Bilingualism Effects in Deaf and Hearing Bimodal Bilinguals

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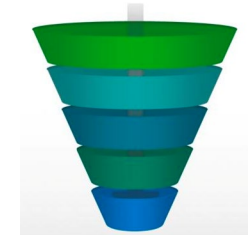
Advantages of Bilingualism

- ★ More opportunities to interact with different people
- ★ Multiple options for obtaining information
- ★ Ability to think about language using language (meta-linguistic skills)
- ★ Cognitive enhancements

https://magazine.uconn.edu/2018/02/28/case-bilingual-deaf-children/

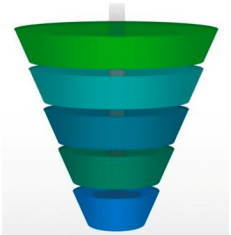
Language A



Jayden

Language A

Language B



Amara

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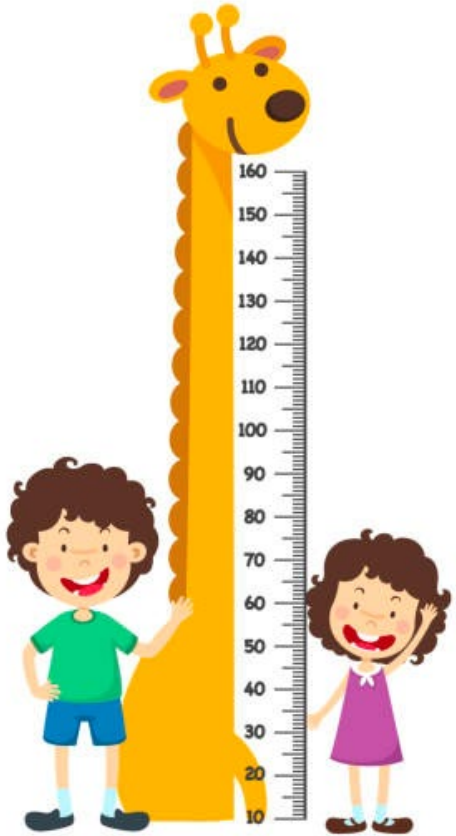


https://www.istockphoto.com/illustrations/child-measuring-height

https://www.freepik.com/free-photos-vectors/multicultural-kids

https://magazine.uconn.edu/2018/02/28/case-bilingual-deaf-children/

https://earlylearningnation.com/2019/12/signs-of-progress-what-families-of-deaf-children-should-know/

Participants

Deaf

ID	Sex	Age Range
D1	M	2;10-5;11
D2	M	5;06-5;10
D3	F	5;03-5;11
D4	F	1;08-2;10
D5	M	4;06-5;11
D6	M	2;04-4;08

Hearing

ID	Sex	Age Range
H1	M	1;07-5;07
H2	F	2;03-5;04
H3	M	2;00-3;04
H4	M	3;00-5;11
H5	M	1;11-5;00
H6	M	2;00-3;05

https://www.childrensmn.org/educationmaterials/parents/article/9266/cochlear-implants/; https://stock.adobe.com/search?k=cochlear; https://twitter.com/BabySigns

Language Sample Analysis

- ❑ Play sessions recorded
- ❑ English transcribed
- ❑ Run through CLAN KidEval utility
- ❑ KidEval provides numerical language scores

CHILDES

Child Language Data Exchange System

https://childes.talkbank.org/

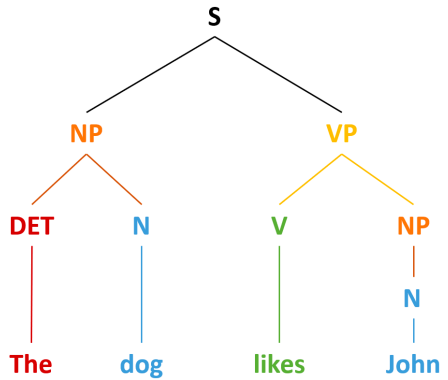
Measures

VocD
Vocabulary Diversity

Vocabulary diversity

MLUm
Mean length of utterance in morphemes

Syntactic complexity



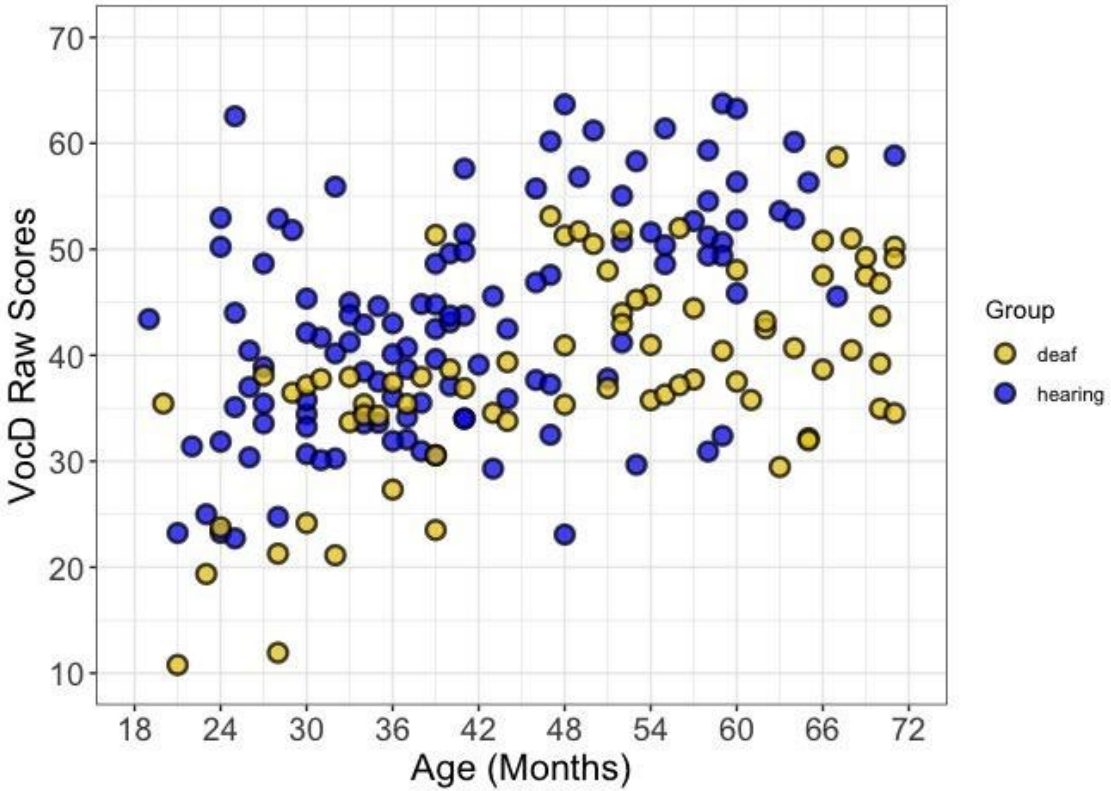
IPSyn
Index of Productive Syntax

Syntactic diversity

S1	Two-word combination	
S2	Subject–verb sequence	S1
S3	Verb–object sequence	S1
S4	Subject–verb–object sequence	S2 & S3
S5	Conjunction (any)	
S6	Sentence with two VPs	

Results: VocD

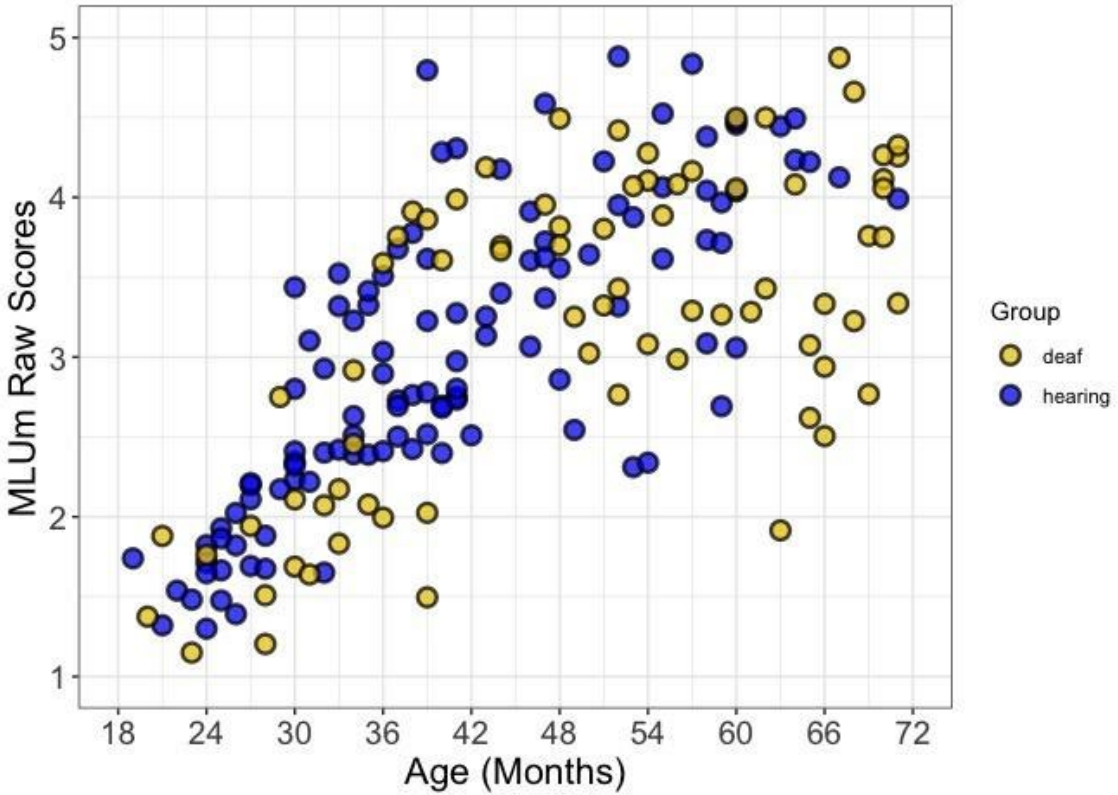
All participants show higher scores as their age increases, and this does not differ between the groups.



Linear Mixed Effects
Age, p <0.001
Group, ns.
Age x group, ns.

Results: MLUm

All participants show higher scores as their age increases, and this does not differ between the groups.

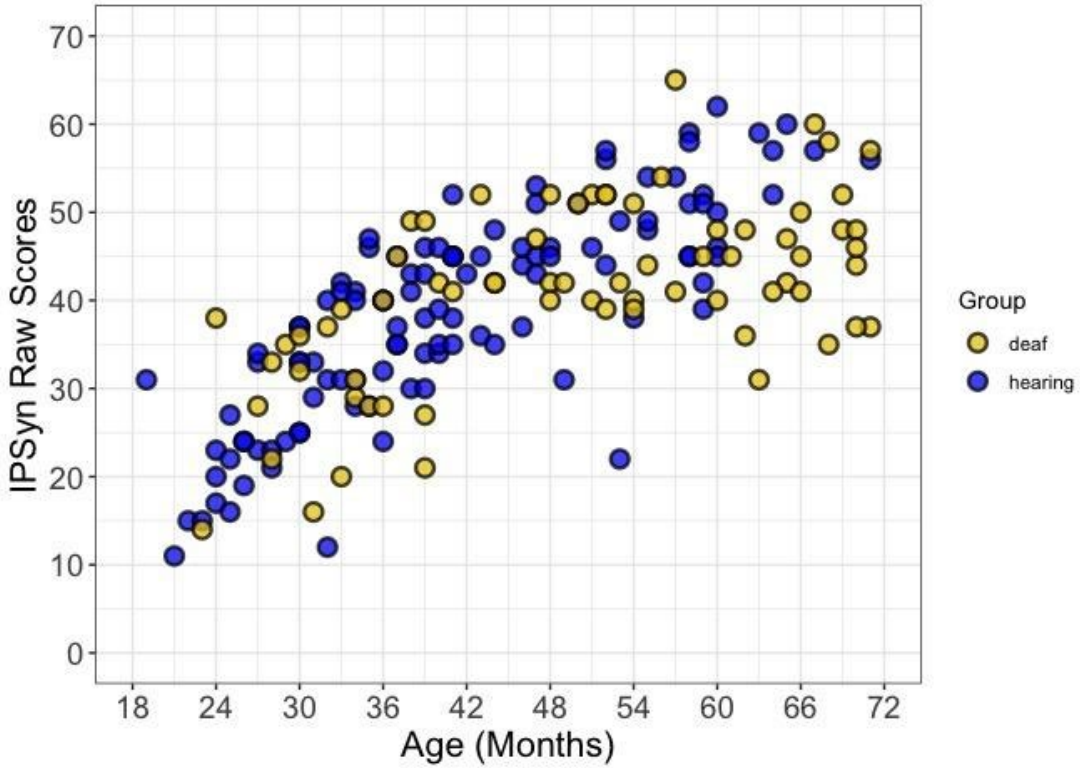


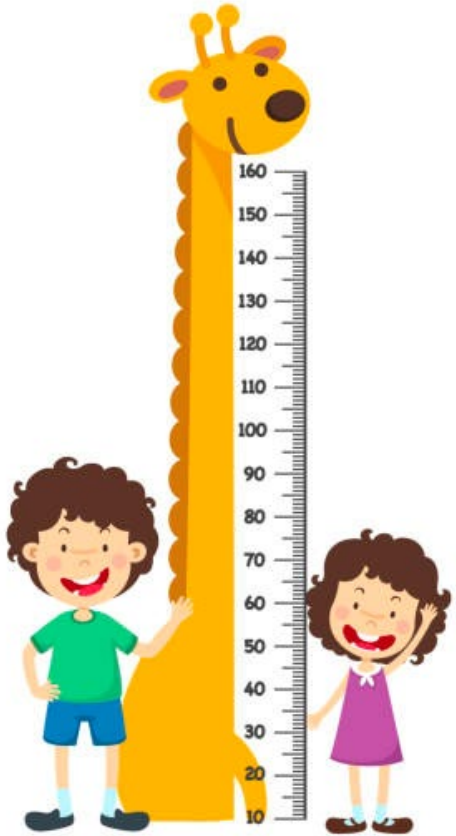
Linear Mixed Effects
Age, p <0.001
Group, ns.
Age x group, ns.

Results: IPSyn

All participants show higher scores as their age increases. The groups are different overall, and the hearing children's scores increase at a faster rate than the deaf children's scores..

<u>Linear Mixed Effects</u>
Age, p <0.001
Group, p <0.001
Age x group, p <0.001



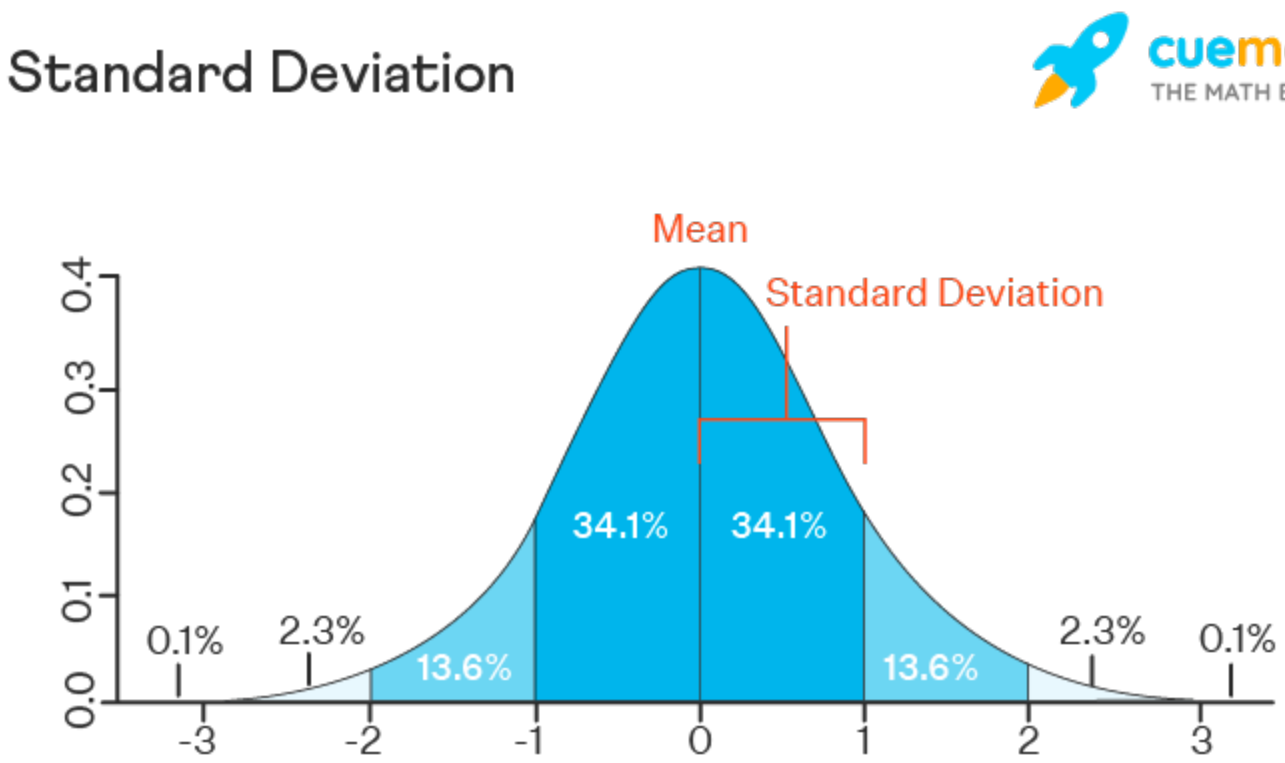


https://www.istockphoto.com/illustrations/child-measuring-height

Factors affecting language development in bilingual children

- Age of exposure to each language (for deaf children, this relates to the age of CI activation)
- Amount of input in each language over time
- Child's place in family structure (siblings, birth order, etc.)
- Number of people using each language with the child
- Attitudes of family and society toward bilingualism

Z-scores



https://www.cuemath.com/data/standard-deviation/

Comparison to Monolinguals:
% of scores < -1.5 SD from monolingual mean*

VocD

Vocabulary diversity

Deaf	Hearing
30%	7%

MLUm

Syntactic complexity

Deaf	Hearing
16%	6%

IPSyn

Syntactic diversity

Deaf	Hearing
14%	8%

*For monolinguals, about 6-7% of scores are expected to fall 1.5 SD below the mean

Comparison to Monolinguals:
% of scores < -1.5 SD from monolingual mean*

VocD

Vocabulary diversity

Deaf	Hearing
30%	7%

Deaf (Hearing Age)
9%

MLUm

Syntactic complexity

Deaf	Hearing
16%	6%

Deaf (Hearing Age)
1.5%

IPSyn

Syntactic diversity

Deaf	Hearing
14%	8%

Deaf (Hearing Age)
6%

*For monolinguals, about 6-7% of scores are expected to fall 1.5 SD below the mean

Implications

- First step in establishing expectations for bimodal bilinguals
- Children learning a sign language and a spoken language need to be considered bilingual!
- Typical bilingual differences in pace of development in one language are to be expected.

Benefits of early exposure to an accessible first language (ASL) can be greater than risks of an extended period without appropriate language exposure/ development❗

Ongoing research

- It is important to assess bilinguals in BOTH of their languages … use ASL assessments as well as English!

- Crucial to study children in hearing families who are learning to sign with their child (Family ASL project currently in progress)

Conclusions

- ★ Even typically developing hearing bilinguals may score significantly below monolinguals when only one language is tested

- ★ Look at DHH children who use a sign language and a spoken language as bilinguals
  - ○ Adjust expectations for pace of development
  - ○ Test both languages!

- ★ Celebrate the advantages of using two languages!

https://creazilla.com/sections/4-clipart/tags/1747-celebration

Acknowledgements

We are grateful to the participants in this study and their families for their longstanding involvement and support, as well as the research assistants who helped collect the data.

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http://www.babies-and-sign-language.com/baby-sign-for-thank-you.html

Questions/Comments?

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