Everyday Experiences as the Foundation for Early Learning

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I-LABS: Focus on Basic Research

Language
- Prediction
- Technology/Media Learning
- Bilingualism

Social-Emotional
- Interaction
- Self-Concept
- Imitation

Cognition
- Problem Solving
- Mathematics
- Reasoning

Brain
- Specialization
- Environmental Links
- Technique Development
Meet Tomás

Day 1

Day 2,000
By the 2,000th Day...

School Readiness

- Imitate & be imitated
- Use objects as symbols
- Take turns & seek help
- Solve problems
- Self-regulate
- Control impulses
- Experience rich input
- Explore environment
- Understand routines
- Lead & follow in play
- Be aware of emotions
- Shift attention well
‘It is not only the skills children have when they enter school that matter for later success but also the path they followed in getting to these skills.’

Rowe, Raudenbush & Goldin-Meadow, 2012
Foundations of Early Learning

- Early experiences matter
- A closer look at everyday experiences
- Not all experiences are created equal
- Experiences set the stage for learning
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Biology + Experience

How did he get from here... ...to here?
Biological factors provide the ‘raw ingredients’

Experience is the ‘recipe’

Development is determined by Biology + Experience
What do you hear?

Sound #1     Sound #2     Sound #3

‘DA’     ‘DA’     ‘TA’

‘DA’     ‘TA’     ‘weird TA?’
Language Learning Before Birth

- Children are exposed to language in the womb
- Hours after birth, infants differentiate between native and foreign language sounds

Moon, Lagercrantz & Kuhl, 2013
Experience Shapes Language

Infant perception of /ra/-/la/

Percent Correct

American Infants

Japanese Infants

Kuhl et al., 2006
Magnetoencephalography (MEG)
Forming the Brain’s Language Networks

- This physical network in the brain connects the areas used for **speech perception** (listening) and **speech production** (speaking)

Choi et al., 2009
Real-time Coordination Between Brain Regions

Imada, Zhang & Kuhl, 2006
Fewer Experiences $\Rightarrow$ Reduced Brain Dev’t

Lower SES is related to less specialized brain function in 5-year-olds

Raizada, Brooks, Meltozff & Kuhl, 2008
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Observing Interactions

“In the Moment”
- Amount of talking/# of words
- Types of toys
- Eye contact and gestures
- Physical touch
- Turn-taking interaction
- Proximity of adults to children
- Quality of speech

“Behind the Scenes”
- Caregiver confidence with kids
- Access to resources
- Caregiver education
- Values and culture
- Adaptability
- Caregiver familiarity with kids
- Dyad interaction history

Others?

Others?
The Art of Scaffolding

Do you remember going to the doctor like Caillou?

What do you think Caillou will do at the doctor’s office?

That’s a tongue depressor! Can you stick out your tongue like Caillou?
The Art of Scaffolding

- Ask questions about the story/experience
- Relate the story/experience to the child’s unique experiences
- Offer expansions, corrections and praise and demonstrate new vocabulary
- Encourage children’s active participation in telling the story
You are the best toy in the room!
Interactions Over Time

- High: Enduring Emotional Attachment
- Moderate: Joint Reciprocal Activities
- Low: Child’s Competency & Self-Efficacy, Adult’s Support & Control

Li & Julian, 2012
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Input + Interaction

Why

Who

How

How Much

What

When

Where

Perception

Safe & Secure Base

Technology & Media

‘Parent-ese’

Word Diversity

Bilingualism

Cognitive Flexibility

Imitation

Book Sharing

Gaze Following

Commands vs Comments

Timing of Responses

Timing of Responses
Types of Exposure to Language

- Live Interaction
- DVD Session
- Audio (CD) Session

- 9-month-old Seattle infants
- Naturalistic Mandarin Chinese exposure (play & books)
- 12 sessions, 25 minutes each

Do infants learn to discriminate Mandarin sounds?

Kuhl, Tsao & Liu, 2003
Humans Learn From Other Humans

Kuhl, Tsao & Liu, 2003
Humans Learn Best from **Familiar Humans**

- 9-month-olds show more mature neural responses to language from a familiar, important person (i.e., a parent)

Parise & Csibra, 2012
Humans Learn from **Infant-Directed Speech**

Liu & Kuhl, 2003
Humans Learn from **Infant-Directed Speech**

Garcia-Sierra et al., 2011
Humans Learn from **Eye Gaze**

Brooks & Meltzoff, 2002
Humans Learn from Eye Gaze

# of Infant Looks

- Open Eyes
- Closed Eyes

- 0
- 1
- 2
- 3
- 4

12 mo. 14 mo. 18 mo.

Brooks & Meltzoff, 2002
Humans Learn from Back-and-Forth Interactions

Roseberry, Hirsh-Pasek & Golinkoff, under review
Humans Learn from Back-and-Forth Interactions

Marshall & Meltzoff, 2011
Humans Learn from Social Agents

Meltzoff, Brooks, Shon, & Rao
*Neural Networks* (2010)
Humans Learn from Social Agents

Movellan, Eckhart, Virnes & Rodriguez, 2009
Quality interactions

- Live interactions with humans (or with agents that act like humans)
- Infant-Directed Speech
- Familiar, important humans as social partners
- Eye gaze following
- others?
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Words Produced Over Time

Chronological Age (months)

Fenson et al., 1993
Early Experience Sets the Stage

7 mo.  2 yr.  4 yr.  5 yr.  4th grade

Gaze following and gesture \(\rightarrow\) later vocab

Speech perception \(\rightarrow\) language growth

Links to reading at age 5

Early language \(\rightarrow\) later reading

Sophisticated words \(\rightarrow\) reading comp.

Language & attn. \(\rightarrow\) reading

Brooks & Meltzoff, 2008; Kuhl et al., 2005; Lebadeva et al., 2010; NICHD ECCRN, 2002; Dickinson & Porche, 2011; Grissmer, 2011
A Brief Review

- Development is the result of Biology + Experience
- Keen observers can identify quality early interactions
- Quality interactions that facilitate language learning:
  - Are live interactions that include back-and-forth turn-taking
  - Involve familiar and important social partners
  - Use infant-directed speech and eye gaze
- Early experiences are the building blocks for later success
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Topics for Discussion

- What is one piece of information from today’s presentation that reinforced something you already do with children?

- What is one piece of information that will be useful to you in your involvement with children?

- How might you boost everyday interactions with the elements of quality interactions?

- What questions can researchers ask that would help you in your role in the early childhood community?