

An Intensity-Specific Dyadic Approach to Analyzing Affect Attunement during Early Mother-Infant Interaction: A Methodological Comparison to Traditional Methods

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INTRODUCTION

Researchers have been interested in early affect-attunement (AA), between infants and their caregivers, as a predictor of later social-cognitive development, including coordinated joint attention (CJA) and language. Traditionally, infants and mothers have been examined separately, with little research analyzing both participants' contributions to AA. For example, infant affect^{1,2} has been examined without measuring maternal affect; or maternal responsiveness to infant affect^{3,4,5,6} has been measured without measuring infant's responses to maternal affect. Furthermore, Stern's work has been influential in the development of AA measures. He stresses the importance of measuring intensity (low, moderate, high) to capture intensity-time courses or to map vitality contours yet most researchers did not analyze the differing intensities separately. Instead, intensities have been collapsed into one positive affect category regardless of the intensity. **The current study compares non-dyadic infant affect and collapsed intensities with an intensity-specific dyadic measure of affect attunement.** Because the latter measure is the most labor-intensive, it is important to justify the approach. The results of these differing approaches were contrasted in a predictive model examining the stability of infant's CJA skills.

RESEARCH QUESTION

Which of the following methodologies is the best approach for measuring and analyzing affect attunement during mother-infant interactions at 6 and 9 months of age when predicting the stability of infant's coordinated joint attention skills at 12 months of age?

INTENSITY-SPECIFIC vs. COLLAPSED INTENSITIES

INDIVIDUAL vs. DYADIC	I. Intensity-Specific; Dyadic		II. Collapsed; Dyadic	
	a. Infant Affect	b. Maternal Affect	a. Infant Affect	b. Maternal Affect
INDIVIDUAL vs. DYADIC	III. Intensity-Specific; Non-Dyadic		IV. Collapsed; Non-Dyadic	
	a. Infant Affect	b. Maternal Affect	a. Infant Affect	b. Maternal Affect

METHODS

- 30 participants: 15 mother-infant dyads
- Mothers: Caucasian; educated (M=16 yrs, SD =1.88)
- Infants: Typically developing; exposed to English
- Object-mediated free play at 6, 9, & 12 months, captured by split-screen digitized video

CODING/MEASURES

AA (6 & 9 mo.) coding system detailed below
 Best viewable consecutive 5-minute selection
 Continuous microanalytic coding (1/4-sec. precision)
 Mutually-exclusive & exhaustive codes for 3 phases
 CJA (12 mo.): Average duration of CJA episodes
 Engagement State Coding^{7,8} (10 minutes); K = .79

AFFECT ATTUNEMENT CODING

Phase 1: Mutual Engagement (ME-time); K = .83
 Engagement State Coding^{7,8} used to identify ME-time
ME-time = Persons, Supported Joint, Coordinated Joint
Not ME-time = Objects, Onlooking, Unengaged
 Phase 2: Infant Affect *during* ME-time; K = .85
 Codes: Neutral; & Low, Moderate, & High Positive Affect
 Multi-media coding scale calibrated across all infants
 Phase 3: Maternal Affect *during* ME-time; K = .77
 Codes: Neutral; & Low, Moderate, & High Positive Affect
 Multi-media coding scale calibrated across all mothers
 Ensured accurate affect matching within dyads as well

DEFINITIONS OF MEASURES

Intensity-Specific = Low, Moderate, & High Positive Affect analyzed separately
Collapsed = Positive Affect (Low, moderate, & high affect summed together & analyzed as 1 variable)
Dyadic = Affect intensity matches (when infant & mother have identical codes within a 2-sec. window)
Infant Affect = Infant-only data from phase 2 (irrespective of mother data)
Mother Affect = Maternal-only data from phase 3 (irrespective of infant data)

Please note: ALL measures are reported in % ME-time (time spent doing x/ME-time)

RESULTS: Correlations

	CJA (12mo)
Low Match (6mo)	0.634 *
Mod. Match (6mo)	
High Match (6mo)	
Low Match (9mo)	
Mod. Match (9mo)	-0.649 **
High Match (9mo)	
Positive Match (6mo)	
Positive Match (9mo)	
Infant Low (6mo)	0.503 ~
Infant Mod. (6mo)	
Infant High (6mo)	
Infant Low (9mo)	
Infant Mod.(9mo)	-0.627 *
Infant High (9mo)	
Mom Low (6mo)	
Mom Mod. (6mo)	
Mom High (6mo)	
Mom Low (9mo)	
Mom Mod. (9mo)	
Mom High (9mo)	
Infant Positive (6mo)	
Infant Positive (9mo)	
Mom Positive (6mo)	
Mom Positive (9mo)	

* p <.05, ** p <.01, ~ p .055

MULTIPLE REGRESSION RESULTS: How Each Method Predicted CJA @ 12 mo.

INTENSITY-SPECIFIC vs. COLLAPSED INTENSITIES

INDIVIDUAL vs. DYADIC	I. Strong Predictive Relationship⁹: Low @ 6mo. (+ relation) & Moderate @ 9 mo. (- relation) R² = .604*		II. No Effects	
	III. Negative Predictive Relationship: Infant Moderate @ 9 mo. a. R² = .393* b. No Effects		IV. No Effects a. No Effects b. No Effects	

⁹Multiple regression results from companion poster: Greenwald & Rollins (2008). Affect Attunement during Early Mother-Infant Interactions: How Specific Intensities Predict the Stability of Infants' CJA Skills.

DISCUSSION

The intensity-specific dyadic approach was the preferred method for coding and analyzing AA. The intensity-specific dyadic approach (a) had the strongest predictive relationship with CJA at 12 months (R² = .604, p < .05) and (b) revealed that the direction of the relationship may differ at different intensities highlighting the unique contributions different intensities of AA may have on the outcome. Collapsing across the intensity levels did not support the hypothesized relationship between AA and CJA. This may be due to the opposing directions of the relationships⁹: low intensity matching at 6 months had a positive relationship; whereas, moderate intensity matching at 9 months had a negative relationship to the outcome. When comparing the different intensity-specific approaches, **the dyadic approach demonstrates the strongest relationship and reflects the reciprocal nature of mother-infant interactions.** Similar results were found for moderate at 9 months when comparing the infant-only versus dyadic approach; however, the infant only approach did not capture the contributions of low matching at 6 months.

Results suggest that an intensity-specific dyadic approach be considered when analyzing the role of affect attunement in social-cognitive development.