



**Teachers College**  
COLUMBIA UNIVERSITY

# Basic Concepts Development for Young DHH Children: Anything But Basic

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# Disclosures

Smolen & Hartman are salaried faculty at Teachers College.

Davenport is founder and CEO of Building Bridges Consulting, LLC.

Smolen is hard of hearing and uses binaural hearing aids.

# Learning Objectives

1. Define basic concepts in the context of language and academic development.
2. Describe the relative strengths and needs of DHH toddlers and preschoolers in developing basic concepts.
3. Discuss developmentally appropriate activities that promote basic concepts in auditory-based intervention.

# Basic Concepts in Early Language

- Basic concepts are words that help us perceive and describe the world around us.
- Being able to understand and use basic concepts is fundamental to comprehending and communicating language.
- **Spatial/Locational:** In/out, up/down, top/bottom, front/behind, over/under, next to.
- **Quantitative:** More/less, all/none, full/empty, few/many, some, single/pair.
- **Temporal/Time:** Before/after, first/last, now/later, morning/night, today/yesterday.
- **Qualitative/Descriptive:** Big/little, hot/cold, hard/soft, rough/smooth, loud/quiet, fast/slow.
- **Same/Different:** Concepts that help children compare and categorize objects.

# Imagine giving these classroom directions:

- "The blocks go under the shelf, not on top".
- "First we will eat our snack, then we will go to recess".
- "We need to clean up before we go to the library".
- "Feel how soft your sweater is compared to your rough jeans".
- "Stack the two blocks are the same; that one is different".
- "Use walking feet when you are inside the classroom".
- "Raise your hand if your water bottle is empty".

# Basic Concepts and School Readiness

- Basic concepts knowledge supports learning across subjects (Bracken & Brown, 2008)
- Early basic concepts knowledge predicts later academic achievement (Duncan et al., 2007)
- Children who are d/Deaf or hard of hearing (DHH) may experience reduced language access and thus begin school with reduced basic concepts knowledge (Santos et al., 2023)

# Basic Concepts and Academic Success

Research shows basic concepts predict:

- School readiness
- Ability to follow classroom instructions
- Early academic achievement

Most vocabulary research with DHH children examines overall vocabulary, not basic concepts.

Gap: Less is known about how DHH children develop these concepts.



Photo: CCHAT Center Sacramento

# Method

## This study examined:

1. How DHH preschoolers develop **basic concepts**
2. How their performance compares with **typically hearing norms**
3. Relative strengths across **types of concepts**

## Participants:

- **46 DHH preschoolers**
- **Learning spoken English**
- **Mean age: 4.2 years**

All participants assessed individually using **live voice presentation**.

# Assessment Measures

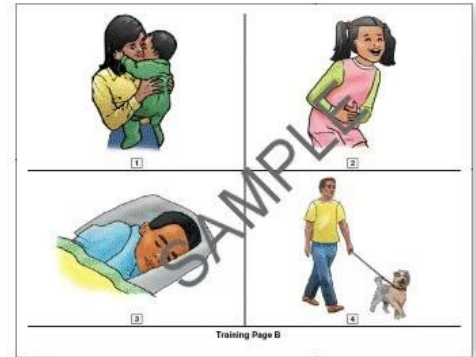
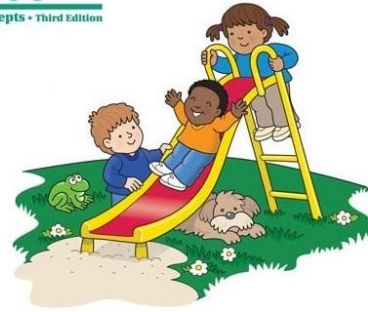
## Basic Concepts

- **Boehm-3 Preschool Test of Basic Concepts (BTBC-3)**
  - 26 concepts - each concept tested **twice**
  - Children responded by **pointing to one of four pictures**

## Vocabulary

- **Peabody Picture Vocabulary Test-4 (PPVT-4)**

m•3  
1001  
Concepts • Third Edition



# Results

## Overall vocabulary performance

- Receptive vocabulary:  $M = \text{Average range}$
- Basic concepts:  $M = \text{Low average range}$

## Key finding

Basic-concepts knowledge lagged behind overall vocabulary.

This suggests basic concepts may represent a **specific area of vulnerability**.

# Order of Concept Development

DHH preschoolers learned concepts in **roughly the same order** as typically hearing children.

## Examples

Mastered by most children:

- longest
- smallest

Mastered by few children:

- least
- last

*However, many advanced concepts were acquired later than expected.*

# Patterns in Concept Learning

## Stronger Area

- Quantity concepts

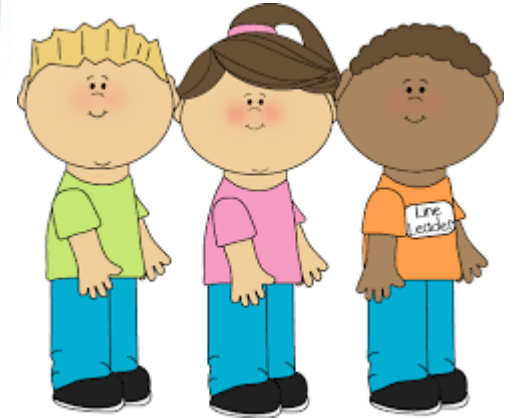


## More Challenging

- Spatial concepts

## Possible reason:

- Spatial language may rely heavily on rich linguistic input and interaction.



# Supporting Concept Development in EHDI Period

Strategies for auditory-based intervention:

- Embed concept words in **daily routines**
- Use **explicit modeling**
- Pair **language with visual experience**
- Provide **repeated listening opportunities**
- Encourage **spoken language use in context**

Vocabulary development is critical for DHH children—but **basic concepts deserve more attention.**

Targeted support during early intervention may help prevent:

- Difficulty following instructions
- Academic delays in early elementary school

# Connect with us!

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