

# Outcomes of Children who are Deaf and Hard of Hearing at the Carle Auditory Oral School

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## Project Objective

Carle Auditory Oral School (CAOS) is a listening spoken language (LSL) program for children who are deaf and hard of hearing (DHH). Our mission is to provide LSL intervention and education to facilitate development of age-appropriate listening, language, and academic skills, and improve quality of life for our students and their families. Many children who are DHH and receive LSL intervention can develop age-appropriate spoken language, but a variety of factors impact outcomes. The primary objective of this project is to characterize the vocabulary and language outcomes of our students who are DHH and who differ by age at intervention and presence of additional impacting factors.

## Methods

**Standardized measures for receptive vocabulary** (Peabody Picture Vocabulary Test-4), **expressive vocabulary** (Expressive Vocabulary Test-2), and **connected language** (Oral Written Language Scales) were administered to three to seven year old students at Carle Auditory Oral School every year.

**Students were divided into three groups as follows**

**Group 1** = Intervention before 18 months, No additional impacting factors

**Group 2** = Intervention before 18 months, One or more impacting factor present

**Group 3** = Intervention between 19-48 months, One or more impacting factor might be present

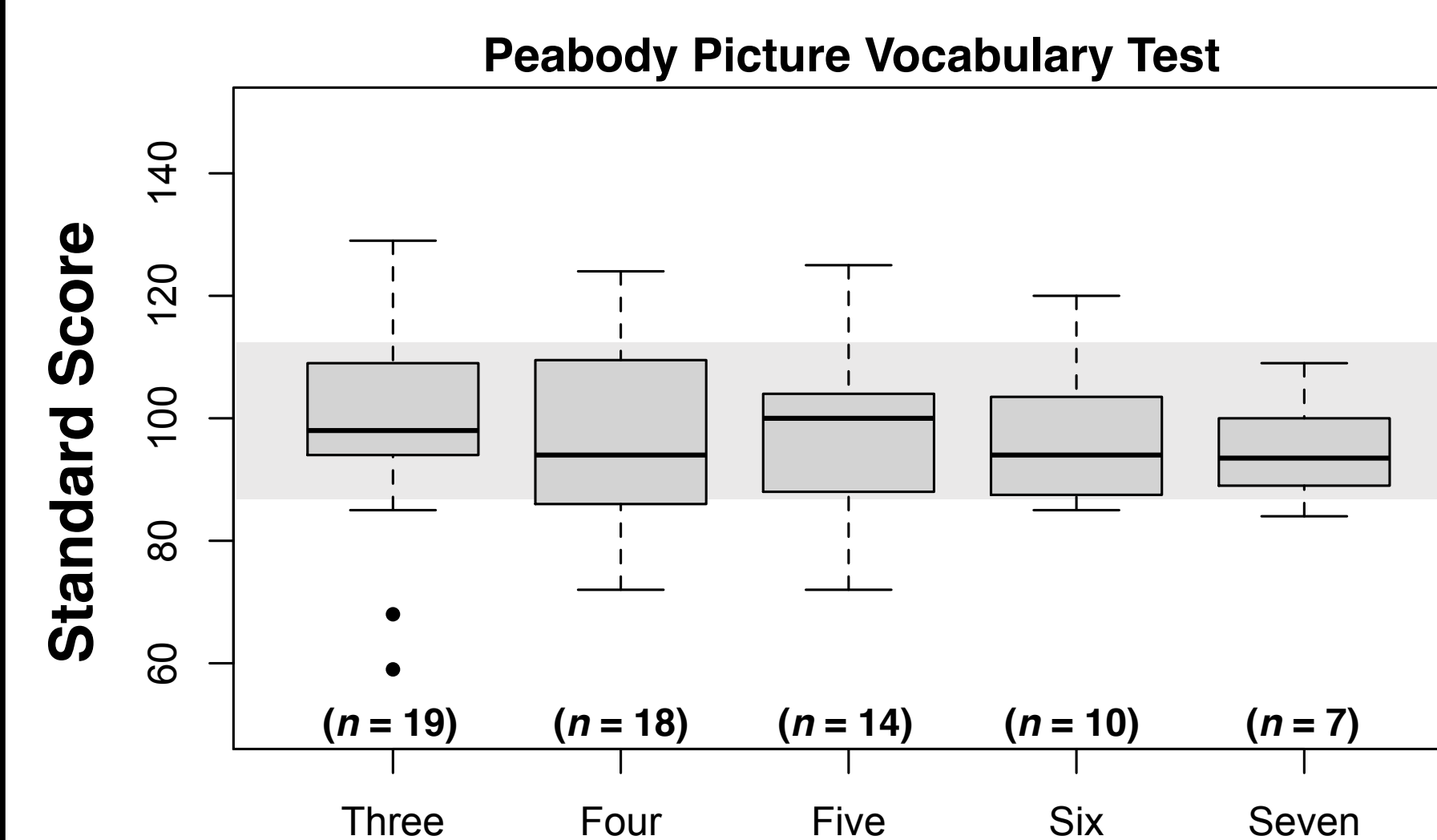
The following **factors** were considered as **impacting language development**

- non-English/ multilingual home
- moderate or severe impact of additional disability on learning
- early trauma and/or adoption
- cochlear implant revision surgeries

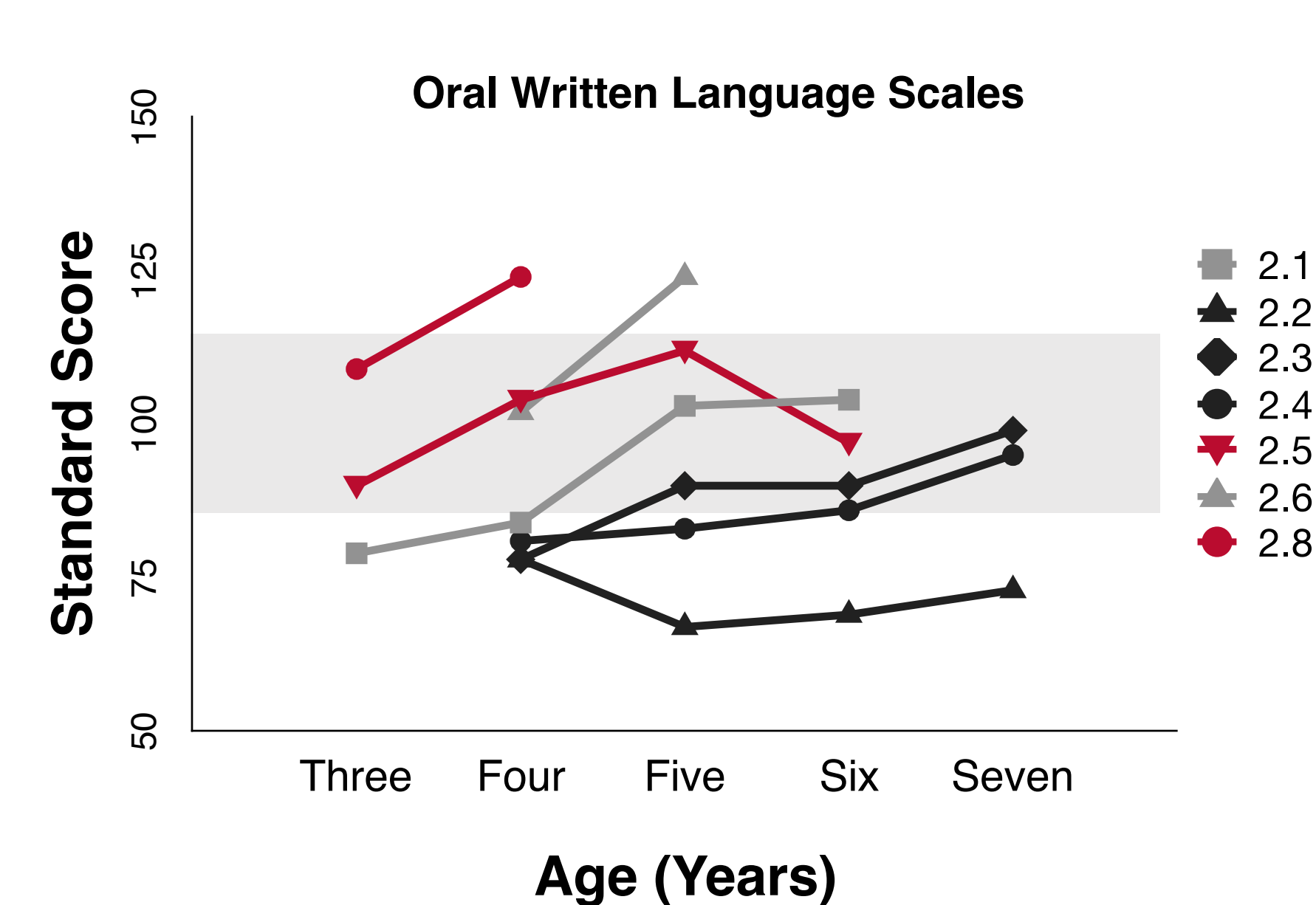
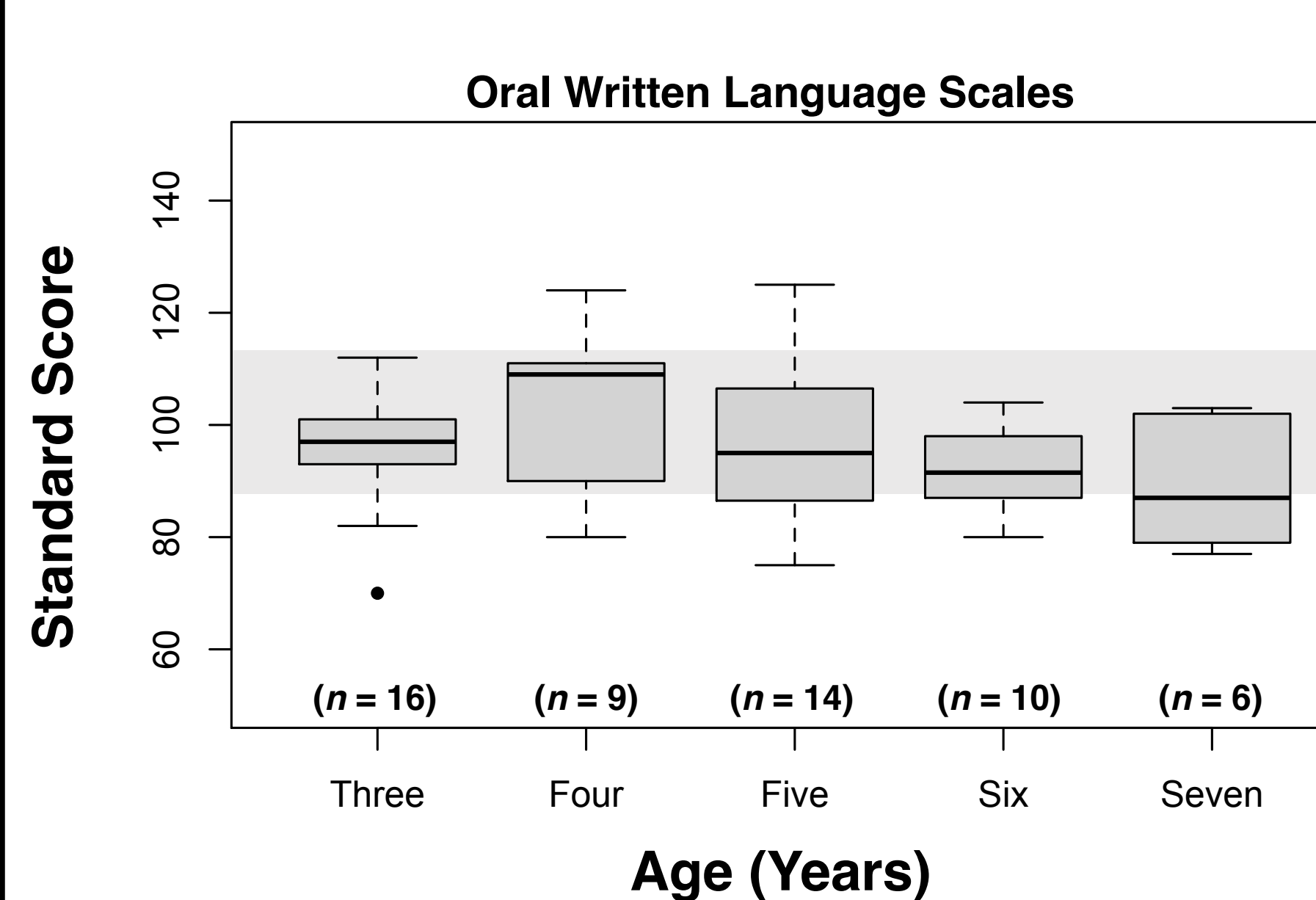
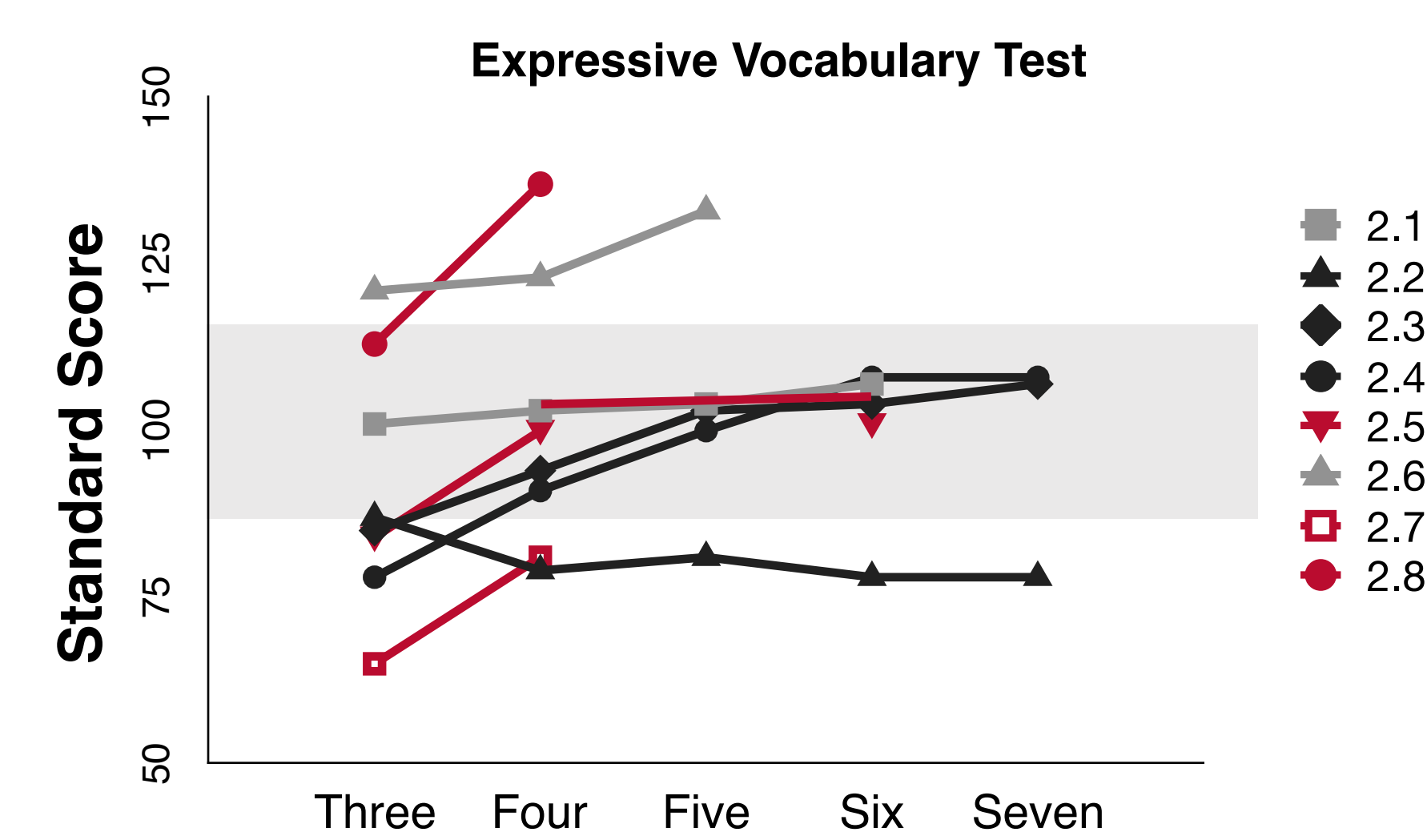
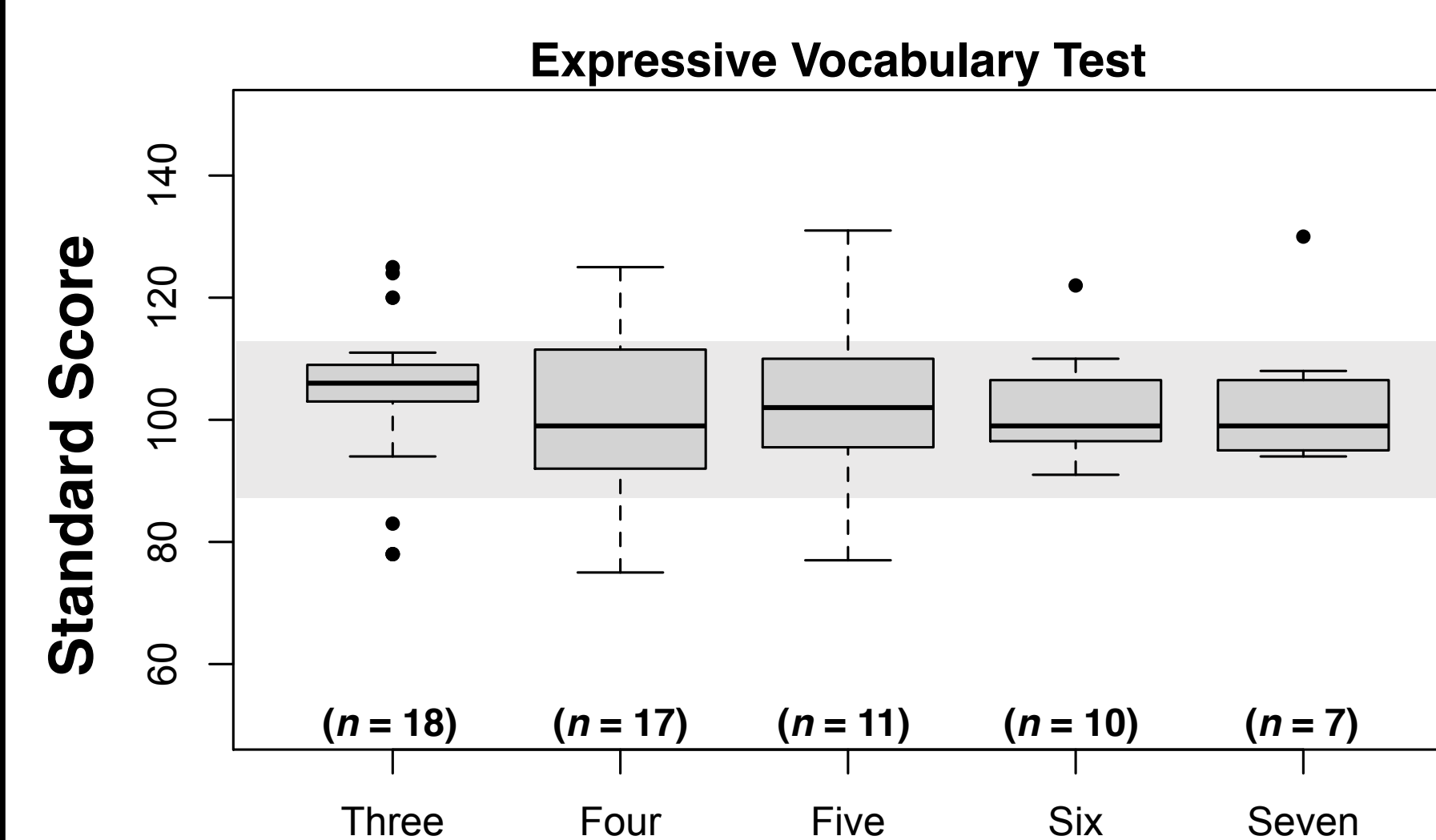
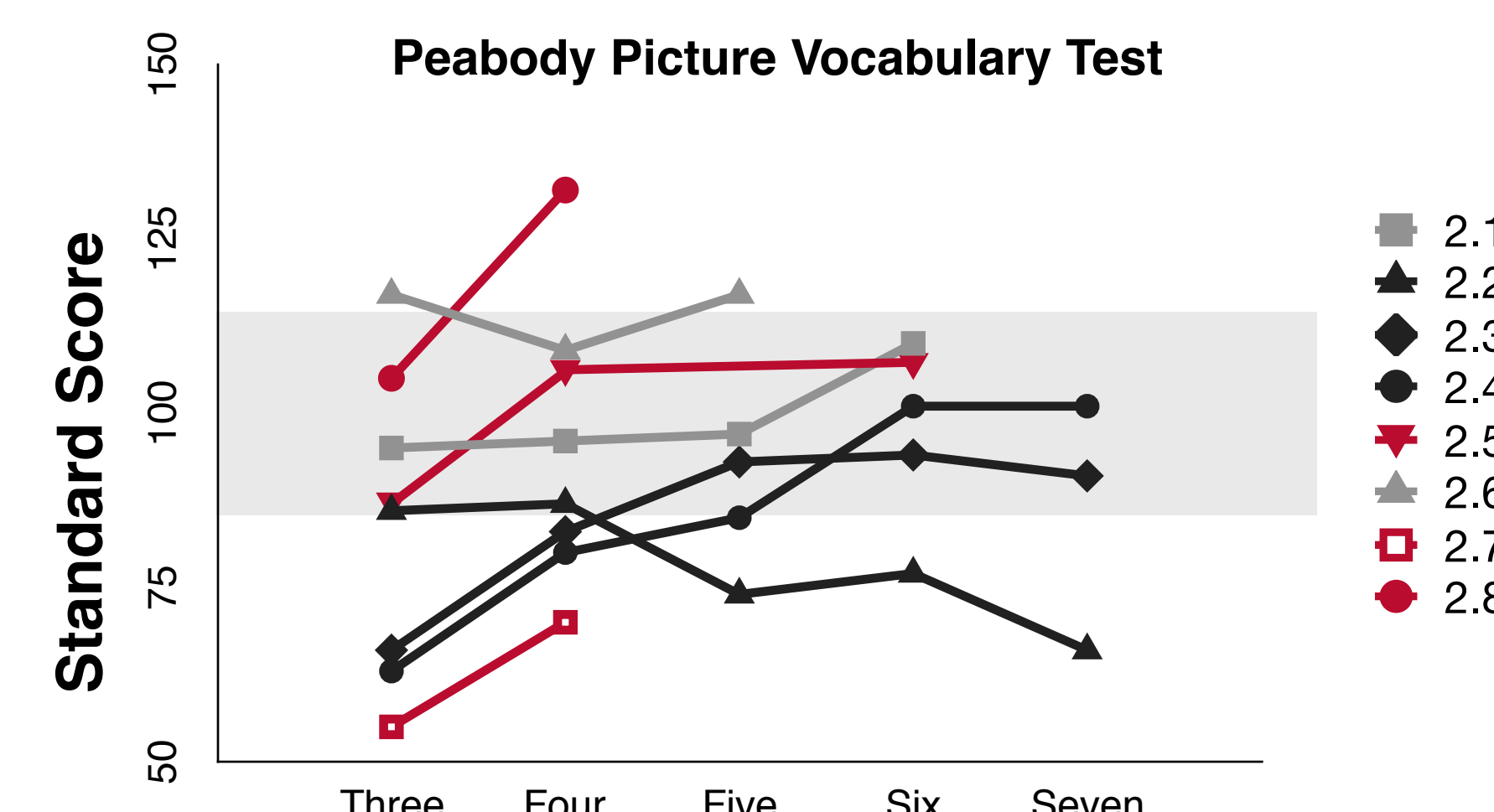
## Results

<b>Group 1 (n = 23)</b>	Female (6), Male (17)	Bilateral HA (9), Bimodal (3), Bilateral CI (10), BAHD (1)	Diagnosis = 3 months Amplification = 6 months Intervention = 7 months
<b>Group 2 (n = 8)</b>	Female (1), Male (7)	Bilateral HA (4), Bilateral CI (3), BAHD (1)	Diagnosis = 3 months Amplification = 6.5 months Intervention = 7 months
<b>Group 3 (n = 5)</b>	Female (2), Male (3)	Bilateral HA (4) Bimodal (1)	Diagnosis = 18 months Amplification = 24 months Intervention = 24.5 months

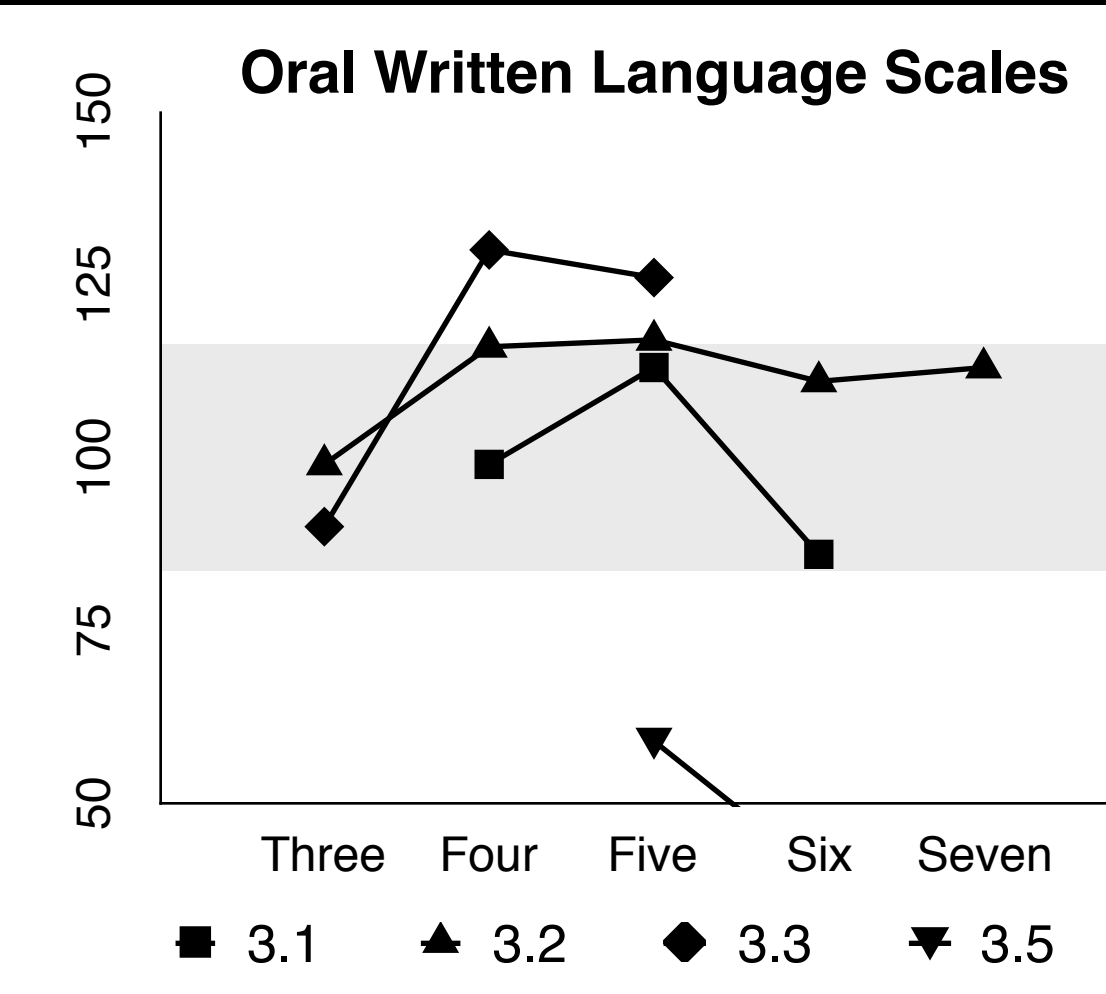
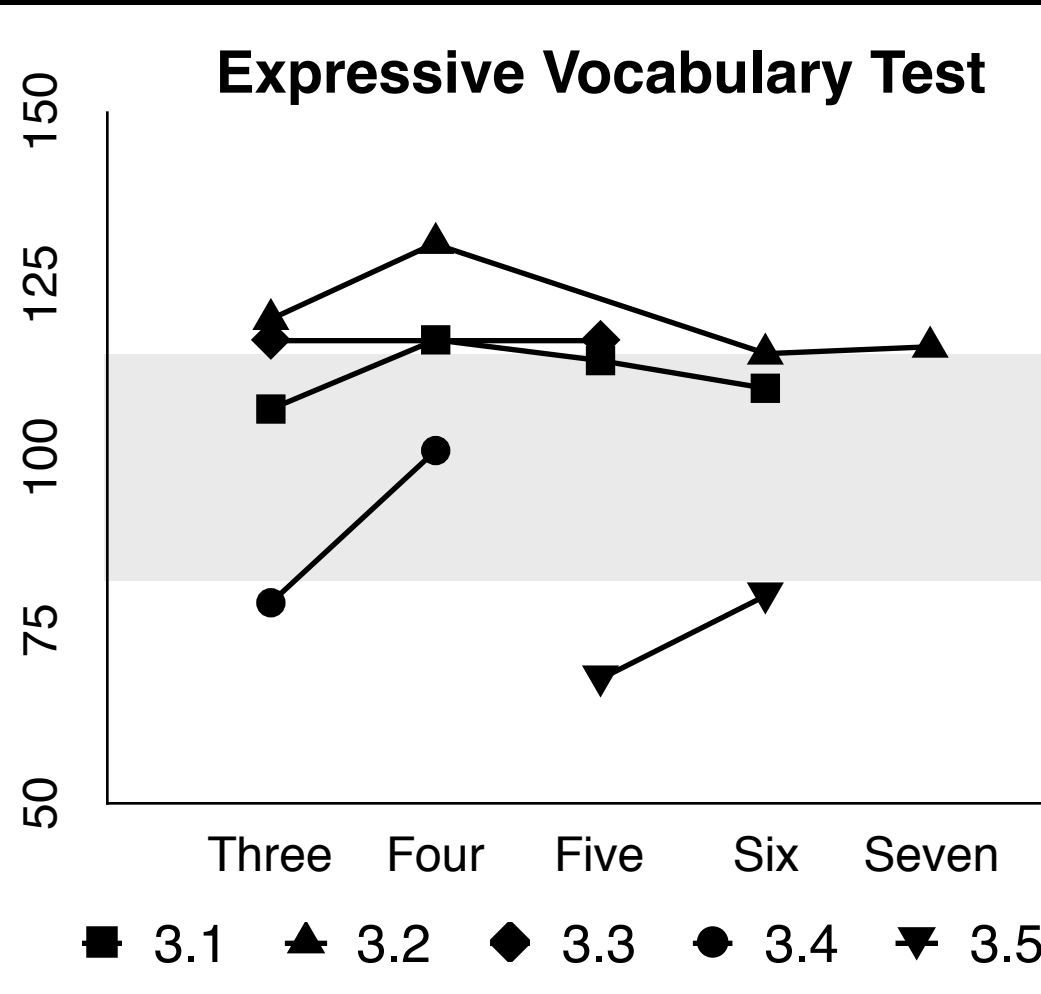
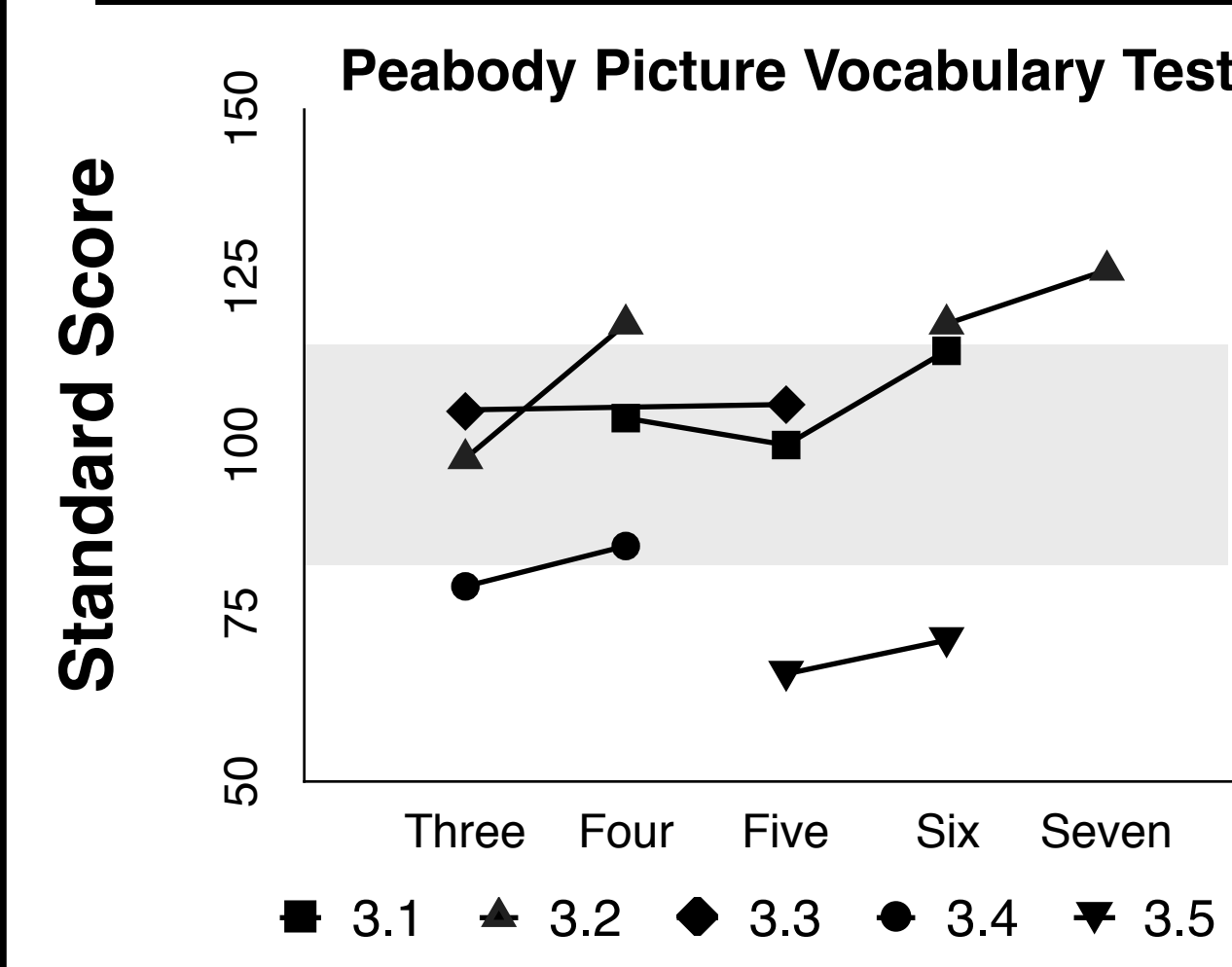
**Group 1: Intervention before 18 months, No additional impacting factors present.**



**Group 2: intervention before 18 months, presence of one or more impacting factor**



**Group 3: Intervention between 19-48 months, Presence of one or more impacting factor**



## Conclusions

The vocabulary and language outcomes of CAOS students can be characterized as belonging to one of three “profiles of potential” (Soman & Nevins, 2018).

**Keep Up** - achieving and sustaining age-appropriate LSL skills over time

**Catch Up** - developing LSL skills at an accelerated rate with the goal of achieving age-appropriate LSL skills

**Move Up** - continuing to develop LSL skills that are meaningful and functional, with a positive impact on quality of life

- Most children in Group 1, who varied by severity of hearing loss, demonstrated a Keep Up profile in vocabulary and language growth.

- Most children in Groups 2 and 3, demonstrated a Catch Up profile, indicating that LSL intervention in early childhood years can ameliorate impact of additional factors.

- A few children in Groups 2 and 3 demonstrated a Move Up profile and continued growth.

These profiles demonstrate that through intensive LSL intervention in early childhood years, age-appropriate spoken language acquisition is possible for a majority of children who are DHH, in spite of additional impacting factors. Research on academic achievement and social skills is ongoing.

## Acknowledgements

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