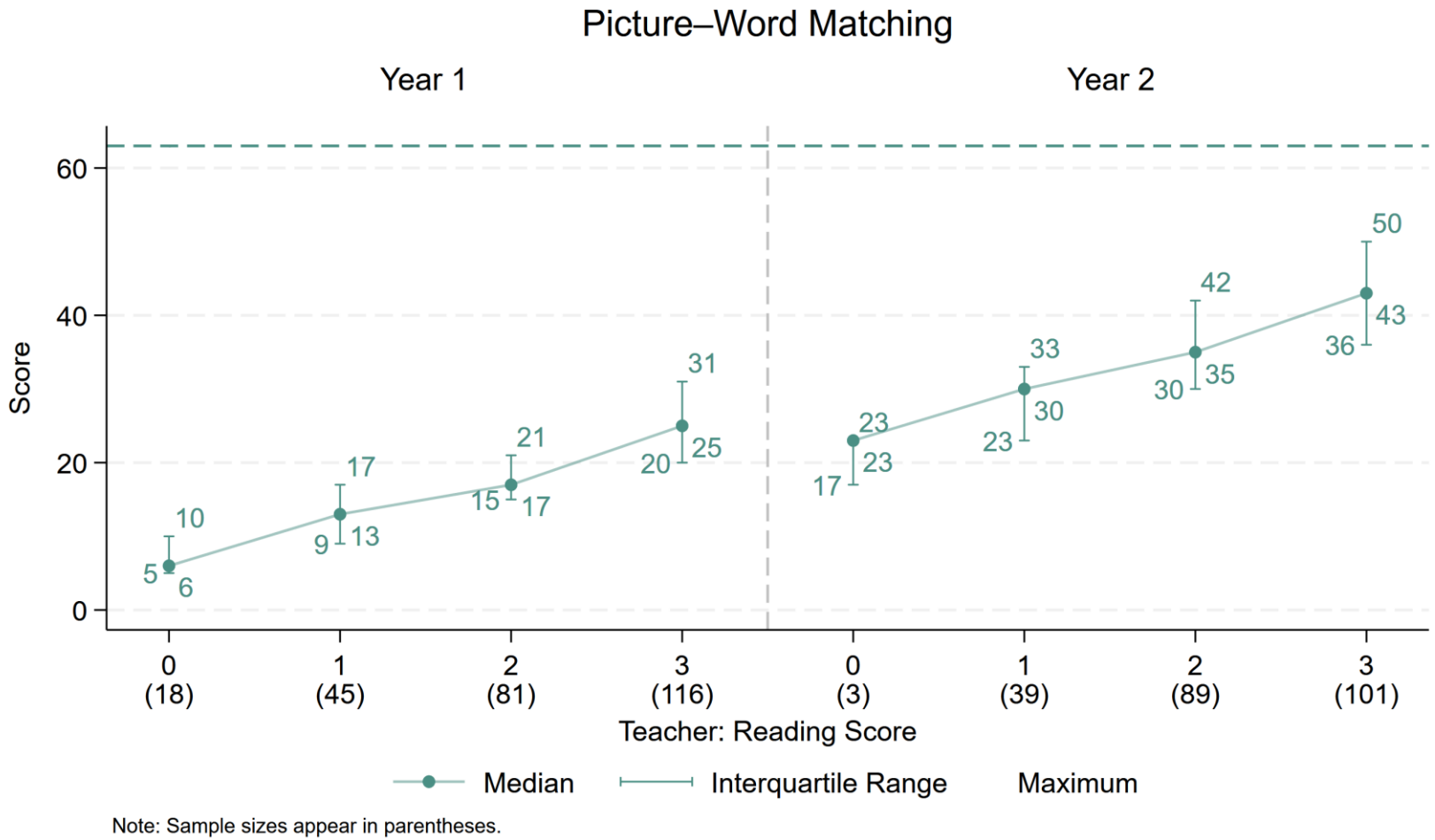
*Except for the grey-shaded cells.

RESULTS: CORRELATIONS BETWEEN TASKS AND READING SCORES



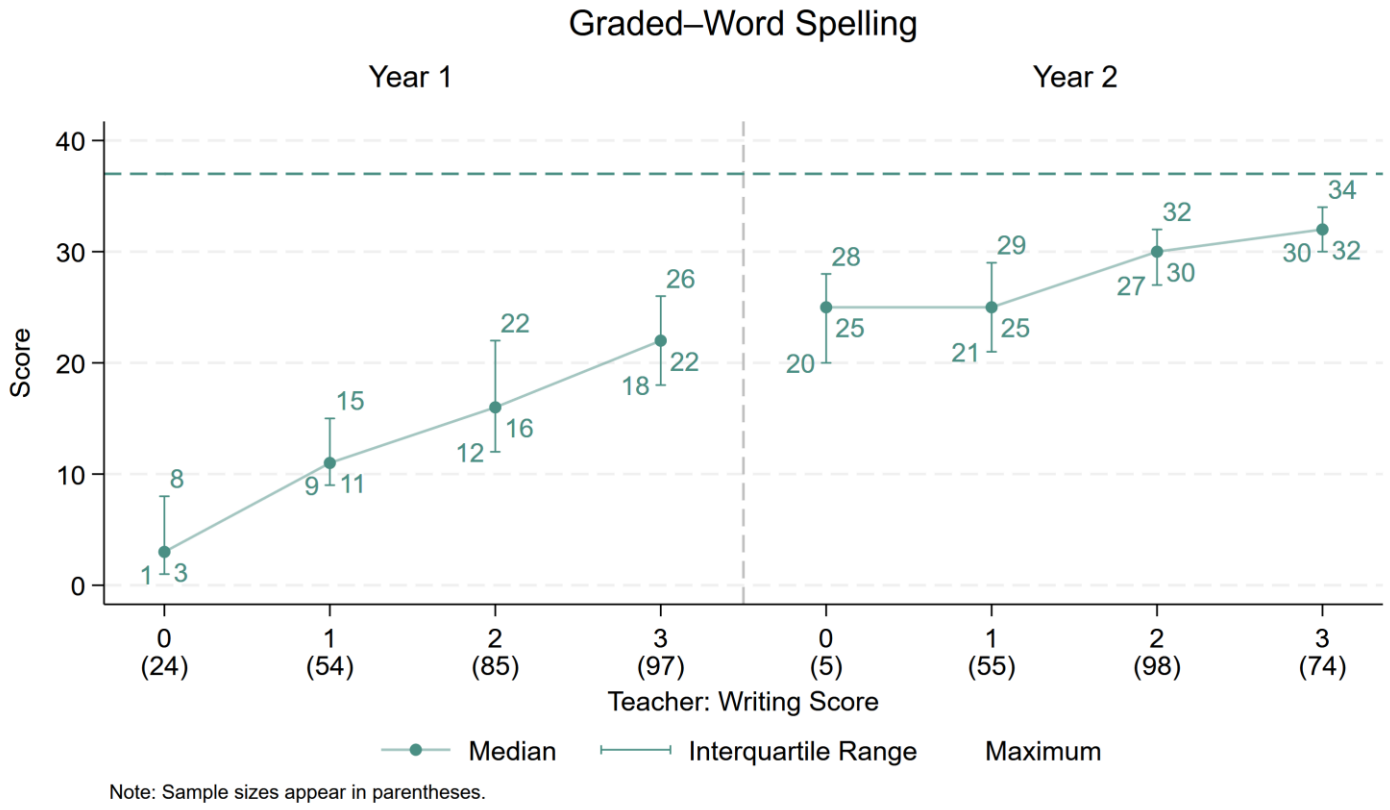


RESULTS: CORRELATIONS BETWEEN TASKS AND READING SCORES



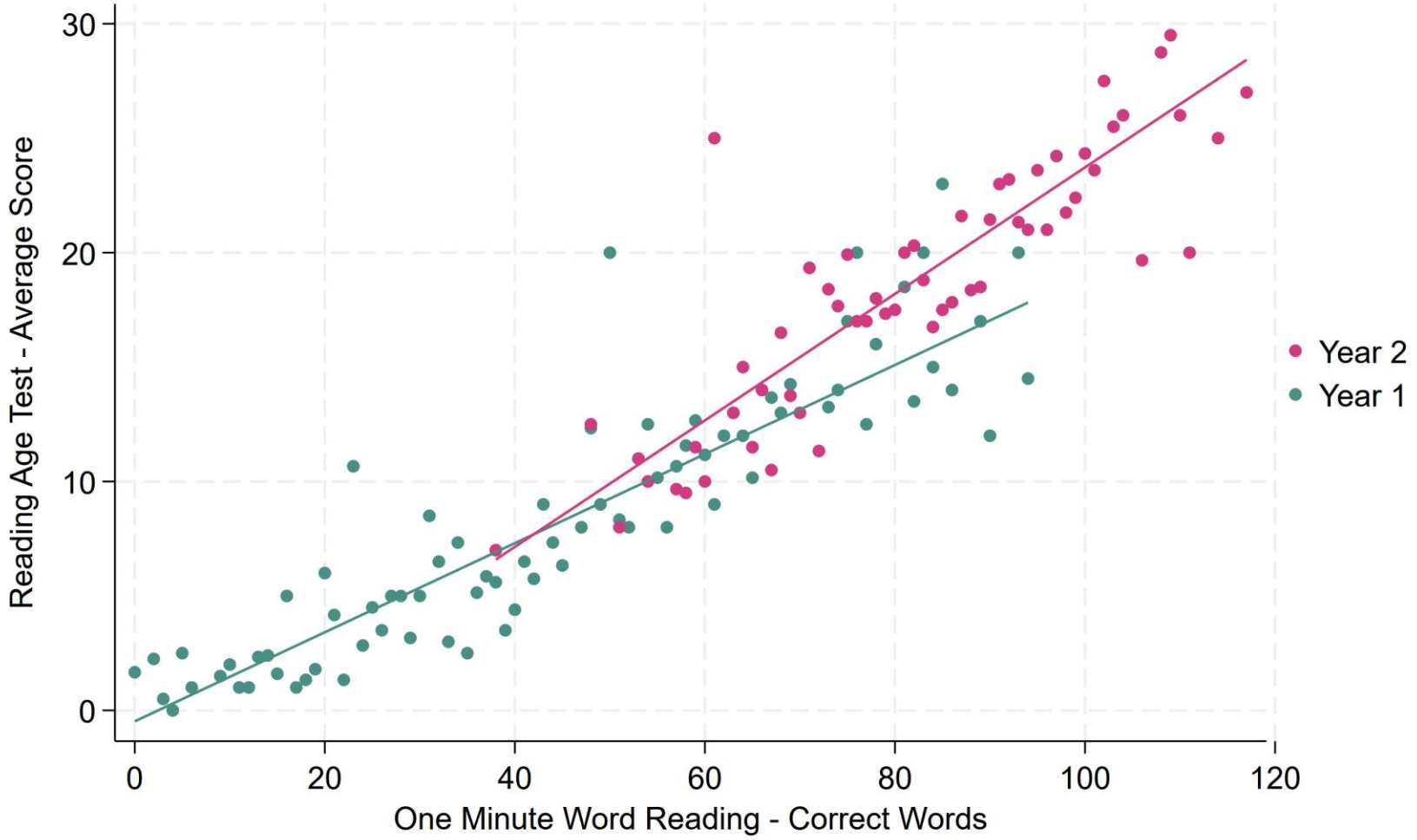
Note: Sample sizes appear in parentheses.

RESULTS: CORRELATIONS BETWEEN TASKS AND WRITING SCORES



Note: Sample sizes appear in parentheses.

RESULTS: CORRELATIONS BETWEEN TASKS AND READING AGE



This chart shows the average score in the reading age test by number of words read per minute, by year group.

In both years, there is a clear positive correlation between reading age and reading fluency.

CONCLUSIONS

Reception Year

- Some improvement along the **Reception Year** regarding letter knowledge and phoneme awareness skills (Phoneme isolation: initial/final sounds), but with **significant room for improvement for most children**
    - Sharpest development occurs during the first half of the reception year.
    - **Performance is highly variable** and **strongly linked to parental education levels**.

RECOMMENDATIONS

- **Strengthen interventions to ensure educational equity**, focusing on:
    - Oral games to develop interest in speech sounds, **letter-sound knowledge** and phonological awareness (specifically at the **phoneme level**)
    - **Building motivation**: creating opportunities for children to want to learn to read and write
    - **Parental support**:
        - Encouraging parents to read to their children regularly
        - Showing them how to read aloud and engage in talk about books and stories, letters and oral games

CONCLUSIONS

In Year 1 and 2

- **Consistent Literacy Growth**: Accelerated development in Year 1, with continued but slower progress in Year 2.
    - Letter Knowledge: By mid-Year 1, most children recognize almost all upper and lower-case letters.
    - Phonemic Awareness: Significant variability remains until mid-Year 1 (many children still struggle to identify individual word sounds).
    - Reading (End of Year 1): 50% of pupils read below 37 words per minute (wpm); Bottom 25% are unable to read more than 21 wpm
    - Spelling ability progresses slowly during the first two years; with considerable variability between children.
- **Family Background Effect:** Parental education, rather than public/private school type, creates large, persistent achievement gaps.

RECOMMENDATIONS

Year 1 and 2

- Deliver a **structured and consistent phonics programme**
  - Teach letter-sound relationships in a pre-planned, incremental order
  - Dedicate specific time every day to direct instruction and practice of reading and writing
  - Provide "decodable" books that match the child's current phonic knowledge, allowing them to experience success and build fluency
- **Assess children regularly** to monitor progress and **ensure early detection of difficulties**
  - Evaluate all core pillars of literacy to ensure the origin of any difficulties can be identified: Letter Knowledge; Phoneme Awareness; Word & Pseudoword Decoding; Spelling
  - Choose tasks that evaluate both correctness and pace of processing (e.g. timed vs untimed tasks)

RECOMMENDATIONS

Year 1 and 2

- Take an integrated approach to reading for decoding and meaning
  - Integrate phonics instruction with activities that build vocabulary and background knowledge to promote language development and set the ground for reading comprehension as the puppils decoding skills evolve

At the school level, closely **monitor pupil progress**, implement **early intervention**, provide ongoing training for all staff, and supply high-quality pedagogical materials

CONCLUSIONS

- Strong correlations between MABEL tests and external measures, such as reading age and school grades, confirm the **validity of MABEL**:
  - Results align closely with independent, validated assessment tools.
  - Successfully link foundational skills (e.g. letter naming, word reading and spelling) with more complex reading comprehension.
- Confirms the **MABEL** battery as a **robust, trustworthy tool for researchers, practitioners, and teachers (contingent on specialized training)**, which, by incorporating assessments for both core literacy skills and their underlying cognitive foundations, enables users to pinpoint exactly **where a student's difficulties originate**
- The strong external validity and ease of use of certain tests (e.g., picture-word matching) are excellent starting points for developing practical pedagogical tools.

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OBRIGADA A TODOS OS EDUCADORES E PROFESSORES, CRIANÇAS E ALUNOS!

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