Brilliantly Bilingual: Growing Up With Two Languages
March 2, 2017
Presenters:
Jane Hu

Session Objectives
After this webinar, you will:

- Understand the brain’s role in supporting dual language learning
- Explain how everyday experiences build bilingual children’s language skills
- Describe the cognitive, social emotional, and cultural advantages of learning more than one language
- Learn strategies to support dual language learners that you work with

Bilingualism
What Does it Mean to be Bilingual, or a Dual Language Learner?
What is bilingualism?

- Bilingualism is the ability to speak two or more languages.
- Bilinguals or dual language learners speak more than one language or are learning a second language.
- Monolinguals speak one language.

Types of bilingualism

- Simultaneous Bilinguals learn two languages from birth.
- Sequential Bilinguals learn one language before they learn another.

Why is bilingualism important?

- Why is bilingualism important?
- How are language and culture related?
- What does your language—or languages—mean to you?
- Why is it so important for you and your community to maintain your home language?
Rapid brain growth

An infant’s brain grows at an incredible rate of about 3% per day, then slows slightly to 0.4% per day by the end of the first 3 months.

Percentage of Adult Volume

<table>
<thead>
<tr>
<th>Birth</th>
<th>1 year</th>
<th>5 years</th>
<th>10 years</th>
<th>18 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>75%</td>
<td>90%</td>
<td>95%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Holland et al., 2014
Gray’s Clinical Neuroanatomy, 2010

Experience strengthens brain connections

Neural connections grow stronger with experience
Pruning connections results in a thriving brain

Different regions of the brain grow at different rates. Within each of these regions, synapses form and are refined at their own rate. This results in different windows when the brain is particularly primed to learn different skills.

Sensitive periods in language learning

- Different regions of the brain grow at different rates. Within each of these regions, synapses form and are refined at their own rate.
- This results in different windows when the brain is particularly primed to learn different skills.

How do babies learn their native/home language(s)?

- Researchers can measure infants' ability to tell the difference between native and non-native sounds.
- Infants listen to a series of sounds. When a baby hears the sounds change, she looks at the box on her left, where a toy lights up slightly after the sounds change.
- If the baby looks at the box after the sounds change, but before the box lights up, researchers know that she is able to tell the difference between the sounds.

Adapted from Johnson and Newport, 1989.
Experiences shape language ability

- At 6-8 months, infants are 'citizens of the world', able to tell the difference between all sounds in all languages.
- By 10-12 months, infants start to become native language specialists, experts at identifying sounds in their own language(s).

Kuhl, 2010; Kuhl et al., 2006

Bilingualism

From Research to Practice

- Brains are built and our early experiences matter.
- The more often a child has an experience, positive or negative, the more likely that experience is to shape the connections forming in their brains.

Bilingualism

Consistent, High-Quality Experiences Build Language Skills
Children learn from others

Foreign-language exposure

Live exposure  
Television exposure

Kuhl et al., 2008; Kuhl et al., 2003

---

Infant Perception of Mandarin Chinese

Percent Correct

6-8 months  10-12 months

Mandarin-learning infants  
English-learning infants

Adapted from Kuhl, 2010; Kuhl et al., 2003; Kuhl et al., 2001

---

Infant Perception of Mandarin Chinese

Percent Correct

6-8 months  10-12 months

Mandarin-learning infants  
English-learning infants

Live exposure to Mandarin  
TV exposure

Mandarin Exposure infants

Adapted from Kuhl, 2010; Kuhl et al., 2003; Kuhl et al., 2001
Language exposure is predictive

- Infant-Directed Speech
- Babbling
- Infant-Directed Speech at 12 mo.
- Vocabulary at 24 mo.

Garcia-Sierra et al., 2011; Ramírez-Esparza et al., 2014

Non-verbal cues help language development

- Live speakers can use nonverbal cues like eye gaze, pointing, and gesturing to keep children’s attention during the interaction
- Even if children aren’t talking back yet, listening and participating in quality interactions gives them positive language experiences

Experiences shape language ability

- Infant brain responses are stronger to whatever language they experience most in their daily lives
- Infant brain responses are related to their productive vocabulary in that language as toddlers

Garcia-Sierra et al., 2011
Bilingualism

From Research to Practice

Face-to-face experiences are important to children’s language development.
Build quality relationships with children and be responsive to their requests and needs in whatever language they speak.
Rich Environments = supported exploration and lots of language!

Magnetoencephalography (MEG)

- Magnetoencephalography (MEG) can be used to study children’s brain development.
- MEG is useful for studying children’s brains because it is safe, non-invasive, and noiseless.

Monolingual and bilingual infants

Adapted from Ferja Ramirez, 2016
Activation in the pre-frontal cortex

As fast as you can, name the color of each word instead of reading the word.

GREEN
Stroop: Which group was easier? Why?

BLACK
BLACK

ORANGE
ORANGE

GREEN
RED
YELLOW
BLUE
BLACK
ORANGE
GREEN
RED
YELLOW
BLUE
BLACK
ORANGE

Adapted from Stroop, 1935
Sun – Moon Game

“Read” the shapes as if they were text.

When you see sun say “sun” and when you see moon say “moon”

This time, swap the labels.

When you see moon say “moon” and when you see sun say “sun”

Sun – Moon: Which way was easier? Why?
Learning More Than One Language: What dual language learning looks like in children you work with

You may see children code-switching by mixing languages within a sentence or phrase. This is evidence that children are learning to decode multiple languages. It is a strategy they use to negotiate/construct meaning within and across languages.

Sensitive periods for language learning
Bilingual sensitive period

Sensitive Period

Language Learning

Bilingual children keep pace with monolingual peers

Supporting dual language learners that you work with

- Talk with families; know which languages children speak at home
- Create a welcoming environment and incorporate children’s home language when possible
- Individualize support for dual language learners
- If you are bilingual, read to children in each of their languages
From Research to Practice

- Bilingual children develop language at the same pace as their monolingual peers.
- Dual language learning children have unique experiences, learning styles, and preferences. Individualize support for these children to help them thrive.

Wrap-up

- The brain is prepared to learn two languages at the same time, and the enormous amount of brain development that occurs in the first 5 years supports dual language learning.
- Children learn through experiences. Lots of quality experience builds children’s language skills in each of their languages.
- Bilingual language development is similar to monolingual language development. Bilingualism is also associated with cognitive advantages.

Thank you!