The Relationship of Oral-Motor Feeding and Communication Skills to Later Language Skills in Premature Infants

Cara McComish, PhD Candidate
The University of North Carolina at Chapel Hill
Division of Speech and Hearing Sciences
American Speech-Language-Hearing Association Convention, Boston MA:
November 17, 2007

Agenda
Research interest- dissertation study:
• Define terms
• Brief review of literature
• Outline research questions
• Implications

Defining “Premature” Infant
• Premature= <37 weeks gestation
• My research all infants <35 weeks
• VLBW= very low birth weight
• <1500g (3.5 lbs)

Rates of Prematurity in USA
• According to the March of Dimes (www.marchofdimes.com)
• Increasing rates
• Currently 12.5% <37
• 10,000 babies a week
• 8% VLBW <3.5 lbs
• Highest for African American infants at 18%
• Annual societal economic cost (2005) $26.2 billion

Early Communication Research
• Communication development occurs in the context of social interactions (e.g. Lewis & Freedle, 1973; Samaroff, 1975; Bruner, 1981)
• Feeding interactions represent a frequently occurring context for communication that begins at birth (Sparling & Rogers, 1985; Satter, 2000).
• Second half of the first year of life early vocalizations and communicative behaviors emerge (Davis & MacNeilage, 1995; Oller et al., 1999; Thal and Tobias, 1992, 1994)

Preterm Infant Research
• Behaviorally: little vocalization, less socially interactive when compared to full terms at 6 months during feeding interactions (Mathisen et al., 2000)
• Approx 50% of VLBW infants will go on to exhibit delays or LD by school age, including later speech and language delays (Aram et al., 1991)
Premature Infant Feeding Cues

- “Communication” very different in premature infants
- Caregivers not always able to easily read infant feeding cues
- May set foundation for altered communication

Premature Infants

- Many preterms need feeding tubes in NICU- early experiences may set infant on altered trajectory for feeding skills
- Infants and young children with disabilities may also have difficulties with eating, drinking, and swallowing

Prevalence of Feeding Problems

- **25%** of all children

(Manikam & Perman, 2000)

Prevalence of Feeding Problems

- **80%** of children with developmental delays.

Feeding Skills Research

- Preterms found to have significant ongoing feeding difficulties/at risk for continued feeding problems (Hawdon et al., 2000)
- Inconsistencies with regard to oral-motor skill development, fewer readiness behaviors for solids (Mathisen et al., 2000)

*Abnormal Feeding Patterns*

- Prolonged sucking w/out breathing
- Short sucking bursts
- Disorganized sucking
- Differences between NNS and NS
- Coughing and choking
*What is a feeding problem?*

- Failure to progress with feeding skills can be anywhere along the digestive tract
- Successful feeding = adequate anatomy and function of oral-pharyngeal structures
- Child’s medical status, especially respiration and digestion (Gisel & Alphonce, 1995)

My research questions...

- What is the relationship between oral-motor/feeding problems and speech and language development?
- Structures used are same for both
- Might feeding problems early on be developmental “red flags” of later communication delays or disorders?

**Dissertation Research**

- Extends existing research:
  - Naturalistic observation of oral-motor feeding skills and communicative acts at mealtime
  - 6 month olds transitioning to solid foods
  - Documentation of communicative acts: vocalizations and non-vocal/pre-gestural acts
  - Relationship with child speech and language outcomes at 2 years of age

**Why examine this relationship?**

- Clinical assumptions (based on same structures)
- Preterm infants are found to be less socially interactive, less engaging and less communicative (Aram et al., 1991; Hawdon et al., 2000; Selley et al., 2001; Mathiesen et al., 2000)
- What would such information provide us with regard to early identification and intervention?

**Purpose of Dissertation Study**

- To examine the early oral-motor feeding skills and communicative behavioral acts of preterm infants at 6 months adjusted age.
- To document the relationship between these early skills and later speech and language skills at two years of age.

**Research Questions**

1. Do early communicative behavioral acts during feeding interactions at 6 months of age predict later speech and language skills at 2 years of age in preterm infants?
   1A. What aspects of early communicative behaviors have greatest predictive value for later speech and language skills (looking, vocalizing acts, early pre-gestural acts)
   1B. What aspects of early communicative behaviors are most predictive of Expressive Communication/Auditory Comprehension subscores on the PLS-4 at 2 years of age?
Research Questions

2. Do early oral-motor feeding skills at 6 months of age predict later speech and language skills at 2 years of age in preterm infants?
   2A. What aspects of early oral-motor feeding skills at 6 months are most predictive of later speech and language skills (e.g. active lips, smooth rhythmic sequence to suck)
   2B. What aspects of early OM-feeding skills most predictive of AC/EC at 2 years of age?

Data

• Diane Holditch Davis' longitudinal datasets on preterm infants in UNC SON
• 6 month video footage of interaction
• Coding as “Yes/No” for behaviors/skills
• Language scores at 2 years of age

Data Coding

Severity Rating Scales-Composite Scores

1. Early Communication “Red Flags”
2. Mealtime Communication “Red Flags”
3. Oral Motor Dysfunction- Bottle Feeding OR
   Oral Motor Dysfunction- Spoon Feeding

Implications

• Identifying which children and their caregivers might benefit most from intervention at 6 months re: feeding and early communication
• Design a screening tool in the future that would measure both feeding skills and communication during mealtime interactions
• Design an intervention program

Conclusion

• Hope to tell “the rest of the story” at a later date- my results (currently coding)
• Challenge you all to consider feeding interactions as the earliest opportunities for communication between caregivers and infants.

Resources

• Schedule for Oral Motor Assessment (SOMA)
• The SOMA was developed to record oral-motor skills objectively in infants and young children (8-24 month)
• Aim is to identify areas of dysfunction that could contribute to feeding difficulties.
• Questions? mccomish@med.unc.edu