Vocabulary Acquisition and Predictors of Accelerated Vocabulary Growth

EHDI

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Today's Topics

- Describe NECAP
- Summarize sample characteristics
- Examine vocabulary growth over time
- Identify characteristics associated with better vocabulary outcomes
- Compare vocabulary development in children with unilateral vs. bilateral loss

Participants

- All families participated in NECAP
  - National Early Childhood Assessment Project
  - CDC-supported project examining language outcomes at the national level
    - Birth to 3
    - Children who are deaf or hard of hearing

States Represented in Sample

- Arizona
- California
- Florida
- Idaho
- Indiana
- Maine
- Minnesota
- New Mexico
- North Dakota
- Oregon
- South Dakota
- Texas
- Utah
- Wisconsin
- Wyoming

Participant Criteria

- Bilateral hearing loss
  - (all degrees -- mild to profound)
- English is written language of the home
- No other disabilities thought to affect speech or language development

Number of Participants/Assessments

- 837 children
- Assessed on 1 to 5 occasions
  - 436 children assessed once
  - 401 children assessed two or more times
- Total assessments = 1,499

Participant Characteristics

- Chronological age
  - Range = 9 to 36 months
  - Mean = 25.4 months
- Boys = 54%; Girls = 46%

Participant Characteristics: Adherence to EHDI Guidelines

Age at…	Median (mos)	Range (mos)
Identification	2	.05 to 31
Amplification	5	.5 to 36
Intervention	5	.25 to 35

*69% of children were identified by 3 months of age

*65% of children were in intervention by 6 months of age

*57% of children met EHDI 1-3-6

Participant Characteristics: Mother's Level of Education

Highest degree completed	% of primary caregivers
Less than HS	9%
High school diploma	37%
Vocational or Associates	19%
Bachelor's degree	25%
Graduate degree	10%

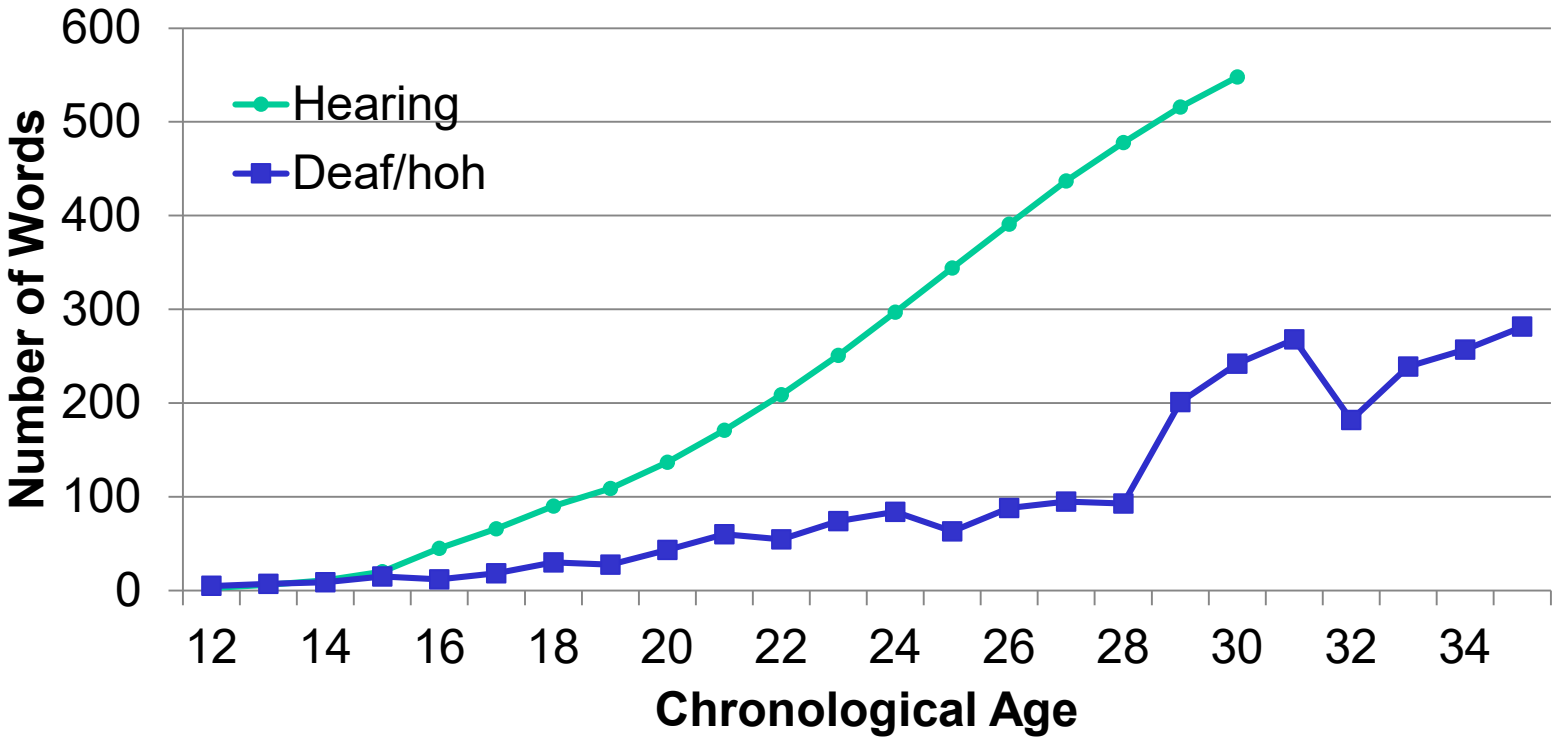
Participant Characteristics: Communication Mode of Family

Communication mode used with child by family	% of primary caregivers
Primarily spoken language	71%
Spoken only	29%
Very occasional sign used	42%
Spoken + sign language	24%
Sign only	5%

MacArthur-Bates Communicative Development Inventories

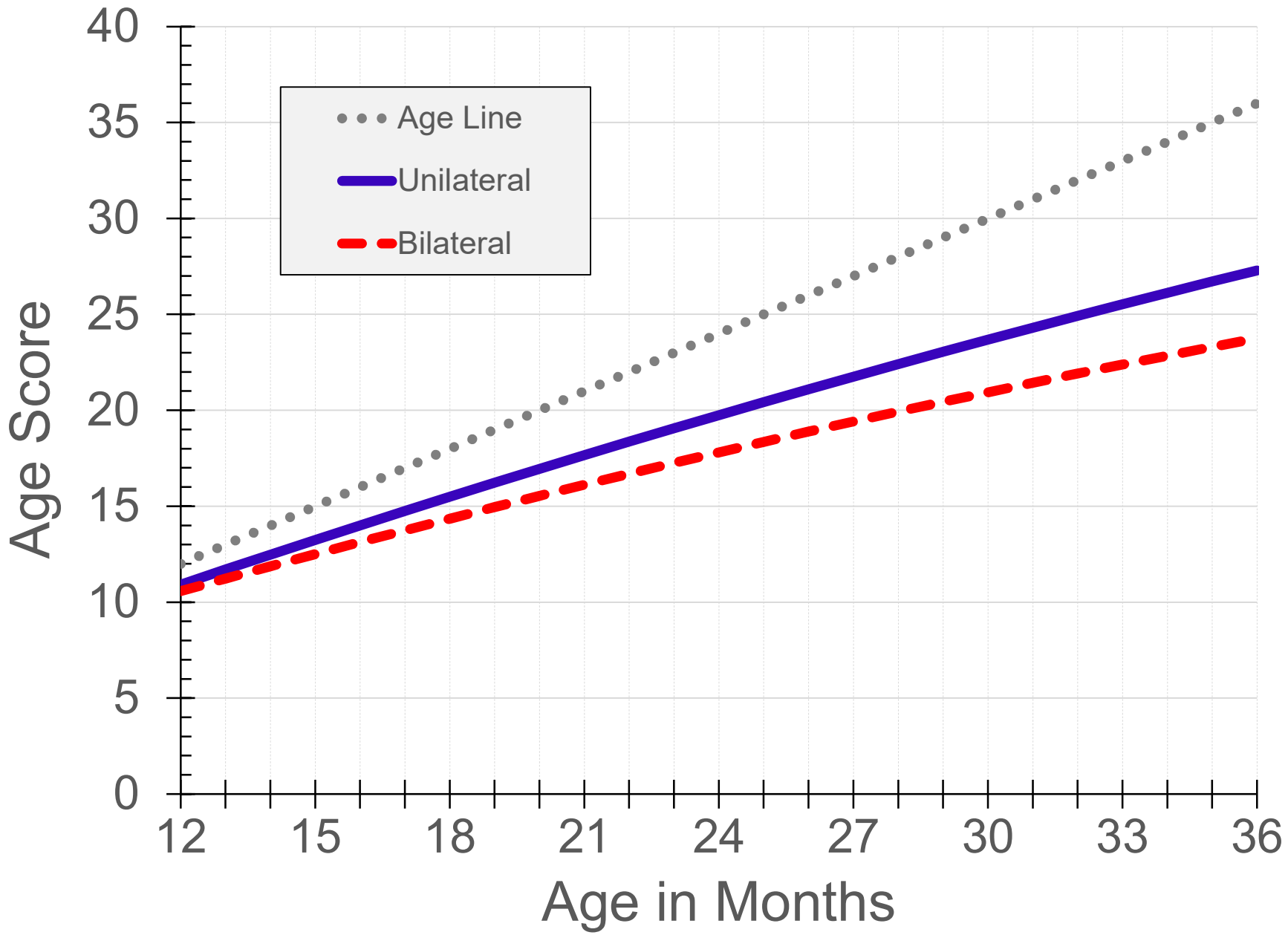
- Assesses expressive spoken and sign vocabulary
- Parent-report instrument
- Age score assigned based on number of words child produces in spoken or sign language

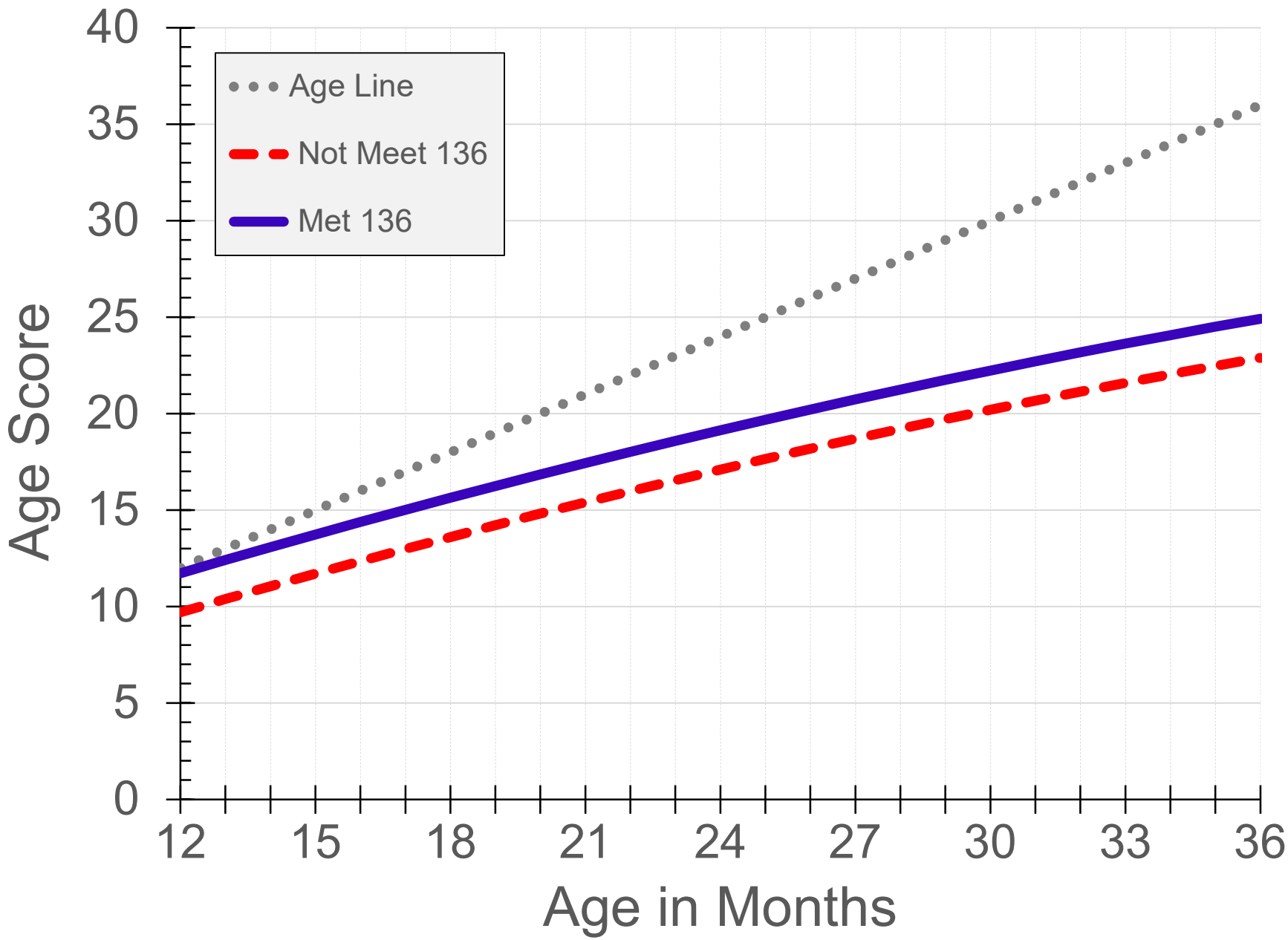
MacArthur-Bates CDI: Expressive Vocabulary – 50th Percentile

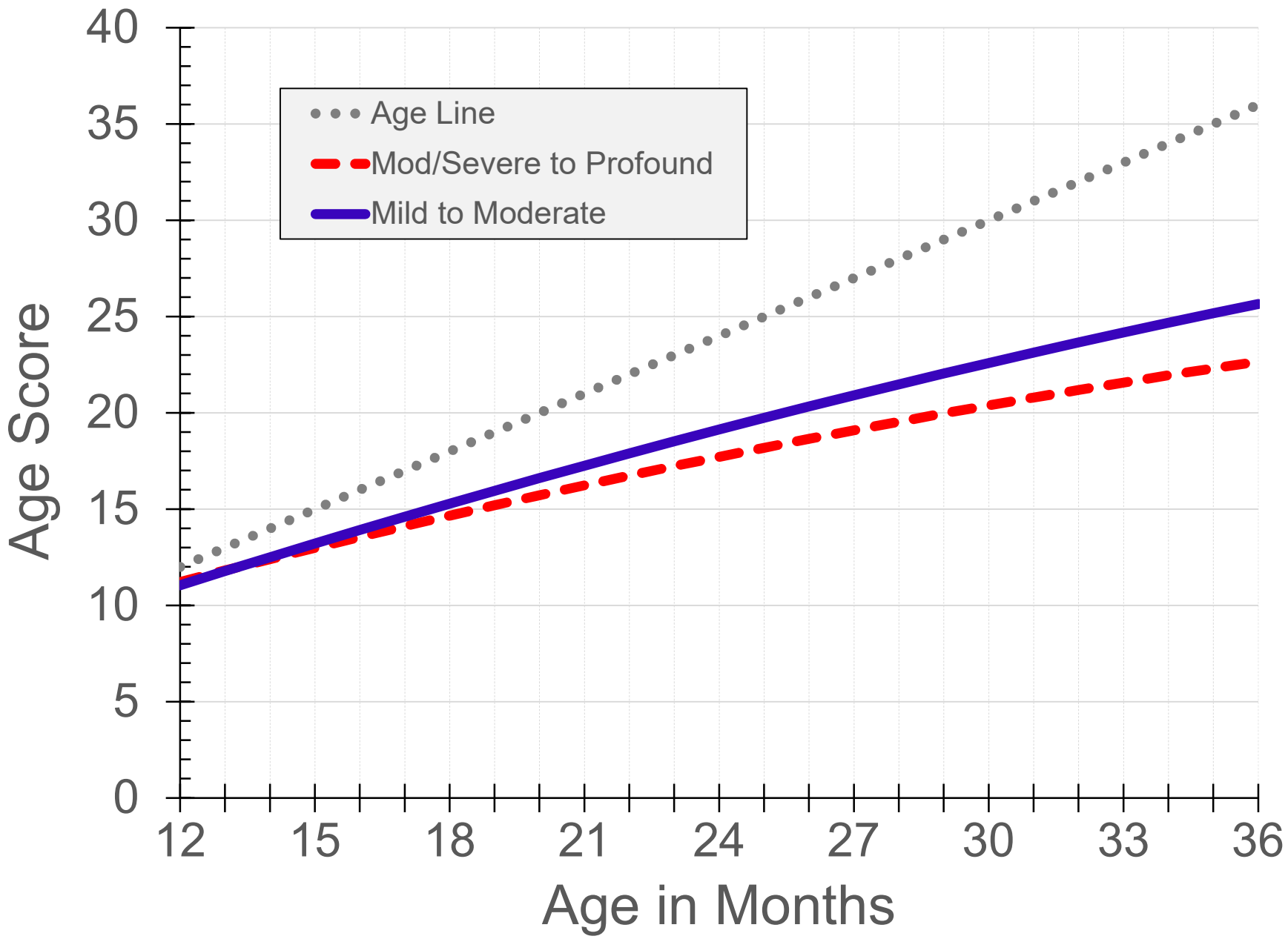


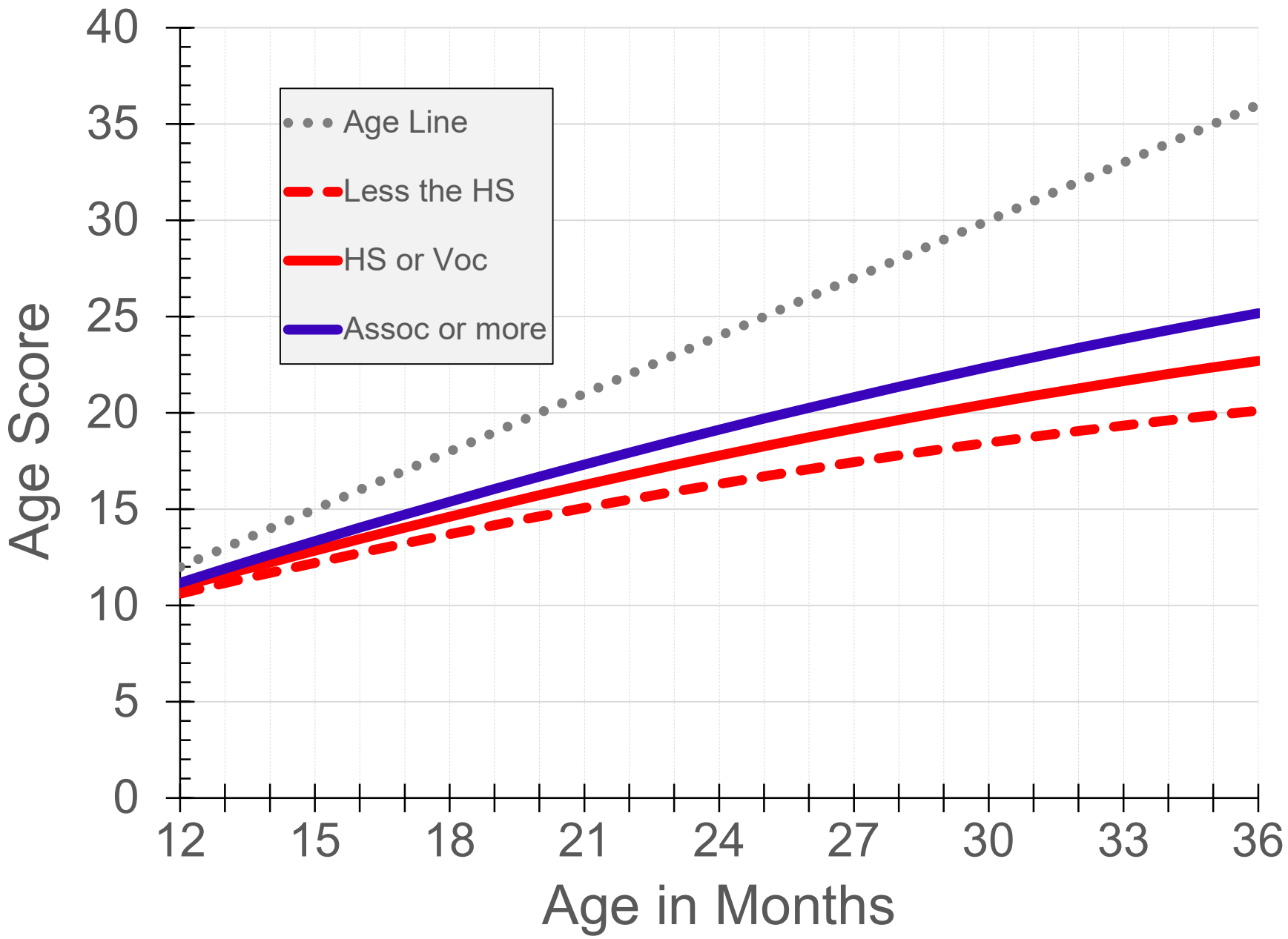
Participants with Unilateral Loss

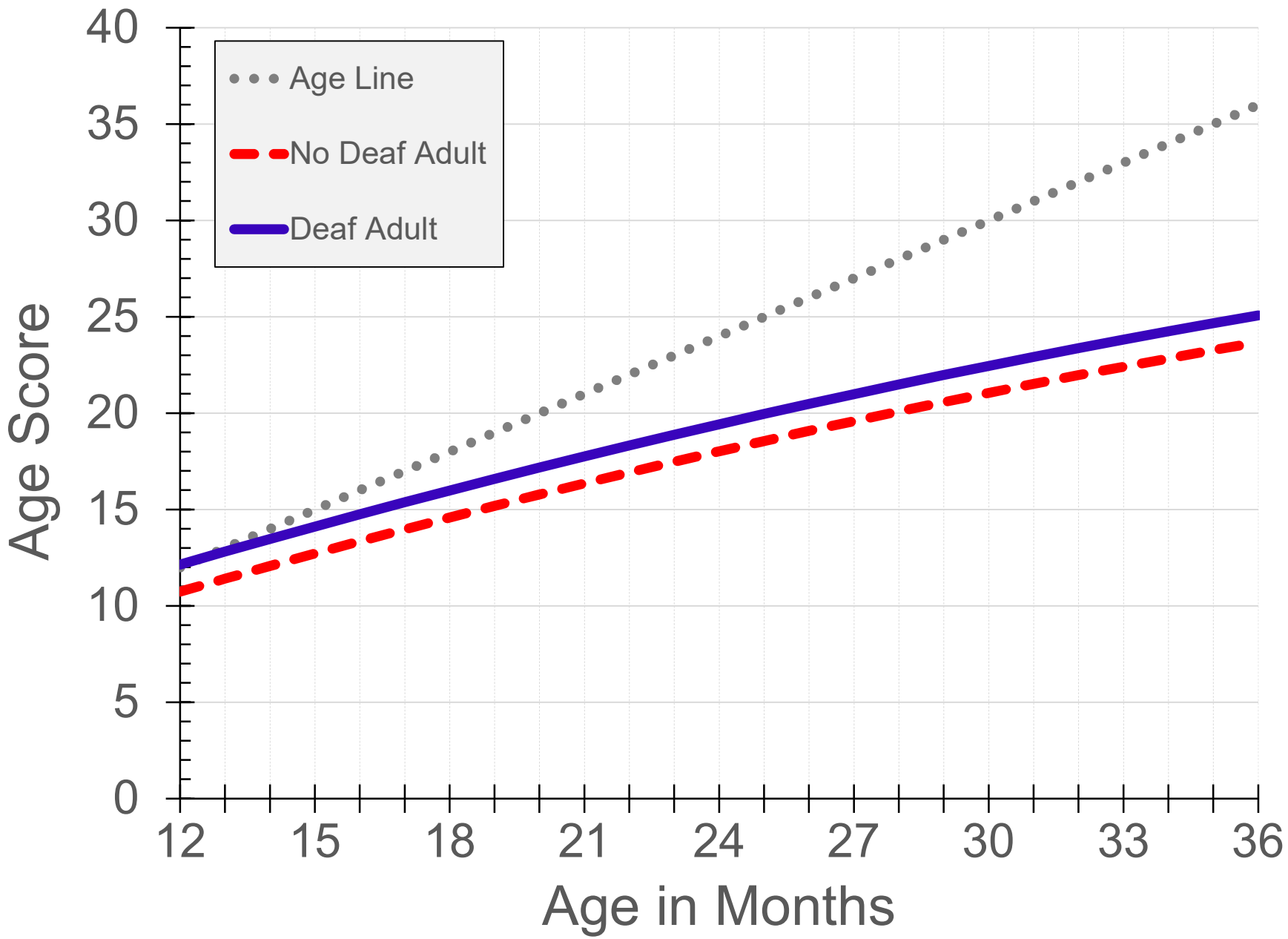
- 228 children
- Assessed on 1 to 5 occasions
- Total assessments = 409


Age Line
Unilateral
Bilateral
Age Score
40
35
30
25
20
15
10
5
0
12
15
18
21
24
27
30
33
36
Age in Months


Age Line
Not Meet 136
Met 136
Age Score
40
35
30
25
20
15
10
5
0
12
15
18
21
24
27
30
33
36
Age in Months


Age Line
Mod/Severe to Profound
Mild to Moderate
Age Score
40
35
30
25
20
15
10
5
0
12
15
18
21
24
27
30
33
36
Age in Months


Age Score
40
35
30
25
20
15
10
5
0
Age Line
Less the HS
HS or Voc
Assoc or more
12
15
18
21
24
27
30
33
36
Age in Months


Age Line
No Deaf Adult
Deaf Adult
Age Score
0
5
10
15
20
25
30
35
40
12
15
18
21
24
27
30
33
36
Age in Months

Conclusions

- As language demands increase over time, gap between CA and Language Age widens
- Divergence from age expectations starts at:
  - 25 mos for general, surface structure expressive language
  - 20 mos for cognitive-linguistic skills
  - 16 mos for Expressive Vocabulary

Conclusions

- By 35 months of age the gap between language age and chronological age is:
  - 7 mos for general, surface structure expressive language
  - 8 mos for cognitive-linguistic skills
  - 12 mos for expressive vocabulary

Conclusions

- Beginning at 19 mos, hearing children produce 35 to 40 new words per month
- Beginning at 19 months, children who are deaf or hard of hearing average 15 new expressive words per month
- It is important for parents and interventionists to keep typical development in mind when assessing progress and setting goals

Predictors of Better Language Outcomes: Multiple Regression

- Significant predictors of expressive vocabulary (based on most recent assessment):
  - Meeting 1-3-6 EHDI guidelines
  - Parent who is deaf or hard of hearing
  - Lesser degrees of hearing loss
  - Higher mother's level of education
  - Gap between CA and Language Age is widening over time