Variability in Early Language Development: Predictors, Consequences, and Considerations for Intervention

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Language Development

Figure 1.1 Major milestones of language development

Hoff, 2009
Variability in Early Language Development

Language development in infancy and toddlerhood is characterized by *variability*

- What does it look like?
- Why does it matter?
- Where does it come from?
Variability: What does it look like?
Variability: What does it look like?

[Image of a scatter plot showing the relationship between MCDI and the size of receptive vocabulary across different ages.

Axes:
- Y-axis: Size of Receptive Vocabulary
- X-axis: Age (months)

Legend:
- Quantile:
  - 0.90
  - 0.75
  - 0.50
  - 0.25
  - 0.10

Source: Wordbank.stanford.edu]
Variability: What does it look like?

Word Types

N=108
Pan, Rowe, Singer & Snow, 2005
Variability: What does it look like?

Variability in earlier skills predicts variability in later skills

→ Gesture at 14-months predicts Vocabulary at age 5 (PPVT)

N=50
Rowe & Goldin-Meadow, 2009
Variability: Why Does it Matter?

Children’s oral language skills -- vocabulary, syntax, pragmatics, phonological awareness, narrative -- are *highly predictive* of learning to read and school success in general.

(e.g., Dickinson & Tabors, 2001; Scarborough, 2001; Snow, Burns & Griffin, 1998; Snow, 1999; Stanovich, 1986; Storch & Whitehurst, 2001; Walker, Greenwood, Hart & Carta, 1994)
Variability: Why Does it Matter?

Reardon, 2013
Variability: Where does it come from?

Early Environment

Children’s early environments, social interactions, and social-pragmatic abilities influence the course of language acquisition (e.g., Bruner, 1981, Snow, 1999; Vygotsky, 1978).

Important environmental/social factors:
– Caregiver input (communication to/with children)
– Socioeconomic status (SES)
  Income, education, occupation (Duncan & Magnuson, 2003)
Variability: Where does it come from?

Figure 19. Cumulative number of words addressed to the child in 13 professional (squares), 23 working-class (plus signs), and 6 welfare families (triangles) extrapolated from birth to 12 months of age and from 37 to 48 months of child age. The linear regression line was fit to the actual average cumulative number of words addressed to the children per hour when they were 12–36 months old.

Figure 2. The widening gap we saw in the vocabulary growth of children from professional, working-class, and welfare families across their first 3 years of life. (See Appendix B for a detailed explanation of this figure.)

Hart & Risley, 1995
Variability: Where does it come from?

Rowe & Goldin-Meadow, 2009
Variability: Where does it come from?

Rowe & Goldin-Meadow, 2009
Caregiver input

Also *varies widely* and can be very helpful in promoting children’s language skills:

→ What are the most helpful features of input during infancy and toddlerhood?

→ Why do caregivers vary so much in how they communicate with children?
Caregiver Input: Helpful Features

Quantity of input matters, but it is not the whole story – not even most important part.

Quality trumps quantity!

Parent talk and child vocabulary size

(e.g., Cartmill et al., 2013; Hirsh-Pasek et al., 2015; Newman, Rowe & Ratner 2016; Rowe, 2012; Rowe, Leech & Cabrera, 2016)
Caregiver Input: Helpful Features

Child Age

Helpful Features
Caregiver Input: Helpful Features

Respond to child vocalizations and actions (e.g., Tamis-LeMonda et al., 2014)

Child Age

Rowe & Zuckerman, 2016
Caregiver Input: Helpful Features

Respond to child vocalizations and actions

- Repetition of words
  (e.g., Newman et al., 2015)

Child Age

Rowe & Zuckerman, 2016
Caregiver Input: Helpful Features

Respond to child vocalizations and actions

Repetition of words (e.g., Newman et al., 2015)

Child Age

Rowe & Zuckerman, 2016
Caregiver Input: Helpful Features

- Respond to child vocalizations and actions
  - Repetition of words
- Joint attention (e.g., Tomasello & Farrar, 1986), Gesture (e.g., Rowe & Goldin-Meadow, 2009)
- Helpful uses (e.g., Cartmill et al., 2013; Medina et al., 2011)

Child Age

Rowe & Zuckerman, 2016
Caregiver Input: Helpful Features

Respond to child vocalizations and actions

- Repetition of words
- Joint attention, Gesture, Helpful uses

Ask challenging *wh*-questions (e.g., Rowe, Leech & Cabrera, 2016)

Child Age

Rowe & Zuckerman, 2016
Caregiver Input: Helpful Features

- Respond to child vocalizations and actions
- Repetition of words
  - Joint attention, Gesture, Helpful uses
- Ask challenging *wh*-questions
  - Diversity of words
    - (e.g., Weizman & Snow, 2001)

Child Age

Rowe & Zuckerman, 2016
Caregiver Input: Helpful Features

- Respond to child vocalizations and actions
- Repetition of words
  - Joint attention, Gesture, Helpful uses
- Ask challenging *wh*-questions
  - Diversity of words
  - Longer utterances (e.g., Hoff, 2003; Huttenlocher et al. 2010)

Child Age

Rowe & Zuckerman, 2016
Child Age

Caregiver Input: Helpful Features

Respond to child vocalizations and actions

- Repetition of words
  - Joint attention, Gesture, Helpful uses

- Ask challenging *wh*-questions
  - Diversity of words
  - Longer utterances

Decontextualized talk and explanations (e.g., Dickinson & Tabors, 2001; Rowe, 2012)

Caregiver Input: Helpful Features

- Rowe & Zuckerman, 2016
Caregiver Input: Helpful Features

- Respond to child vocalizations and actions
- Repetition of words
  - Joint attention, Gesture, Helpful uses
- Ask challenging *wh*-questions
  - Diversity of words
  - Longer utterances
- Decontextualized talk and explanations

Child Age

Rowe & Zuckerman, 2016
Caregiver Input: Helpful Features

Input that involves children in back-and-forth, engaging, conversations!

Rowe & Zuckerman, 2016
Caregiver Input: Why does it vary?

• **Parental knowledge of child development** mediates relations between SES and quantity and quality of parental input (Rowe, 2008; Vernon-Feagans et al., 2008)

• **Parental mindsets** about children’s abilities/development predict their interactions with children (Donahue et al., 1997; Moorman & Pomerantz., 2010; Muenks et al., 2015)
Implications for Intervention

1. Start early
2. Work with caregivers
3. Focus on important qualities/features of input
4. Providing caregivers with information about why this matters
5. Help caregivers understand how much of a difference they can make
Theory of Change:

Pointing to Success Training

- Pilot Study (n=50) parents of 10-month olds
- Follow families from child age 10-18 months
- Five home visits per family, measuring parent gesture use, child gesture use and child vocabulary

Parenting knowledge/Mindsets

Parent gesture → Child gesture → Child vocabulary Growth

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