

# Intervention Techniques for Children in the Prelinguistic and Early Stages of Language Development

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## Core Beliefs

- › Communication begins at birth
- › Every child can and does communicate
- › There are no prerequisite skills that are necessary before intervention can begin

## Typical Development

- › First words typically appear at about 12 months of age
- › Before words are learned and used productively, children typically develop a broad nonlinguistic repertoire and use it frequently and productively

## What is Prelinguistic Communication?

- › Forms
  - Vocalizations
  - Gestures
  - Eye gaze
  - Combinations of these forms
- › Functions
  - Behavior regulation (requests)
  - Social interaction (greeting)
  - Joint attention (commenting)

## Summary of Vocal Development

Age	Vocal behavior
Birth to 6 months	Experimental sounds (e.g., raspberries) Noncanonical vocalizations Cooing Quasi-vowels (produced with the vocal tract at rest)
6 to 10 months	Canonical babbling (rapid transition between consonant and vowel) Reduplicated babbling Variegated babbling
10 to 18 months	Jargon Speech

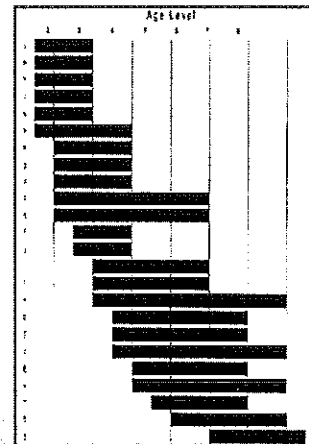
## Shriberg's (1993) sequence of speech sound development

Early 8 - / m n b j w d p h /

Middle 8 - / t k g ŋ f v tʃ dʒ /

Late 8 - / ʃ θ ð s z l r ʒ /

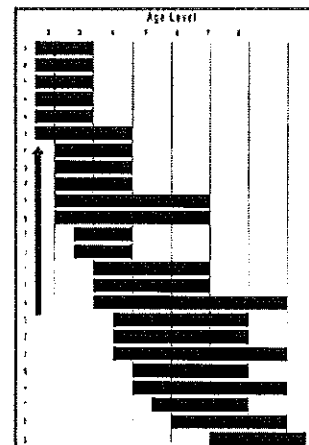
Sander (1972) "Norms"



## Sander's (1972) Norms

- ▶ This is a commonly used chart but it is not actually showing the development of speech sounds from beginning of use to full use.
- ▶ The left end of the bar shows the point where 50% of the children in the sample set correctly produced the sound.

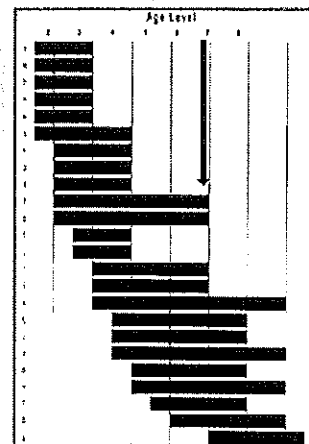
Sander (1972) "Norms"



## Sander's (1972) Norms

- ▶ The right end of the bar is where 90% of the children in the sample set produced the speech sounds correctly.
- ▶ This is not really a developmental progression; the development of speech sounds begins long before it is shown here.

Sander (1972) "Norms"



## Shriberg's (1993) sequence of speech sound development

Early 8 - / m n b j w d p h /

Middle 8 - / t k g ŋ f v tʃ dʒ /

Late 8 - / ʃ θ ð s z l r ʒ /

## Why are vocalizations important?

- ▶ Canonical vocalizations are predictive of later language ability.
- Children who do not produce canonical babbling by 10 months of age are at an extreme risk for speech and language delays (Oller et al., 1999)

## Why are vocalizations important?

- ▶ Canonical vocalizations are predictive of later language ability.
- The rate of vocalizations, vocalizations with consonants, and vocalizations used interactively are correlated with later expressive vocabulary (McCathren, Yoder, & Warren, 2003)

## Why are vocalizations important?

- ▶ Canonical vocalizations are predictive of later language ability.
- Phonetic and syllabic complexity of vocalizations at 18-20 months has been shown to predict later vocabulary size at 24 months (Fasolo, Majorano, & D'Odorico, 2008)

## Gestures

- ▶ Contact gestures
  - Gestures that are in direct contact with an object or person
- ▶ Distal gestures
  - Person is not in direct contact with the referent
- ▶ Representational gestures
  - Indicate semantic content

## Why are gestures important?

- ▶ Gesture use is correlated with other areas of prelinguistic and linguistic communication
- Children who use only contact gestures try to repair communication breakdowns less often than children who use more advanced gestures (Brady et al., 1995)

## Why are gestures important?

- › Gesture use is correlated with other areas of prelinguistic and linguistic communication
- Individuals with intellectual disabilities who only communicate with contact gestures rarely communicate other functions such as joint attention (commenting)

## Why are gestures important?

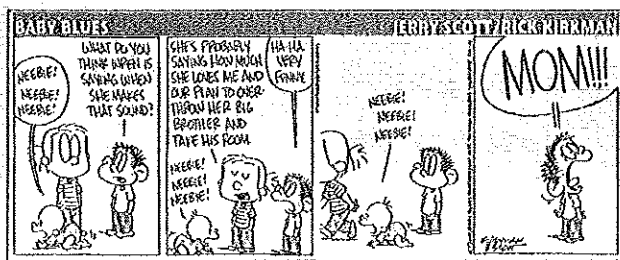
- › Individuals who communicate with only contact gestures communicate significantly less often than children who communicate with more advanced gestures (Brady et al. 2001; 2004)

## Why are gestures important?

- › Eleven-month olds who pointed had an additional 1.16 words/month....Or 167 word advantage by 2 years of age (Brooks & Meltzoff, 2008)

## Importance of gaze

- › Alternating gaze or coordinated attention is also a form of prelinguistic communication

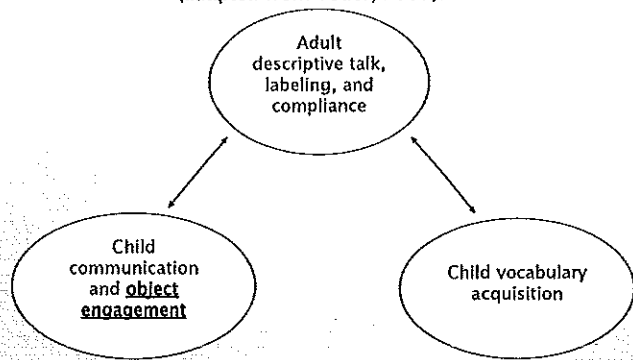


Just because they aren't using words..... »»

## Is it important to target prelinguistic communication?

- › Individuals progress in communication even if they have not yet begun using words or other symbols
- › Progress in:
  - Frequency of prelinguistic communication
  - Use of pointing and other advanced gestures
  - Diversity of communication functions
  - Repair of communication breakdowns

Transactional model of communication development  
(adapted from Yoder, 2007).



## Why Assess Prelinguistic Communication?

- › Early identification of a language delay
- › Early identification of a developmental disorder
- › Identify intervention goals and monitor progress
- › Measure caregiver responsiveness to prelinguistic behaviors

## Evaluation and Assessment : Different purposes under Part C

### Evaluation

- › Procedures used to determine the existence of a delay or disability
- › To determine initial and continuing eligibility
- › To identify the child's strengths and needs

### Assessment

- › Ongoing procedures to identify the child's strengths and needs and the services appropriate to meet those needs
- › To identify the resources, priorities, and concerns of the family and the supports and services necessary to enhance the family's capacity to meet the needs of the child

## Examples of Evaluation Tools Used By *tiny-k*

- › Transdisciplinary Play-Based Assessment (TPBA)
- › Rosetti Infant-Toddler Language Scale
- › Assessment, Evaluation, and Programming System for Infants and Children (AEPS)
- › Hawaii Early Learning Profile (HELP)

These standardized tools diagnose or determine eligibility but they are not useful for planning intervention goals.

## Assessment Strategies

- › Information should come from a variety of sources
  - Parent/Caregiver questionnaires
  - Direct observation
  - Assessment protocols
  - Interviews/focused conversations

## Characteristics of a Good Parent Questionnaire

- › Uses recognition memory
  - "Does your child point to things in the distance?"
- › Questions are tied to specific events
  - "How does your child let you know that he wants something out of reach?"
  - How does your child get you to look at something she wants you to notice?"

The Communication and Symbolic Behavior Scale (CSBS) Caregiver Questionnaire is good.

## Direct Observation

- › Use contexts that have a high probability of communication
  - Snack or meal time
  - Book sharing
  - Free play

## Assessment Protocols

- › Tests with specific tasks that are designed to create an opportunity to request, comment, or repair a communication breakdown
  - If a communicative act does not occur during direct observation, we need to see if the child will perform this act when provided with a specific opportunity to do so

## Why are breakdown repairs important?

- › Necessary for turn-taking to proceed smoothly
- › Facilitates social interaction
- › Prompts the development and use of more advanced forms of communication

## Interviews/Focused Conversations

- › Explain the purpose of the conversation
- › Talk about enjoyable activities as well as challenging ones
- › Talk about what strategies the parent has already tried

## A thorough assessment should provide information regarding:

- Forms of communication
- Functions of communication
- Rate of communication
- Assertiveness
- Communication repairs
- Motivation
- Family priorities

Classification scheme for profiling children according to their levels of social-conversational participation (Fey, 1986).

ASSERTIVENESS	EXPECTED	+ ASSERTIVE + RESPONSIVE	+ ASSERTIVE - RESPONSIVE
	LOW	- ASSERTIVE + RESPONSIVE	- ASSERTIVE - RESPONSIVE
		EXPECTED	LOW
		RESPONSIVENESS	

## Intervention Techniques

- ▶ Discrete trial teaching
  - Didactic, adult-directed instruction with massed trials and external reinforcers
    - Social praise – “good talking”; “good job”
    - Tokens
  - Errorless learning technique

## Intervention Techniques

- ▶ Naturalistic behavioral interventions
  - Use a child-directed approach with natural reinforcers
    - Adult complies with the communicative intent of the child
    - In other words, the child receives what they ask for
  - Milieu Teaching, Prelinguistic Milieu Teaching, Incidental Teaching, Pivotal Response Training, Early Start Denver Model

## Resource:

- ▶ National Joint Committee for the Communication Needs of Persons with Severe Disabilities

[www.asha.org/njc](http://www.asha.org/njc)

## Prelinguistic Milieu Teaching

- ▶ Teaches early intentional communication acts composed of gestures, coordinated gaze, vocalizations and combinations of these components
- ▶ Purpose of PMT is to increase a child's rate and complexity of intentional communication prior to using language

## Basic Principles of PMT

1. Arrange the environment to create multiple opportunities for the child to communicate
  - Children are most likely to initiate communicative acts about things they need, want, or find novel and interesting
  - Motivation is crucial

## Motivation

- ▶ What are some reasons why a child might communicate?

## Reasons to Communicate

- › To ask for an object or an action
- › To ask that something happen again
- › To greet
- › To call attention
- › To protest
- › To ask for information
- › To share information

## Not a Reason to Communicate

- › Because an adult tells them to communicate

## Selecting materials

- › Use toys/materials that are highly preferred by the child and that the child finds interesting
- › Use toys with multiple parts
  - Ball tower with multiple balls
  - Duplos
- › Use toys that require assistance
  - Closed containers
  - Ball tower that must be put together

## Arranging materials

- › Limit the number of toys you make available to the child at any one time
  - This will encourage longer periods of engagement with an object and may encourage more differentiated play
- › Have toys in view but out of reach
  - High on a shelf or in a clear container
- › Use containers that are difficult for the child to open

## Managing materials

- › Keep some of the toys/materials in your control
  - Don't give the child all of the toys at once to create opportunities to request
  - Don't give necessary items to create an opportunity
- › Add toys/materials when the child appears to lose interest
- › Use the toy in a new way when the child appears to lose interest
- › Place a toy/object in an unexpected place
  - A picture of the child's mom inside a book

## Basic Principles of PMT

2. Follow the child's lead
  - Young children attend more closely to objects or events of their choosing rather than to objects or events of an adult's choosing



## Follow the child's lead

- › The child gets to choose the activity
- › Requires a thorough understanding of the techniques and what the target behavior or behaviors are
- › Any activity can be turned into an opportunity for communication to take place
  - Which activity the adult and child engage in does not matter, what matters only is that there is child engagement

## Follow the child's lead (within reason)

- › If the child is rapidly shifting from one object to another
  - Stay in one place, entice the child, and reward the child when they come close
  - Create a smaller work space
    - Sit at a table or in a corner
  - Use fewer toys

## Basic Principles of PMT

3. Build social routines
  - Repetitive, predictable sequences of play or interaction that the child recognizes
  - Child is able to anticipate the next step in the routine
  - Routines can be unconventional and unique to a given child

## Procedures of PMT

- › Explicit prompts to produce the targeted behavior
- › Adult models of targeted behavior
- › Natural consequences
  - Child requests yield the desired object or action
  - Child comments result in the adult's attention to the child's topic
- › Add language
  - Label the object or action

## Prompt Hierarchy Least to Most

- › Use the least intrusive prompt necessary
  - Time delay
  - Open-ended question – "What?"
  - Explicit prompt – "Look at me" "Reach for it"
  - Provide a model
  - Physically assist for a gesture
  - Intersect the child's gaze for coordinated attention

## Goal of PMT

- › To increase a child's rate and complexity of intentional communication (i.e., gestures, vocalizations, and coordinated attention) prior to using language

## Who is appropriate for PMT?

- › Infrequent prelinguistic communicators by 12 months of age, or earlier if the child has a diagnosis with a known communication delay
- › <10 productive words

## Who is not appropriate for PMT?

- › Children who are frequent prelinguistic communicators (>1 communication act per minute)
- › Children who use >10 words, regardless of their rate of communication

- › Children who do not respond quickly to efforts to improve frequency and complexity of vocalizations should be considered as candidates for an alternative/augmentative communication system beyond gestures that are targeted as a part of PMT
- › The Early Start Denver Model (2010) employs PROMPT if children do not improve their vocal communication after a period of 3 months

## PROMPT

- › Prompts for Restructuring Oral Muscular Phonetic Targets
- › Auditory and tactile cues
  - Vocal modeling and actual manual manipulation of the child's jaw, lips, and other speech mechanisms while the child vocalizes to elicit speech approximation of a target word

## Intermediate objectives of PMT

1. Establish routines
2. Increase frequency and diversity of vocalizations
3. Increase coordinated attention (eye gaze)
4. Increase use of gestures
5. Increase complexity of nonverbal communicative acts by combining components of eye gaze, gestures, and vocalizations

## How to build a social routine

- › Child interest begins the activity
  - Take a few moments to observe the child
    - What is it about the object/activity that the child finds enjoyable?
- › Draw the child's attention to you
  - Eliminate distractions
  - Position yourself so that you are face to face with the child

## How to build a social routine

- › Imitate the child's motor actions and/or vocalizations

## How to build a social routine

- › Insert a short turn
  - Do the same action as the child for a brief period of time then give the toy immediately back to the child
  - Remember we are building routines at this point - not prompting for communication

## How to build a social routine

- › If the child refuses to relinquish the toy, try trading him for the toy until he realizes that he is going to get the toy right back
- › Do not use your turn to end the activity

## How to build a social routine

- › Perform an act the child finds interesting and repeat it
  - The Fey technique - balance an object on your head, then let it drop forward. If the child enjoys this, repeat the game.

## How to build a social routine

- › Pair the same words with the same actions
  - Over time this becomes an anticipated part of the routine
- › Play the way the child wants to play

- › Once a familiar routine is established wherein the child knows her role and can anticipate the next step, interruptions in the routine can serve as opportunities for communication

## Increase frequency/diversity of nonverbal vocalizations

- › *Nonverbal* vocalizations
- › There is no referent
  - The child is not trying to communicate about an object
- › The objective is to get the child to produce more vocalizations outside of a communicative act so that they will begin to vocalize for the purposes of communication

## Increase frequency/diversity of nonverbal vocalizations

- › Imitate a sound that is produced by the child
  - Do not overlap vocalizations, wait until the child pauses before you insert a vocal turn
- › Model a sound known to be in the child's sound and syllable shape repertoire
- › Model a sound outside of the child's sound and syllable shape repertoire
- › Vocalize into or through objects

## Increase coordinated attention

- › Once a routine is established, use time delay
- › Verbally prompt for gaze
  - Call the child's name
  - Use an explicit prompt - "Look at me"
- › Intersect the child's gaze
  - Bring the object to your face
  - Move your face into the child's line of visual regard
- › Comply and add language

## Increase use of gestures

- › Natural gestures (not signs)
  - Not symbolic
- › Gestures are part of a culture's nonverbal communication system
- › Remain in our communication system even after we learn to communicate through symbolic means

## Increase use of gestures

- › Once a routine is established, use time delay
- › Pretend not to understand
  - Ask "what?" and look quizzical
- › Tell the child to be more specific
  - "Which one do you want?"
- › Give an explicit prompt (e.g., Reach for it)
- › Model the targeted gesture
- › Physically assist the child to produce the targeted gesture
- › Comply and add language

## Comments

- › Teaching requests involves prompting and rewarding the desired behavior
- › We can't directly prompt comments
  - Comments are intrinsically self-initiated
  - Use of "unexpected events" becomes less effective over time
- › The only reward for comments is adult attention or social interaction

## Targeting Language

- ▶ Once children are communicating frequently and spontaneously (or with only a short time delay prompt), symbolic language (i.e., words) becomes the target
- ▶ Children who have at least 10 productive words are appropriate candidates for language intervention rather than prelinguistic intervention

## (Enhanced) Milieu Teaching

- ▶ Focus is on the functional use of language in natural contexts
  - Teaching episodes are distributed, not massed
- ▶ Like PMT, this approach uses prompting procedures and natural consequences to promote the use of language
- ▶ **Enhanced** refers to an added component of responsive interaction
  - Following the child's lead, responding to the child's imitations, balanced turn-taking, and expanding the child's utterances

## (Enhanced) Milieu Teaching

- ▶ Continuous exposure to highly responsive adults is a necessary but not sufficient component of optimally effective early intervention for all children (Warren, 2005)
- ▶ MT uses the direct teaching procedures of
  - Time delay
  - Elicitive model: prompt to imitate
  - Mand-model: questions, choice questions, prompt to imitate
  - Incidental teaching: follows a child initiated request

## Who is appropriate for EMT?

- ▶ Children who are verbally imitative
  - Verbal imitation is a prerequisite because the core MT procedures rely on adult modeling and child imitation to practice the responses in functional contexts (Hancock & Kaiser, 2006)
- ▶ Children who have at least 10 productive words
- ▶ Children with MLUs between 1.0 and 2.5
  - Hancock and Kaiser (2006) recommend this intervention for children whose MLU is as high as 3.5

## (Enhanced) Milieu Teaching

- ▶ Imitation becomes less effective for children with more complex language
- ▶ This may be because the adult expansion of the child's platform utterance may not be what the child intended

## (Enhanced) Milieu Teaching

- ▶ Child: "mommy going car"
  - Intended: Why is mommy going in the car?
- ▶ Adult prompt: Say "mommy is going in the car"

## (Enhanced) Milieu Teaching

- › For children with more complex language (Brown's stage III and up), recasts may be more effective

## (Enhanced) Milieu Teaching

- › Basic principles of EMT are the same as PMT
  - Arrange the environment to create opportunities for communication
  - Follow the child's attentional lead
  - Build social routines
- › Goal is now language

## (Enhanced) Milieu Teaching

- › When selecting targets, consider:
  - Absent and/or emerging (but not mastered!) targets
  - The phonetic composition of the targets
  - The developmental appropriateness of the targets
  - The functionality of the targets
  - The caregivers' preferences
  - Generalizability
  - Addressing 5–10 lexical items; 2–3 semantic relations at a time

## Choosing targets

Word Class	Routine	Bubbles	Brimble ball	Swingset	Snack
Noun		bubble	ball		juice cookie
Verb		pop open	go stop	go	open
Adjective					hot dirty
Other relational Words		no gone		up down more	done more mine

## Procedures of MT

- › Time delay
- › Elicitive model
- › Mand-model
- › Incidental teaching

## Elicitive model

- › Identify an opportunity to communicate within an activity/social routine
- › Model the target language form with a prompt to imitate the model
  - Say/tell me "ball"

## Elicitive model

- › If the child imitates the ELICITIVE model, acknowledge the response by providing the object AND recasting the child's utterance
  - Adult: Say ball
  - Child: ball
  - Adult: You want the ball; Here's the ball; another ball

## Elicitive model

- › If the child does not imitate the target form, prompt the child again
- › If the child doesn't respond or repeat the target correctly, state the correct response and give the child the object

## Mand-model

- › Identify an opportunity to communicate within an activity/social routine
- › Present a verbal mand (e.g., tell me what you want) or a question (e.g., what do you want?) or a choice question (e.g., do you want the car or the ball?)

## Mand-model

- › If the child responds to the mand/question, acknowledge the response by providing the object AND recasting the child's utterance

## Mand-model

- › If the child does not respond to the mand/question, give either another mand or give an elicitive model, depending on the child's need for support
- › If the child still doesn't respond, state the correct response and give the child the object

## Mand-model

- › Adult: *Do you want the car or the ball?*
- › Child: no verbal response but reaches for the ball
- › Adult: *Say ball*
- › Child: no verbal response
- › Adult: *Ball, you want the ball* then gives the child the ball and creates another opportunity for communication within the activity/routine

## Incidental teaching

- › Begins with a child initiation
- › Use either time delay, elicitive model, or mand-model procedure to prompt for a more elaborate response

## Incidental teaching

### Example 1

Context: Making pudding  
Adult: gives a peer a turn at stirring the pudding as the child looks on  
Child: *Me* (child initiates)  
Adult: Say *stir the pudding* (elicitive model)  
Child: *stir pudding* (correct response)  
Adult: *Okay, you stir the pudding too.* (acknowledgement and recast)

## Incidental teaching

### Example 2

Context: Giving a doll a bath  
Child: *Wash* (child initiates an action verb)  
Adult: *Wash what?* (question for elaboration)  
Child: *Wash* (insufficient response)  
Adult: Say *wash the baby* (elicitive model)  
Child: *Wash baby* (correct response)  
Adult: *Yeah, we are washing the baby.* (acknowledge and recast)

## Focused stimulation

- › Multiple concentrated exposures of a few select target words
- › No attempt to elicit a production
- › General language stimulation – descriptive talk without much repetition or focus on specific vocabulary

## Targeting Semantic Relations

- › Once a child has a productive vocabulary of about 50 words, the target becomes semantic relations
- › The procedures are the same
  - Time delay
  - Mand-model
  - Elicitive model
  - Incidental teaching

## Choosing Semantic Relations

- › There is a developmental progression (Bloom & Lahey, 1972)
- › Existence – labels of things
  - This juice
- › Nonexistence – absence or disappearance of an expected object
  - Cookie allgone; no ball
- › Recurrence – reappearance of an object or action or appearance of a similar item
  - More cookies; another cookie; kick again



## Choosing semantic relations

- › Rejection – indicates child's opposition to some object or event
  - No bed
- › Denial – negates the truth of a statement or identity of an object
  - Not yours

## Choosing semantic relations

- › Attribution – adjectives
  - Hot, dirty, messy, broke, empty
- › Change of state attributions develop first – the change of state is more salient than other static attributes like size or color

## Choosing semantic relations

- › Possession – nouns or pronouns that refer to the owner + noun
  - Mommy shoe; my ball
- › Agent Action/Action Object – verbs
  - Baby eat; eat cookie
- › Locative Action – verbs that involve a change in location or movement to a goal
  - Daddy go; go outside; come in

## Vertical structuring

- › When the child produces a single word, repeat the word and prompt for the second component of the semantic relation

## Telegraphic utterances

- › A telegraphic utterance is an utterance that is missing closed class morphemes, or functional words

Baby drinking

the baby is drinking

## An Experiment

dack

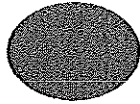


Verb (kick)

dack



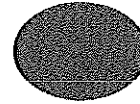
Noun (ball)



Adjective (blue)

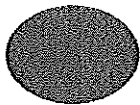


the dack



Verb (kick)

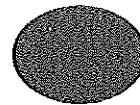
Tooz dack



Adjective (blue)



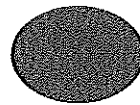
Tooz the dack



Tooz the dack  
Kick the ball



The tooz dack  
The blue ball



## Gerken & McIntosh (1993)

- ▶ Telegraphic models
  - distort the natural prosody of a sentence
  - reduce exposure to morphemes known to be difficult to learn
  - imply optionality when there is none
- ▶ Research has shown that telegraphic models do not aid in comprehension

- ▶ Series of experiments with children 21–28 months old
- ▶ Children heard sentences then were asked to point to a picture representing a target word

## Gerken & McIntosh (1993)

- ▶ The target word was preceded by either:
  - an article that was grammatical in the context: "Find *the* bird for me."
  - no function morpheme: "Find \_ bird for me."
  - an auxiliary that was ungrammatical in the context: "Find *was* bird for me." or
  - a nonsense syllable: "Find *gub* bird for me."

## Gerken & McIntosh (1993)

- ▶ Significant difference between grammatical and ungrammatical function morphemes
- ▶ Significant difference between grammatical and nonsense syllables
- ▶ No significant difference between grammatical morphemes and absence of grammatical morphemes (telegraphic utterances)

## Fernald and Hurtado (2006)

- ▶ Fernald and Hurtado (2006) used a preferential looking paradigm to test even younger children
- ▶ Compared 18 month olds' recognition of words in contexts with grammatical detail to contexts with no grammatical detail

Look at the baby      baby

## Fernald and Hurtado (2006)

- ▶ Also compared sentences with a word that served as a prompt for the upcoming noun to elicit attention to the target word

Look. Baby!

Look at the baby!

## Fernald and Hurtado (2006)

- › The target word presented in the full grammatical sentence resulted in faster and more accurate responses.
- › Complete sentences, with the familiar prosodic contours and predictability of the co-occurrence of determiners with nouns preserved, offer an advantage to young children learning language

## Do telegraphic utterances help with production?

- › Clinical advantages of telegraphic speech have not been demonstrated
- › This is not to say that interventions using telegraphic models are not effective. Milieu Teaching, which advocates the use of telegraphic models, has been shown to be effective with a variety of populations including children with language delay, intellectual disabilities, speech intelligibility issues, and autism

## Recasts

- › Recasting is repeating the child's utterance into a more complete, phonologically, grammatically and semantically appropriate word, phrase, or sentence
- › A recast expands the child's utterance by repeating but also adding to or correcting the child's immature grammar, and/or speech production error

## Effective Recasts

- › Must immediately follow the child's utterance
- › Must maintain the essential meaning of the child's utterance
- › Must reproduce at least one content word found in the child's utterance
- › Must add information

## Recasts

- › Children can use recasts to make a cognitive comparison between a structure present in their linguistic system and new, more advanced structures

## Expatiations

- › topically contingent responses that do not repeat the basic meaning of the child's utterance and may not repeat any of the child's words
- › They keep the conversation going but do not have the same language facilitation as recasts

## Evidence for PMT

- ▶ longitudinal experimental study (Yoder & Warren, 1998)
- ▶ 58 children between ages of 17–32 (mean = 23, sd = 4)
- ▶ < 5 expressive words
- ▶ fit the TN definition for developmentally delayed (i.e. 40% delay in one domain or 25% delay in two or more domains)

- ▶ Randomly assigned to either a PMT group or a Responsive Small Group (RSG).
  - adults played with child and commented
  - no prompts to communicate
- ▶ Tx sessions for both groups were 20 minutes a day, 3–4 times per week for 6 months

## Results

- ▶ No main effect for group
- ▶ There was a significant interaction

## Results

- ▶ Children who received PMT increased number of intentional communication acts if their mothers were highly responsive
- ▶ RSG was more effective in increasing intentional communication for children with unresponsive mothers

## Follow-up study

- ▶ Children who received PMT (and had responsive mothers) did significantly better on linguistic measures 12 months later (Yoder & Warren, 2001)

## Experimental Study

- ▶ Longitudinal experimental study that combined PMT with Responsivity Education (Yoder & Warren 2002)
  - to ensure that parents would increase their responsiveness to their child's prelinguistic communication bids

- › 39 children with developmental delays and their primary caregiver participated (median age = 22 mos, sd = 4)
- › Randomly assigned to PMT/RE group or a control group
- › Tx sessions were 20 minutes a day, 3-4 times per week for 6 months
- › Control group received no intervention from the study

- › Experimental group was offered 12 sessions of responsivity education (3 group; 9 individual sessions)
  - Curriculum based on the Hanen Program It Takes Two to Talk

## Results

- › Results of PMT/RE – more comments and greater lexical density if children began tx with low frequency comments and canonical vocalizations
- › Tx appeared to slow growth in comments and lexical density if children began tx with relatively frequent comments and canonical vocalizations

- › 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

## Fey et al. (2006)

- › Longitudinal experimental study of PMT/RE (Fey, et al. 2006)
- › 51 children with developmental delays between ages of 24-33 months (mean = 25, sd = 2.7)
- › Mild to moderate cognitive delay, <10 words, and a rate of intentional communication <2 acts per minute

- › Randomly assigned to PMT group or control group
- › Parents in the PMT group received eight 1-hour individual sessions of RE
- › 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

- › Children in the PMT group, regardless of their diagnosis, produced more intentional acts than children in the control group during the CSBS
- Gains by children with Down syndrome were no different from those for children without Down syndrome ( $d = .65$ ).

## Follow-up study

- › Follow-up study (Warren et al., 2008)
  - Both groups received 6 months of intervention targeting language
  - Tested children 6 months *after* discontinuing PMT/RE and after an additional 6 months of language intervention
  - No advantage of the treatment group over the control group for word learning

- › Two hypotheses to explain lack of PMT/RE effects on language acquisition (Warren et al., 2008)
  - Underlying principle of PMT/RE that better non-verbal communication leads to better word learning is not correct
  - PMT/RE and follow-up language intervention was not sufficiently intensive or as long in duration as needed for most children

## Intensity Study

- › Compares one group of children who receive 5 hours of intervention per week to another group who receives one hour per week for 9 months
- › Parents in both groups receive 9 hours of individual Responsivity Education
  - Based on the Hanen program It Takes Two to Talk

## Intensity Study

- › 64 children; 18 - 27 months in age
- › Significant language delay
  - No more than 20 spoken or signed words in the expressive lexicon, as reported on the MCDI
- › Bayley III standard score of 55 - 75
- › No autism
  - a score of 2.75 or lower on the Screening Tool for Autism in Two-year-olds
- › No primary sensory impairment
- › English as the primary language

## Intensity Study

- › PMT/MT was continued for 9 months for all included participants
- › All RE was delivered by the 3 month measurement period
- › Measurements were taken at 5 points: pre-tx, 3 months, 6 months, 9 months, and 6-month follow-up

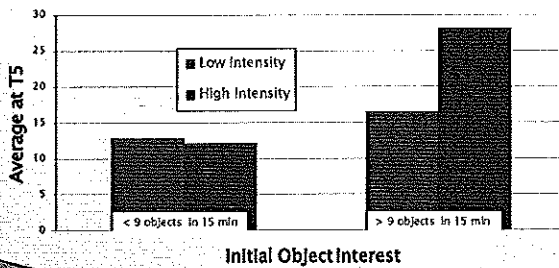
## Results

- › Main effect for time
- › Main effect for group but not clinically relevant because of such a small effect size
- › Significant interaction between a moderating variable and group
  - Object interest (number of objects touched during DPA at beginning of the study)

## Results

- › Children with high object interest had better expressive language outcomes if they received high intensity treatment

### Object Interest Moderated the Effect of Intensity on CDI-Spoken Words



## Conclusions

- › For children with developmental delays who do not have autism, those most likely to benefit from as much as 5 hours of tx per week may be those children who interact with a lot of toys and have multiple schemes for relating to them

## Conclusions

- › Interventions that target AAC in addition to spoken words may be more appropriate for children with significant communication delays such as those in this study
- › The procedures of PMT may still be appropriate techniques for teaching the use of an SGD or other system

## Romski et al. (2010)

- › 62 children and their parent completed the intervention
  - Fewer than 10 words on the CDI (did not count items in the animal sound category)
  - MSEL mean standard score not >60
  - Hearing and vision WNL
- › Randomly assigned to an intervention
  - augmented communication input (AC-I)
  - augmented communication output (AC-O)
  - spoken communication (SC)



## Romski et al. (2010)

- › 24 30-minute sessions; parents provided final 8 sessions with coaching as needed
- › Three 10-minute blocks of play, book reading, and snack
- › Intervention strategies included natural routines, environmental arrangement, offering choices, time delay, and natural reinforcers

## Romski et al. (2010)

- › Target vocabulary was individually chosen for each child
  - Not comprehended or produced by the child
  - Motivating for the child during the three contexts
  - Appropriate for use at home during similar routines
- › The mean target vocabulary size for each group was 15, with more words added as they became used by the child

## Romski et al. (2010)

- › Spoken Communication (SC)
  - Interventionist and parent visually and verbally prompted child to produce a spoken word

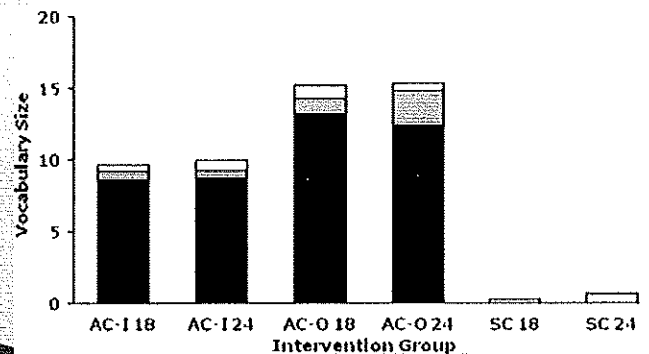
## Romski et al. (2010)

- › Augmented Communication – Input (AC-I)
  - Interventionist and parent modeled augmented and spoken word use via an SGD
  - Symbols were positioned in the environment to mark referents
  - No direct demand was made for the child to communicate

## Romski et al. (2010)

- › Augmented Communication – Output (AC-O)
  - Interventionist and parent used an SGD and spoken words
  - Child was visually, verbally, and physically prompted to produce an augmented word

## Romski et al. (2010)



## Romski et al. (2010)

- › When augmented words and spoken words are considered together, the children who received AC-O and AC-I interventions acquired more expressive language in the children who received SC
- › Children in the AC-O intervention, who were required to produce augmented words, spoke more than either the AC-I or SC groups.

## An Autism Study Yoder & Stone (2006)

- › Randomized comparison of RPMT/MT and PECS
- › 36 children ages 21-54 months with ASD
- › 3 20-minute sessions per week for 6 months of either PECS or RPMT/MT
- › Measured number of non-imitative spoken words and number of different non-imitative spoken words at pre-tx, post-tx, and at 6 months follow-up

## Yoder & Stone (2006)

- › Main effect for time
- › No main effect for group
  - Strong growth on both measures from pre-tx to 6-month follow-up regardless of the intervention

## Yoder & Stone (2006)

- › Strong interaction between the child characteristic of object exploration and the DV
  - Children who were high object users did better in PECS (10 different non-imitative words compared with 3 different words for low object users)
  - Children in the PMT group performed clinically the same, regardless of object exploration (5 diff words for low object use and 6 diff words for high object use)

## Working with Parents

- › Why include parents in intervention?
- › It's mandated
  - Congress established the Part C of Individuals with Disabilities Education Act in 1986 to "enhance the capacity of families to meet their child's needs"
- › It is a guiding principle in ASHA's Roles and Responsibilities of SLPs in Early Intervention
  - The family, rather than the individual child, is the primary recipient of services to the extent desired by the family

## Working with Parents

- › Interaction between children with disabilities and their parents often differs from those involving children who are developing typically
  - Conversations are used to meet needs rather than to share information
  - Conversation partners control the conversation more by taking more turns, introduce most topics and use high levels of questions and commands

## Working with Parents

- Children assume a more responsive role and rarely initiate a communication exchange
- Communication is used for a restricted range of functions, answering yes/no questions, 'test' questions, acknowledgements, and requesting objects that are usually in view

## Working with Parents

- ▶ Subtle cues are difficult to recognize and interpret
  - Parents may not respond to prelinguistic forms of communication
- ▶ Research supports it

## It Takes Two to Talk The Hanen Program for Parents

- ▶ Parents are taught to use:
  - Child-centered strategies (e.g., follow the child's lead)
  - Interaction promoting strategies (e.g., waiting for the child to take a turn, balancing turns)
  - Language modeling strategies (e.g., labeling, commenting, and expanding)

## It Takes Two to Talk The Hanen Program for Parents

- ▶ 11 weeks of treatment
  - 8 group sessions (2.5 hours each)
    - Parents observe videos illustrating techniques
    - Parents participate in group discussion, small group activities and role play
    - Home practice is assigned
  - 3 individual home visits (~ 1 hour)
    - Parents are video-taped interacting with their children and the tapes are reviewed with the SLP

## It Takes Two to Talk The Hanen Program for Parents

- ▶ Parents are trained to be the primary and possibly only intervention agent
- ▶ In this form of the intervention, parents do not teach specific communication behaviors like vocalizing, gesturing, looking, or using specific words
  - Rather, they observe their children, wait for them to act, listen to the sounds they make and respond to them in ways that foster participation, intentional communication, and language use

## An evaluation of ITTT Girolametto (1988)

- ▶ 20 children participated.
  - Aged 15-62 months at the start of the study
  - Comprehension age was 8-28 months
  - Expressive age was 4-24 months
  - Mild to severe developmental delay
  - The parents of 9 children were randomly assigned to receive the Hanen Parent Program
  - 11 children were no-therapy controls

## An evaluation of ITTT Girolametto (1988)

- › Results for parents:
  - took fewer turns.
  - produced more semantically-related responses to child communication and less topic control.
- › Results for children:
  - took more and longer verbal turns
  - took more turns related to their mothers' turns
  - used more diverse vocabulary
  - did not differ from controls on standardized language tests
- › The treatment seemed to increase interaction and use of existing words, but not necessarily new language

## An Evaluation of ITTT: Tannock, Girolametto, & Siegel (1992)

- › 32 children were enrolled from a waiting list.
  - 16 children were assigned to receive the Hanen Parent Program.
  - 16 children were no-treatment controls.
  - A low mental age group averaged 25 months (14-30 months).
    - These children were pre-verbal.
  - A high mental age group averaged 40.3 months (21-60 mos.)
    - These children had 10-100 words.

## An Evaluation of ITTT: Tannock, Girolametto, & Siegel (1992)

- › Results for parents:
  - Became more responsive to child communication
  - Used fewer directives such as commands and questions
  - Provided more appropriate verbal responses
- › Results for children:
  - Tx had no effect on children's communication and verbal behavior

## More Than Words Carter, Messinger, Stone, et al. 2011

- › 62 children (mean age 20 months) with ASD and their parents participated
- › Randomized trial compared Hanen More Than Words to a "business as usual" control group
- › Hanen program was provided over 3.5 months
- › Measurements at pre-tx, 5 months and 9 months

## More Than Words Carter, Messinger, Stone, et al. 2011

- › Results
  - No main effect for child outcomes of initiating joint attention, initiating requests, and frequency of intentional communication
  - Effect size for parent responsivity was large (.71) at 5 months and moderate (.50) at the 9-month follow-up

## More Than Words Carter, Messinger, Stone, et al. 2011

- › Significant interaction between object interest and child measures
- › Children with low object interest (<3 toys) had greater gains in initiating joint attention, initiating requests, and frequency of intentional communication if assigned to Hanen MTW
- › Children with high object interest (>5toys) showed lower gains if assigned to HMTW

## Conclusions about Hanen

- › The Hanen program is effective in enhancing parent responsiveness and increasing parent-child interaction
- › It should not be used on its own if the goals are to increase the complexity of children's early language behavior

## Adult Learning Principles

- › New material is more easily learned by adults when it has direct relevance to the learner's knowledge and interests
- › For mastery to occur, application in multiple contexts must be provided with opportunities for evaluation and feedback
- › Self-reflection and goal setting helps adult learners apply their knowledge and skills to novel situations

## Working with Parents

- › Adults learn best with clear, relevant, and jointly established expectations
- › Parents need to understand that the SLP is not coming to their home to work directly with the child
- › Instead, services are intended to support parent-child interaction

## Working with parents

- › Observe the parent and child in the routine
  - Can build on the parent's current skills rather than introducing a strategy that might already be in place
- › Join in and give direct explicit teaching and demonstration of the procedure if necessary
  - Explain exactly what you are doing and how it will help the child's participation in the routine

## Working with parents

- › Support opportunities for the parent and child to practice while the SLP offers feedback
- › Help parents analyze their own use of the procedure, including what went well and what did not
  - Video tape review

## Working with parents

Optimal learning requires explicit instruction, demonstration and guided practice with frequent opportunities that are attached to specific activities/routines so the caregiver is informed on what, how, when, and how often to use the specific strategies with the child. Simply encouraging parents to provide an environment that supports communication, play, and social interaction has not provided adequate effects (Woods et al., 2011).

## Help parents identify outcomes

- › ICF (International Classification of Functioning, Disability, and Health) model of disability
- › Disability is now defined as "the extent to which impairments in bodily structure create challenges for participation in an activity/routines that are typical in an individual's environment"

## Help parents identify outcomes

- › As participation in an activity increases, the experience, or degree of disability decreases. In contrast, as participation in an activity decreases, or is restricted, the degree of disability increases

## Help parents identify outcomes

- › Participation is the basis for developing early intervention outcomes
- › The process for developing outcomes focuses not only on a child's performance abilities or inabilities, but also the impact of those performance inabilities on the child's participation in everyday activities/routines

## Help parents identify outcomes

- › The focus is directly on increasing participation in family activities/routines, and less so on isolated skill performance
- › If participation is enabled or enhanced, then young children can acquire new skills through their experiences while participating in activities/routines with their families and caregivers