Affect Attunement during Early Mother-Infant Interactions: How Specific Intensities Predict the Stability of Infants’ Coordinated Joint Attention Skills

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THEORETICAL FRAMEWORK
Sharing emotions with others (2 mo.+)
Affect Attunement (AA)
Sharing attention with others (9-12 mo. +)
Coordinated Joint Attention (CJA)
Sharing thoughts with others (12 mo. +)
Language

INTRODUCTION
Coordinated joint attention (CJA) represents intersubjectivity and is often considered the infrastructure for language development*. Theorists have proposed a predictive relationship between emotion sharing/affect attunement (AA) and CJA3,4,5,6,7. This study examines the putative nature of this relationship: Does the intensity of early caregiver-infant AA, before the emergence of CJA, predict the stability of later CJA skills?

THEORETICAL IMPLICATIONS
How does CJA develop? Is it innate, or can it be influenced by the caregiving environment? A predictive relationship between AA and CJA would support the idea that CJA can be supported through caregiving.

RESEARCH QUESTION
Does AA at 6 and 9 months predict later CJA at 12 months when CJA is stable & robust? Further, does the intensity of AA matter?

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

MEASURES
AA (6 & 9 mo.) coding system detailed below
Best viewable consecutive 5-minute selection
Continuous microanalytic coding (¼-sec. precision)
Mutually-exclusive & exhaustive codes for 3 phases
CJA (12 mo.): Average duration of CJA episodes
Engagement State Coding (10 minutes); K = .79
(Bakeman & Adamson 1984; Adamson et al. 2004; Carpenter et al. 1998)

AFFECT ATTUNEMENT CODING
Phases 1: Mutual Engagement (ME-time); K = .83
Engagement State Coding 2 collapsed 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

AFFECT ATTUNEMENT MEASURES
• Affect intensity matches defined as infant & mother having identical codes at the same time or up to 2-sec. afterwards
• Total time matched at each intensity / ME-time = % of ME-time spent matching at each intensity (neutral, low, moderate, & high positive intensity)

RESULTS
Multiple Regression Model Building Table:
Intensity matches (%ME-time) predicting CJA (12 mo.)

<table>
<thead>
<tr>
<th>Model</th>
<th>Low-Intensity</th>
<th>Low-Intensity</th>
<th>Moderate-Int.</th>
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<tbody>
<tr>
<td></td>
<td>ME-time</td>
<td>ME-time</td>
<td>ME-time</td>
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<tr>
<td></td>
<td>AffMatch</td>
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<tr>
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<tr>
<td>1</td>
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<td>42.99</td>
<td>124.39</td>
</tr>
<tr>
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<td>124.39</td>
</tr>
<tr>
<td>3</td>
<td>91.07**</td>
<td>39.06</td>
<td>-185.06**</td>
</tr>
<tr>
<td>4</td>
<td>-185.06**</td>
<td>39.06</td>
<td>-136.96*</td>
</tr>
<tr>
<td>5</td>
<td>136.71*</td>
<td>53.03</td>
<td>-191.75**</td>
</tr>
</tbody>
</table>

INTERPRETATION
Model 4: On average, ME-time spent Low Matching at 9 months (negative predictor) and Moderate Matching at 9 months (negative predictor) each contributed uniquely to the stability of CJA at 12 months.

DISCUSSION
Findings both support and extend the theory regarding a predictive relationship between AA and intersubjectivity. Shared low-intensity emotional states, during caregiver-infant object-mediated interactions, support the development of attention before and during the emergence of CJA. In contrast, moderate-intensity AA may impede CJA. Caregiver-infant object-mediated interactions at 6 and 9 months are rich in information available for processing (e.g. multi-modal motherese8, caregiver’s contingent comments6, visual gaze referencing, referential gestures6, and shared emotional experiences7). Thus, pleasurable well-modulated low-intensity AA may enhance infants’ processing capacities for learning intersubjectivity. The function of early AA may shift from understanding others’ emotions to understanding others’ attentions during object-mediated mutual engagement.

REFINED THEORETICAL FRAMEWORK
Understanding others’ emotions
Affect Attunement (2-6 mo.)
Processing & learning about others’ attentions
Low-intensity Affect Attunement (6-9 mo.)
Understanding & coordinating w/ others’ attentions
Coordinated Joint Attention (9-12 mo. +)
Sharing thoughts with others
Language (12 mo. +)

* Adapted from Adamson et al. (1999)