Communication Before Language: An Appraisal of Responsivity Education/ Prelinguistic Milieu Teaching

Marc E. Fey, Ph.D.
University of Kansas Medical Center
Intercampus Program in Communicative Disorders
Email: mfey@kumc.edu

Oregon Speech-Language & Hearing Association Convention
Eugene, Oregon
October 14, 2005

Important Acknowledgments

- U.S. Department of Education grant #H324C990091 from the Office of Special Education Programs
- Center grant #HD02528 from NICHD
- Steve Warren, University of Kansas
- Fey lab colleagues, KU Medical Center
  - Nancy Brady, **Shelley Bredin-Oja**, Marti Fairchild, **Liza Finestack**, Shari Sokol
- Paul Yoder and lab colleagues, Vanderbilt University

What is Prelinguistic Milieu Teaching?

- A hybrid intervention approach that targets the frequency and complexity of children's prelinguistic communicative acts

Some Basic Assumptions of Prelinguistic Milieu Teaching

- Before words are learned, retained, and used productively, children typically develop a broad nonlinguistic communicative repertoire and use it frequently and productively.
- Many children with developmental delays lack this rich, nonlinguistic communicative foundation and may not be ready to learn and use words.

Some Basic Assumptions of Prelinguistic Milieu Teaching

- Successful prelinguistic intervention should pave the way for development of functional word and semantic-syntactic development.
- Yoder & Warren (1998) found that children who received PMT increased their production of intentional communication acts if their mothers were highly responsive.
  - To be efficacious, PMT may need to be combined with efforts to heighten parental responsivity.

A Two-Pronged Solution Based on The Effects of PMT: RE/PMT

- Ensure that children have a broadly based prelinguistic system for communicating *before* targeting language.
  - Increase the frequency and complexity of proto-imperatives and -declaratives, using PMT.
- Ensure high rates of maternal responsivity using a responsive interaction approach.
  - Enhance parents' responsiveness to their children's nonverbal communicative attempts.

Operational Principles of RE/PMT: RE

1. Parents should be aware of their child's developing non-intentional and intentional communication behaviors;
2. Parents should wait for their child to produce interpretable behaviors;
3. Parents should attend to their child's focus of attention by following their child's lead;
4. Parents should provide appropriate verbal and nonverbal consequences to their child's acts.

Examples of assignments and goals for Responsivity Education

- Identify five different ways your child communicated with you during the last week.
- Count to 10 before making an additional request or comment.
- Heighten awareness of child's non-intentional and intentional communication behaviors.
- Wait for child to produce an interpretable behavior.

Examples of assignments and goals for Responsivity Education

- Play for 5 minutes with your child, doing what they do, without making any decisions. Example: playing a board game without enforcing the rules.
- Identify a familiar routine and choose target words to use consistently during that routine.
- Attend to child's focus of attention by following child's lead.
- Provide appropriate verbal (e.g., linguistic mapping) and nonverbal consequences to child's acts

RESPONSIVITY EDUCATION

- Adapted from It Takes Two to Talk - Hanen Early Language Program (Manolson, 1992)
- Eight sessions over the 6-month period (M = 7.72 sessions; SD = .89).
- Meetings were individualized, in the children's homes.
- At least one videotape of child-parent interactions was made for review with all parents.

Operational Principles of RE/PMT: PMT

- Create contexts (routines) in which the child communicates naturally.
- Follow the child's communicative lead but address specific communicative targets.
- Use the least intrusive prompts necessary to solicit the highest level communicative acts possible.

Classes of Targeted Communicative Acts

- Proto-imperatives
  - communicative acts intended to direct another person to carry out an action (i.e., requests)
- Proto-declaratives
  - communicative acts that are social in nature and direct another person's attention to an object, entity, or event of interest (i.e., comments)

Three Primary Components of Intentional Prelinguistic Communicative Acts

- Vocalizations
  - Non-canonical and Canonical
- Gestures
  - Non-conventional and Conventional
- Gaze between object and adult
  - Coordinated attention

Children Eligible for RE/PMT

- Developmental Age 9-18 months
- Significantly delayed onset of language use
  - No more than a total of 10 words or signs
- Infrequent use of intentional communicative acts
  - Less than ~2 per minute
- Infrequent use of canonical vocalizations
  - True CV(C)(V) syllabic structure
  - Less than ~1 per minute
- Infrequent use of proto-imperatives and/or proto-declaratives
  - Less than ~1 per minute

The Intervention Plan

- PMT for 20 minutes, 3-4 times weekly for up to 6 months
  - 3 visits are scheduled with a primary clinician and 1 visit is scheduled with a second clinician.
- 8 - 10, 45-60 minute parent education sessions over the same 6 month period
- The child transitions to milieu intervention when entry criteria have been reached.

PMT INTERVENTION GOALS

- The basic goal of PMT is to help the child to establish and/or increase the frequency, clarity, and complexity of nonverbal communicative acts (i.e., proto-imperatives and proto-declaratives).

INTERMEDIATE GOALS FOR PMT

1. Establish routines to serve as the context for communicative acts
2. Increase the frequency of nonverbal vocalizations
3. Increase the frequency and spontaneity of coordinated eye gaze
4. Increase the frequency, spontaneity, and range of conventional and non-conventional gestures
5. Combine components of intentional communication acts

INTERMEDIATE GOAL 1

- Establish routines to serve as the context for communicative acts.
  - Imitate the child's motor acts.
  - Imitate the child's vocal acts.
  - Interrupt the child's established pattern of actions with an adult turn, and then wait for the child to take a turn.

INTERMEDIATE GOAL 2

- Increase the child's vocalizations
  - Imitate the child's spontaneous vocalizations as precisely as possible to encourage vocal turn-taking.
  - Imitate the child's spontaneous vocalizations with sounds and syllable shapes known to be within the child's repertoire but different from the child's original vocalization.
  - Model a sound within the child's sound and word shape repertoire during a motor act.
  - Use words when the child clearly marks referents as part of the communicative act.

INTERMEDIATE GOAL 3

- Increase the frequency and spontaneity of coordinated eye gaze
  - Intersect the child's gaze by moving the adult's face into the child's line of regard.
  - Move the desired object to the adult's face to encourage a more explicit look.
  - Verbally prompt for eye gaze (e.g., say *Look at me* or call the child's name).

INTERMEDIATE GOAL 4

- Increase the frequency, spontaneity, and range of gestures
  - Create a need for communication within a routine (e.g., by placing a desired object out of reach); then, if the child does not produce a gesture:
    - help the child to form an appropriate gesture,
    - model an appropriate gesture, or
    - pretend not to understand by looking and gesturing quizzically and saying *What?* or *What do you want?*
    - Use time delay

INTERMEDIATE GOAL 5

- Combine two or all three of the components of intentional communicative acts.

Six Crucial Steps in Making an EBP Treatment Decision

1. Develop an appropriate clinical question
2. Find the internal evidence
   - Student-family values, desires, circumstances
   - Clinician knowledge of the condition *and* of the student, experience, theoretical perspectives, and school attitudes regarding the need for change
3. Find the external evidence
4. Critically evaluate the external evidence
5. Integrate the internal and external evidence
6. Evaluate the outcome of the decision

A Hypothetical Case Example

- Stewie is a 27-month-old boy with Down Syndrome.
  - Stewie has been receiving Part C services, including speech and language since shortly after his birth.
  - Your testing suggests that the parents are not sensitive to Stewie's wants and needs and they often neglect his communicative acts, especially those that are nonverbal.

A Hypothetical Case Example

- Stewie uses signs for “more” and “all done” but prompts are often needed to get him to use these signs.
- Stewie has some drooling, poor tone around the lips, and a pronounced reverse swallow, but he is producing a number of CVs, CVCs, and CVCVs and a total of 7 consonants, including [f] and [s].
- During your administration of the CSBS, Stewie produced 1.75 communication acts per minute.

A Hypothetical Case Example

- Stewie is not highly attentive to toys and other playthings; he tends to flit about from object to object.
- Stewie’s parents interested in being a part of Stewie’s program and are willing to pay for extra services, if necessary.
- You are familiar with “Hanen”-like interventions, and you have received Hanen training, but you are unfamiliar with RE/PMT.

Step 1: Developing the Clinical Question Using PICO

- Would a 27-month-old child with Down Syndrome with limited communication, only two signs and no spoken words (P) make more significant gains in the use of communication acts, words, and signs (O) with a “Hanen”-style parent-based intervention (I), or a more costly program involving weekly Responsivity Education/Pre-linguistic Milieu Teaching (C)?

Step 2: Finding the Internal Evidence: Some Questions to Ask - Child/Family

- What do you know about the child and the child’s attentional, motivational, behavioral, social, emotional, linguistic and curricular needs and desires?
- What does the family need and want for the child?
  - Is this consistent with your own perspective?
- What are the family’s values (e.g., cultural) and resources (e.g., time, energy, attitudes about education/tx, financial)?
  - How might this influence the intervention outcome?

Step 2: Finding the Internal Evidence: Some Questions to Ask – SLP

- What type of intervention would you normally use for this sort of a case?
  - What level of success have you had in such cases (or with this child!) in the past?
    - Can you document this success with your own data?
  - How proficient do you feel you are in administering this sort of intervention?
  - What evidence is there to support such an approach?
  - What are the advantages and disadvantages of applying this approach with this child?

Step 2: Finding the Internal Evidence: Some Questions to Ask - School

- What sorts of constraints on the time, frequency, and context of tx are imposed by the school district and/or individual school?
- What is the school’s perspective on the role of the SLP?
- Does the school culture value/disvalue change?
- These factors may be unimportant in determining the best program, but they are crucial to success in implementation.

Step 3: Finding the Evidence

- Read and evaluate 1 – 3 of the most recent articles that seem best to address the question.

External Evidence for PMT

- Yoder & Warren (1998)
  - 58 children between the ages of 17-32 (mean = 23, sd = 4) participated.
  - Children were randomly assigned to either a PMT group or a Responsive Small Group (RSG).
    - In RSG, adults played with the child and commented on what they were doing but did not require the child to produce any communicative acts

External Evidence for PMT

- Yoder & Warren (1998) Results
  - Children who received PMT increased their production of intentional communication acts if their mothers were highly responsive.
  - For those children with unresponsive mothers, the RSG tx was more effective in increasing their production of intentional communication.
  - Twelve months after completing the intervention, children who received PMT (and had responsive mothers) did significantly better on linguistic measures (Yoder & Warren, 2001).

External Evidence for PMT

- Yoder & Warren (2002): Responsivity education for parents (RPMT)
  - 39 children with developmental delays and their primary caregiver participated (median age = 22 mos, sd = 4; mental age = 14 mos, sd = 4)
  - Children-parent dyads were randomly assigned to RPMT group or a control group
  - Tx sessions for RPMT were 20 minutes a day, 3-4 times per week for 6 months
  - Control group received no intervention from the study

External Evidence for PMT

- Yoder & Warren (2002) Results
  - RPMT resulted in more comments and greater lexical density (i.e., number of different symbols used in a communication sample) if children began tx with low frequency comments and canonical vocalizations.
  - RPMT appeared to slow growth in comments and lexical density if children began tx with relatively frequent comments and canonical vocalizations.

External Evidence for PMT

- Yoder & Warren (2002) Results (cont.)
  - RPMT resulted in more requests if children did not have Down Syndrome.
  - For children with Down Syndrome, the rate of growth in requests was not as great as the control group.

External Evidence for PMT

- Fey and colleagues (in preparation)
  - 51 children with developmental delays between the ages of 24-33 months (mean = 25, sd = 2.7) participated
  - All children had mild to moderate mental retardation, less than 10 words, and a rate of intentional communication that was less than 2 acts per minute.

External Evidence for PMT

- Children were randomly assigned to either a PMT group or a control group as they entered the study.
- Parents of children in the PMT group received eight 1-hour individual sessions of responsivity education.
- Children in the control group received language intervention one year after entering the study.
- Tx sessions for PMT were 20 minutes a day, 3-4 times per week for 6 months.

External Evidence for PMT

- Fey and colleagues (in preparation) Results
  - Children in the PMT group, regardless of their diagnosis, produced more intentional acts than children in the control group during the CSBS.

Step 4: Evaluating External Evidence - Critical Appraisal of a Topic Relevance and Feasibility

		Yes	??	No
1.	Are the participants described clearly?	x		
2.	Are kids like Stewie represented in the sample?		x	
3.	Is the intervention clearly described?	x		
4.	Is the intervention feasible in my school system?	x		
5.	Are the outcome measures indicators of clinical significance?	x		

The study appears to be relevant to Stewie's case.

Step 4: Evaluating External Evidence - Critical Appraisal of a Topic Strength of the Effects

		Yes	??	No
1.	Are the observed effects statistically significant?	x		
2.	Are the effects medium to large in size?	x		
3.	Are the effects reliably greater than zero?	x		
4.	Are the effects clinically meaningful?	x		

The study provides support for the efficacy of RE/PMT.

Step 4: Evaluating External Evidence - Addressing Levels of Evidence

Ia A systematic review of randomized controlled trials with consistent study outcomes

Ib A well-conducted single randomized controlled trial (RCT) with a narrow confidence interval

IIa A systematic review of non-randomized quasi-experimental trials OR a systematic review of single subject experiments that documents consistent study outcomes

Step 4: Evaluating External Evidence - Addressing Levels of Evidence

IIb A high quality quasi-experimental trial OR a lower quality RCT OR a single subject experiment with consistent outcomes across replications

III Case study/series OR poor quality quasi-experimental studies

IV Expert opinions without critical appraisal OR theoretical knowledge OR basic research

Step 4: Evaluating External Evidence - Critical Appraisal of a Topic Determining Study Methodology

	Yes	??	No
1. Does the study systematically review randomized controlled trials?			x
2. Are ≥ 2 conditions compared?	x		
3. Is the study prospective: measures before and after tx?	x		
4. Are groups assigned randomly?	x		
5. Are there controls within or across single subjects?			x

The study is a randomized clinical trial.

Step 4: Evaluating External Evidence - Critical Appraisal of a Topic Determining Quality of Evidence

	Yes	??	No
1. Are participant groups equivalent?	x		
2. Are testers blind to group assignments?			x
3. Are coders blind to group assignments?		x	
4. Are outcome measures reliable and valid?		x	
5. Are dropouts accounted for?	x		

Due to methodological flaws, the study cannot be rated as Ia and must be regarded as IIb level evidence.

Step 5: Internal Evidence: Child-Parent Factors

Step 5: Internal Evidence: Clinician/School Factors

Step 6: Evaluate the Outcomes of the Decision

Some Things That EBP Principles Do and Do NOT Do

- EBP principles do *not* limit us to the use of clinical practices that have shown to be efficacious and effective.
- They *do* require us to examine our practices to determine what types and what amounts of evidence support our practices.
- They *do* require us to be skeptical about the use of all of our clinical practices.
  - This is especially true when we do not have a strong body of evidentiary support.
  - This is *most* especially true when there is less support for our approach than for an alternative.

References

•Fey, M. E., Warren, S. F., Brady, N., Finestack, L., Bredin-Oja, S., Fairchild, M., Sokol, S., & Yoder, P. J. (submitted). Early Effects of Prelinguistic Milieu Teaching and Responsivity Education for Children with Developmental Delays and Their Parents.

•Fey, M. E., & Justice, L. Evidence-Based Decision Making in Communication Intervention. To appear in R. Paul (Ed.) *Introduction to Clinical Methods in Communication Disorders.* Baltimore: Paul H. Brookes.

•Girolametto, L. E. (1988). Improving the social-conversational skills of developmentally delayed children: An intervention study. *Journal of Speech and Hearing Disorders, 53,* 153-167

•Girolametto, L., P. S. Pearce, et al. (1996). "Interactive focused stimulation for toddlers with expressive vocabulary delays." *Journal of Speech and Hearing Research*, **39**(6): 1274-83.

•Girolametto, L., P. S. Pearce, et al. (1997). "Effects of lexical intervention on the phonology of late talkers." *JSLHR: Journal of Speech Language and Hearing Research*, **40**(2): 338-48.

•Girolametto, L. and R. Tannock (1994). "Correlates of directiveness in the interactions of fathers and mothers of children with developmental delays." *J Speech Hear Res*, **37**(5): 1178-91.

References

•Girolametto, L., M. Verbey, et al. (1994). "Improving joint engagement in parent-child interaction: An intervention study." *Journal of Early Intervention.* **18**(2): 155-167.

•Girolametto, L., E. Weitzman, et al. (1998). "Vocabulary intervention for children with Down syndrome: Parent training using focused stimulation." *Infant Toddler Intervention*, **8**(2): 109-125.

•Tannock, R., L. Girolametto, et al. (1992). "Language intervention with children who have developmental delays: effects of an interactive approach." *Am J Ment Retard* **97**(2): 145-60.

•Warren, S. F., P. J. Yoder, et al. (1993). "Facilitating prelinguistic communication skills in young children with developmental delay." *Journal of Speech & Hearing Researc,h* **36**(1): 83-97.

•Yoder, P. J., A. P. Kaiser, et al. (1991). "An exploratory study of the interaction between language teaching methods and child characteristics." *Journal of Speech and Hearing Research* **34**(1): 155-67.

•Yoder, P. J., S. F. Warren, et al. (1994). "Facilitating prelinguistic communication skills in young children with developmental delay: II. Systematic replication and extension." *Journal of Speech & Hearing Research* **37**(4): 841-851.

References

•Yoder, P. J., H. Spruytenburg, et al. (1995). "Effect of verbal routine contexts and expansions on gains in the mean length of utterance in children with developmental delays." *Language, Speech, and Hearing Services in Schools* **26**(1): 21-32.

•Yoder, P. J. and S. Warren (1998). "Maternal responsivity predicts the prelinguistic communication intervention that facilitates generalized intentional communication." *Journal of Speech Language and Hearing Research* **41**(5): 1207-19.

•Yoder, P. J. and S. F. Warren (2002). "Effects of prelinguistic milieu teaching and parent responsivity education on dyads involving children with intellectual disabilities." *Journal of Speech, Language, and Hearing Research*, 45(6): 1158-74.

•Yoder, P. J. and S. F. Warren (2001). "Relative treatment effects of two prelinguistic communication interventions on language development in toddlers with developmental delays vary by maternal characteristics." *Journal of Speech Language and Hearing Research* **44**(1): 224-37.