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AIMH Annual Conference
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The linguistic and wider impacts of encouraging non-verbal communication within mother-child dyads.

Dr Elizabeth Kirk
Prof Karen Pine • Neil Howlett

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Baby Signs Program

Baby Signs Story

Our Team

News

Helping Babies "Talk" Before They Can Talk

By teaching your baby a few simple signs, successful communication will be literally at your baby's fingertips.

The Baby Signs® Program is the world's leading sign language program for hearing babies. It's the only program:

- created by child development experts specifically for babies.
- proven through scientific research to provide positive benefits for babies.
- based on American Sign Language but flexible to fit the needs of all families.
- with a full range of classes and products for parents *and* babies.
- that offers trainings for Early Childhood Educators and classroom resource kits for Child Development Centers.

New from Baby Signs!

Learn how to potty train your baby—
before age 2!

Institute Info

Baby Signs Program

Benefits

Research

FAQs

Classes

Careers

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- Re
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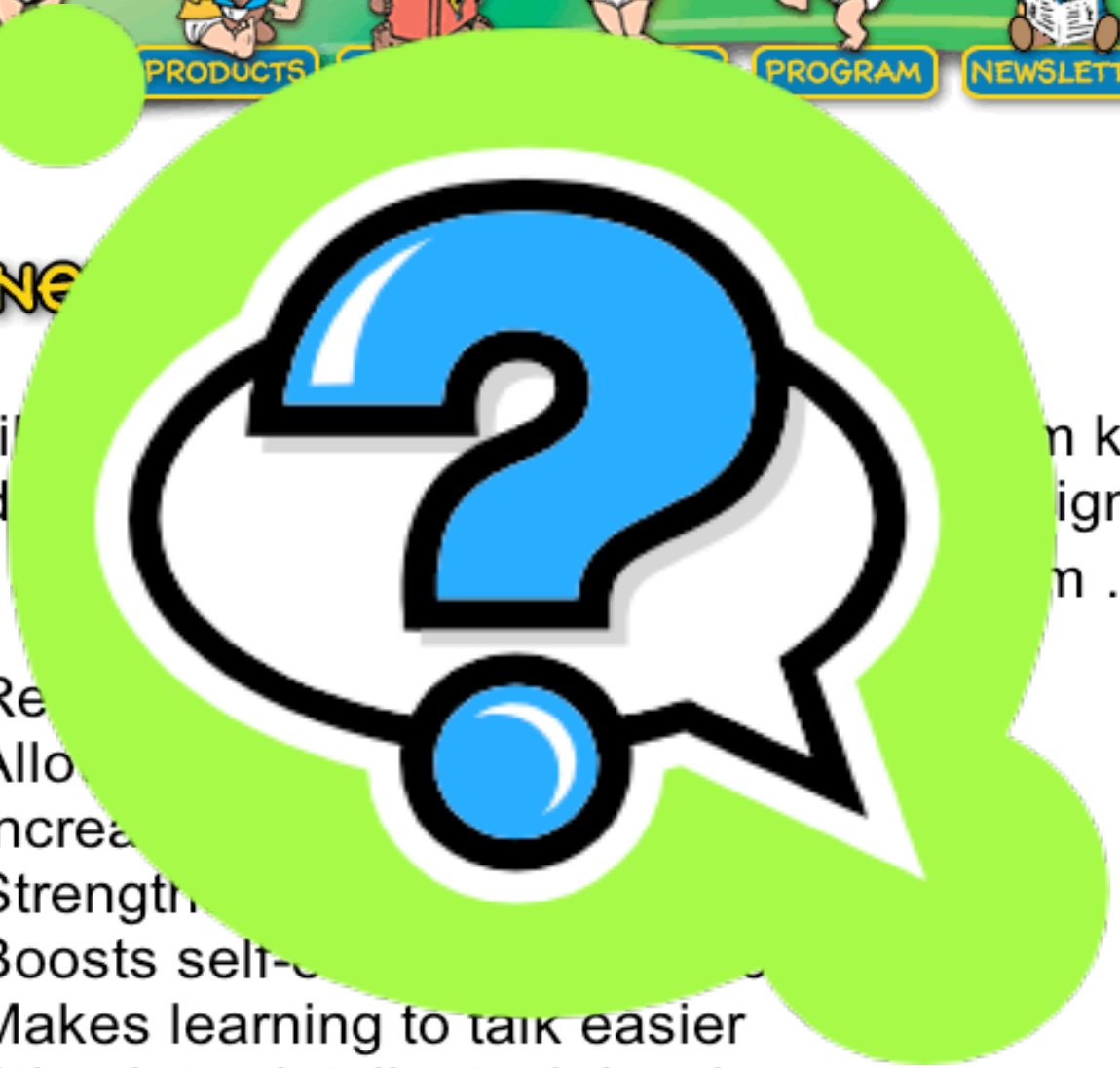
- Boosts self-
- Makes learning to talk easier
- Stimulates intellectual development



Baby Sign Research

- Review of 17 research studies that examined effectiveness of pre-lingual signing for normally developing hearing infants.

- **Methodological weaknesses precluded evidentiary confirmation**

- *Johnston, Durieux-Smith and Bloom (2005) Teaching gestural signs to infants to advance child development: A review of the evidence. First Language, Vol. 25, No. 2, 235-251*

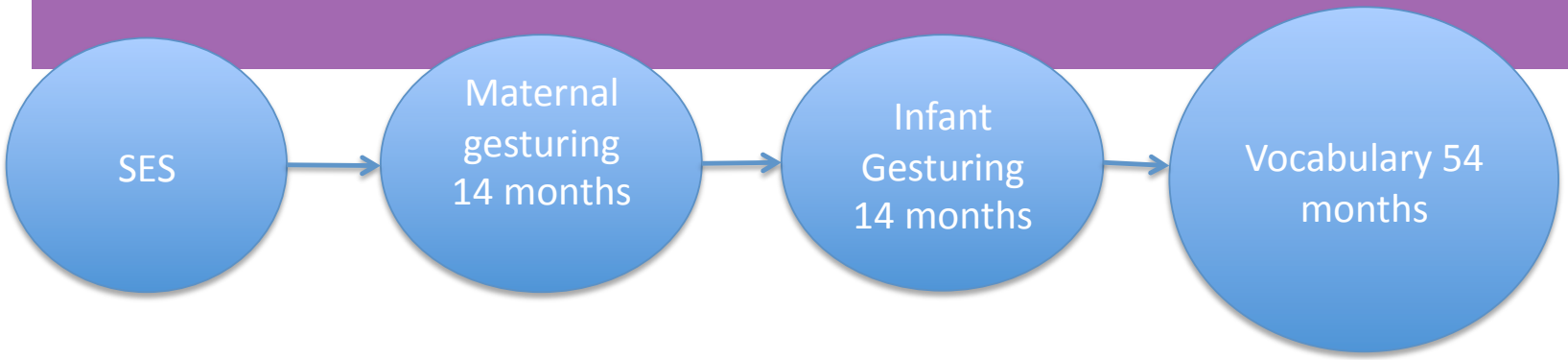
Outstanding Questions

- Does encouraging gesture benefit language development?
- Are there any wider non-linguistic impacts of encouraging non-verbal communication within mother-infant dyads?

Does encouraging gesture benefit language development?
Rationale

- Language milestones in speech mirrored by equivalent gains in gesture
  - *(Bates & Dick, 2001)*
- Gesture predates and predicts verbal gains
  - *(Ozcaliskan & Goldin-Meadow, 2005)*
- Relationship between frequency of maternal pointing and infant vocabulary, mediated by SES

Gesture and SES



•The fact that children from high-SES families have large vocabularies at 54 months was explained by children's gesture use at 14 months

•Differences in early gesture help to explain the disparities in vocabulary that children bring with them to school.

Rowe and Goldin-Meadow (2009) Science

Social emotional benefits?
Preliminary findings

- Improved synchronic interactions:
  - Gesturing dyads visually engaged with one another for longer
  - Displayed a higher frequency of tactile interaction behaviours

Gongora & Farkas (2009)

- Elicit caregiver responsiveness

Vallotton (2009)

- Gesture training suggested as a means to reduce infant crying

Thompson, Cotnoir-Bichelman, McKlerchar, Tate & Dancho (2007)

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Impact on mother

Changing a mother's perception of her infant?

- By training mothers to gesture with their infants from a preverbal age we are encouraging them to perceive their infants as communicative partners (possibly at a much earlier age than they normally would).

Increase sensitivity?

- Does this change in perception drive her to behave in a way which is more sensitive to her child's mental abilities?

Enhance maternal mind-mindedness?

- Mothers may be more likely to attend to and attribute meaning to her infant's early communicative attempts.

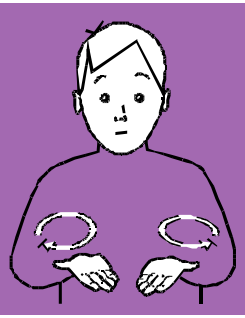
Parental mind-mindedness
Liz Meins

- Evolved from the original definition of maternal sensitivity (Ainsworth, 1971)
- Higher levels of mind-mindedness in the child's first year of life predict:
  - infant-mother attachment security (better than maternal sensitivity) (Meins,1998;2001)
  - infant-father attachment security (Arnott & Meins, 2007; Lundy, 2003)
  - children's later understanding of others' mental states, i.e. theory of mind.
  - (Meins, Fernyhough, Wainwright, Gupta, Fradley & Tuckey, 2003).

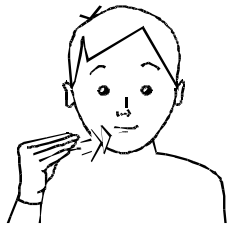
The study

- One-year longitudinal study
- 40 infants (8m at onset) randomly allocated to 1 of 4 conditions:
- **BSL Gesture Training**
- **Symbolic Gesture Training**
- **Verbal Training**
- **Non-intervention control**

Target set



	Set One (8m)	Set Two (12m)
Object Concepts	Duck Flower Hat Drink Food	Dog Aeroplane Book Shoes Biscuit
Non-object concepts	All-gone Where More Hot Sleep	Pain Cuddle Dirty Sing Bath



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Aeroplane

Jessica, 16 months

More grapes!

Sebastian, 12 months

Assessment Measures
1. Pre-school language scale (PLS)-3 UK

- Auditory comprehension and expressive communication assessed in play task.

Boucher and Lewis, 1997.

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Assessment Measures
2. Oxford Communicative Developmental Inventory

- British adaptation of the MacArthur CDI
- Parental report of receptive & productive vocabulary.
- Hamilton, Plunkett & Schaffer (2000).

Games and Routines	U	U/S			U	U/S	
bath	O	O		no	O	O	
breakfast	O	O		pat-a-cake	O	O	
bye bye	O	O		peekaboo	O	O	
dinner	O	O		please	O	O	
don't	O	O		shh / hush / shush	O	O	
hello	O	O		tea	O	O	
hi	O	O		thank you	O	O	
lunch	O	O		wait	O	O	
nap	O	O		want to	O	O	
night night	O	O		yes	O	O	

Assessment Measures
3. Gestures, Actions and Pretend Play Checklist

A parental checklist of infants' use of:

- Communicative gestures (e.g. conventional gestures such as waving goodbye and deictic gestures)
- Actions (e.g. joining in with action games such as round-and-round-the-garden)
- Symbolic play (e.g. playing with doll or teddy or imitating an adult)

Indicating gestures	Never	Seldom	Often
Holds out an object to show you			
Offers an object to you			
Indicate a place using hand or arm			
Point with index finger to show you an interesting object or event			

Adapted and extended from the words and gestures section of the MacArthur CDI by Hamilton, Plunkett & Schaffer (2011).

Assessment Measures
4. Maternal interview

- mothers interviewed regarding:
  - their modeling efforts (frequency, context)
  - infant comprehension of verbal and/or manual target items
  - infant production of verbal and/or manual target items

Assessment Measures
5. Maternal mind-mindedness

- Mother-infant dyads filmed at each time point: ten minutes free-play/ten minutes snack or mealtime.
- A subsample of 18 participants (9 gesture-trained group;9 control group) randomly selected
- Sessions were coded using the Observer system from Noldus.
- The sessions were coded for six Maternal Mind-Mindedness variables.

Mind-Mindedness

1. Appropriate mind-related comments

accurately describe the thoughts, feelings or desires of the infant in a play context

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Mind-Mindedness

2. Inappropriate mind-related comments

Inaccurately describe the thoughts, feelings or desires of the infant in a play context

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Mind-Mindedness

3. Encouraging Autonomy comments

Encourage the infant to perform actions independently of the mother, not including demands.

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Mind-Mindedness

4. Imitation

Direct imitations of an infant's utterance.

5. Response to change in infant gaze and action

Change in infant directed action and change in infant gaze were coded.

- Mothers were coded as responding to a change in infant directed action or gaze if they made a comment contingent to the change or physically responded to the change.

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Results
Language outcomes

- No significant main effect of condition on each of the language measures (p>.05)

- For particular children, gesturing did bring about some language gains.
  - Effect was specific to male infants who at eight months scored low in expressive communication.
  - These infants demonstrated a greater gain in their expressive communication abilities relative to the rest of the sample if they had been exposed to gesture and no gain if they were not.

- **Overall, no evidence that encouraging advancements in the manual modality promotes language development**

Results
Mind-Mindedness

While no overall language benefits of enhanced gesture were found….

……close scrutiny of interactions between mothers and infants uncovered subtle differences indicative of positive changes in mothers' interactions with her infant.

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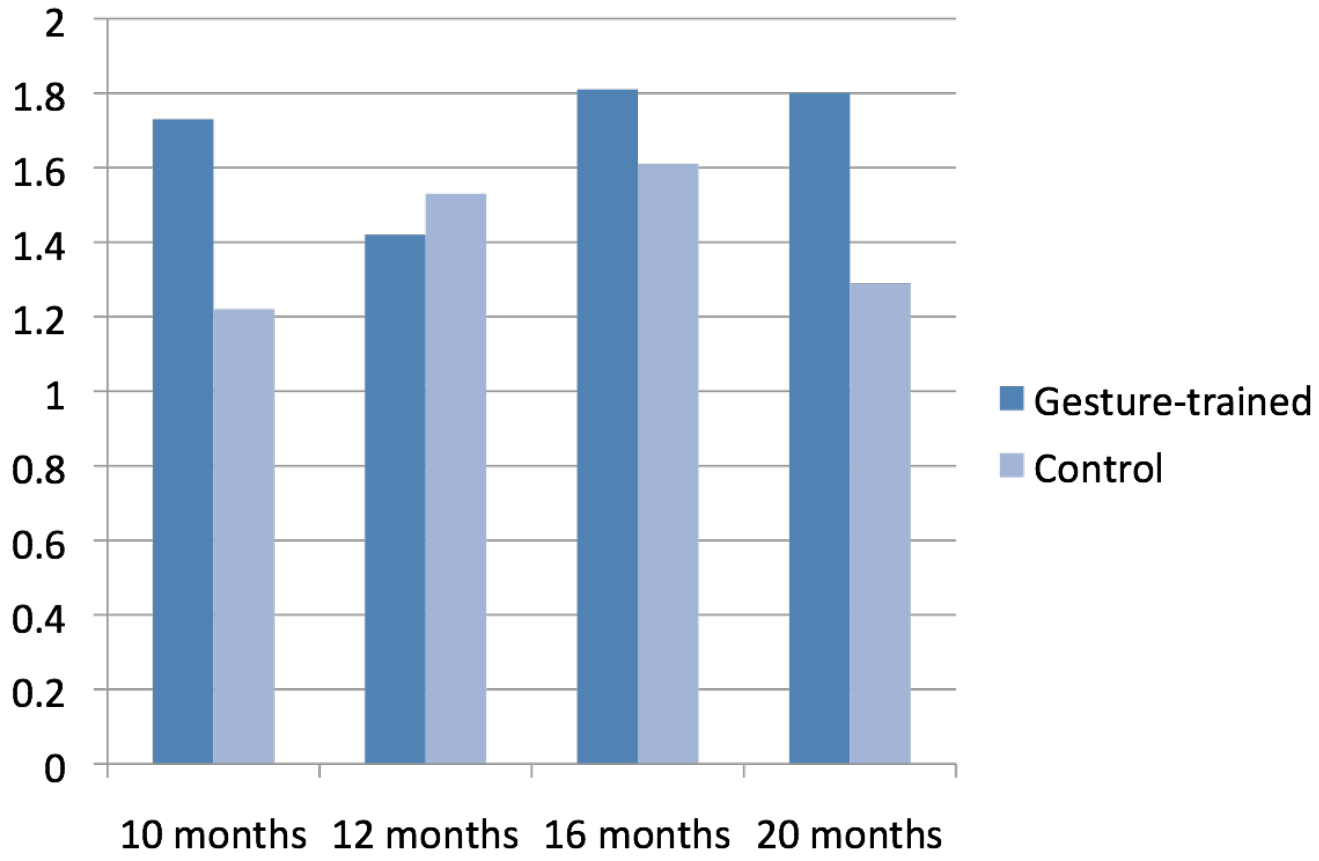
Composite Mind-Mindedness score by age and condition



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Bordered significance, p = .06.
No significant interaction between condition and age, p = .18

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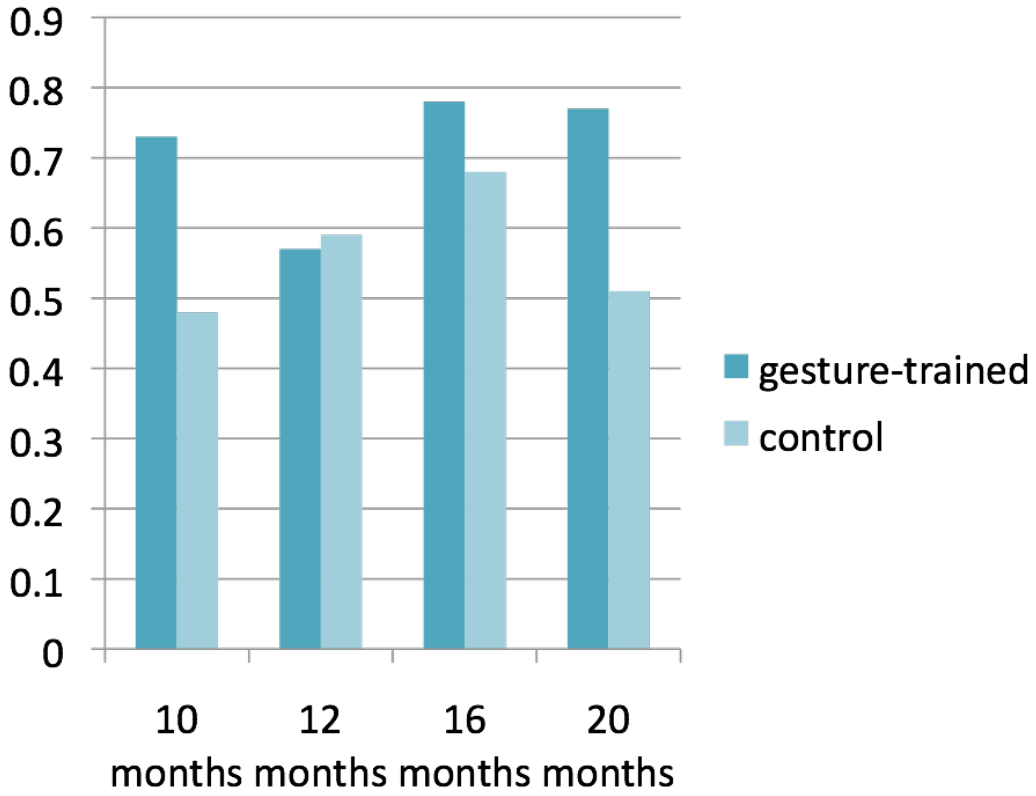
Non-Verbal Mind-Mindedness

- We predicted that mothers who were gesture trained would be more attuned to their child's **nonverbal behaviours.**
- We calculated mother's **Nonverbal MM** by summing and averaging the **proportion of changes in infant gaze and action that mothers responded to**
- Significant (p = .04)



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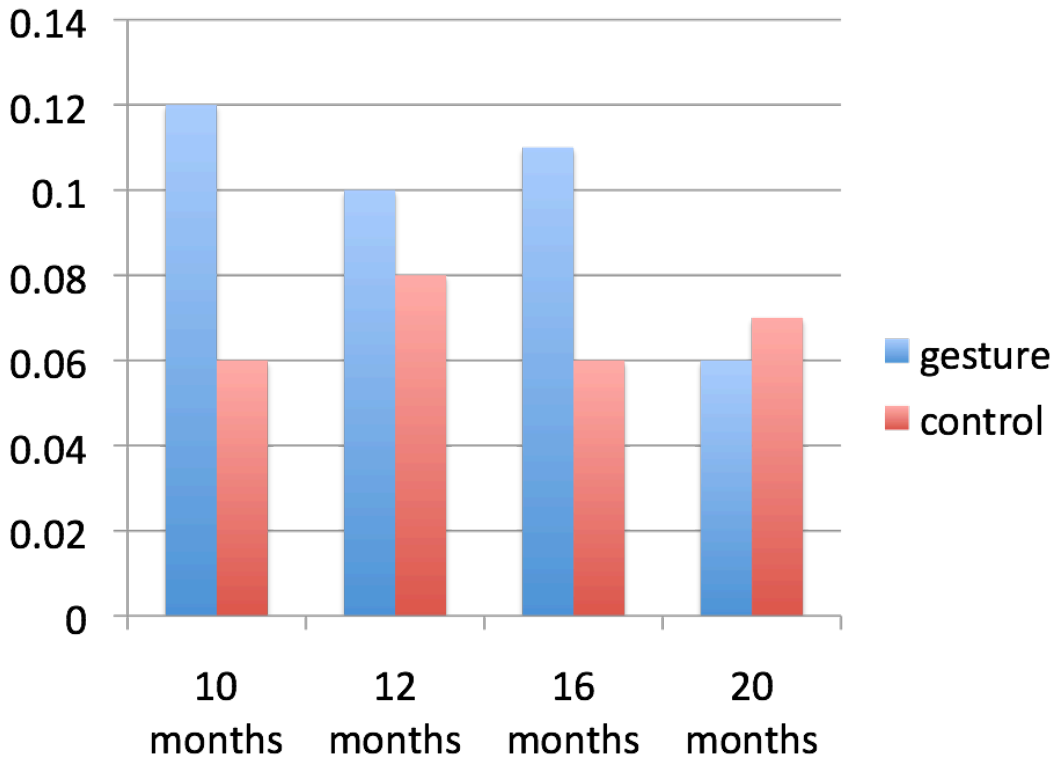
Encouraging Autonomy

- Mothers in the gesture group encouraged more independent action than mothers in the control group (approaching sig, p = 0.08)
- interaction between Condition and Age n/s (p = 0.23)
- No significant differences in appropriate mind-related comments, inappropriate mind-related comments and imitation.



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Summary of mind-mindedness findings

Mothers who gestured with their infants

- encouraged more independent action with their infants
- were more responsive to changes in their infant's gaze and action

Revealing that mothers

- viewed their infant as capable of intentional action
- willing to acknowledge infant's wants and to anticipate infant's desires

Why more responsive?

- by-product of gesture training: enhanced focus on their child's non-verbal communicative attempts.
- experience of sharing a gestured system of communication might have enhanced the mothers' proclivity to interpret and follow the desires of the child.

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To sign or not to sign?

- Gestural intervention not necessary for healthy developing infants raised in an environment where the quality and quantity of linguistic input is good.

- Mothers who access baby sign classes and products more likely to be high-SES mothers who have the motivation, financial and time resources. May actually have a detrimental effect by enhancing parental anxiety (Howlett, Kirk & Pine, 2010).

- There are family environments where the richness of communication could be enhanced to nurture healthy development and where encouraging gesturing may be beneficial.

Small Talk

Parents with babies aged 6 – 12 months

Course of 6 weekly sessions focus on enhancing non-verbal interaction including some sign training (Makaton)

Delivered by a Speech and Language therapist in Sure Start children's centres in Hertfordshire

Pilot findings indicate positive impact with improvements in measures of early expressive and receptive communication.

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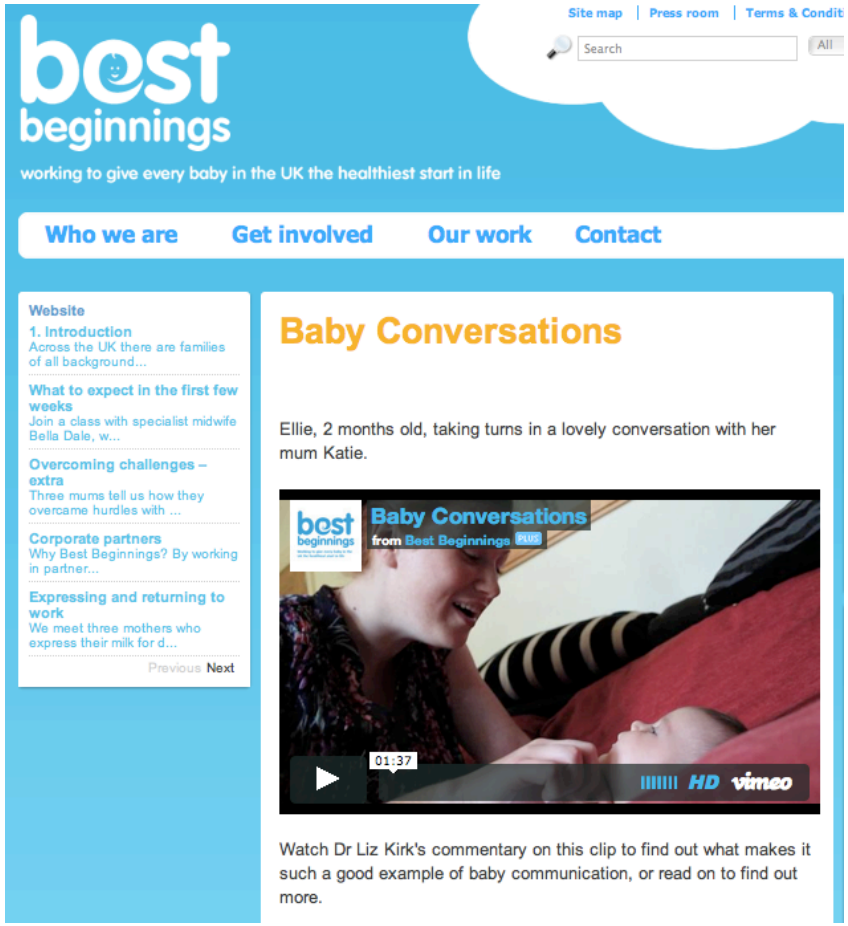
Best Beginnings
working to reduce inequalities in child health



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Thank you

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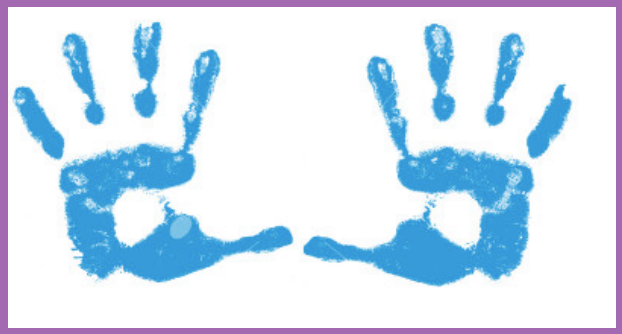

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