

The Emergence of Triadic Attention

- Prior studies identify a radical shift (between 9-12 mo)
 - From Dyadic (Mom+Infant or Infant+Object)
 - To Triadic (Mom+Infant+Object) interactions
- Involves the **apparently discontinuous appearance** of social abilities
 - the “*Social Revolution*” in cognitive development
 - Includes behaviors like *You-Me-It* Games
 - e.g. Infant gives object to Mom
 - e.g. Infant imitates Mom’s actions to objects
 - These generally assumed to be driven by new rep’l abilities
 - e.g. Infant *represents* Mom’s *intentions*
- DCog analysis shows Triadic development NOT discontinuous!
 - i.e. Instead: Multi-modal, multi-party engagement re-configures over development

de Barbaro, Johnson & Deak, 2013



METHODS

- Mother/infant pairs, seated face to face
- Free-play with 3 toys, ~6 min video segments
- Videotaped at 4, 6, 9 and 12 months
- Micro (sec-by-sec) analysis of on 5 pairs at 4 ages (took ~2 years!)
 - Later, follow up with 26 pairs (see *de Barbaro et al. 2015*)

ANALYSIS

- Focus on “Maternal Bids”
 - Mother makes effort to direct infant’s attention to particular object
 - Assess how coordinated Mother-Infant-Object are at each age
- Scored same parameters at every age
 - Mom & Infant: Target of Hands, Eyes; Mouth; Affect. Plus Object identity & location.
 - Continuous, frame-by-frame for all parameters
 - Interested (*ala* Thelen & Smith) in how esp **attentional parameters**
configure and re-configure over developmental time

4 Months Old



6 Months Old



9 Months Old



12 Months Old



Articulated attention

12 Months Old

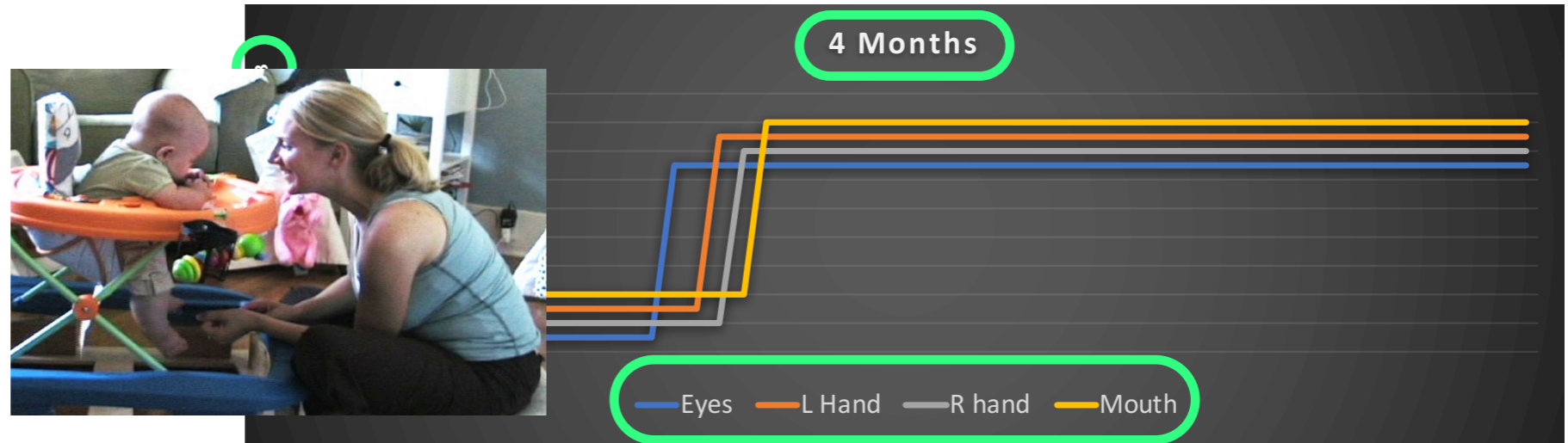


“Imitation” by Infant

Learning to divide attention

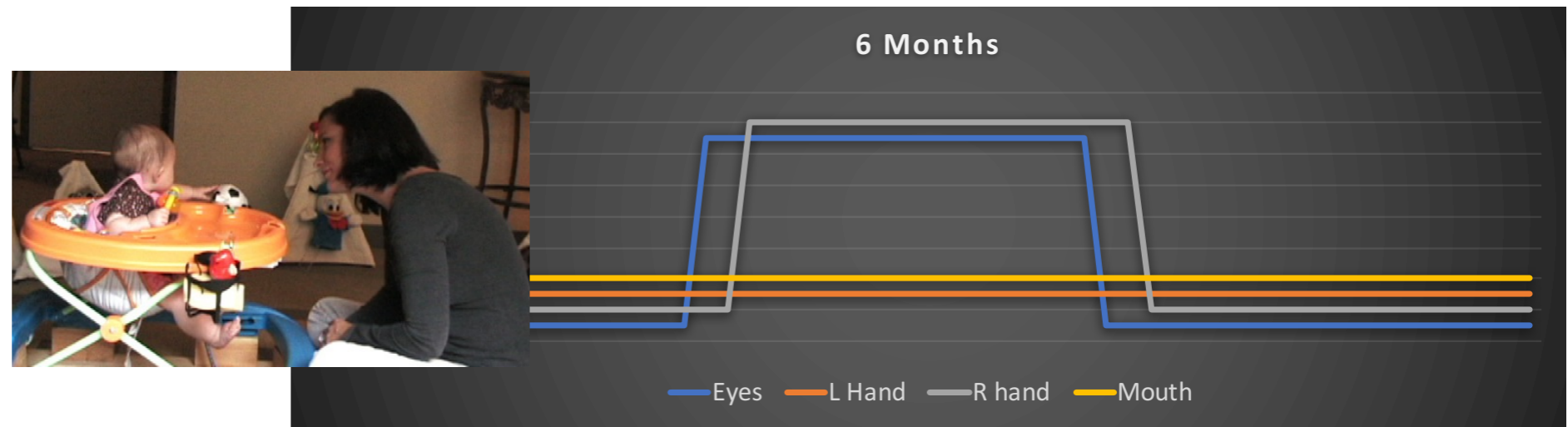
- 4 Months

- All modalities converge
- Easily distracted, led



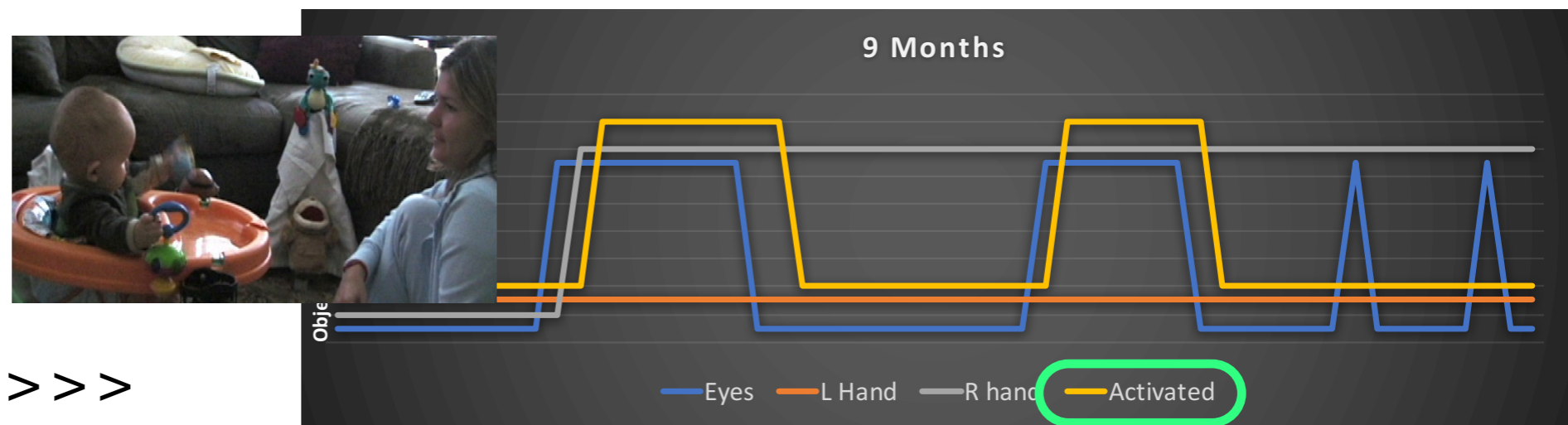
- 6 months

- Acquisition of object
- Fragile de-coupling



- 9 months

- 1 obj/each hand, activated by vision
- Facile de-coupling



So, gradual decoupling >>>
eventual multi-task integration

de Barbaro, Johnson & Deak, 2013

Other Relevant Parameters

- Haptic Articulation increases
 - 4 mo: Undifferentiated full-hand fingering
 - 6 mo: Extend arm, grasp, retrieve
 - 12 mo: Complementary bimanual: grip+1 finger explore



4 mo



12 mo

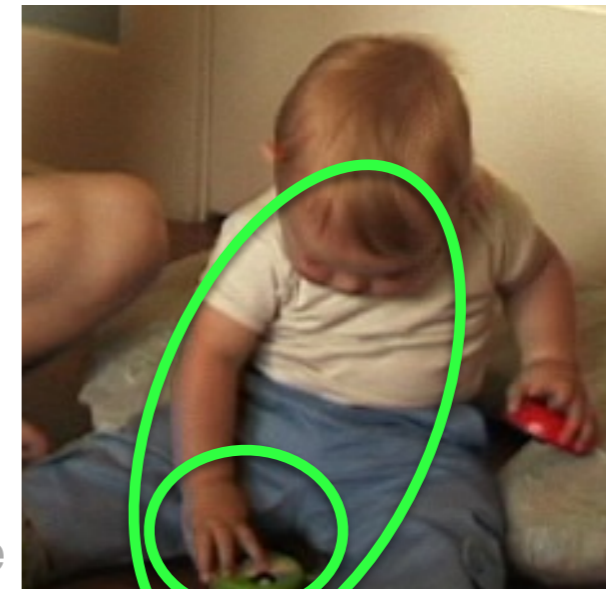


6 mo

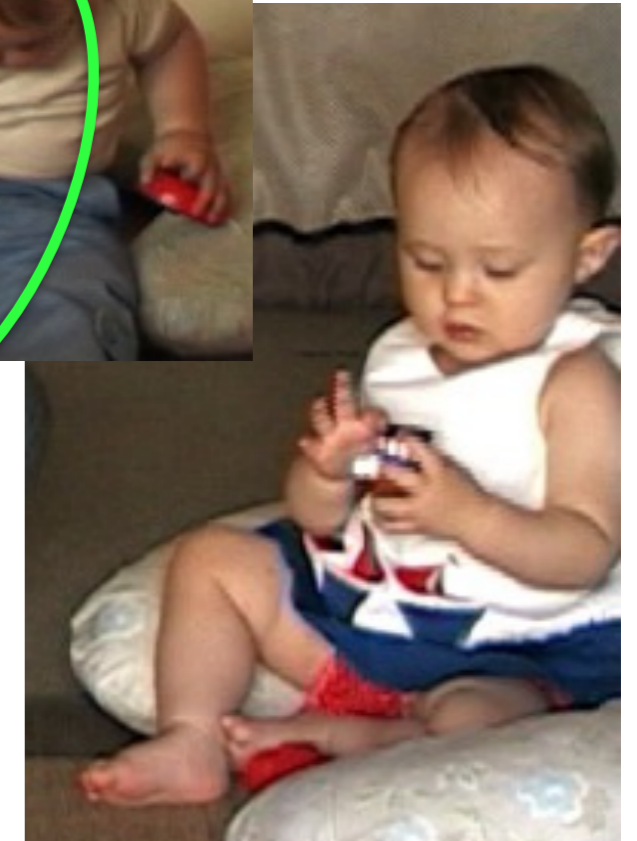
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 - Visual guides reach & manip; before and/or with haptic
 - Elongated engagement, attend consequences, examine
 - Visual discrimination also increasingly articulated



12 mo



9 mo



6 mo



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- Arousal and Affect
 - Espec to face, then to 'do-with', then to 'do-same-as'
 - Timing increasingly tied to social accomplishments



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9 Mo



12 Mo

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 - Mom provides for younger, demonstrates for older
 - Mom imitates, radical increase before infant's
 - Reinforces salience of similar actions with pos affect



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- So, rather than a discontinuous “revolution”, this approach shows...
 - As each of the above developing parameters elaborate and re-configure, the infant increasingly incorporates multiple, spatially distributed targets (including You, Me, It) into elongated, triadic, attentional & manipulative routines.



de Barbaro, Johnson & Deak, 2013



As we saw in Thelen & Smith
on “crawling” in infants...

Multiple developmental trajectories . . .

- Attentional modalities increasingly divided
- Haptic & Visual articulation increases
- Visual pursuit, obj regain time elongates
- Arousal & positive affect inc'ly for “do same”
- Maternal scaffolding, leads, mimics, adapts

**. . . result in triadic interactions
that reconfigure the system
in “new” ways**

“Give”

Not an unexpected, “new” triadic,
but an emergent of the maturing system



Triadic (Mother-Infant-Object) Coordination

- 4 Months
 - Well coordinated
 - Infant converges its attention on any maternal bid
- 6 Months
 - Infant least compliant with bids, usually only briefly diverted
 - Infant exercising own control predominates
- 9 Months
 - Infant more amenable to bids
 - More easily divert multiple modalities, then return to own object
- 12 Months
 - Well coordinated
 - Incorporate multiple targets, including Mom, into elongated routines
- So, triadic attention occurs at every age, although
elaborated and re-organized as multiple parameters co-develop