

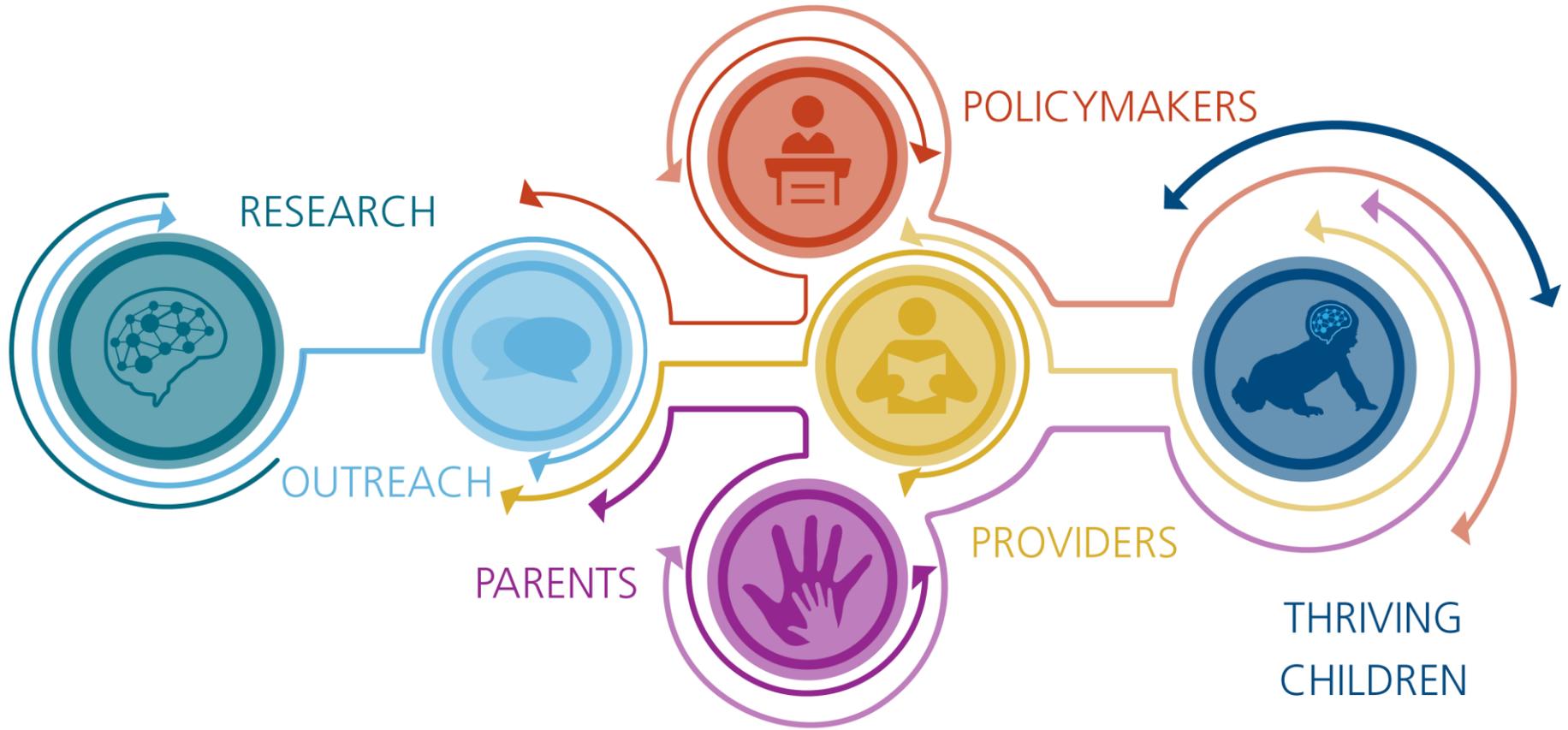
Supporting Language Learning, Multilingualism, and Early Literacy

Amelia Bachleda, Ph.D.

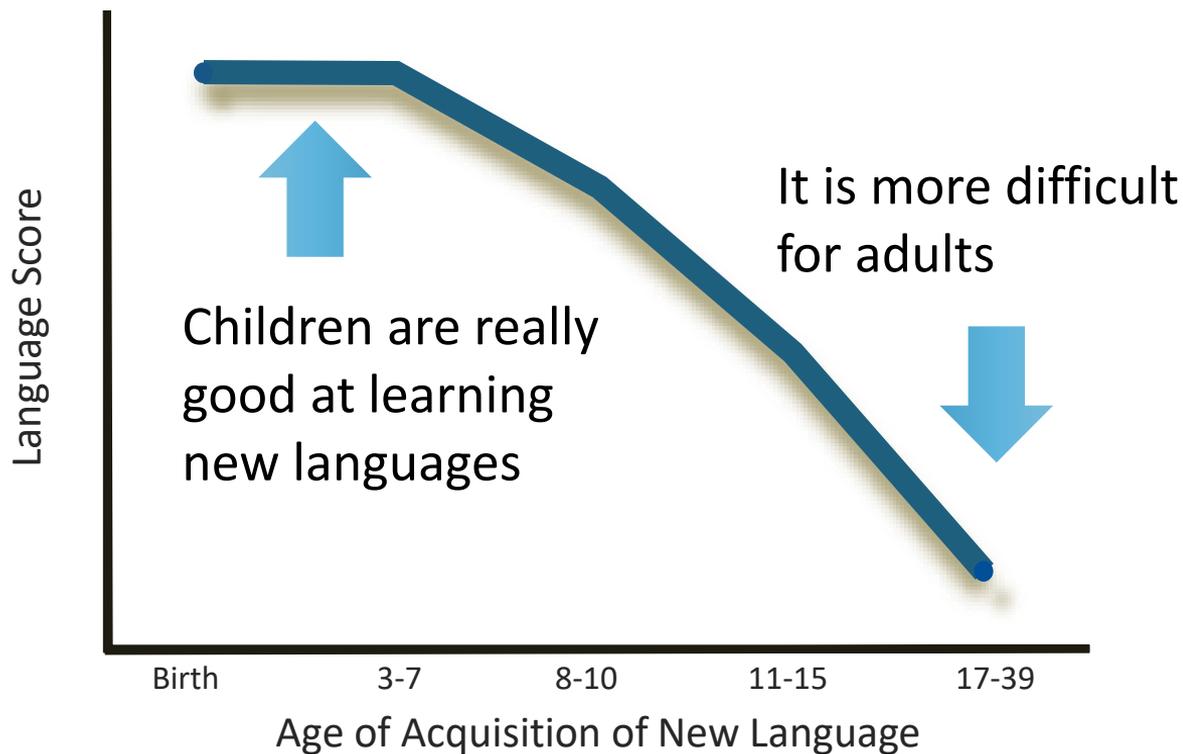
Director of Outreach and Education



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LEARNING
& BRAIN
SCIENCES



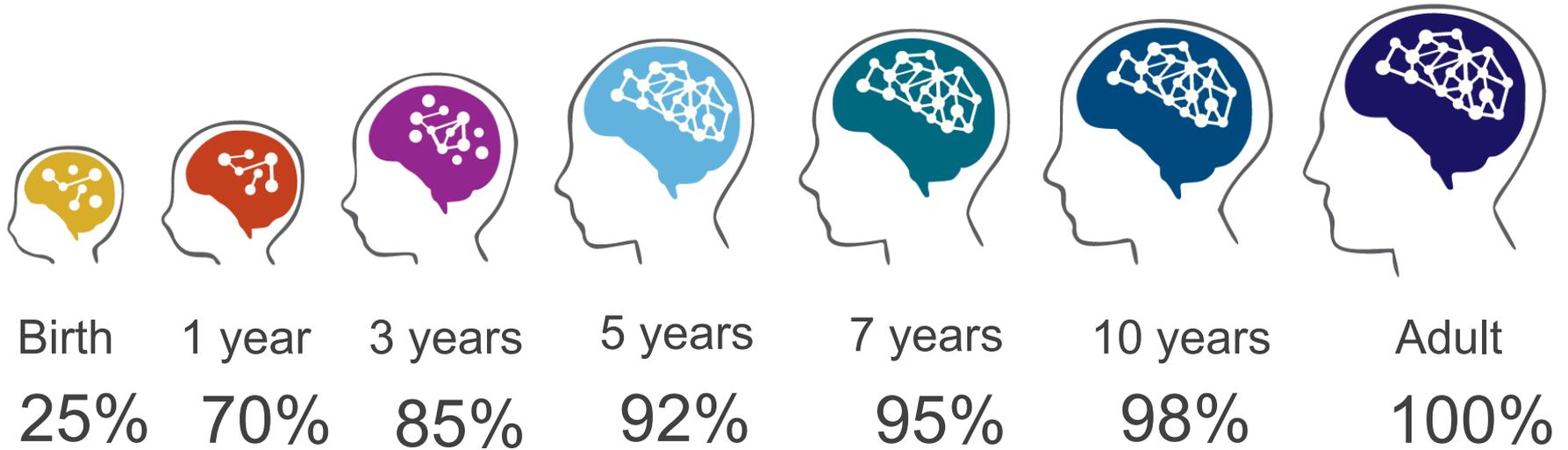
The Genius of Children



We Grow Our Brains



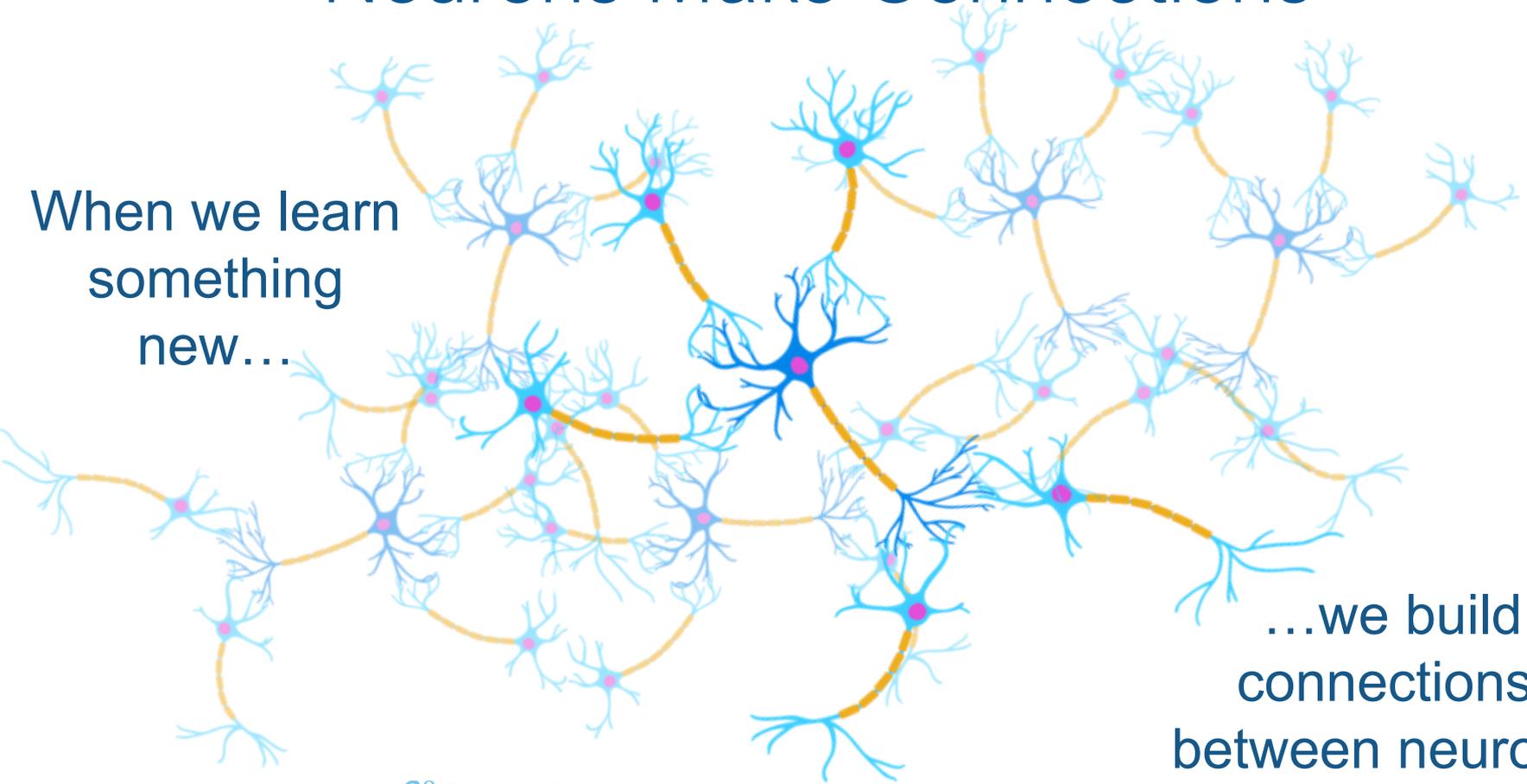
Early Brain Growth

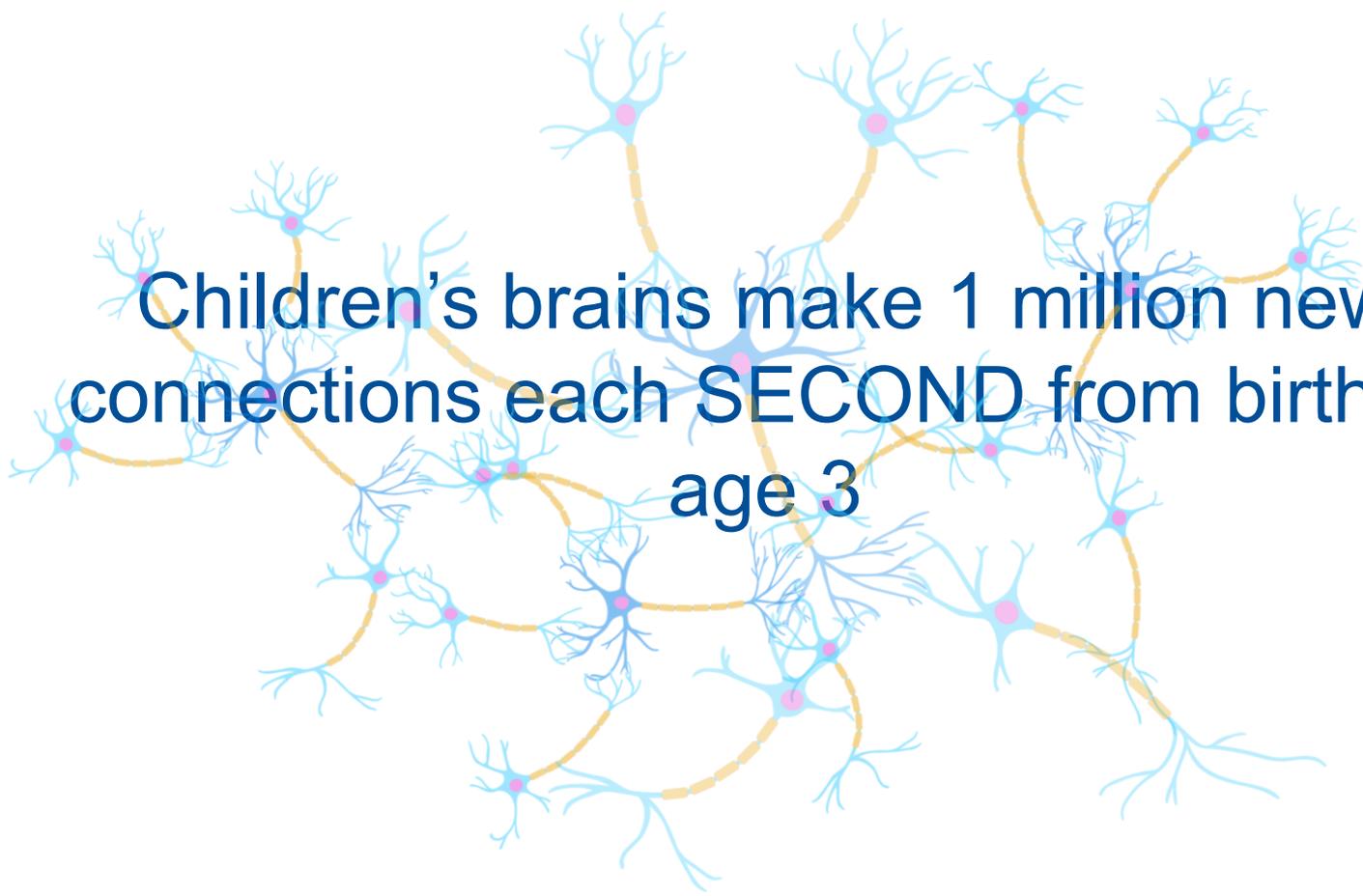


Neurons Make Connections

When we learn
something
new...

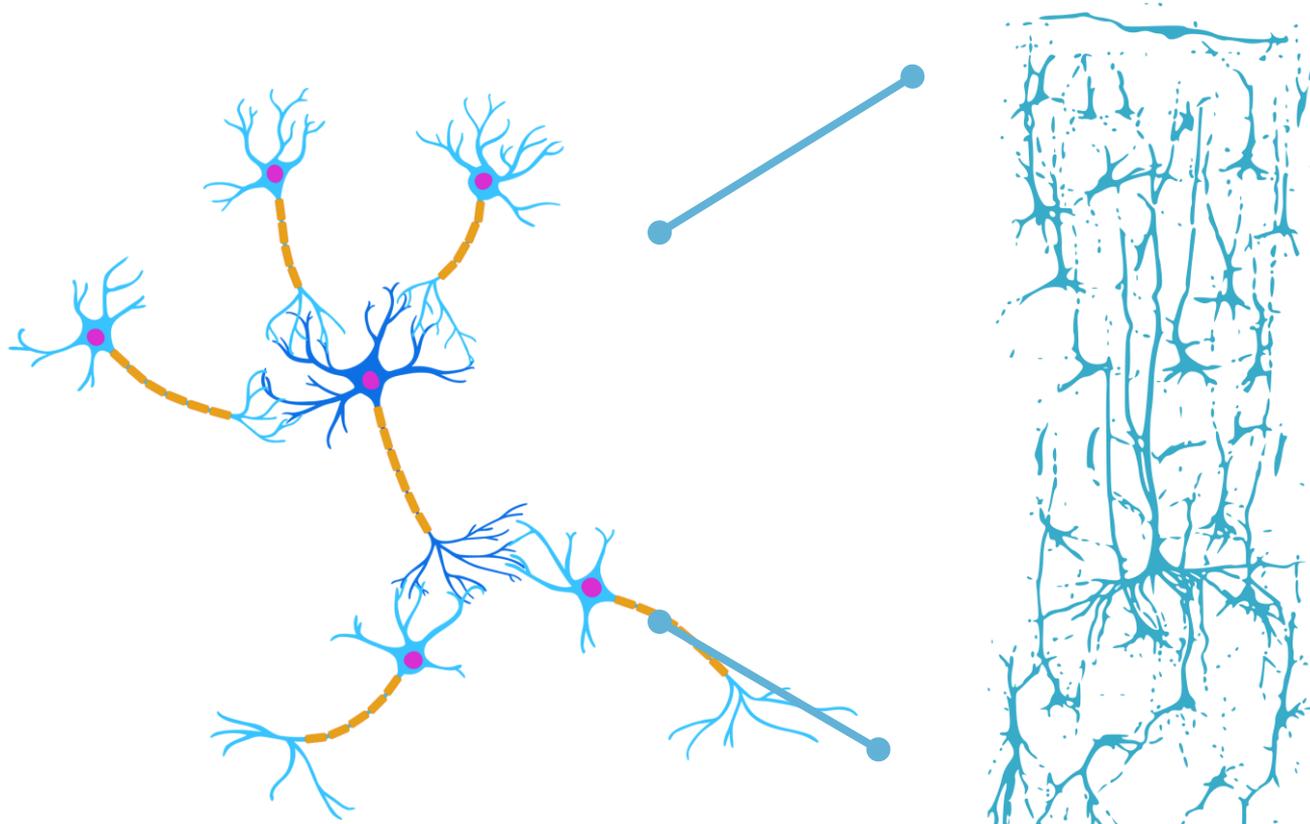
...we build
connections
between neurons





Children's brains make 1 million new connections each SECOND from birth to age 3

Experiences Drive Connections

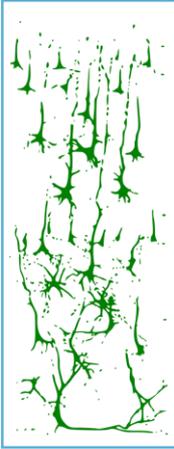


Experiences Drive Connections

Newborn



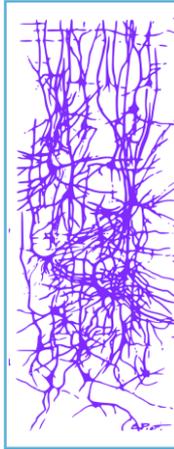
1 Month



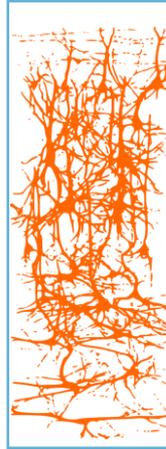
3 Months



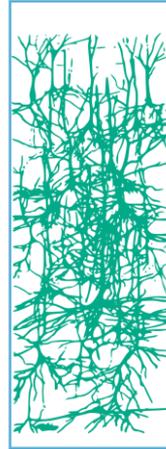
6 Months



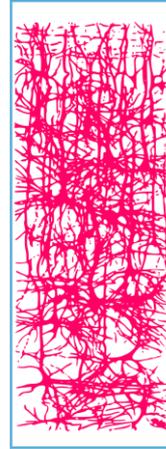
1 Year



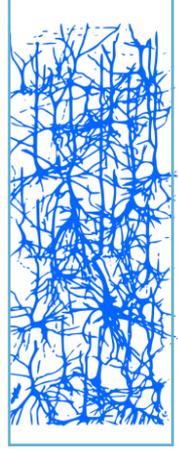
2 Years



4 Years



6 Years



A Thriving Brain



Blooming



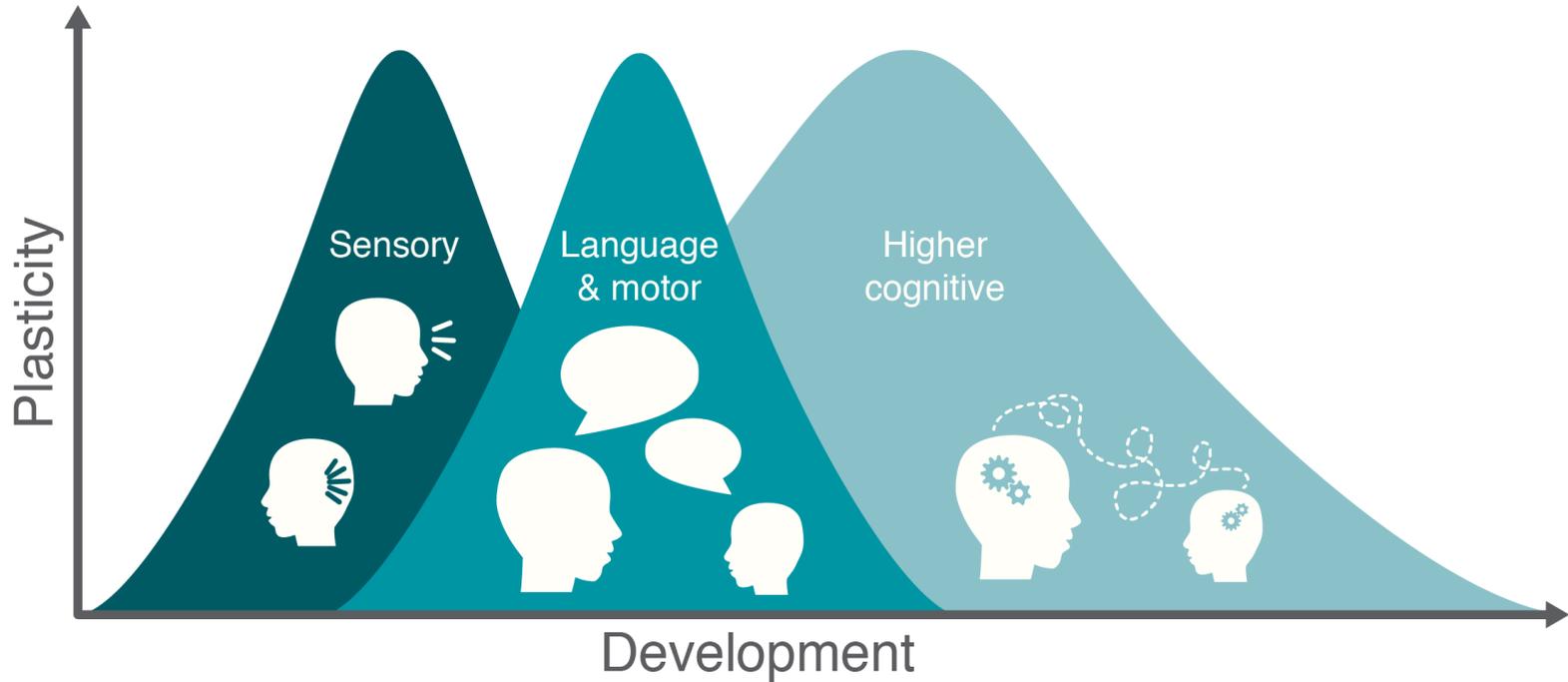
Pruning



Thriving



The Brain Is Primed to Learn Different Skills at Different Times



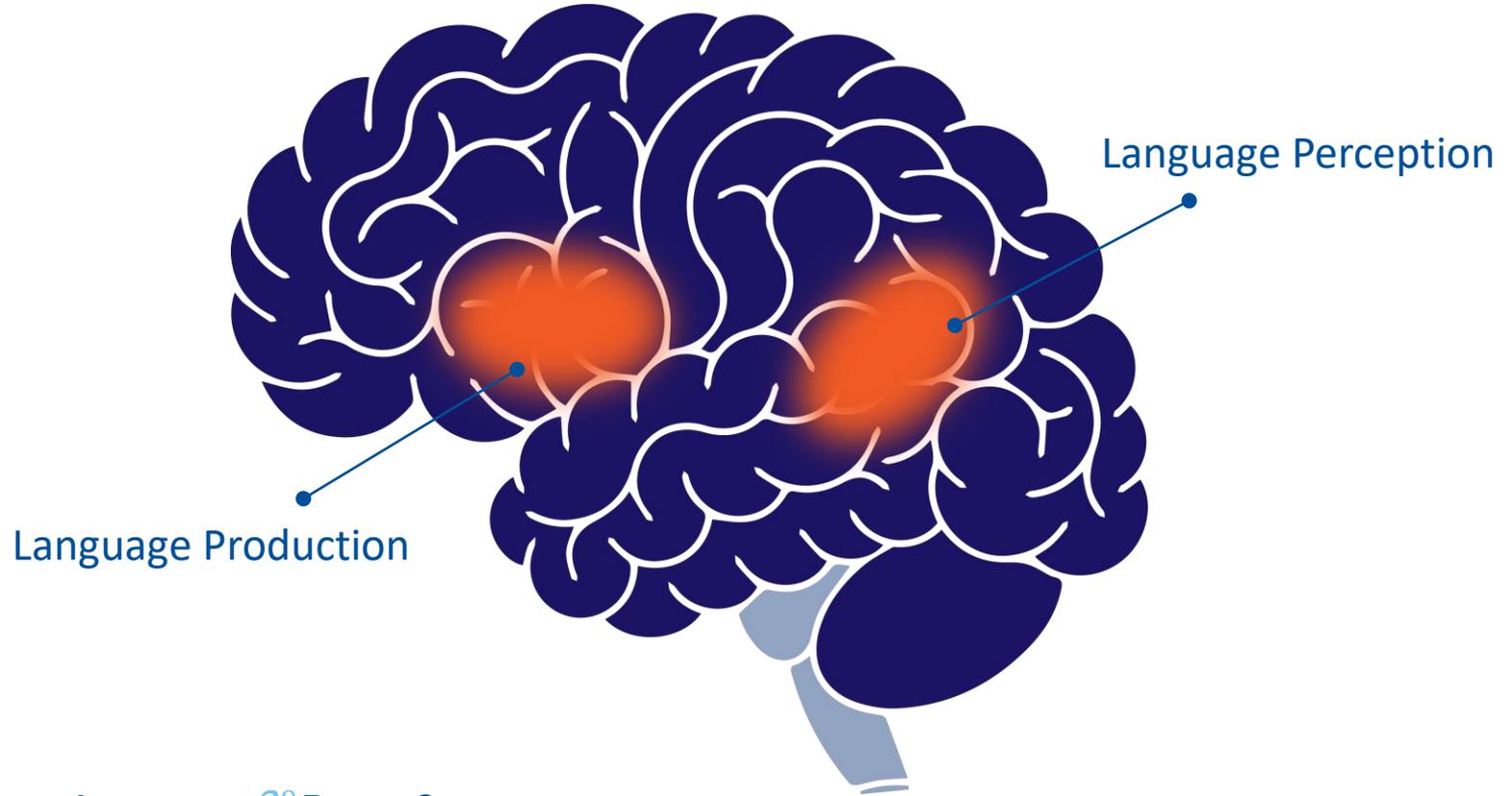
مرحبا حبيبتي

Hello baby

Newborn
Infants
recognize their
birth parent's
language(s)



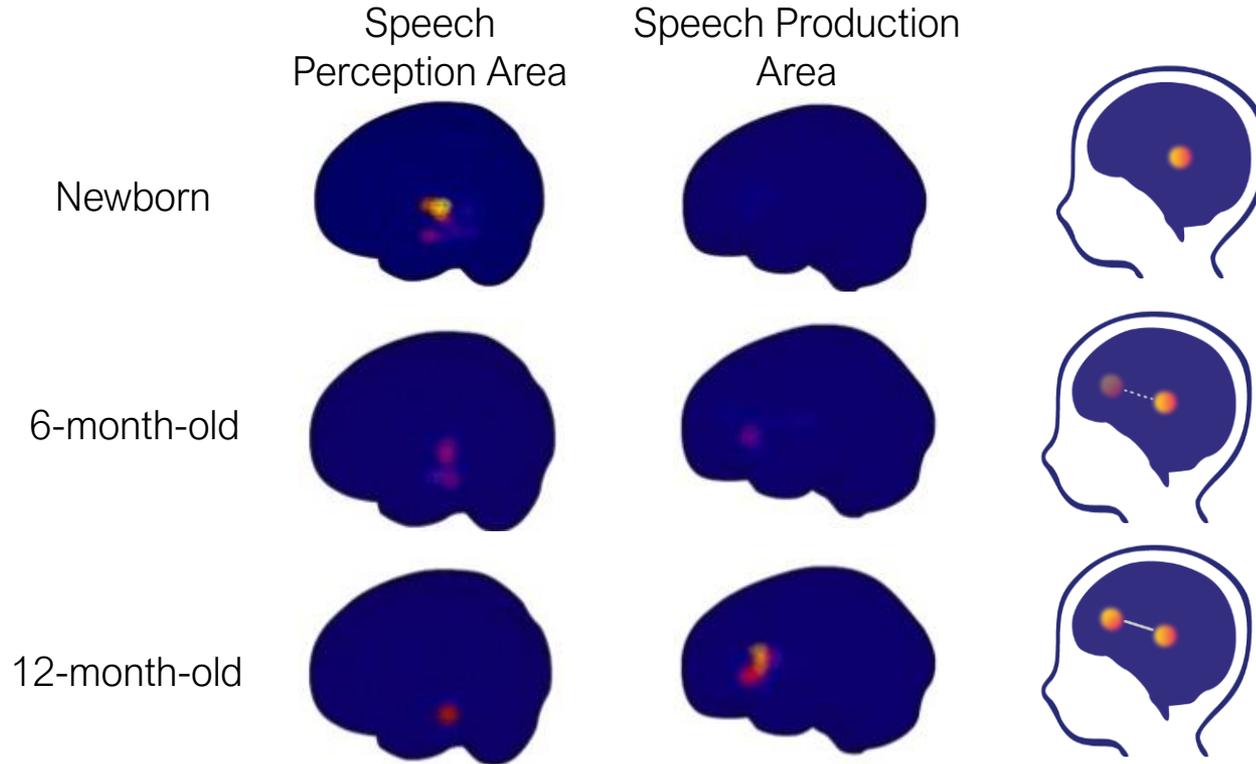
Language Regions



Looking Inside the Brain (MEG)

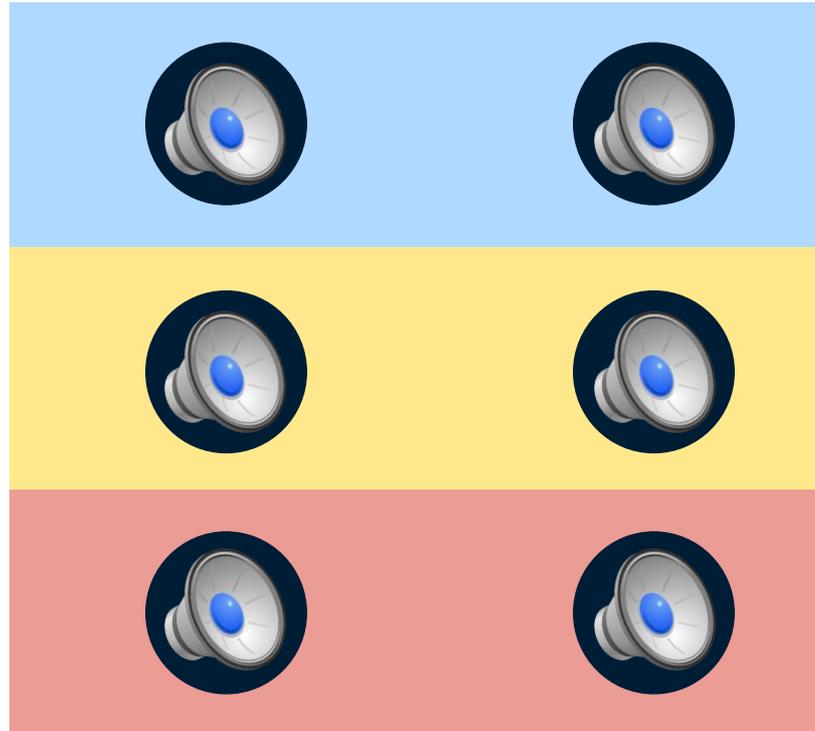


Building a Coordinated Brain





Same or Different?



Same or Different?

English



Different

Spanish



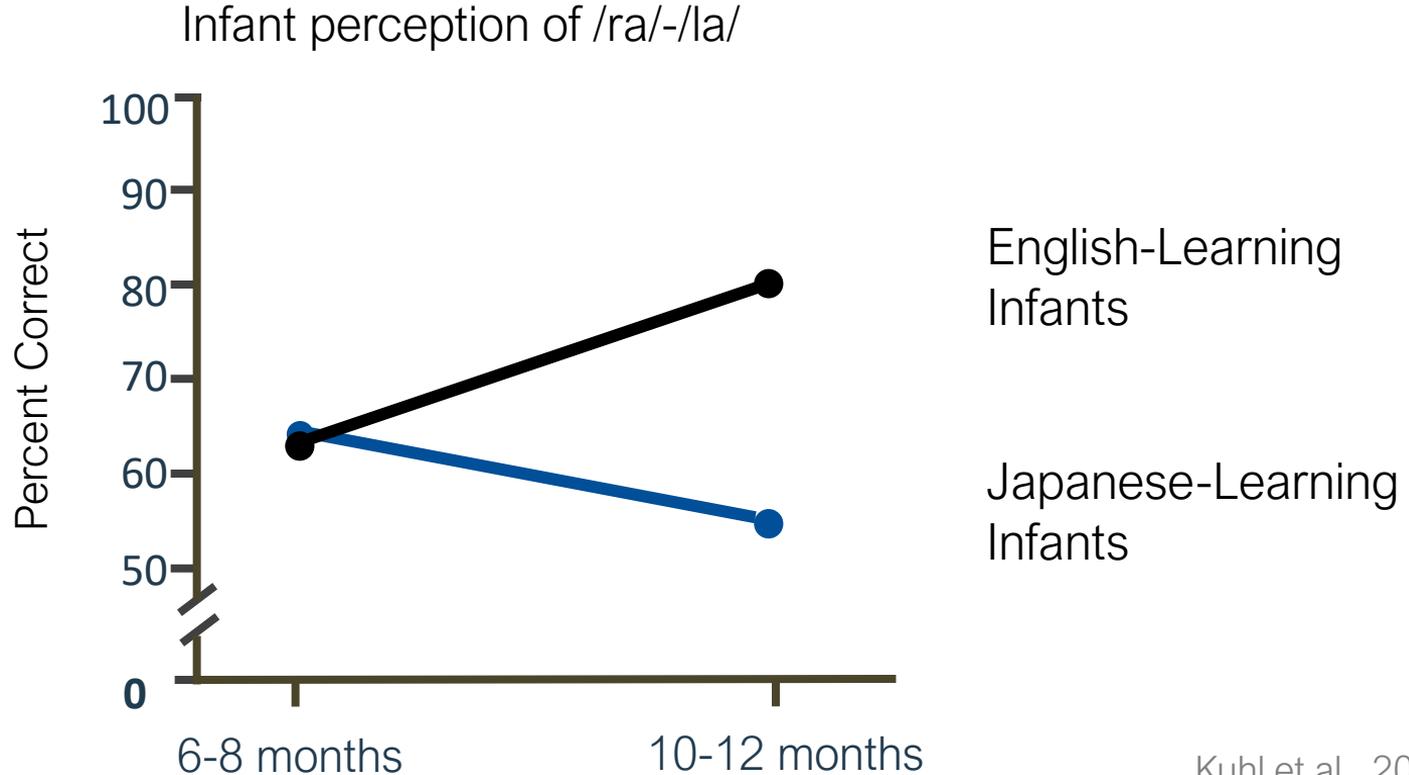
Different

Hindi



Different

Experience Shapes Language



Kuhl et al., 2006



Language Learning Begin Early!

- Babies start learning language before they are born.
- Listening to language before babies learn to talk helps build their brains that support language and early literacy skills.



Talking with Babies Builds Crucial Language and Literacy Skills



- Babies who are better at identifying language sounds:
- Know more words at 30 months
- Have higher reading readiness at age 5

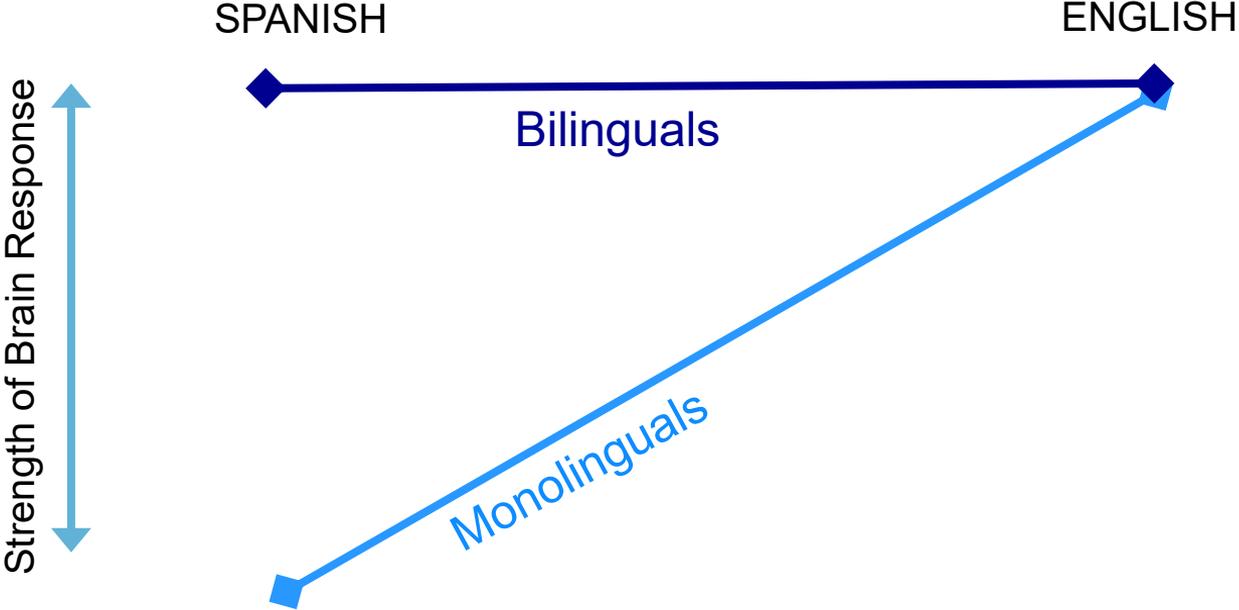
Learning Multiple Languages



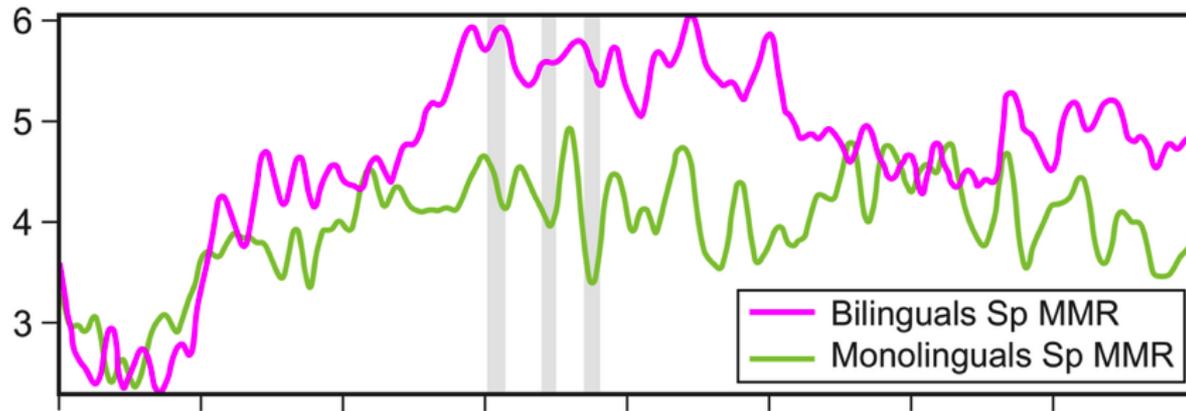
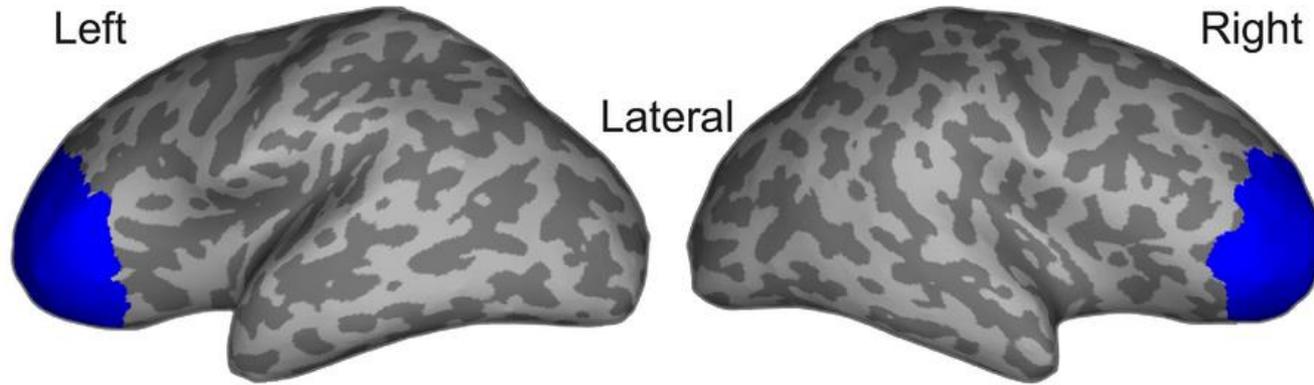


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Specializing Based on Experiences



Adapted from Ferjan Ramirez, 2016



Bilingual Environments Boost Cognitive Flexibility

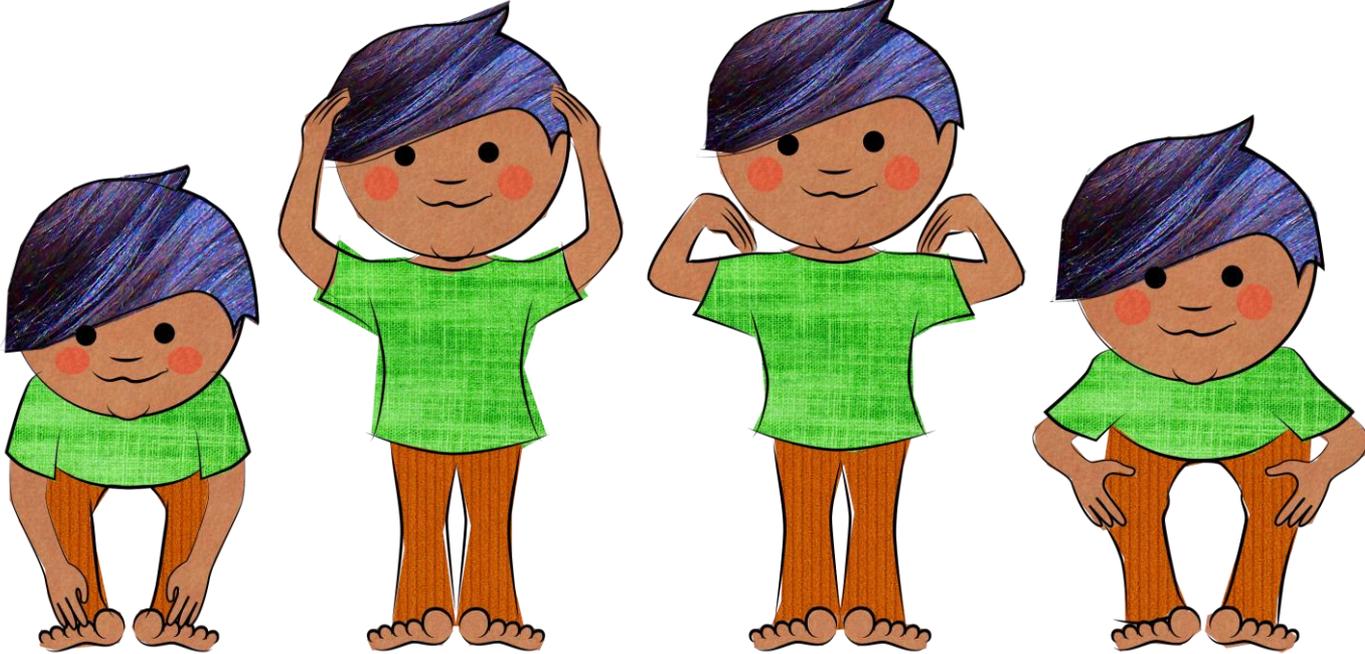


Head!

Toes!

Knees!

Shoulders!

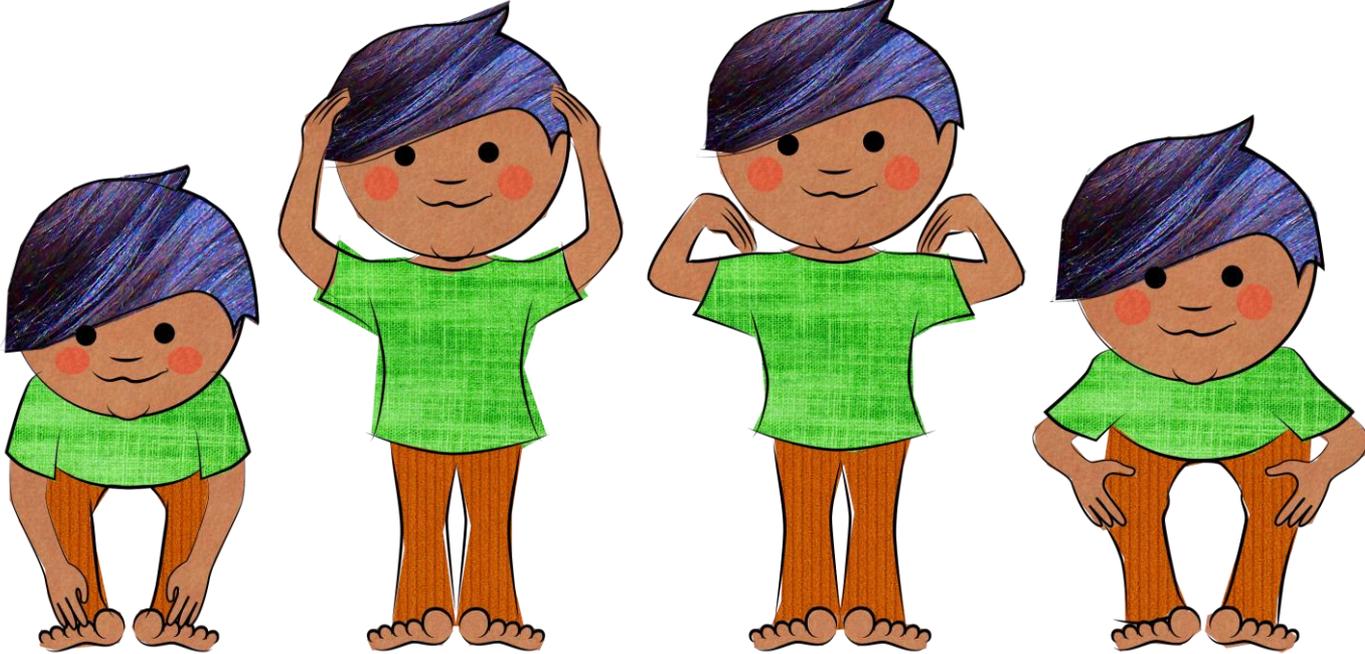


Head!

Toes!

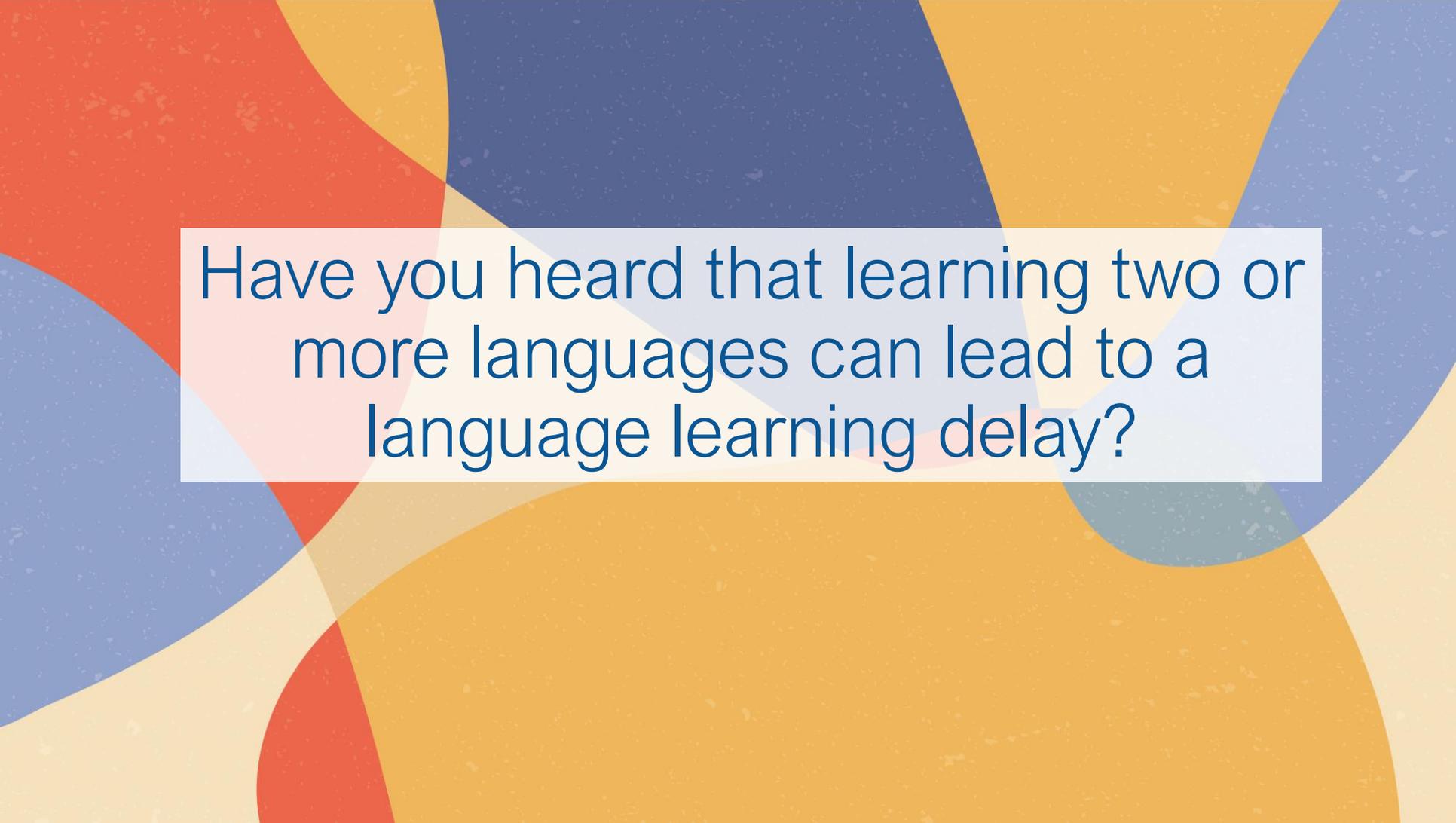
Knees!

Shoulders!



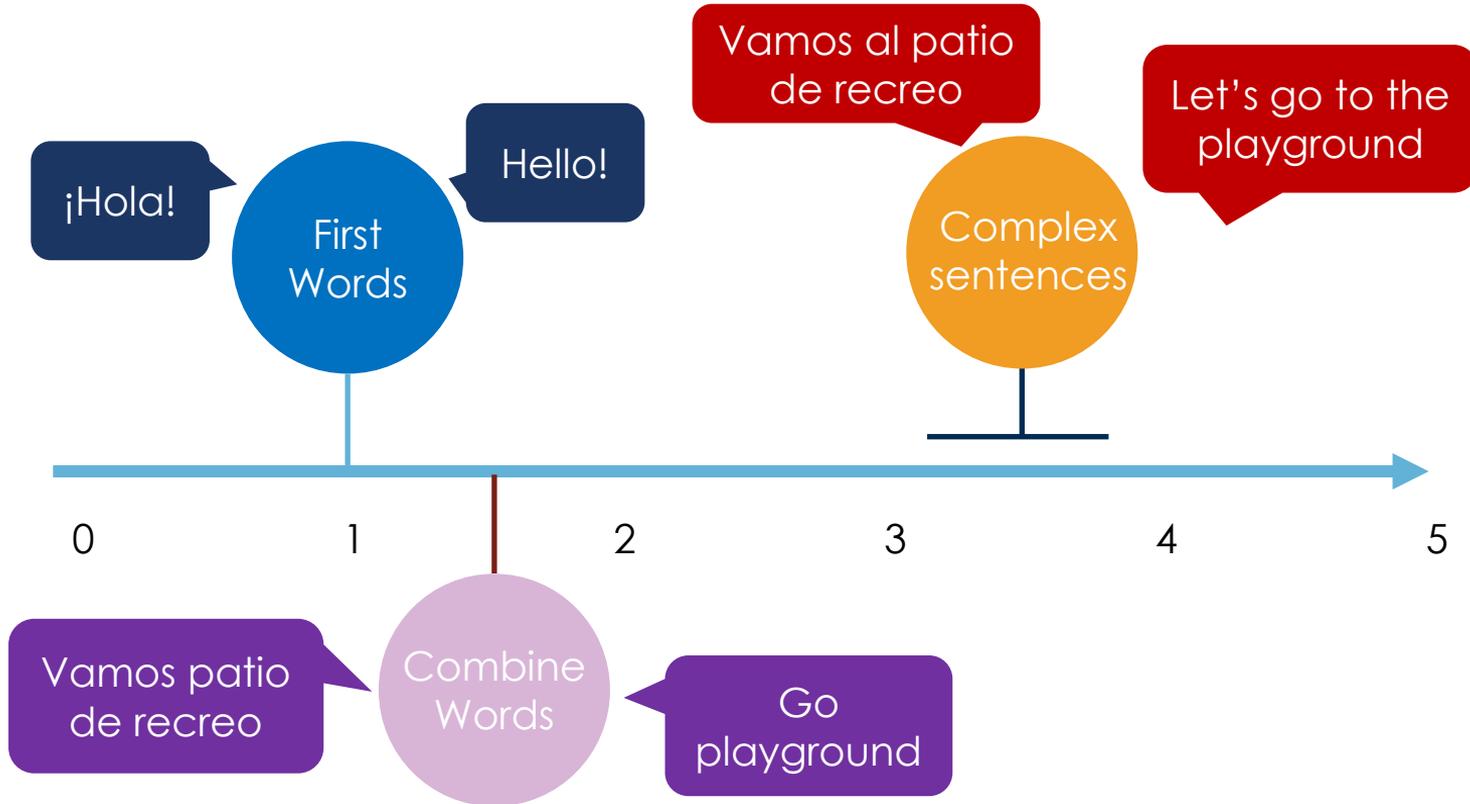




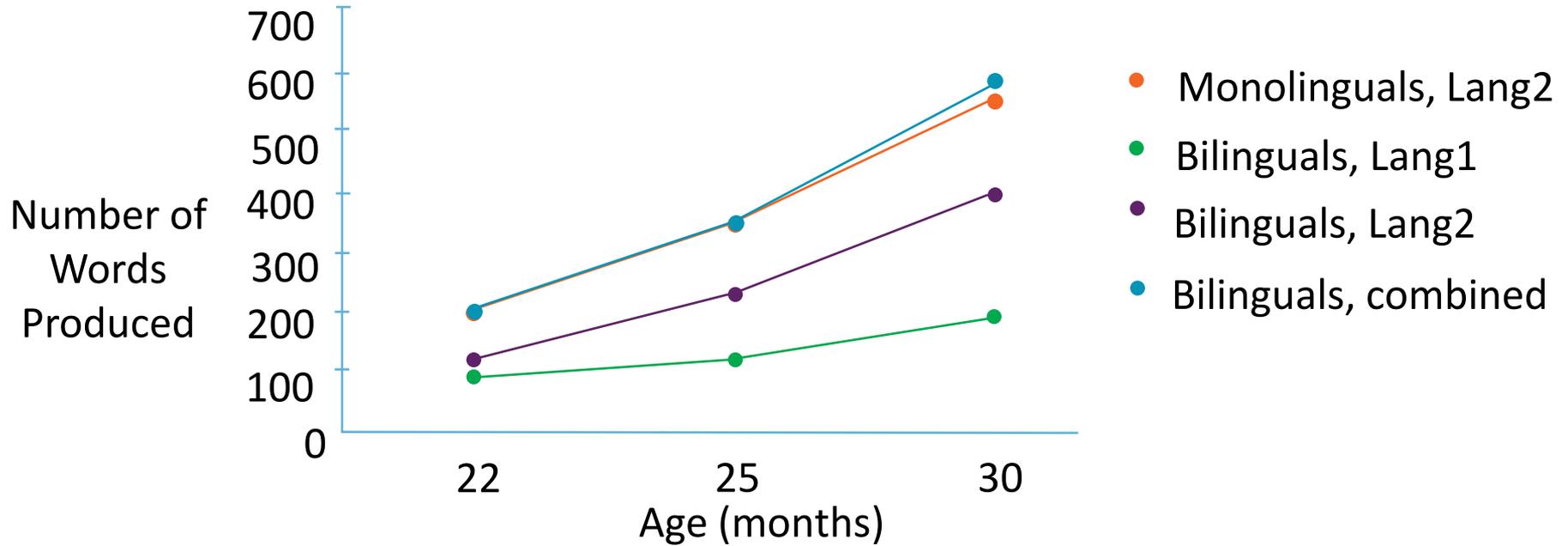


Have you heard that learning two or more languages can lead to a language learning delay?

Language Development



Language Development





Multilingualism: A Beautiful Necklace



Using Multiple Languages





Multilingualism Is a Strength

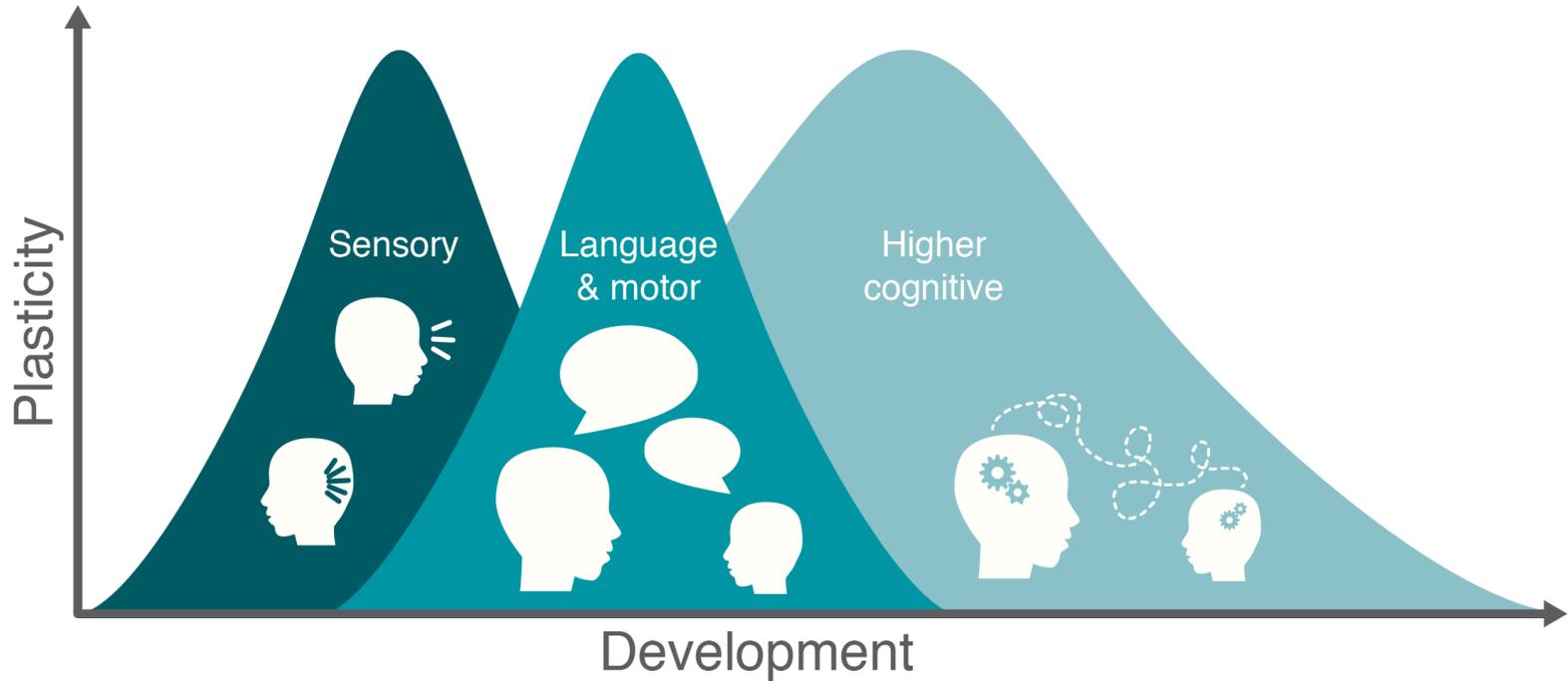
- Executive functioning
- Cognitive flexibility
- Attentional control
- More efficient brain communication
- Memory generalization
- Later onset of dementia
- Rooted in culture



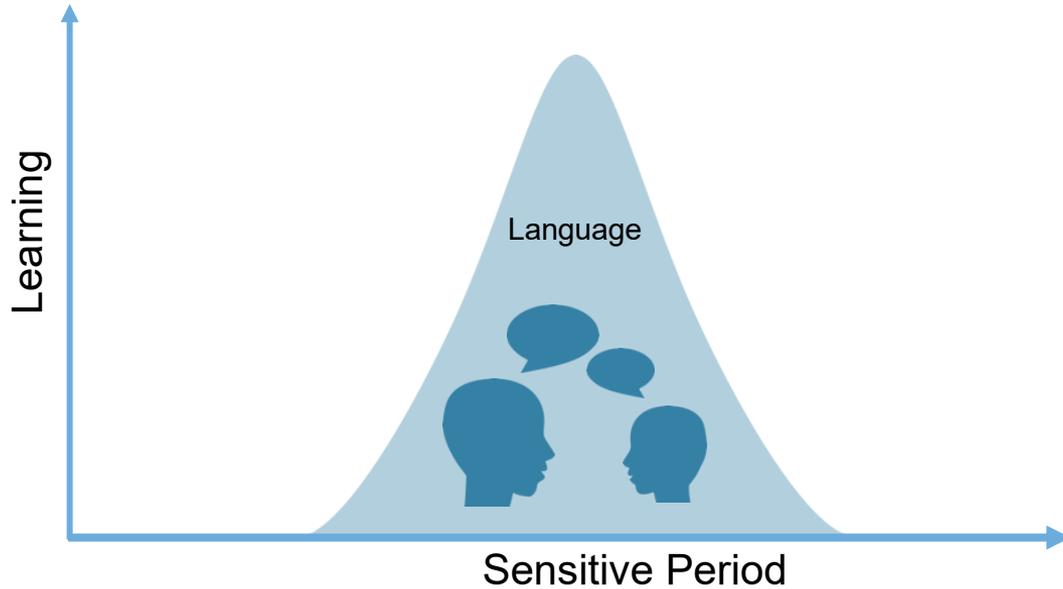
ALL Children (And Adults!) Can Learn Multiple Languages

- Learning two or more languages does not lead to slower language learning.
- Children with disabilities can learn multiple languages and benefit from bilingual environments and supports alongside their peers.

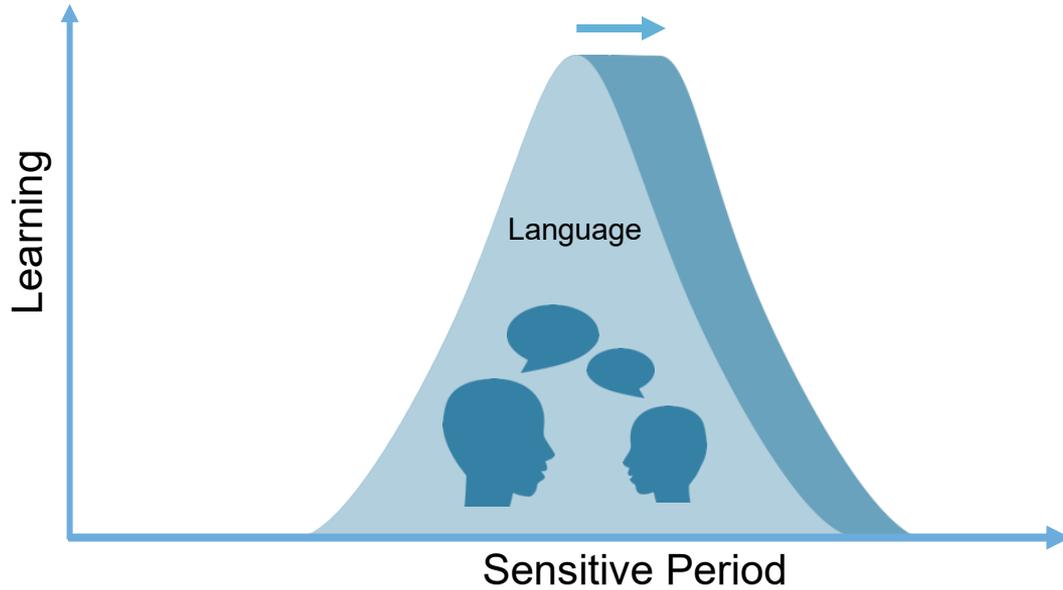
The Brain Is Primed to Learn Different Skills at Different Times



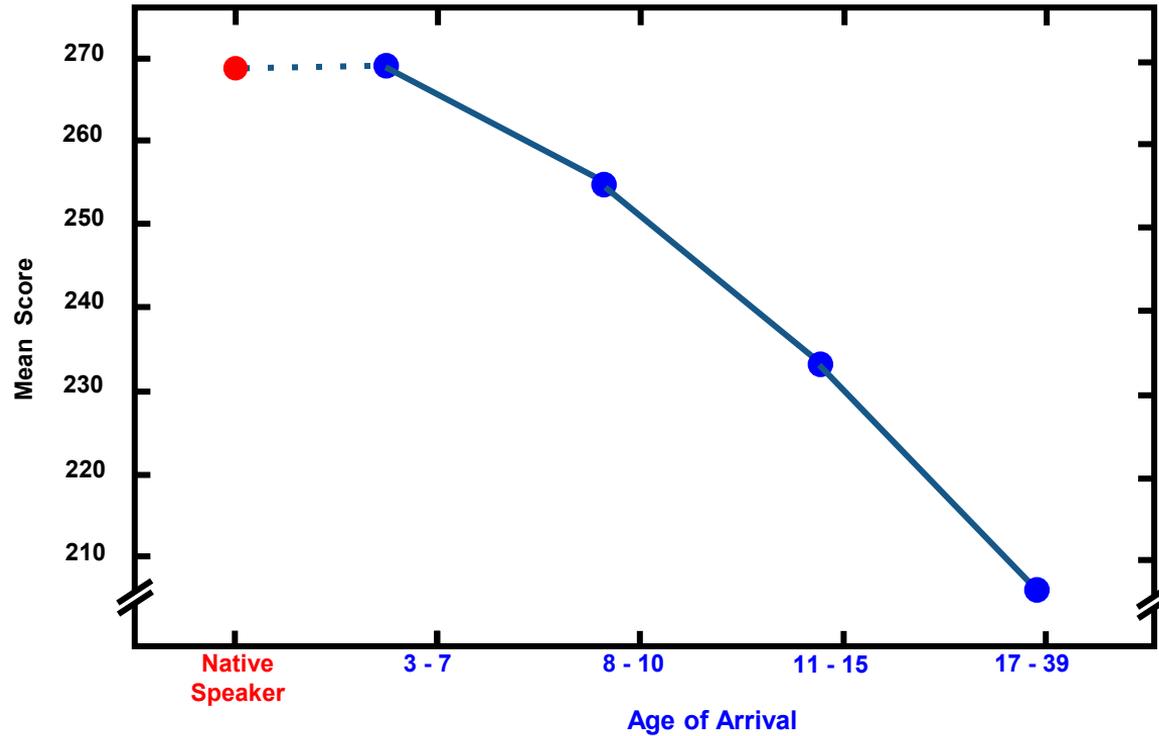
Sensitive Periods for Language Learning



Bilingual Sensitive Period



Sensitive Periods



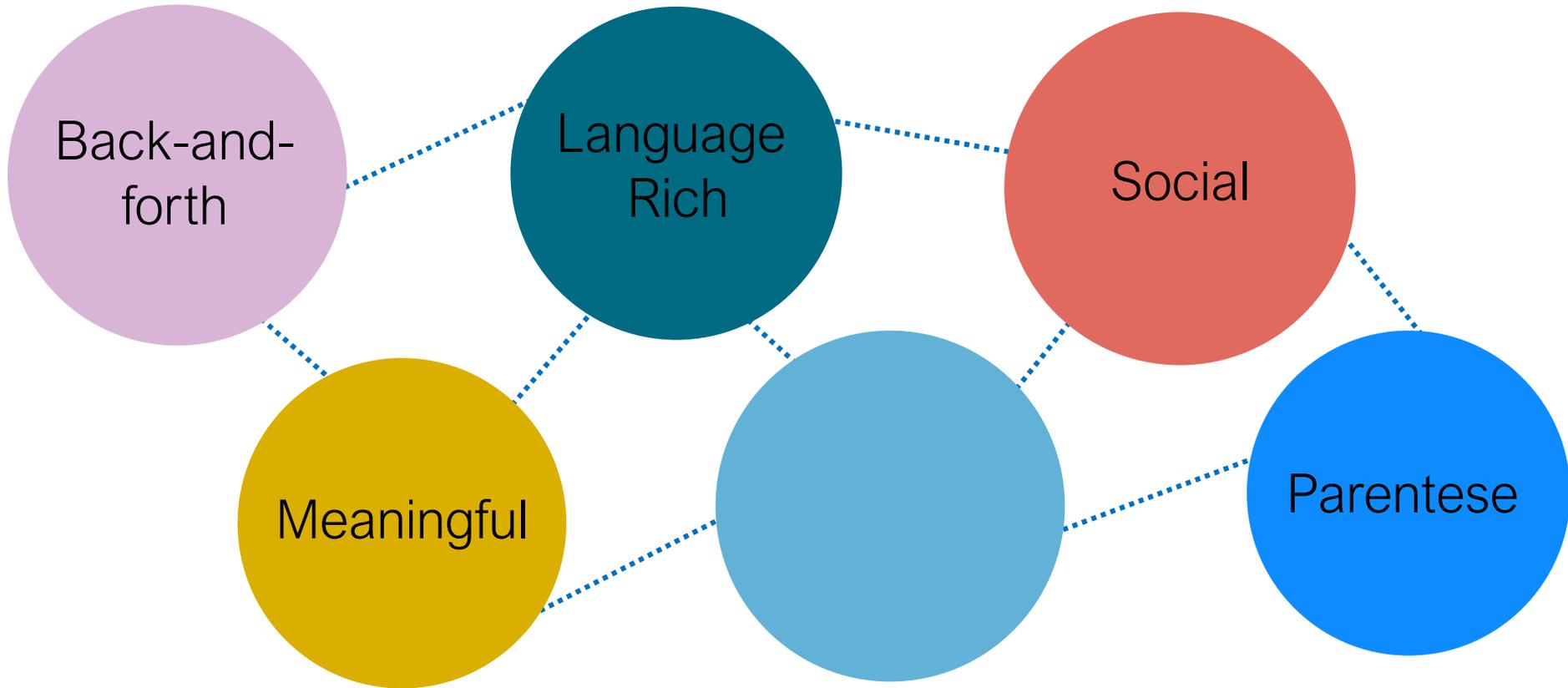
Adapted from Johnson and Newport, 1989



Our earliest
experiences build the
foundational
architecture of our
brains



Supporting Language Growth



Social

Relationships Build Our Brains





Do Babies Learn Language from Recordings or Screens?

Live Interaction



Audio Session



Video Session





Poll: When do babies learn language?



TV, audio, and in person



Audio and in person



TV and in person



Only in person

Children Learn from Social Interactions with Other People

Live Interaction



Learning!

Ability similar to native speakers

Audio Session



No Learning

Video Session



No Learning

Kuhl, Tsao & Liu, 2003

Social Interactions *Through* Media





The social brain “gates” learning.

A close-up photograph of a man with dreadlocks and a nose ring smiling warmly at a young child with curly hair. The man is on the left, and the child is on the right, looking up at him. The background is a plain, light-colored wall.

Back-and-forth Conversation

Back-and-forth conversations
strengthen neural pathways

Huber et al., 2023

Strong Brain Pathways Support Reading Readiness



- Neural connections in the brain at 2 years predict letter-sound knowledge at age 5.
- Conversational turns predict reading readiness at age 5.

PLAYful Conversations

Build the
Brain

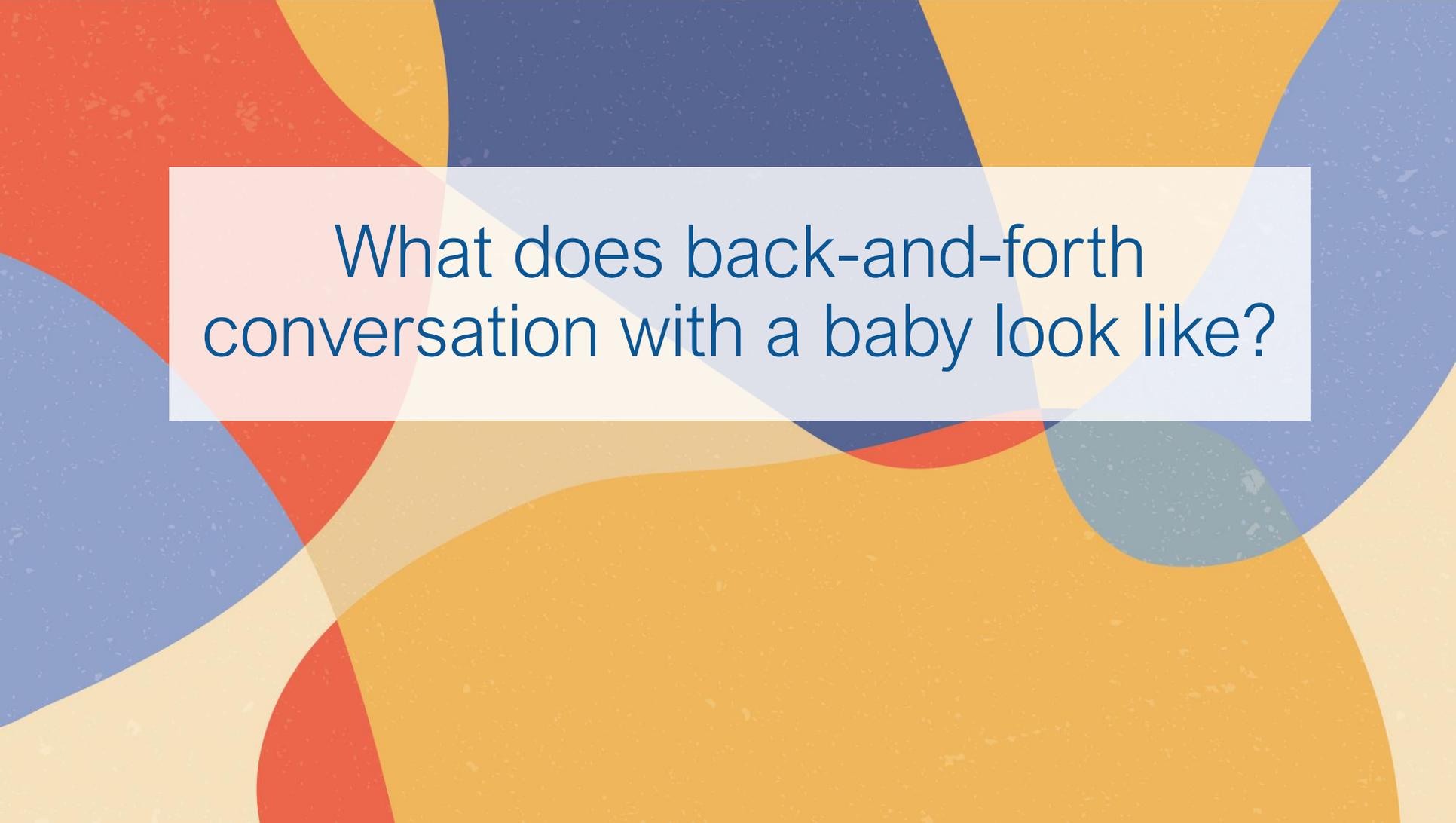




The Importance of Conversations

Back-and-forth interactions boost language skills and brain development and improve reading readiness

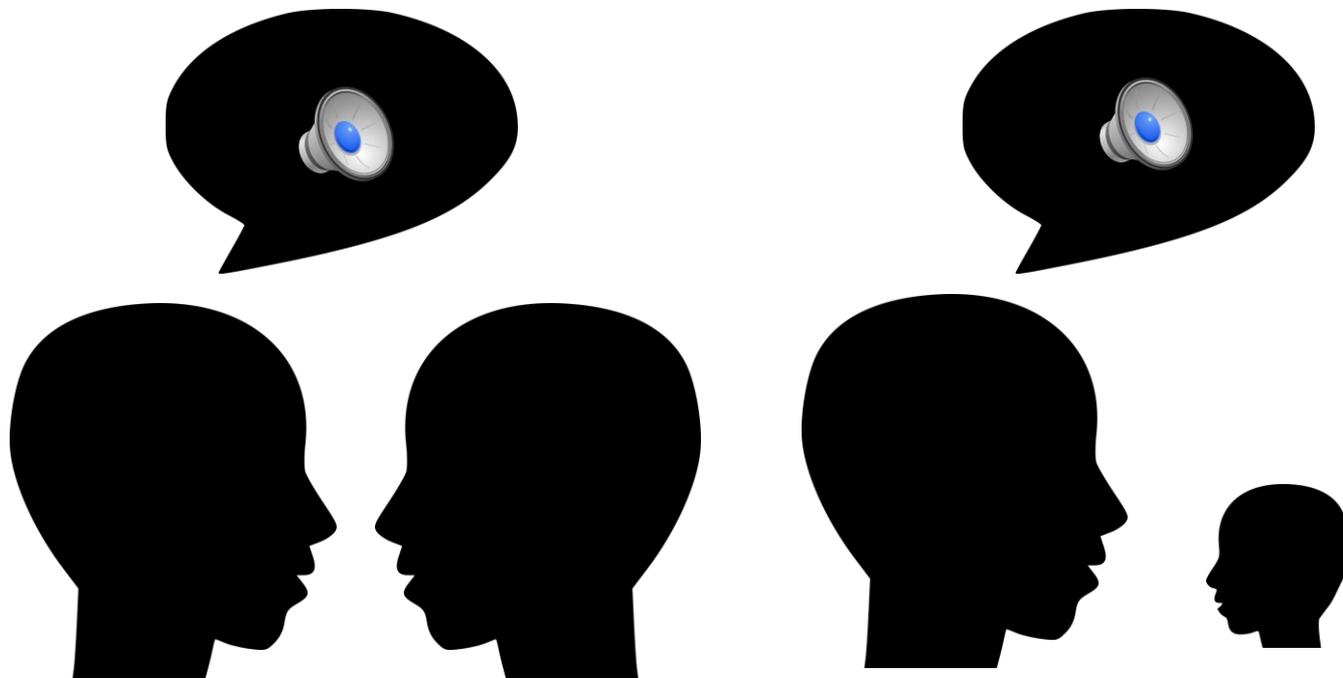




What does back-and-forth
conversation with a baby look like?



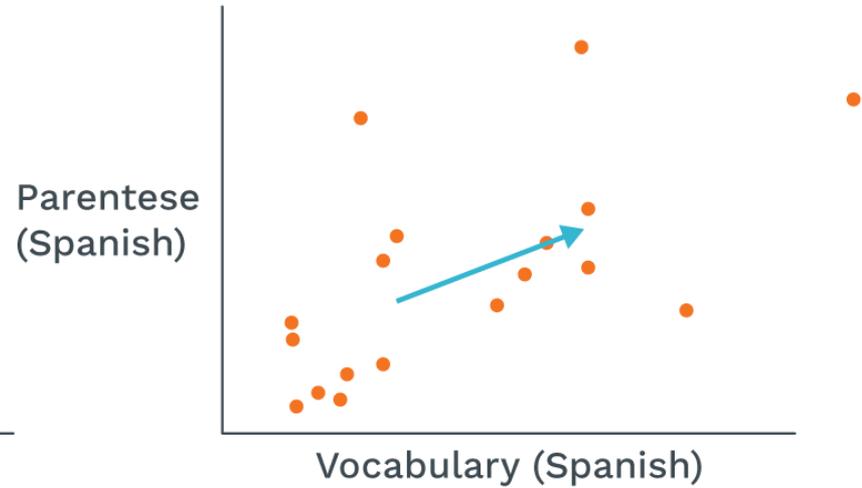
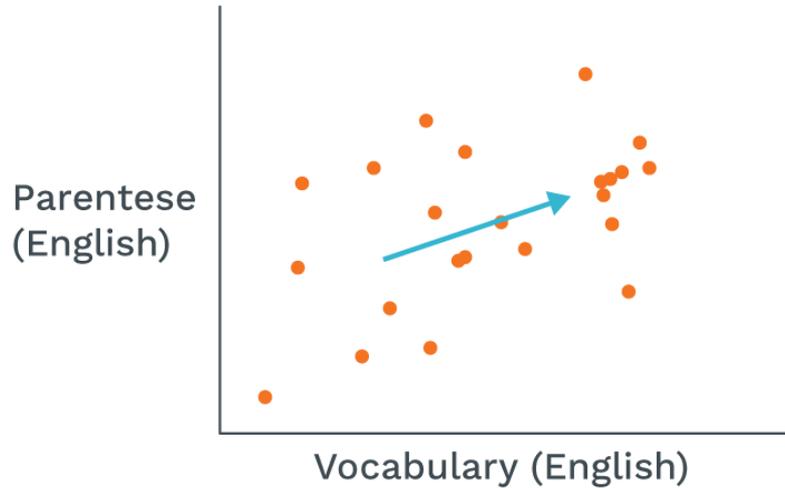
Infant-Directed Speech



Ramírez-Esparza et al., 2014; 2017



Parentese Supports Language Development



Ramírez-Esparza et al., 2014; 2017





Infants' Brain Responses To Social Interaction Predict Future Language Growth

Current Biology

Play-based

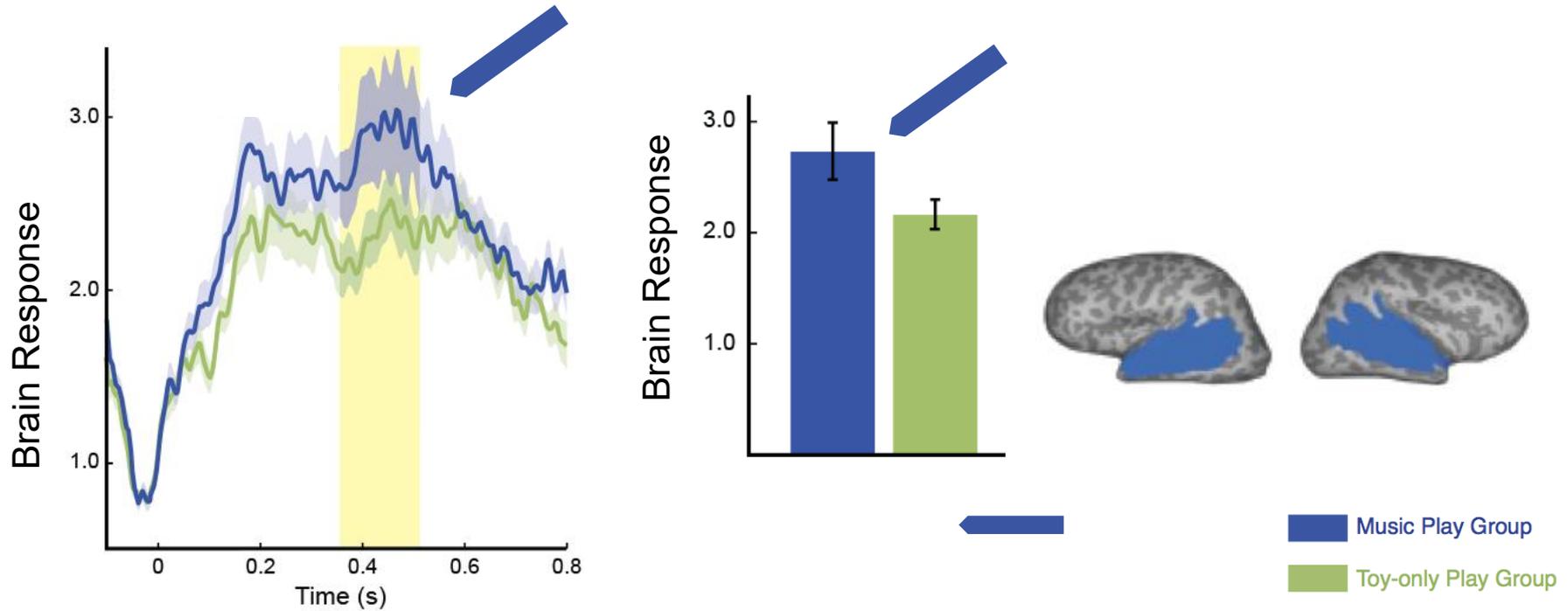
Music, Language and the Brain



Zhao & Kuhl, 2016



Music Supports Language



Zhao & Kuhl, 2016

Meaningful



“when children find the meaning in what they are learning [they] are able to not only connect new material to existing knowledge but expand their current knowledge to create new conceptual understanding.”



Language Shapes Who We Are





It's Never Too Early to Start Reading

Research shows that early reading supports language development.





How do you talk with families
about language learning?

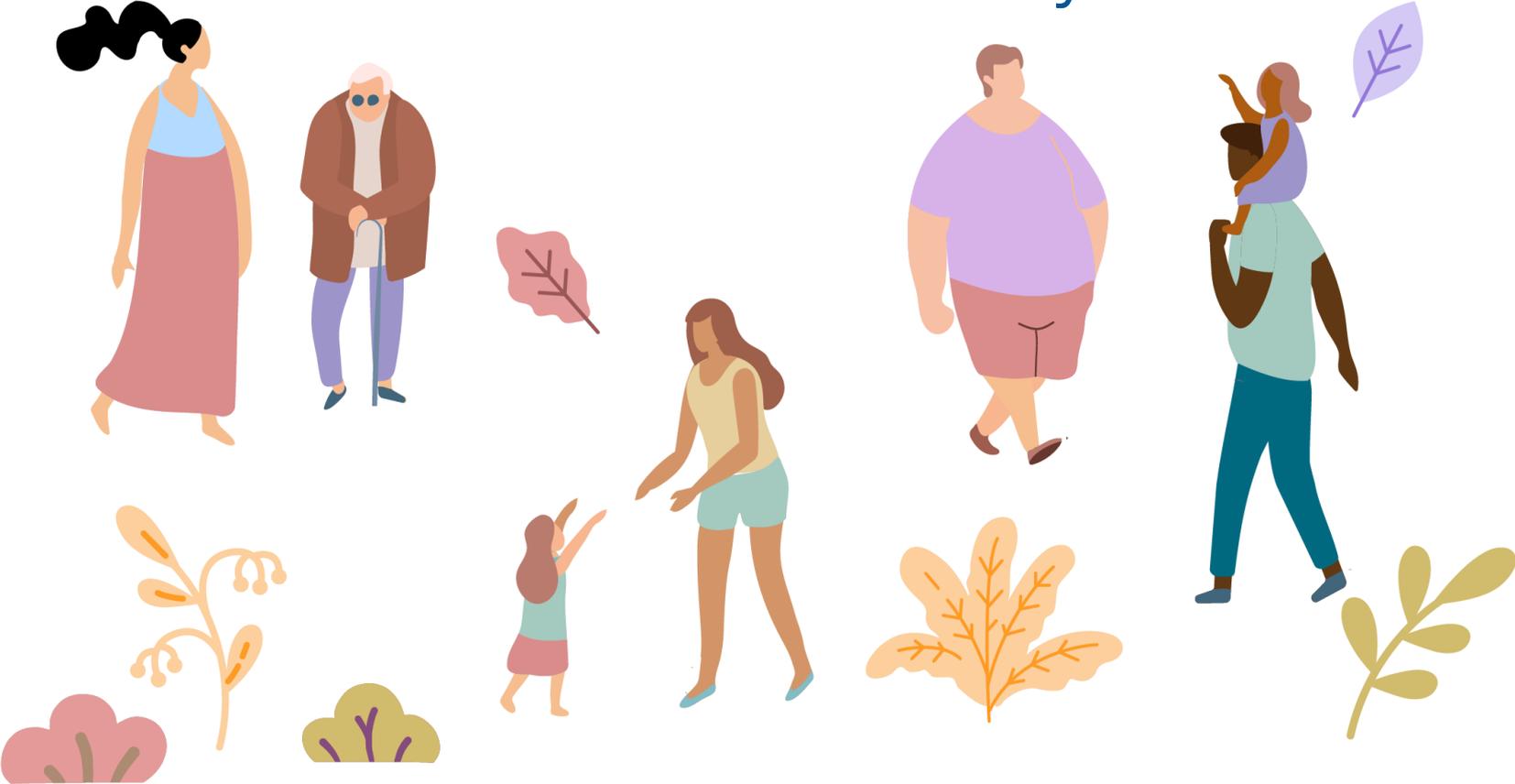


Supporting Parents

Research shows that helping parents use high quality language interaction boosts children's language and literacy skills long term.



Connection is Key



Thank you!

Amelia Bachleda

bachla@uw.edu

Training & Resource Library



**LEARNING
MODULES**



HANDOUTS



**VIDEO
LIBRARY**



ABC'S OF PLAY



INFOGRAPHICS



**AND MUCH,
MUCH MORE!**

modules.ilabs.uw.edu